Abstracts from the 2017 Society of General Internal Medicine Annual Meeting

SCIENTIFIC ABSTRACTS

"A PCMH MIND AND A PCMH HEART": PATIENT, FACULTY, AND LEARNER PERSPECTIVES ON THE DEVELOPMENT OF AN INTERPROFESSIONAL TEAM-BASED TRAINING PRACTICE

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BACKGROUND: The benefits of interprofessional education (IPE) and clinical training have been documented for learners, yet less is known about the perceptions of the faculty members who facilitate the educational experiences, or the perspectives of patients who receive this interprofessional (IP) care. Aligning the priorities of these three stakeholders would inform a truly patient-centered medical home and also develop an IP workforce skilled and comfortable working in a PCMH delivery model. The objective of this report was to use focus groups to compare stakeholder attitudes about IP education and training.

METHODS: We conducted five groups with 42 participants (31 F, 11 M): A "learner" group, a faculty group and three patient groups. The learner and faculty group represented the disciplines of medicine (students and residents), psychology, pharmacy, and physician's assistants. One of the patient groups was conducted in Spanish. This project was a formative research activity of IMPACcT (Improving Patient Access, Care, and cost through Training), a HRSA-funded program to expand the primary care workforce through IP education, training, and mentorship. Three raters analyzed group transcripts until common themes across the three groups emerged.

RESULTS: Themes present in all stakeholder groups were labeled 1) team engagement, 2) the role of technology in care delivery, 3) insurance/cost of care, 4) involving patients in the learning process, 5) time constraints, 6) scope of practice, and 7) autonomy, interdependence, and decision-making. Both similarities and distinct perspectives emerged across stakeholders when discussing these issues and most attitudes were positive. Learners, faculty, and patients each emphasized the importance of defining roles within a team and communicating roles to patients. Learners were excited about IP work and anticipated high quality interactions with other professions. Patients noted that participating in a teaching clinic was "more than about me" and described benefits receiving care from supervised trainees. Faculty perspectives, however, were more ambivalent. They noted that IP "is not a new thing" and questioned their ability to integrate PCMH mandates with an authentic mission to provide patient-centered care: "there's a difference between…checking off all the boxes for PCMH and…really incorporating the spirit of it…like having a PCMH mind versus a PCMH heart."

CONCLUSIONS: This is the first reported data comparing perceptions about IP education and care across these three stakeholder groups. Commonalities observed across the perspectives of patients, faculty, and learners suggests the need to attend to stakeholder priorities (e.g. regarding scope of practice and role definition) and bridging gaps between teaching PCMH principles and actually providing patient-centered, high quality care. Focus group material has been incorporated into project protocols for interprofessional huddling, communicating with patients, and in the content of our didactic curriculum.

"CONVERSATIONAL ADVICE": A MIXED-METHODS ANALYSIS OF MEDICAL RESIDENTS' EXPERIENCES CO-MANAGING PRIMARY CARE PATIENTS WITH BEHAVIORAL HEALTH PROVIDERS

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BACKGROUND: Integrated Behavioral Health Clinicians (IBHC's) are increasingly common in residency primary care clinics. When IBHCs and residents co-manage patients, residents may learn new approaches to counseling and medical management. This survey sought to better understand the impact that patient co-management with IBHCs has on residents' learning about behavioral health management.

METHODS: Residents were surveyed from 2 Internal Medicine (IM) and 3 Family Medicine (FM) residency training programs with behavioral health integration in residents' continuity clinics. To assess the degree of face-to-face interaction during their most recent co-managed case, residents were asked whether or not the co-management included (1) a shared visit with the IBHC and/or (2) meeting face-to-face to discuss the patient's care. Respondents were asked about other features of the visit, including: (1) whether or not they received feedback from the IBHC on their management, and (2) to rate the episode's impact on the patient's care. Associations between the degree of face-to-face interaction and these two outcomes were assessed using multiple logistic regression and linear regression. Residents were asked open-ended questions regarding what they had learned from co-managing with an IBHC. Qualitative responses were coded thematically by two researchers using grounded theory. Associations were examined between face-to-face interactions and the frequency of each major learning theme category.

RESULTS: 113 residents of 117 respondents had experience co-managing a patient and described their most recent experience co-managing a patient with an IBHC (overall response rate 72%, 117/163). Residents were significantly more likely to receive feedback on their patient management if they had a shared visit (Adjusted OR 3.0,

95% CI 1.2–7.6). Residents gave high ratings (mean rating 8.0/10) to the patient impact of their co-management with no association to whether or not they had a shared visit. Fourteen learning sub-themes were reported from the following major themes: BH skills awareness, interpersonal communication skills awareness, and newly-adopted attitudes toward BH. Residents who reported receiving feedback were more likely than those who did not receive feedback to report themes of interpersonal communication skills awareness (yes 26.6% vs. no 9.4%)

CONCLUSIONS: In residency clinic settings with BHI, residents have the opportunity for regular face-to-face co-management with IBHCs. Face-to-face co-management can facilitate increased feedback on skills and management and positively influence residents' attitudes and perceived skills.

Selected Quotes from Each Major Theme Organized by Degree of Co-management and Receipt of Feedback (Yes or No)

	Theme 1 BH Skills Awareness	Theme 2 Interpersonal Communication Skills Awareness	
No shared appointment or face-to-face meeting	"I learned about the severity of my patient's Post-traumatic Stress Disorder, which he had only mentioned to me briefly, and I got more information about his coping resources." N	No residents in this group reported this major theme	"With BHI, patients have additional support and tend to be more compliant." N
Met face-to-face, no shared appointment	"I learned about ethical issues, physician obligations, and reporting requirements to law-enforcement." Y "I learned about community resources available for IV drug addicts." N	"I learned to have a stronger communication with my patient's family." N "I learned different ways of addressing medication problems with the patient and how to approach her about her chronic pain." Y	"I developed more understanding of the impact of social stressors on health" N "The alternate perspective on disease often provides the key to treatment adherence" N
Shared appointment, no outside face-to-face meeting	"I learned about quick interventions for my patient in a single visit." Y	"I learned different ways to presents medical information in ways that patients understand." Y	"It is helpful to have a neutral party and to coordinate the message that the patient receives." Y
Shared appointment and face-to-face meeting	"I learned how to address some of the most common issues–opioid dependence and depression." Y "I learned various weight loss support groups and strategies for patients" Y	"I learned to ask what other concerns patient has- if there is a part that is missing from what the patient is telling me- that can help for therapeutic relationship." Y "The BHC gave conversational advice in steering the interview." Y	"I can delegate this aspect of care to the IBHC to free up time for me to deal with this patient's complex medical conditions" N "I learned that behavioral health issues are complex and require special management considerations." Y

"DOES FORMAL TRAINING IN MEDICAL EDUCATION AND PROFESSIONAL DEVELOPMENT LEAD TO BETTER CAREER OUTCOMES FOR CLINICIAN EDUCATORS? A SURVEY STUDY OF A DEGREE GRANTING PROGRAM IN MEDICAL EDUCATION." Amar Kohli; Maggie K. Benson; Alexandra E. Mieczkowski; Carla Spagnoletti; Rosanne Granieri. University of Pittsburgh, Pittsburgh, PA. (Control ID #2706562)

BACKGROUND: Medical school and residency training programs rely on skilled clinician educators to provide high quality educational experiences. While faculty development programs are common, as of 2012, formal degree-granting programs in medical education existed at only ten institutions in the United Stated. To date, there have been limited outcomes reported for participants of degree-granting programs. Beginning in 2002, the University of Pittsburgh's Institute of Clinical Research Education created both masters and certificate level degree-granting programs in medical education, which now have more than 10 years of graduates. Courses include those focused on teaching skills, medical education research skills, and faculty development. We sought to evaluate the program by surveying its participants with regards to their attitudes, self-reported skills, and career outcomes.

METHODS: All graduates of the program between 2004 and 2014 received an email invitation to complete an anonymous electronic survey regarding their satisfaction with the program as well as their perception of whether the master's program adequately prepared them in domains pertinent to medical educators. Participants were also asked to upload their current CV from which data about educational leadership positions, curriculum development and national dissemination of education-related work was abstracted.

RESULTS: Out of 60 graduates, 47 completed the survey (78%) and out of those 45 uploaded their CV for analysis (75%). More than 90% of respondents agreed that due to completion of the program they were competent in applying principles of learning theory, clinical teaching, small group teaching, ability to give lectures, providing feedback to learners, curriculum development and evaluation, as well as conducting and evaluating educational research. 94% of respondents believed that they were a more effective educator than peers who did not complete a degree. CV abstraction revealed that 98% of respondents hold academic positions. Respondents represent more than 15 different medical specialties, though the majority (40%) are general internists. Of graduates surveyed, 76% held educational leadership positions. 93% published in peer reviewed journals, 67% published on an educationally related topic, 87% participated in curriculum development, and 67% engaged in mentorship. 13 respondents won teaching awards at their respective institutions.

CONCLUSIONS: Because degree-granting programs in medical education require great resource investment, the outcomes of such programs are relevant for institutional support and sustainability. Graduates of the degree granting programs at the University of Pittsburgh reported, because of their training, competence in several key domains crucial to success as a clinician educator. Abstraction of CV's noted almost all hold academic positions in their representative specialties as well as document their prolific nature in several domains essential to academic success as a clinician-educator.

"GETTING LOST" IN HOSPITAL IS A SOURCE OF STRESS AMONG PHYSICIANS AND NON-PHYSICIAN HEALTHCARE PROVIDERS
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BACKGROUND: Navigating around large hospitals has been shown to be a stressful and time-consuming experience for all users of the hospital, including staff members. In addition, navigation difficulties in a hospital highlight suboptimal organisation. When staff encounters navigation difficulties this can lead to cost and efficiency issues and potentially put patient safety at risk. Despite the provision of an array of in-hospital navigational aids, 'getting lost' continues to be an everyday problem in these large complex environments. Within the framework of developing a navigation mobile app for the largest university hospital of Switzerland (Geneva University Hospitals), we aimed to identify the navigational needs of, problems encountered by, and consequences to primary care staff.
METHODS: A questionnaire was developed by a primary care physician and an indoor navigation specialist (both from Geneva University) based on factors identified through a review of the literature. The questionnaire was constructed to reflect all professional activities encountered in the primary care division and was sent in 2016 to both physicians and non-physician healthcare providers. The questionnaire includes the identification of current problems in way finding inside the hospital (stationary and ambulatory) and their impacts on the staff's work.
RESULTS: Out of 169 eligible collaborators, 111 (65.7%) answered the questionnaire, 61.3% were completed by physicians, 56.7% of collaborators had >5 years of work at Geneva University Hospitals, 70.5 were female, mean age was 39.5 years (SD 10.3). The majority (52.3%) of the participants answered that they had faced difficulties in finding their destination in the hospital (36.9% occasionally; 14.4% often, 0.9% all the time). Only 9.9% answered "never" and 37.8% "rarely". On average, participants estimated that they spent 11.7 min per week on searching for their destination or answering questions of others trying to reach their destinations. About 70% of the participants reported that the difficulty of finding one's way in the hospital could be a source of stress for staff members. The participants expressed a very positive view over the prospect of the creation of an application for mobile phones that would guide staff to their destination in the hospital.
CONCLUSIONS: These results show that even for staff members of a large hospital, finding their destination is difficult, consume time, and might be a source of stress. Improving way finding could contribute to pursuing organizational change, improve efficiency, and decrease stress.

"IT WAS A LOT OF DIFFERENT THINGS BUT BASICALLY WE WERE BEING EVICTED." PRECURSORS OF HOMELESSNESS AMONG ADULTS AGED 50 AND OLDER: FINDINGS FROM THE HOPE HOME STUDY
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BACKGROUND: The median age of single homeless adults is approximately 50; little is known about older adults' pathways to homelessness. Among older homeless people, 44% first experienced homelessness after age 50. We conducted in-depth interviews with older homeless adults about life course experiences and precipitants of homelessness, and examined whether these differed by age at first homeless.
METHODS: We recruited 24 participants from the HOPE HOME cohort, a population-based study of homeless adults 50 and older; we sampled purposively so that 1/2 experienced homelessness before age 50. Our interview focused on childhood circumstances, family and social relationships, criminal and victimization history, social services, criminal justice, education and employment, substance use, and precipitants of most recent homelessness. We developed a codebook using open coding. Two researchers coded transcripts independently, and then met to discuss and reach consensus. The research team identified key themes using thematic analysis.
RESULTS: Participants were 52–64 years old, 71% were African American. We identified five key themes: 1) adverse childhood experiences (ACE) had negative consequences throughout the life course; 2) substance use disorders derailed efforts at educational attainment, partnership, employment, and housing; 3) inadequate social ties with partners and family members limited housing options; 4) legal entanglements threatened employment, housing, and entitlement access; 5) institutional and structural racism impeded participants' access to services and criminalized behaviors. Those with early onset homelessness reported a higher severity of ACE and earlier onset of mental health and substance use disorders which interfered with educational and occupational attainment and familial attachments. They were unable to identify discrete precipitants of homelessness. Those with late onset homelessness reported lower severity of ACE and behavioral health conditions. They reported discrete homelessness precipitants, including: catastrophic illness, marital dissolution, job loss, and eviction for non-financial reasons. Men with late onset homelessness reported feelings of shame and loss of masculinity, hampering their ability to seek assistance. African-American participants reported multiple experiences of racism which heightened their vulnerability to homelessness.
CONCLUSIONS: Older homeless adults with early and late onset homelessness shared risk factors for homelessness that differed in severity and timing. Preventing homelessness among those with early onset homelessness requires early interventions for those with ACE and early onset behavioral health conditions. Efforts to prevent late-onset homelessness should focus on interpersonal (e.g. marital dissolution) and structural (e.g. eviction) high risk periods. Homelessness prevention efforts should incorporate structural responses to racism.

"LET ME FINISH THIS NOTE AND THEN WE CAN TALK ABOUT THAT": TRANSITIONS BETWEEN MULTITASKING AND SILENT ELECTRONIC HEALTH RECORD USE IN SAFETY NET VISITS
Neda Ratanawongsa[1, 2]; George Matta[1, 2]; Courtney R. Lyles[2]; Kaylin Yu[3]; Jennifer Barton[5, 6]; Christopher Koenig[4]; Ed Yelin[1, 1]; Dean Schillinger[1, 2]. [1]UCSF, San Francisco, CA; [2]University of California San Francisco, San Francisco, CA; [3]Cornell University, Ithaca, NY; [4]San Francisco State University, San Francisco, CA; [5]Oregon Health & Science University, Portland, OR; [6]VA Portland Health Care System, Portland, OR. (Control ID #2698401)

BACKGROUND: Electronic health record (EHR) use affects communication, but the impact may depend on EHR use styles. We explored how clinicians transition between multitasking and silent EHR use during safety net visits and the benefits & risks of these dynamic EHR styles.
METHODS: We conducted an observational study ≥2 months after certified EHR implementation in 5 academic public hospital clinics. We video-recorded encounters between English- and Spanish-speaking patients with chronic conditions and their primary and/or specialty care clinicians. Using Atlas.ti, we recorded durations of: *multitasking EHR use* (concurrent with patient talk or clinician talk); *silent EHR use* (clinician AND patient silent for ≥5 s); non-

EHR tasks; and focused clinician-patient talk. We calculated median proportions of the total visit spent in these segments. Two investigators independently analyzed 3 videos and generated codes (editing organizing style), negotiating discrepancies to create a coding template. One investigator independently applied the template to the remaining videos. By consensus, we combined codes into themes and selected representative quotes.

RESULTS: We recorded 35 visits between 25 patients & 25 clinicians. Patients averaged 57 years in age; 44% were women; 48% were Hispanic/Latino; 28% reported < high school graduation; and 20% had limited health literacy (LHL). Among clinicians, 72% were women; 48% were primary care providers; 88% physicians; and they averaged 16 years since earning degrees. The median visit length was 25.5 min; 17% visits were in Spanish. The proportion of visit time with clinician EHR use was: 0% in 3 visits, ≤ 25% in 9 visits, >25–50% in 17 visits, and >50% of visit time in 6 visits. Multitasking EHR use occurred in 91% of visits, and silent EHR use in 60% of visits. A median of 28% of the visit was spent in multitasking EHR use (range 0–73%); 3% in silent EHR use (range 0–19%); 3.4% in non-EHR tasks (range 0–59%); and 31% in focused clinician-patient talk (range 2–81%). Table 1 shows the three core themes: 1) varying clarity in signaling the transition to silent EHR use; 2) breaking the silence; and 3) unaddressed patient concerns.

CONCLUSIONS: Most safety net encounters involved both multitasking EHR use and transitions in & out of silent EHR use. Clinicians may be unaware these transitions are occurring. Some patients use the silence to recall or reinsert their concerns; this silence could be particularly beneficial to LHL patients or introverts who need space to process and voice their thoughts. However, both EHR use styles pose risks to missing patient concerns. Future research should explore how different EHR-use styles affect clinician cognitive workload - including outcomes related to safety and clinical decision-making - as well as patient engagement and satisfaction.

Themes Related to EHR Use Styles

Varying clarity in signaling the transition to silent EHR use	Some clinicians overtly voiced a need to pause to use the EHR, Most clinicians gave non-verbal signals (e.g., turning body or gaze) without verbal warnings. Some clinicians drifted into silence without signaling awareness they were halting conversation with patients.	• "I'm going to look into the computer for a second, okay?" • "Give me a minute, I want to review in the computer what we've done before." • "Let me just…oops…hold on one second." • After period of multitasking history- taking: "So…umm…we…" & drifts into 17 sec silence while typing. • "There aren't specific treatments…but they're going to…uh…uh…uh…"
Breaking the silence	Clinicians & patients may break silent EHR use, leading to multitasking. Clinicians may emerge from EHR tasks to re-engage patients. Patients often interjected "chit-chat," but also voiced biomedical or psychosocial concerns.	• After 43 sec, clinician explains: "I'm going to send this to your pharmacy now, ok? This is the new dose of the furosemide." • After 25 sec, pt asks "So are you ready for Christmas?" • After 32 sec, pt asks: "So they didn't talk to you either about my pap machine?" • After 12 sec, pt lifts his foot "My [primary] doctor was worried about this…". Clinician replies "Oh yeah…when did this happen?" and examines it.
Unaddressed patient concerns	Both multitasking and silent EHR use offer risks of unaddressed patient concerns.	Multitasking EHR Use: • Pt describes friend who had a stroke: "He called me to tell me what happened." Clinician: "So let's just review, you're taking simvastatin which is a cholesterol medicine…" • "Yes and sometimes I have tremendous pain." Clinician: "Mm-hm.. and you're still taking…?" Silent EHR Use: Pt explains problems with getting medications on time from pharmacy. Clinician: "That's weird" & resumes silent EHR use.

"WHY DON'T YOU LOOK THAT UP?" VERSUS "COLLABORATIVE SELF-DIRECTED LEARNING:" THE IMPACT OF RESIDENCY TRAINING CONTEXT ON SELF-DIRECTED LEARNING

Adam P. Sawatsky; John T. Ratelle; Sara Bonnes; Jason Egginton; Thomas J. Beckman. Mayo Clinic, Rochester, MN. (Control ID #2698863)

BACKGROUND: Self-directed learning (SDL) is an important component of the Accreditation Council for Graduate Medical Education practice-based learning and improvement competency. Previous research has elucidated the significance of personal characteristics and learning process within SDL. However, there is a need to understand the impact of learning context on SDL within residency training. Therefore, we explored resident physicians' perceptions of the learning context to characterize the roles of faculty and training programs in supporting resident SDL.

METHODS: We drew upon existing principles of SDL and used constructivist grounded theory to explore the effects of context on SDL during residency training. We conducted 7 focus groups (FG) with 46 internal medicine residents. FG guides were developed from literature and expert review. A trained facilitator moderated the FGs, which were transcribed verbatim. Transcripts were explored using open coding and analytic memos to guide subsequent FGs. Constant comparison and axial codes revealed themes related to SDL context. Themes were organized within a theoretical model of SDL to understand the impact of residency training context. The findings were confirmed with member checks.

RESULTS: Residents identified the roles of Individual faculty members and residency programs in supporting SDL throughout the learning process, including triggering SDL, identifying learning objectives, formulating learning objectives, utilizing resources, applying knowledge, and assessing learning. Three archetypes of faculty support for SDL emerged: 1) role modelling personal SDL; 2) challenging learners by asking, "Why don't you look that up?"; and 3) engaging learners in "collaborative SDL." These archetypes incorporate slightly different approaches to supporting SDL, and were seen as complementary means for engaging learners. Residents discussed the importance of residency programs creating and supporting a culture of SDL by providing time and resources for learning, structuring teaching opportunities that deliver a framework for future learning, incorporating opportunities for self-assessment, offering social learning opportunities, and teaching SDL skills.

CONCLUSIONS: SDL is viewed by residents as an internal orientation to learning that integrates process and personal characteristics, like motivation.

This study highlights the effect of contextual factors, including the role of individual faculty members and the residency program, on the process of SDL during residency training. Residents elaborated archetypes of faculty involvement in SDL, and provided perspectives on achieving these strategies. The current findings can be used to assist residency programs with faculty development and creating a culture of SDL.

CROSS-DISCIPLINARY ROLE AGREEMENT IS STILL LACKING IN THE VA PCMH Karleen Giannitrapani[6]; Linda Kim[3]; Alexis K. Huynh[5]; Susan E. Stockdale[2]; Alison Hamilton[4]; Lisa V. Rubenstein[1]. [1]GLA VA, North Hills, CA; [2]Greater Los Angeles VA Healthcare System, Sepulveda, CA; [3]VA-Greater Los Angeles, Los Angeles, CA; [4]Veterans Administration, Los Angeles, CA; [5]Veterans Affairs, Sepulveda, CA; [6]Veterans Health Administration, Menlo Park, CA. (Control ID #2707577)

BACKGROUND: With increasing demand for primary care services and a deficient supply of qualified providers to meet this need, new interdisciplinary team based models of primary care delivery, including the Patient Centered Medical Home (PCMH), have emerged. Under PCMH, the roles of supporting teams members expand in include top-of-license tasks allowing some tasks that historically fell to only physicians to be shared or redistributed. We explore the role expansion of clinical associates (CAs) (licensed practical nurses, health technologists and medical assistants). Specifically, in this study we query team members of a newly implemented patient centered medical home (PCMH) to identify facilitators and barriers of role self-efficacy, a belief of possessing the capacity to execute their new team based roles effectively.

METHODS: We employ longitudinal qualitative analysis involving two waves of 105 semi-structured interviews with interdisciplinary providers based in Veterans Health Administration (VA) PCMH teams. Primary data were collected in 2011–2012 (wave 1) and 2014 (wave 2). We assess team member experiences approximately 1 year after the implementation to identify facilitators and barriers to role self-efficacy; we compare these with facilitators and barriers identified 4 years post implementation.

RESULTS: In wave one, three themes that functioned as facilitators/barriers to the self-efficacy necessary for successful role expansion of CAs were identified: 1) role training 2) time and resources for roles and 3) cross-disciplinary role agreement. By wave two, most training complaints were resolved. Time and resources to complete expanded tasks as well as cross-disciplinary role agreement persisted as challenges. Specifically, insufficient coordination between medicine and nursing or administrative leadership about staff roles was unresolved.

CONCLUSIONS: The goal of freeing up physician time by sharing tasks effectively across a team, will likely not be realized without team member role self-efficacy, specifically time and resources to completed expanded role tasks and cross-disciplinary agreement about roles. When implementing interdisciplinary teams in primary care, existing disciplinary paradigms and leadership pathways are impacted and in turn impact team member role-self efficacy and ultimately team functioning. Investing resources in engaging managers and in interdisciplinary leadership approaches may be an important strategy for supporting PCMH team member role self-efficacy.

CROSS-SECTIONAL STUDY OF PHYSICIAN BURNOUT AND ORGANIZATIONAL STRESSORS IN A LARGE ACADEMIC HEALTH SYSTEM Kristine Olson[3]; Seppo Rinne[4]; Mark Linzer[2]; Christine Sinsky[1]; Sandip Mukherjee[3]; Michael Bennick[3]; Ronald Vender[3]; Harlan M. Krumholz[3]; Theodore Long[3]. [1]American Medical Association, Chicago, IL; [2]Hennepin County Medical Center, Minneapolis, MN; [3]Yale University School of Medicine, New Haven, CT; [4]Center for Healthcare Organization and Implementation Research, Bedford, MA. (Control ID #2703601)

BACKGROUND: Physician burnout is common nationwide and tied to adverse outcomes for physicians, patients, and healthcare systems. The aim of this study is determine the prevalence of burnout among academic faculty, hospital employed, and community private practice physicians, and to identify remediable workplace stressors associated with physician burnout.

METHODS: This was a cross-sectional survey via email of the estimated 4118 clinicians affiliated with a large non-profit academic tertiary medical center. The sample represented three cohorts: academic faculty, hospital employed, and community private practice physicians. Burnout was measured by the Maslach Burnout Inventory, calculated as defined by a score ≥ 27 on emotional exhaustion or a score of ≥ 10 on depersonalization, or both. The perceived presence of seven workplace stressors was measured by the Mini-Z survey, and odds ratios for burnout were determined by separate multivariable logistic regression models, adjusting each for age, gender, full-time equivalent (FTE), and group (academic, employed, private practice).

RESULTS: Of the estimated 4118 clinicians invited by email, 1252 received the survey having clicked the link, and 557 responded (45% completion rate). The prevalence of burnout was 58.6%. Physicians who perceived poor control over workload (53.9%) were more likely to experience burnout (80.4% vs 33.1%, OR 7.6, 95% CI 4.7–12.2, $p < 0.001$). Physicians who perceived team effectiveness as unsatisfactory (16.8%) were more likely to experience burnout (84.3% vs. 53.4%, OR 7.2, 95% CI 3.1–17.1, $p < 0.001$). Physicians who perceived work atmosphere as hectic-chaotic (51.7%) were more likely to experience burnout (74.8% vs. 41.4%, OR 4.3, 95% CI 2.7–6.7, $p < 0.001$). Physicians who felt their values were not in alignment with department leadership (42%) were more likely to experience burnout (72.7% vs 48.0%, OR 3.2, 95% CI 2.0–5.1, $p < 0.001$). Physicians who felt their time for documentation was unsatisfactory (64.6%) experienced more burnout (68.4% vs. 40.7%, OR 4.2, 95% CI 2.6–6.9, $p < 0.001$), as did the 53.4% of physicians who felt the amount of time on the EMR at home was unsatisfactory (65.7% vs. 50.6%, OR 2.1, 95% CI 1.4–3.3, $p = 0.036$). Academic faculty experienced more burnout than those in private practice (62.2% vs 43.7%, $p = 0.006$). Burnout was most prevalent among trainees, early career physicians, and women.

CONCLUSIONS: In this cross sectional study, the prevalence of physician burnout was 58.6%, and highly associated with lack of control over workload, team effectiveness, a more chaotic work atmosphere, unsatisfactory time for documentation, a lack of value-alignment with departmental leadership, and the presence of EMR stress. Private practitioners experienced less burnout than academic faculty or hospital employed physicians. Academic faculty were most affected.

Organizational leadership commissioned this work to guide interventions and begin serial monitoring.

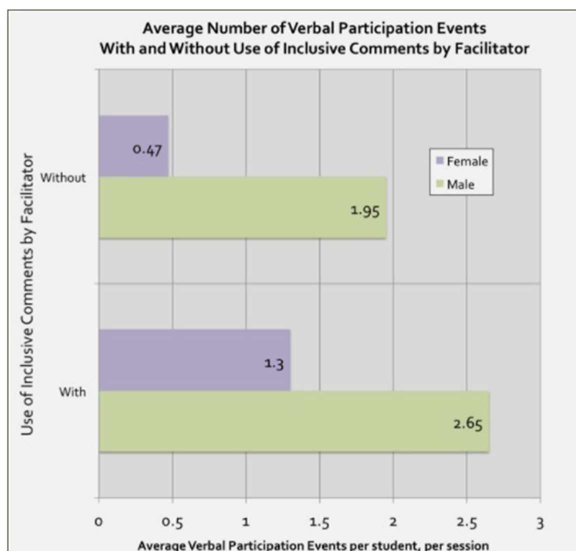
GENDER DISPARITIES IN SMALL GROUP VERBAL PARTICIPATION AMONG 1ST YEAR MEDICAL STUDENTS Mary Clare Bohnett; Sylvia Peterson-Perry; Molly R. Rabinowitz; Mariah Peterson; Shadi Dowlatshahi. OHSU, Portland, OR. (Control ID #2698509)

BACKGROUND: It has been shown that gender disparities exist for female clinicians today and that female trainees are disadvantaged by the so-called "hidden curriculum". However, research is lacking on specific targets at which to aim interventions. Class participation has been correlated with academic success, but it is unknown whether participation disparities exist during preclinical medical education, or whether increasing participation may be a locus for combating gender disparities. This descriptive pilot study explores gender disparities at the level of preclinical medical education, using verbal participation as a proxy metric. It aims to (1) quantify any gender disparities in verbal participation; (2) examine whether factors such as facilitator gender or inclusive facilitation impact verbal participation; and (3) encourage medical education initiatives that address gender gaps before the hidden curriculum widens them later in training.

METHODS: Observational data was collected over a 4-week period during a first year medical school course. Ten small work group sessions were observed and unique verbal participation events were counted by gender. Facilitator gender, gender composition of group, and inclusionary comments by facilitator were also recorded.

RESULTS: Descriptive statistics analysis revealed a disparity in average verbal participation between males and females of 2.5:1, when normalized by group gender composition. At least one instance of inclusive facilitation per session increased female participation, while a lack of inclusive facilitation doubled the disparity.

CONCLUSIONS: Verbal participation disparities exist, but are somewhat mitigated by inclusive facilitation. More research is needed on implications and interventions to promote gender equity.



Average verbal participation events, with and without inclusive comments by facilitator (per student per session), normalized for group gender composition

GEOGRAPHIC VARIATION IN PRESCRIPTION OPIOID USE DURING THE POSTPARTUM PERIOD Nora V. Becker[2]; Brandon Maughan[1, 2]. [1]Emergency Physicians Integrated Care, Salt Lake City, UT; [2]University of Pennsylvania, Philadelphia, PA. (Control ID #2709687)

BACKGROUND: Morbidity from prescription opioid use varies substantially by geography. There is a lack of published literature on opioid use in the immediate postpartum period.

METHODS: We extracted claims data from the Optum Clinformatics Data Mart, a database of approximately 14 million commercially-insured individuals. The sample included women with claims for vaginal or Cesarean delivery during 2001–2013. Extracted data included age, race, inpatient diagnosis and procedural codes, and type of filled prescriptions. Primary outcome was proportion of women who filled an opioid prescription within four days of discharge. Outcomes were stratified by mode of delivery (uncomplicated vaginal, complicated vaginal, uncomplicated Cesarean, complicated Cesarean) and compared across US census divisions using two-tailed tests of proportions.

RESULTS: Among women with uncomplicated vaginal delivery ($n = 905{,}584$), 28.3% filled opioid prescriptions. Opioid use differed by 459% between the lowest-use division (Middle Atlantic, 10.7%) and highest-use division (East South Central, 49.2%) ($p < 0.0001$). Complicated vaginal deliveries ($n = 80{,}510$) had higher opioid use (42.1%) and similarly large variation among divisions (19.2% vs. 61.9%, $p < 0.001$). Opioid use after uncomplicated Cesarean ($n = 357{,}813$) and complicated Cesarean ($n = 85{,}388$) was similar (76.2% vs. 77.0%). The Middle Atlantic division had lower opioid use rates for Caesarean deliveries (61.0 and 60.1%, respectively) compared to other divisions (rates of 76.2–79.6 and 76.8–80.2%, respectively).

CONCLUSIONS: There is significant geographic variation in prescription opioid use following vaginal delivery. This variation in prescription opioid use may identify opportunities to improve prescription safety and reduce opioid-related harms among women in the postpartum period.

IMPLEMENTATION OF THE RURAL VA MULTICENTER MEDICATION RECONCILIATION QUALITY IMPROVEMENT STUDY (R-VA-MARQUIS) Caroline Presley[2, 4]; Kathleene Wooldridge[2]; Susan Byerly[2]; Amy R. Aylor[3]; Christianne Roumie[2, 4]; Robert S. Dittus[4, 2]; Amanda S. Mixon[1]. [1]VA Tennessee Valley Healthcare System and Vanderbilt University, Nashville, TN; [2]Vanderbilt University Medical Center, Nashville, TN; [3]Veterans Engineering Resource Center (VERC), Indianapolis, IN; [4]VA Tennessee Valley Healthcare System, Nashville, TN. (Control ID #2704394)

BACKGROUND: Unintentional medication discrepancies at care transitions can contribute to adverse drug events. High quality medication reconciliation can decrease unintentional medication discrepancies but is difficult to implement.

METHODS: R-VA-MARQUIS was a feasibility study to improve inpatient medication reconciliation practices using a mentored-implementation design conducted from 2014–2016 in three VA hospitals caring for rural Veterans. An evidence-based toolkit of best practices in medication reconciliation was adapted to the VA setting. Distance mentors evaluated baseline medication reconciliation practices and guided local improvement teams as they implemented toolkit interventions through monthly site phone calls and yearly site visits. At each

site, the number of unintentional medication discrepancies per Veteran was collected in a sample of control and intervention patients to monitor response to the interventions. These data were obtained by comparing a Best Possible Medication History (BPMH) taken by trained pharmacists with the medication lists in provider notes and orders upon admission and discharge. Data analysis was performed using traditional QI methods; unintentional medication discrepancies per Veteran were plotted on run charts and XmR charts for each site. Student's t-test was used to compare control and intervention patients.

RESULTS: Sites 2 and 3 successfully implemented several toolkit components. Site 2 utilized pharmacy students to take BPMH on admission, implemented risk stratification, and trained providers on how to take BPMH. Site 3 implemented standardized discharge process and documentation, trained providers on how to take BPMH, and, most importantly, hired an inpatient clinical pharmacist. Facilitators of implementation at Sites 2 and 3 included committed multidisciplinary improvement teams and support from senior leadership. Site 1 was unable to implement any toolkit interventions and faced barriers of high turnover of staff and lack of multidisciplinary engagement on the improvement team. Data was collected on a total of 797 patients across the sites. Patients were 68.7 years old on average; 94.5% were male. Patients were on a mean of 10.1 medications at admission; 45.6% had been admitted at least one time in the previous year. At Site 2, unintentional medication discrepancies per Veteran were not improved in intervention patients compared to control (4.45 vs. 3.5, $p = 0.012$). At Site 3, unintentional medication discrepancies per Veteran were reduced in intervention patients compared to control and this reduction was sustained over the course of the study (1.79 vs 4.77, $p < 0.001$).

CONCLUSIONS: The mixed results by site highlight the complexity of implementing evidence-based practices for medication reconciliation. This study adds to understanding of how to implement best practices to improve medication reconciliation in smaller hospitals caring for rural Veterans.

UTILIZATION OF PRIMARY CARE AND PREVENTIVE HEALTH SERVICES AMONGST INDIVIDUALS IN SAME-SEX AND OPPOSITE-SEX PARTNERSHIPS; A CROSS-SECTIONAL OBSERVATIONAL ANALYSIS OF MEDICAL EXPENDITURES PANEL SURVEY (MEPS), 2003–2001 Ani Abrahamyan[1]; Igor I. Bussel[1]; John R. Blosnich[2, 1]; Janel Hanmer[1]. [1]University of Pittsburgh Medical Center, Pittsburgh, PA; [2]VA Pittsburgh Healthcare System, Pittsburgh, PA. (Control ID #2706132)

BACKGROUND: The health of sexual minorities is national priority in the US. Prior publications reported health disparities amongst sexual minorities, including health risk behaviors, health service access/utilization, and differences in the prevalence of medical conditions. However, little evidence exists about differences in utilization of primary care and preventative health services. The objective is to describe the differences in utilization of primary care and preventive health services amongst individuals in same-sex (SS) and opposite-sex (OS) partnerships and to elucidate perceptions of the quality of care received.

METHODS: An observational cross-sectional analysis of the Medical Expenditures Panel Survey (2003–2011) was conducted on matched cohorts of 494 individuals in SS and OS partnerships. Measures included identification of a PCP, basic preventive care utilization, and perceptions of quality. Descriptive analysis was performed to determine frequencies for categorical variables and means for continuous variables.

RESULTS: SS partnered men had a higher rate of compliance with colon cancer screenings (i.e., FOBT or colonoscopy) than OS partnered men (50.3% vs 30.2%, $P = 0.001$). The rate of flu shots within the last 2 years was greater amongst SS partnered men compared to their OS partnered cohorts (35.5% vs 53.1%, $P = 0.001$). There were no differences among men or among women in the perception of quality of care, which was assessed by responses to the perceived timeliness and necessity of care, perceptions about providers listening, explaining, and showing respect, as well as the ease of seeing a specialist.

CONCLUSIONS: In sexual minorities who identify themselves as SS partnered, there appears to be minimal difference in utilization patterns of primary care and preventive health services with the exception of greater utilization of colon cancer screening and flu shot compliance by SS partnered men. These differences may be driven, in part, by HIV status and an overlap in screening modalities used to diagnose problems associated with receptive anal intercourse. The lack of differences in perception of quality of care is in conflict with earlier studies that showed greater dissatisfaction with care amongst SS partnered people. This could be explained by a changing political climate with increasing equality and improved quality of life for sexual minorities or it may simply be due to the use of a different sample of same-sex partnered people. These findings are based on a subset population that is in a partnership and identifies themselves as such, thus it may not necessarily be representative of sexual minorities as a whole.

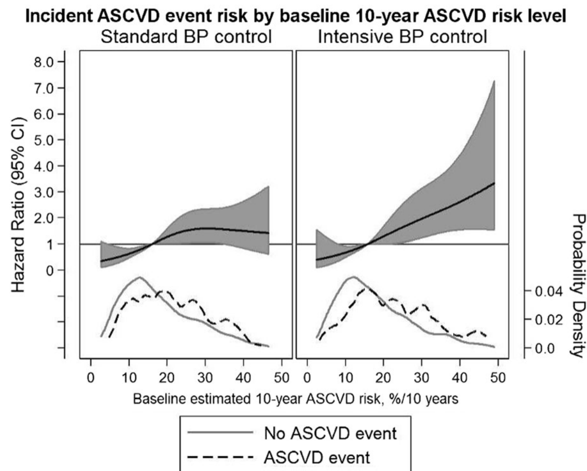
10 year ASCVD RISK AND INCIDENT ASCVD IN THE SYSTOLIC BLOOD PRESSURE INTERVENTION TRIAL (SPRINT) Timothy B. Plante; Stephen P. Juraschek. Johns Hopkins University, Baltimore, MD. (Control ID #2706812)

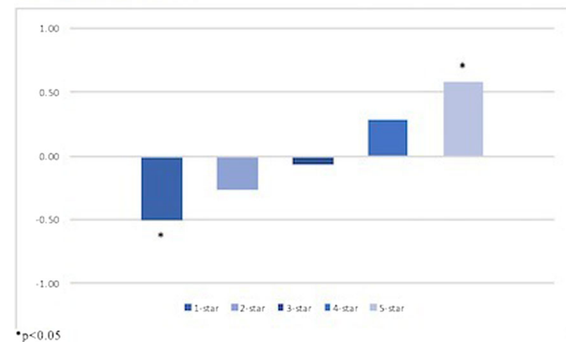
BACKGROUND: Atherosclerotic cardiovascular disease (ASCVD) is the top cause of disability and death in the US. Guidelines recommend integrating 10y ASCVD risk into primary prevention counseling. Observational studies have shown fewer ASCVD events with lower SBP levels but it's unclear if intensive SBP control below 140 mm Hg will further reduce risk. SPRINT randomized adults to standard or intensive BP control. A composite ASCVD outcome has not been reported. Whether intensive BP control reduced risk of incident ASCVD for SPRINT participants is unknown.

METHODS: SPRINT randomized 9,361 adults without diabetes or stroke to standard (135–139 mm Hg) or intensive (<120 mm Hg) SBP control. After excluding baseline ASCVD or ages outside of the risk estimator validated range, we calculated 10y ASCVD risk. HR compared intensive vs. standard BP control and ASCVD events, ASCVD or death, and death alone. Visualization of HR by level of 10y ASCVD risk for ASCVD events used a restricted cubic spline model with 95% CI relative to the median 10y ASCVD risk using Harrell's method. Kernel density plots depicted distribution of 10y ASCVD risk.

RESULTS: After excluding ASCVD at baseline or age >79y, 6,911 participants remained. Mean age was 65y, 37% were female, 35% were Black, median 10y ASCVD risk was 16%. There was a trend towards fewer ASCVD events in the intensive BP control arm ($n = 105$ v. 136; HR 0.78; 95% CI 0.61–1.01). ASCVD events or death was reduced (0.80; 0.65–0.99) but not death alone (0.82; 0.61–1.10). The spline model showed increasing hazard of ASCVD events with increasing baseline 10y ASCVD risk. Intensive but not standard BP control showed increased hazard of ASCVD events at a 10y ASCVD risk level >30%.

CONCLUSIONS: Among adults at increased risk for ASCVD, intensive BP control is associated with a non-significant trend towards reduction in incident ASCVD. Modeling of treatment effects across levels of baseline risk demonstrates a positive association between intensive BP control and incident ASCVD events among those with the highest baseline risk, though few were in this risk range. Further investigation to delineate levels of risk that may benefit from this intervention are warranted.





5-STAR NURSING HOME (NH) REPORT CARD ASSOCIATED WITH PREVENTABLE HOSPITALIZATIONS FROM POST-ACUTE CARE

Kira L. Ryskina[1]; Tamara Konetzka[3]; Rachel M. Werner[2]. [1]University of Pennsylvania, Philadelphia, PA; [2]University of Pennsylvania and Philadelphia VA, Philadelphia, PA; [3]University of Chicago, Chicago, IL. (Control ID #2697507)

BACKGROUND: In an effort to better inform consumers, Medicare began publicly reporting NH quality using a simple-to-understand 5-star rating. This resulted in increased attention to NH ratings from consumers and NHs themselves. While NH star ratings increased substantially since they were first published in December 2008, whether this represents improvement in quality or, instead, "teaching to the test" is unknown. Our objective was to test whether improvements in star ratings were associated with improvements in patient outcomes.

METHODS: We used Medicare hospital claims and NH clinical assessment data for 2,143,217 fee-for-service Medicare beneficiaries receiving post-acute care in 15,318 NHs Jan 2007 - Jun 2010. We used these data to recreate NHs' star ratings over the study period and to observe hospitalizations and risk-adjustment variables. To account for the differences in patient exposure to NH care, our primary outcome was number of potentially preventable hospitalizations per 100 patients per month (pppm), weighted by the number of days in the NH. We compared the correlation between star ratings and hospitalizations before vs after Dec 2008 by estimating hospitalizations as a function of NH star ratings, an indicator for whether the hospitalization occurred before or after ratings were released, and the interaction between the two. All analyses included risk adjustment from the NH clinical data and NH fixed effects to account for heterogeneity across NHs. Standard errors were adjusted for clustering within NHs.

RESULTS: The association between the number of preventable hospitalizations and a NH's star rating weakened after the ratings became public: the number of hospitalizations was 0.58 pppm higher in 5-star (best-rated) NHs (95% CI 0.06 to 1.11, $p = 0.029$) and 0.51 pppm lower in 1-star (worst-rated) NHs (95% CI −0.86 to −0.16, $p = 0.004$) after star ratings release vs. before (Figure). When stratifying stays by baseline characteristics, these differences were concentrated in NHs with low baseline quality and staffing levels.

CONCLUSIONS: Recent improvements in NH star ratings were not accompanied by improvements in preventable hospitalizations for post-acute care patients. This suggests improvements in star ratings were driven by potentially superficial changes that impact ratings, but not the underlying quality of care.

A COMMUNICATION INTERVENTION AIMED AT MEDICINE DOCTORS AND NURSES IMPROVES PATIENT SATISFACTION SCORES

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BACKGROUND: Patient satisfaction continues to play an ever-expanding role in healthcare, from reimbursement to hospital rating. However, effective strategies to improve Hospital Consumer Assessment of Healthcare Providers and Systems (HCAHPS) remain scarce. At the University of Pittsburgh Medical Center, a multidisciplinary patient experience committee aims to improve patient experiences through targeted interventions. The committee identified communication-specific HCAHPS scores, specifically for items "Doctors (nurses) explained things in a way you could understand," as an area for intervention. We hypothesized a lack of adequate training in beside communication and identification of poor health literacy as reasons for suboptimal communication scores. The aims of our study were to (1) develop a multidisciplinary curriculum to teach physicians and nurses to best deliver complex medical information and (2) evaluate the effectiveness of the curriculum by examining HCAPHS scores for doctor and nurse communication.

METHODS: A clear health communication curriculum was developed for 112 internal medicine (IM) residents and 120 nurses from the general medicine wards. The curriculum was disseminated through 60–90 min workshops that were facilitated by IM clinician educators and a nurse educator. The content included didactic teaching on health literacy, small group discussion and simulated videos of optimal communication skills during bedside rounds and the discharge process. Data was collected from 422 HCAHPS surveys from patients discharged from these wards over a 6-month period. We compared that percentage of "top-box" scores (corresponding to a rating of 9 or 10 on a 10-point scale) on communication items between 3 months pre and 3 months post curriculum.

RESULTS: A total of 76 residents (participation rate 68%) and 80 nurses (participation rate 67%) who work in 5 wards across 3 hospitals attended. Percentage of "top-box" scores improved for all doctor and nurse communication-specific HCAHPS items after the intervention (See Table).

CONCLUSIONS: Our data shows that a multidisciplinary clear communication curriculum with a focus on health literacy can significantly improve doctor and nurse communication specific HCAHPS scores at a large academic

hospital. As communication skills are essential to providing quality patient care, our curriculum has value for any medical specialty or healthcare system seeking ways to improve the patient experience.

	Pre (% top box)	Post (% top box)	*P* value
Doctors explained things in a way you could understand	63	70	.15
Doctors listened carefully to you	66	77	.02
Doctor treated you with courtesy and respect	80	84	.25
Overall communication with doctor	70	77	.10
Nurses explained things in a way you could understand	59	73	.003
Nurses listened carefully to you	60	72	.018
Nurses treated you with courtesy and respect	74	80	.199
Overall communication with nurses	65	75	.025

A COMPARISON IN PATIENT REPORTED OUTCOMES RELATED TO TELEPHONE FOLLOW-UP VISITS AND CONVENTIONAL OFFICE VISITS IN ACADEMIC SPECIALTY PRACTICES

Theodore Peng; Nathaniel Gleason; Ralph Gonzales. University of California, San Francisco, San Francisco, CA. (Control ID #2702100)

BACKGROUND: Scheduled telephone follow-up visits are one strategy for improving access to specialty care practices, primarily because telephone follow-up visits can be completed in less time (4–6 telephone visits per hour vs. 2–3 office visits per hour, for instance) with lower overhead costs. However, there is limited data on the relative advantage to patients from such a program. To inform ongoing improvement of the program, and to share the experience with payers, who do not currently reimburse scheduled telephone visits, we conducted a survey to evaluate patient-reported outcomes associated with telephone and office follow-up visits.

METHODS: Scheduled telephone follow-up visits were introduced in January 2015 as a substitute for some scheduled follow-up office visits in specialty care practices at UCSF. Physicians determine the appropriate patients based upon clinical condition and patient acceptability. Patients are not charged for the service and the UCSF physician receives a modest internal RVU credit. English-language surveys were delivered to all patients (>18 y.o.) who completed a follow-up visit (either telephone or office) at UCSF in Endocrinology, Hepatology, or Multiple Sclerosis clinics between March and May 2016 (n = 2741). Patients with email addresses on file were sent the survey electronically (Qualtrics LLC), and those without were contacted by phone.

RESULTS: 96% of patients had email addresses, of which 16% (n = 426) responded. An additional 8 patients without email addresses completed telephone surveys. The final study sample included 13 and 17% of patients with telephone visits and office visits, respectively. Respondents and non-respondents were similar with regard to clinic, sex, and mean age. Main results are show in Table below. Among telephone visit respondents, 87% reported that it replaced the need for an office visit. When telephone visit respondents were asked about their out-of-pocket costs and total time spent for previous office visits, they had similar responses as office visit respondents. 87% of telephone visit respondents and 85% of office visit respondents agreed that insurance companies should pay for telephone visits that substitute for an office visit, and more than half were willing to pay a co-payment of approximately $20 (median).

CONCLUSIONS: This study fills an important gap in understanding the patient's perception of telephone follow-up care, and represents a critical first step in mobilizing health plans to pay for telephone visits.

	Phone Visit N = 110	Office Visit N = 324	*P*-value
Age, mean	55 years	56 years	0.525
Female sex	69%	60%	0.10
Very satisfied or satisfied with telephone visit	98%	N/A	
Out-of-pocket costs, median (IQR)	$0 (0,0)	$50 (20,100)	<0.001
Total Time Spent, median (IQR)	10 min (5, 50)*	240 min (150, 420)	
Urgent/emergency care visit	5%	4%	0.92

*imputed based on 10 min scheduled telephone visit time, and request of patients to be available for phone visit 30 min before and after scheduled visit time.

A COMPARISON OF MEDICATION-BASED VERSUS MEDICAL CLAIMS-BASED RISK ADJUSTMENT TO PREDICT 1-YEAR MORTALITY AMONG VETERANS DUALLY-ENROLLED IN VA AND MEDICARE PART D

Thomas R. Radomski[3, 4]; Xinhua Zhao[4]; Joseph T. Hanlon[3, 4]; Joshua M. Thorpe[2, 4]; Carolyn T. Thorpe[2, 4]; Florentina Sileanu[4]; John P. Cashy[4]; Jennifer A. Hale[4]; Maria K. Mor[4]; Leslie R. Hausmann[4, 3]; Julie M. Donohue[6]; K J. Suda[1]; Kevin T. Stroupe[1]; Chester Good[4]; Michael J. Fine[4, 3]; Walid F. Gellad[5, 3]. [1]Hines VA Hospital, Hines, IL; [2]University of Pittsburgh, Pittsburgh, PA; [3]University of Pittsburgh School of Medicine, Pittsburgh, PA; [4]VA Pittsburgh Healthcare System, Pittsburgh, PA; [5]VA Pittsburgh/University of Pittsburgh, Pittsburgh, PA; [6]University of Pittsburgh Graduate School of Public Health, Pittsburgh, PA. (Control ID #2700094)

BACKGROUND: There is systematic undercoding of medical comorbidities within administrative claims in the Veterans Health Administration (VA) as compared to Medicare. This undercoding may lead to bias when applying claims-based risk adjustment indices in studies of Veterans who dually use both VA and Medicare services, or when comparing medical outcomes between VA and Medicare. Medication-based risk adjustment models may be an unbiased method of risk adjustment in these circumstances or when medical claims are not uniformly available. Our objective was to adapt a medication-based risk index for use with combined VA and Medicare data and compare its prognostic accuracy to commonly used claims-based risk adjustment methods in predicting 1-year mortality.

METHODS: Our cohort was all individuals enrolled in both VA and Medicare Part D who filled at least one opioid prescription from either system in 2012. We adapted an existing VA-based medication risk index (Rx Risk-V) to also incorporate Medicare pharmacy and durable medical equipment claims. VA and Medicare medications/supplies were classified into 1 of 45 disease categories, applying previously derived category weights. Using the C-statistic (C), we compared the prognostic accuracy of the adapted Rx Risk-V + demographics (age, gender, race, Medicaid eligibility, and disability status) in predicting 1-year mortality to models that included demographics with and without alternative risk adjustment methods (prescription count, Charlson index, or Elixhauser index). We also compared the adapted Rx Risk-V model to models that included demographics, adapted Rx Risk-V, and Elixhauser or Charlson. We conducted a sensitivity analysis by restricting our cohort to dual

enrollees who had a clinical encounter and/or received a medication within both VA and Medicare (i.e. dual users), as we expected the adapted Rx Risk-V model may perform better among this cohort.

RESULTS: The 271,343 Veterans in the overall cohort had a mean age of 70.5 years; 96.1% were male, 81.7% were non-Hispanic white, and 63.4% were dual users. Overall, 9.4% died within 1 year. The prognostic accuracy of the adapted Rx Risk-V (C = 0.76) was significantly greater than models using demographics alone (C = 0.72) or a prescription count (C = 0.74), but significantly lower than models using Charlson (C = 0.79) or Elixhauser (C = 0.79) ($P < 0.001$ for all comparisons). The model combining demographics, adapted Rx Risk-V, and Charlson provided significantly greater prognostic accuracy than all other models (C = 0.80, $P < 0.001$). We found similar patterns of relative model performance in analyses limited to dual users.

CONCLUSIONS: The adapted Rx Risk-V index, when used in combination with common claims-based indices, enhances prognostic accuracy in regard to 1-year mortality. Using this model in place of claims-based indices marginally lowers prognostic accuracy, but remains a viable method of risk adjustment when medical claims are not available or the use of claims-based indices may lead to bias.

A COMPARISON OF QUALITY END-OF-LIFE CARE IN PATIENTS WITH HEMATOLOGIC AND SOLID MALIGNANCIES: IDENTIFYING DEFICIENCIES IN PATIENT CARE Ramy Sedhom[1]; Daniel Sedhom[1]; David Barile[2]. [1]Rutgers Robert Wood Johnson Medical School, New Brunswick, NJ; [2]University Medical Center of Princeton at Plainsboro, Plainsboro, NJ. (Control ID #2670839)

BACKGROUND: Limited data is available on the differences in end-of life care for patients with hematologic and solid malignancies. We retrospectively analyzed and compared the quality of end-of-life care between patients with hematologic malignancies and those with solid tumors.

METHODS: All adult patients who died of advanced cancer between 1/1/2015 and 5/1/2017 at our institution were included. We collected baseline demographics and indicators reflective of quality end-of-life care including: hospitalizations, emergency room visits, admissions to the intensive care unit, and chemotherapy use during the final 30 days of life. Data analysis included descriptive statistics, Chi-square tests, and multivariate logistic regression.

RESULTS: 57/316 (18%) of patients who died had hematologic malignancies. In the final 30 days of life, patients with hematologic cancers had more visits the emergency room (56%vs. 41%, $P = 0.03$), admissions to the hospital (84% vs. 45%, $P < 0.001$), >2 admissions (26% vs. 11%, $P < 0.001$), extended lengths of stay (48% vs. 6%, $P < 0.001$), transfers to the intensive care unit (42% vs. 8%, $P < 0.001$) and death (35% vs. 4%, $P < 0.001$). They also had more frequent chemotherapy use (48% vs. 12%, $P < 0.001$) compared to patients with solid tumors. In addition, patients with hematologic malignancies were less frequently referred to palliative care (5% vs. 21%, $P = 0.02$) or hospice (4% vs. 20%, $P = 0.02$). Chart review, and multivariate analysis, revealed more aggressive care among patients with hematologic malignancies.

CONCLUSIONS: Patients with hematologic malignancies receive different treatment at end-of-life and are less likely to receive palliative services when compared to patients with solid malignancies. Future research is needed to identify differences in overall patient care in order to provide higher quality care.

A CRITICAL APPRAISAL OF GUIDELINES FOR ELECTRONIC COMMUNICATION: DO CURRENT RECOMMENDATIONS NEED MODERNIZATION Joy L. Lee[2, 1]; Nir Menachemi[3]; Michael Weiner[1, 2]. [1]Indiana University, Indianapolis, IN; [2]Regenstrief Institute, Indianapolis, IN; [3]Richard M. Fairbanks School of Public Health at IUPUI, Indianapolis, IN. (Control ID #2704852)

BACKGROUND: Patients are increasingly interested in electronic access to providers (e.g., via emailing, secure messaging, or texting), and federal policies are encouraging secure messaging. Nevertheless, little is known about how providers should use electronic tools to communicate with patients. We sought to identify published evidence that underpins guidelines for electronic communication, and to evaluate evidence-based recommendations for electronic-communication between patients and members of the healthcare team. We identified a dearth of published work in both areas and instead critically appraise existing published guidelines and suggest an agenda for future work in this area.

METHODS: We performed a narrative review of provider-targeted guidelines on electronic communication, searching Ovid MEDLINE, EMBASE, and PubMed databases using relevant search terms (e.g. 'patient' and 'email,' 'webmail,' or 'messaging' and 'guideline,' or 'standard'). We limited the search to articles published in English. We also manually searched the citations of relevant articles. We identified the themes and suggested practices of each guideline, and evaluated whether promoted practices reflect current practice.

RESULTS: We identified 11 guidelines on electronic communication between providers and their patients. Although many articles referenced emerging evaluations of electronic communications, no recommended practices were underpinned by evidence of the effectiveness of the practices. Within the guidelines, privacy and data security were major themes. Most guidelines recommend a discussion with patients regarding expectations for communication. They focused little on suggested practices regarding the content of electronic communications, communication delivery, and how best to achieve communication functions such as providing information and emotional support. Many guidelines are out of step with current practice regarding both how email is used and how patients and clinicians interact. For example, they include suggestions that providers should direct patients to use the auto-reply e-mail feature to acknowledge reading messages and to also direct patients to use specific subject headings in electronic communications.

CONCLUSIONS: Although current guidelines for electronic communication may be rooted in a solid conceptual basis, they have three major flaws: a) the guidelines are not founded on evidence, b) they offer little guidance on how best to use electronic tools to communicate effectively, and c) many guidelines are out of line with current practice. Just as clinicians and clinical trainees are being taught face-to-face communication with patients based on an evidence-rich foundation, the same rigorous work needs to be applied to electronic communication. Researchers need to evaluate and identify effective practices systematically, create a framework to evaluate quality of communication, and test the relationship between electronic communication delivery and quality of care.

A CROSS SECTIONAL PROSPECTIVE COMPARISON OF COLLABORATIVE CARE AND CO-LOCATION TREATMENT FOR DEPRESSED, LOW INCOME, DIVERSE PATIENTS IN PRIMARY CARE Michelle Blackmore; Henry Chung; Sarah Ricketts; Urvashi Patel. Montefiore Medical Center, Bronx, NY. (Control ID #2689889)

BACKGROUND: Although substantial research demonstrates the effectiveness of integrated care models, there are very few studies that compare clinical outcomes in depression for a co-location model versus a collaborative care model (Krahn, Bartels, Coakley, et al., 2006; Unützer, Katon, Callahan, et al. 2002) As health care reform efforts support integrated model sustainability and scalability, understanding whether there are differential outcomes achieved can help practices allocate resources appropriately. An academic medical center with large ambulatory primary care practices ($N = 19$), serving primarily Medicare and Medicaid recipients with significant racial and ethnic diversity, began offering integrated care primarily through co-location (usually a licensed clinical social worker and a part time psychiatrist) in the Fall of 2014. In February 2015, 7 sites were chosen to begin implementation of the integrated collaborative care model (CCM) as part of a Health Care Innovations Award from the Center for Medicare and Medicaid Innovations. The CCM program aimed to improve care quality through the addition of a care manager to the behavioral health team, allowing enhanced "between visit" care and case reviews in a multidisciplinary team, facilitated by a measurement-informed care patient registry.

METHODS: A cross sectional natural experimental design compared depression symptom severity outcomes for patients attending Montefiore primary care sites employing co-located care ($N = 12$) and sites utilizing CCM ($N = 7$). Depression symptom severity was measured with the Patient Health Questionnaire 9 (PHQ-9). Patients were enrolled in the study if they scored 10 or above on the PHQ-9, indicating moderate to severe depression. Eligible patients receiving both intervention types had access to short-term, psychotherapy, concrete social services, and medication management. At 10 to 16 weeks (mea$n = 12$ weeks) following enrollment, patients were re-administered the PHQ-9 by a trained and blinded independent assessor over the phone.

RESULTS: A total of 240 participants were enrolled ($N = 122$ at co-location sites; $N = 118$ at CCM sites). Significant within group reductions in depressive symptoms were observed in the co-location sites (difference, 2.23, $p < 0.0003$) and the CCM practices (difference, 5.04, $p < .0001$). Between group differences indicated patients in CCM sites demonstrated significantly greater reduction in depressive symptoms compared to patients at the co-location sites (difference, −2.81; $p = .0005$).

CONCLUSIONS: The CCM intervention appears to result in a significantly greater reduction in depressive symptoms compared to the co-location model across a range of Montefiore primary care clinics serving low income, diverse patients. Replication will be necessary in larger samples to further support these findings.

A CROSS SECTIONAL STUDY REVEALS AN ASSOCIATION BETWEEN ELECTRONIC CIGARETTE USE AND MYOCARDIAL INFARCTION

Taher M. Tayeb; Talal Alzahrani; Nardos Temesgen; Ivan Pena. The George Washington University, Arlington, VA. (Control ID #2689119)

BACKGROUND: Electronic cigarettes (E-cigarettes) have grown in popularity as an alternative to traditional cigarettes especially among consumers who want to reduce the risk of morbidity and mortality associated with smoking. Nonetheless, a recent study showed that both E-cigarettes and traditional cigarettes cause an increase in oxidative stress and endothelial dysfunction, however this effect is less pronounced with E-cigarettes. Currently, there is a limited study that shows the impact of E-cigarette in the cardiovascular system. Therefore, data from the 2014 National Health Interview Survey (NHIS) was used to evaluate the effect of E-cigarettes on the cardiovascular system, specifically the effect on myocardial infarction(MI).

METHODS: Analysis of the 2014 National Health Interview Survey (NHIS) database was performed to examine the effect of E-cigarettes on MI. Initially, subjects were assigned to one of two groups: those with a history of MI and those without a history of MI. The t-test and chi-square test were subsequently applied to compare the different demographics and health characteristics between these two groups. A logistic regression model was then used to measure the association between E-cigarettes and history of MI. Data was adjusted for multiple risk factors for MI including age, gender, race, body mass index, income, the status of smoking cigarettes, and history of hypertension, diabetes, and hypercholesterolemia.

RESULTS: A total of 35,156 subjects were included in the final logistic model. [Summarize a number of baseline variables with respect to health and demographic characteristics] Analysis showed that increasing age (OR, 1.04; p <0.001), history of hypertension (OR, 2.72; $p < 0.001$), high cholesterol (OR, 2.19; $p < 0.001$), and diabetes (OR, 1.68; $p < 0.001$) are associated with an increased odds of myocardial infarction. With respect to smoking, increased frequency of smoking was associated with increasingly higher odds of MI when compared to patients who had never smoked: every day smokers (OR, 2.75 $p < 0.001$), some day smokers (OR, 2.39; $p < 0.001$), and former smokers (OR 1.80; $p < 0.001$.) In contrast, females (OR, 0.49; $p < 0.001$), Hispanics (OR, 0.62; $p < 0.001$), and people with higher incomes (OR, 0.93 [95% CI, 0.90–0.96]; $p < 0.001$) have lower odds of heart attack. With respect to Electronic cigarette use and MI, analysis revealed an odds ratio of 1.42 with $p = 0.017$.

CONCLUSIONS: Our findings indicate that Electronic cigarette use, when adjusted for other risk factors, is associated with a 42% increased odds of myocardial infarction. This increase in odds is consistent regardless of traditional cigarette smoking history. More studies are needed to further assess this risk.

A CROSS-SECTIONAL STUDY OF SELF-REPORTED COLORECTAL CANCER SCREENING STATUS IN US ADULTS WITH AND WITHOUT DISABILITIES

Bliss Temple[2]; Lisa I. Iezzoni[1]. [1]Harvard Medical School, Boston, MA; [2]University of California San Francisco, San Francisco, CA. (Control ID #2703635)

BACKGROUND: Colorectal cancer screening is a life-saving aspect of primary care recommended for most adults 50 to 75 years old. People with disabilities face difficulties accessing health care services and disparities in rates of cervical and breast cancer screenings. This study used a large, nationally representative database to examine rates of self-reported colorectal cancer screening to determine whether there are disparities for people with disabilities compared to those without disabilities.

METHODS: This was a secondary analysis of cross-sectional data from adults 50–75 years old in the 2013 National Health Interview Survey, which uses a multistage area probability design to sample the civilian non-institutionalized US population. The outcome was self-reported current colorectal cancer screening status. The main predictor was self-reported limitation in functional abilities (i.e. disability) in at least one of 12 domains. Severe disability and type of disability (physical, sensory, cognitive/intellectual, chronic disease, mental health) were secondary predictors. Covariates included age, sex, race, Hispanic

ethnicity, and seeing a primary care provider (PCP) in the previous year. Logistic regression analyses were used to model the odds of current screening status. The model was evaluated for interactions, collinearity, goodness of fit, and misspecification.

RESULTS: Of the 13,332 subjects in the analysis, 51.3% reported any disability and 28.2% severe disability. Subjects with any disability reported a 59.3% current colorectal cancer screening rate; those with severe disabilities, 58.8%. Both groups had higher screening rates than those without disabilities (52.1%). Those with disabilities did not have significantly different adjusted odds (OR 1.05; 95% CI 0.98,1.13) of current screening compared with those without disabilities. Statistically significant covariates were age, Asian race, Hispanic ethnicity, and seeing a PCP within the past year. The odds ratio for those with versus without severe disability was not statistically significant (OR 0.95; 95% CI 0.87,1.03). Odds ratios for health condition subgroups compared to those without that condition were statistically significant only for the groups with physical health conditions (OR 1.15; 95% CI 1.06,1.24) and chronic diseases (OR 0.89, 95% CI 0.80,0.99).

CONCLUSIONS: Overall rates of colorectal cancer screening for people with and without disabilities were not significantly different, despite barriers to accessing care and disparities in other cancer screening rates. This may reflect an increased focus on health by people with disabilities compared to the nondisabled and/or fewer barriers to colorectal cancer screening than for other cancers. Policy initiatives aimed at decreasing health disparities for people with disabilities may be more productively focused on areas other than colorectal cancer screening.

A DIFFERENCE-IN-DIFFERENCE ANALYSIS OF TRENDS IN UTILIZATION FOLLOWING A PRIMARY CARE REDESIGN INTERVENTION Kevin Nguyen[1]; Alyna T. Chien[2, 4]; David J. Meyers[1, 3]; Sara Singer[1, 2]; Meredith Rosenthal[1]. [1]Harvard T.H. Chan School of Public Health, Boston, MA; [2]Harvard Medical School, Boston, MA; [3]Brown University School of Public Health, Providence, RI; [4]Boston Children's Hospital, Boston, MA. (Control ID #2699123)

BACKGROUND: Many academic medical centers (AMCs) are seeking novel approaches to deliver higher quality care and lower costs for patients cared for in primary care practices. Beginning in mid-2012, 20 practices across 6 AMCs affiliated with Harvard Medical School launched a learning collaborative to establish team-based care at both hospital- and community-based practices. We describe trends and changes in utilization 3 years before and 1 year following this intervention.

METHODS: The learning collaborative followed a sequenced change strategy, and relied on in-person learning sessions, monthly calls, and leadership training. We conducted difference-in-difference analyses using generalized linear models to compare changes in utilization between intervention practices and controls before and after the intervention using the Massachusetts All-Payer Claims Database (APCD) for 2009 to 2013. The APCD aggregates medical claims each year for private payers and Medicaid in the Massachusetts. The 20 intervention practices were identified by linking National Provider Identifier number to the Massachusetts Health Quality Partnership Physician database, which trackers physician hierarchy within practices and systems. We used propensity weights to identify controls that were of comparable size and affiliated with AMCs. Patients were attributed to intervention or control practices annually. Utilization measures included outpatient visits, emergency room (ER) visits, inpatient hospitalizations, ambulatory care sensitive inpatient (ACSIP) hospitalizations, and ambulatory care sensitive ER (ACSER) visits. We adjusted the utilization outcomes based on the number of months a patient was enrolled. We estimated percent change in intervention practices' utilization relative to changes in controls' utilization.

RESULTS: One year following the beginning of the intervention, we found a statistically significant reduction in outpatient use in intervention sites compared to controls by 0.72 visits per patient per year, or approximately 7.3% ($p < 0.01$). From baseline, ER use decreased in intervention sites compared to controls by 0.06 visits per patient per year (8.3%, $p < 0.01$) and inpatient hospitalizations in intervention practices decreased by 0.1 admissions per patient per year (19.2%, $p < 0.01$). ACSIP admissions decreased by 0.02 per patient per year in intervention sites compared to controls (28.6%, $p < 0.01$) and ACS ER decreased by 0.01 visits per patient per year (9.1%, $p < 0.01$).

CONCLUSIONS: We observed significantly larger reductions in utilization in intervention practices when compared to control practices. Our findings suggest that involvement in the learning collaborative was associated with significant reductions in healthcare utilization.

A DIGITAL LANGUAGE DIVIDE? THE RELATIONSHIP BETWEEN INTERNET MEDICATION REFILLS AND MEDICATION ADHERENCE AMONG LIMITED ENGLISH PROFICIENT PATIENTS Alejandra Casillas[2]; Leo Morales[3]; Jonathan Grotts[2]; Chi-Hong Tseng[1]; Gerardo Moreno[1]. [1]UCLA, Los Angeles, CA; [2]University of California Los Angeles, Los Angeles, CA; [3]University of Washington, Seattle, WA. (Control ID #2703287)

BACKGROUND: Use of an Internet portal to refill medicines positively affects medication adherence among English-speakers. However, no studies examine if Internet refills also affect medication adherence for patients with Limited English Proficiency (LEP). Our objectives were to 1) examine the relationship between use of an Internet medication refill system and medication adherence among linguistically diverse patients with chronic conditions and 2) compare this relationship between LEP and English Proficient (EP) patients.

METHODS: We analyzed 2013–2014 data from 509 surveyed adults with hyperlipidemia, hypertension, and/or diabetes mellitus in the Group Health Cooperative. Data were merged from a multilingual phone survey, plan enrollment, claims data, and electronic medical records. The primary outcome, medication adherence rate (%), was calculated for patients with at least two pharmacy fills over a 12-month period by the "Continuous Measure of Medication Gaps" (CMG) method. For Internet refill system use, patients were asked, "Have you used the health systems Internet site to refill any medications in the last 12 months?". LEP status was captured by patient self-identification with a non-English primary language, and/or a claims record of interpreter use. We used multivariate linear regression models to examine the adjusted effects of use of the Internet refill system on medication adherence, and compared this association between LEP and EP patients. We adjusted for age, gender, education, insurance, chronic conditions, and number of medications.

RESULTS: 384 patients (75%) had a calculable CMG (to produce adherence rate): 134 EP and 250 LEP, included in the models. Patients who had calculable CMG's were older, prescribed more medications, and more likely to have Medicare or Medicaid coverage, versus patients without a CMG. In unadjusted analyses, LEP patients had lower use of the Internet refill system ($p < .001$) and lower adherence versus the EP group ($p < .001$). In multivariate analyses, LEP

status (b = −0.022, $p = .047$) was negatively associated with adherence. Use of the internet refill system (b = 0.030, $p = .002$), and Medicare or Medicaid insurance (b = 0.030, $p = .007$), were positively and independently associated with adherence. In stratified models, use of remote Internet refills was positively associated with adherence, even when examining EP (b = 0.029, $p = .003$) and LEP patients (b = 0.027, $p = .049$) separately.

CONCLUSIONS: We found that the use of remote medication refills through an Internet portal was independently and significantly associated with higher medication adherence in both EP *and* LEP patients. These findings suggest that LEP patients could be under-utilizing a beneficial Internet tool. Should our health-care system fail to ensure that LEP patients can digitally manage their health care (such as refilling medications) through an Internet portal, we face the risk of widening the existing health care gaps via this digital divide.

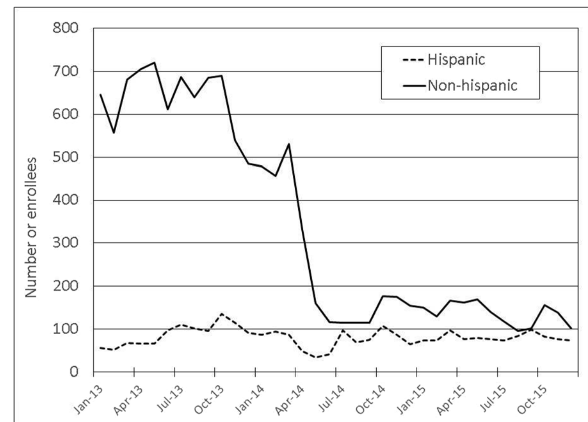
A LOOK AT WHO STILL NEEDS BREAST AND CERVICAL CANCER SCREENING SERVICES FROM SAFETY NET PROGRAMS FOLLOWING IMPLEMENTATION OF THE AFFORDABLE CARE ACT Latonya Riddle-Jones; Julie George; Robert Burack. Wayne State University School of Medicine, Detroit, MI. (Control ID #2708275)

BACKGROUND: The rate of uninsured adults in the United States has declined by nearly 40% since the Affordable Care Act in 2013, nevertheless, more than 20 million adults in the US remain uninsured. Safety net programs are necessary to help address the needs of those who remain uninsured, but to what degree? We have examined the enrollment of people in a safety net breast and cervical cancer screening program (BCCCP), serving uninsured and low-income women in an area of Metro Detroit, Wayne County, MI, to better understand the magnitude and determinants of this need.

METHODS: We examined patterns of enrollment by age, ethnicity, and income, in our community-based breast and cervical cancer control program for the period from 2013 through 2015. We used logistic regression to estimate adjusted odds ratios for enrollment according to race/ethnicity.

RESULTS: Please see the attached graph depicting the number of breast and cervical cancer screenings of non-Hispanic and Hispanic women enrolled in our safety net program from January 2013 through October 2014. - The graph shows a decline in the number of non-Hispanic women enrolled in our program from October 2013 through July 2014. - The graph also demonstrates that Hispanic enrollment in the program remained steady during this time, which correlates with the implementation of the ACA in Michigan (April 2014). - Our adjusted Odds Ratio for being Hispanic in 2015 compared to 2013 was 4.44.

CONCLUSIONS: The ACA has reduced, but not eliminated the need for specific safety net programs in the United States. While enrollment in the BCCCP declined by 70% pre-post ACA, we have served over 15,000 women from 2013 through 2015 who, in the absence of this safety net program, would likely have remained unscreened. In particular, we note that the BCCCP has taken on increased importance for Hispanic women in our community, who remain disproportionately uninsured, here and elsewhere.



A NARRATIVE REVIEW OF PHYSICIAN PERSPECTIVES REGARDING THE SOCIAL AND ENVIRONMENTAL DETERMINANTS OF OBESITY Feenalie Patel[2]; Ashley K. Haddad[1]; Debra A. Werner[1]; Monica E. Peek[1]. [1]University of Chicago, Chicago, IL; [2]University of Tennessee Health Sciences Center, Cordova, TN. (Control ID #2703874)

BACKGROUND: Obesity is a multifactorial disease with influences from biology, behavior, social norms, physical environment, and the larger health system. However, current guidelines for managing obesity discuss only biologic and behavioral therapeutic options, without suggesting ways to address the social and/or environmental determinants of obesity. In this review, we evaluate the ways that physicians conceptualize and address the social and environmental determinants of obesity to better understand current practice.

METHODS: We searched PubMed, Ovid, and PsycINFO databases and conducted hand searches of relevant bibliographies over the past 30 years. Search terms included variations on the following: obesity, attitude, perception, belief, knowledge, physician, adult, recommendation, treatment, cause, and etiology. Our final review included all articles that elicited physician perspectives on the causes or management strategies of obesity. We categorized causes and management strategies into the following domains, defined by the ecologic model of health: individual (i.e. biological, psychological, behavioral), social, environmental, and macro-level.

RESULTS: We found 1144 total articles, 24 of which met inclusion criteria. Eleven articles (46%) assessed physician perspectives on obesity *causes* and 18 (75%) assessed physician perspectives on obesity *management*. Of the 11 articles that discussed obesity cause, all (100%) evaluated physician perspectives on at least one non-individual domain, but no paper evaluated physician perspectives across all domains. Of the 18 articles that discussed obesity management, 12 (66%) evaluated physician perspectives on at least one non-individual domain, and again, none evaluated physician perspectives across all domains. When asked to rank the causes of obesity across multiple domains, physicians ranked individual causes as more important than social or environmental causes in all except one study. Physicians also used individual management strategies more frequently (and believed individual management strategies were more successful) than social or environmental management strategies in all studies.

CONCLUSIONS: No articles in our review allowed physicians to evaluate the causes or management strategies of obesity across all domains that might

influence weight. However, within this limitation of available literature, our review suggests that clinicians rank individual characteristics as more important in the development and management of obesity than social or environmental factors. While clinicians may simply under-value the impact of social and environmental obesity determinants, this finding may also represent a lack of perceived ability or responsibility to address non-individual health determinants in clinical practice. As we move into the era of population health management, more research is needed to understand the most appropriate ways for physicians to address the social and environmental determinants of chronic diseases such as obesity.

A NEEDS ASSESSMENT FOR EMPANELMENT IN A RESIDENT CONTINUITY CLINIC Jennifer Bracey; Alanna Stone; Sara Turbow. Emory University School of Medicine, Atlanta, GA. (Control ID #2704973)

BACKGROUND: Empanelment is the act of assigning patients to a primary care provider (PCP). Improving empanelment could create greater satisfaction in clinic by increasing continuity and enabling closer relationships with patients, both of which could decrease resident clinic burnout and create interest in GIM careers. In this analysis, we sought to define the baseline accuracy of current PCP assignments for our resident continuity clinics, and we investigated if residents were engaging in empanelment by assigning themselves as PCP for patients without accurate PCP assignments.
METHODS: This analysis was performed in three IM resident continuity clinics at a large urban hospital. We examined charts for all patients scheduled in clinic on two dates in December 2016. We recorded if the patient had a PCP assigned prior to the visit and, if they did, whether the listed PCP was the resident the patient was scheduled to see that day, a different current resident, a graduated resident, or another type of provider (ex. advanced practice provider, subspecialist, or community provider). We reviewed the same charts after clinic to determine if patients without a PCP or with an incorrect PCP had been reassigned to the resident they saw that day. Patients who did not show to clinic or who were added to the schedule after our initial pre-clinic chart review were excluded from the analysis. SAS Studio was used for data analysis.
RESULTS: We reviewed 496 charts. Of those, 45.6% ($n = 226$) had the resident they were scheduled to see that day listed as their PCP. 13.1% ($n = 65$) had another current IM resident listed, 13.9% ($n = 69$) had a graduated resident listed, 10.5% ($n = 52$) had another type of provider listed, and 16.9% ($n = 84$) were unassigned. Of the 205 patients eligible to be assigned a new PCP at their visit, 44.4% ($n = 91$) came to the appointment. Five patients were assigned to PCPs other than the resident they saw that day. Of the remaining 86 patients, 45.4% ($n = 39$) had their PCP assignment changed to the resident they saw that day.
CONCLUSIONS: We found that residents assign themselves to be the PCP at a low rate. There was no statistically significant difference in the percent of patients reassigned to a current resident between patients in each of the "inaccurate" PCP categories ($p = 0.7314$). This also does not appear to differ by PGY level. This analysis was limited by high no-show rates: 42.3 overall and 67.9% for patients without an assigned PCP. Overall, this project shows a need for increased focus on empanelment in our resident continuity clinic. Our next steps will focus on resident-level interventions to: 1) educate them on empanelment and why this process is important and 2) strategize ways for them to improve empanelment. By improving empanelment, we may see greater resident satisfaction with clinic, less clinic burnout and an increased interest in GIM careers.

A NEW FRAMEWORK FOR STAKEHOLDER ENGAGEMENT IN EARLY STAGE TRANSLATIONAL SCIENCE Amy LeClair[1]; Thomas Concannon[3]; Virginia Kotzias[3]; Allison M. Cole[2, 2]; Simona Kwon[4]; Alexandra Lightfoot[5]. [1]Tufts Medical Center, Boston, MA; [2]University of Washington, Seattle, WA; [3]RAND Corporation, Boston, MA; [4]NYU School of Medicine, New York, NY; [5]University of North Carolina at Chapel Hill, Chapel Hill, NC. (Control ID #2705519)

BACKGROUND: Stakeholder and community engagement (SCE) is a national priority for the National Center for Advancing Translational Science (NCATS). There is an established framework for stakeholder engagement for the latter stages (T2-4) of translational science, but no such framework currently exists for early stage (T1) clinical researchers. Four Clinical Translational Science Award (CTSA) hubs launched a collaboration to develop a new framework for engaging communities and stakeholders in T1 research.
METHODS: We led structured individual and group discussions with T1 investigators to learn about: (1) the health decisions they seek to inform with research evidence, (2) the actors who make those decisions, and (3) the individuals and organizations that are affected by those decisions. Focus groups lasted, on average, one hour. Interviews lasted approximately 30 min. Both were recorded. Audio recordings were transcribed and de-identified, and transcripts were coded using Dedoose™. We used a deductive-inductive procedure to develop the framework for stakeholder engagement in T1 research. A deductive codebook was development from the focus group & interview guides; emergent themes were added and the codebook was revised after preliminary inductive analysis. Two coders analyzed all transcripts using a constant comparison approach. Analysis included input from research participants to assure the framework could be used by T1 researchers.
RESULTS: Eighteen individuals connected to four CTSA hubs participated in the discussions. Participants came from the fields ranging from basic chemistry and drug development to infectious disease and pediatrics and represented both methodological and topical experts. Preliminary analysis produced several findings. First, basic scientists can identify stakeholders, contrary to concerns that stakeholder engagement is not applicable at this stage. Second, stakeholders in early stage translational research (T1), as identified by the research participants, do not fit into the same framework as those further down the translational spectrum (T2-T4). A unique framework may therefore assist early stage researchers in the process of stakeholder engagement. Finally, participants indicated they would like more guidance on who, how, and when to engage them in their research.
CONCLUSIONS: By showing T1 researchers how to identify and involve their stakeholders in (1) defining research questions, (2) carrying out research activities, and (3) disseminating research evidence, this work has the potential to improve the use of basic science evidence in latter stages of translation from bench to bedside.

A NEW MODEL FOR EXPANDING AAMC MEDICAL EDUCATION RESEARCH CERTIFICATION Joshua T. Hanson; Jeffrey Jackson. University of Texas Health Science Center, San Antonio, San Antonio, TX. (Control ID #2702129)

BACKGROUND: It is difficult to provide large-scale faculty development in medical education scholarship. This type of development frequently requires formal training and, in response, the Association of American Medical

Colleges (AAMC) has created the Medical Education Research Certificate (MERC) program. MERC courses are offered at national meetings; however, this can be costly and time consuming to the individual faculty member. In an effort to provide this to faculty at the University of Texas School of Medicine (UTSOM), we engaged with AAMC to host the MERC program locally. Our goal was to create a sustainable faculty development program in medical education scholarship by increasing opportunity while reducing resource utilization.

METHODS: MERC faculty traveled to the UTSOM campus where all the sessions were held. All workshop topics were offered in morning and afternoon sessions to accommodate clinical and administrative duties of the attendees. Attendees were recruited through the Division of General & Hospital Medicine, Office of Undergraduate Medical Education, and the Office of Graduate Medical Education. To measure impact of the program, ten-item pre and post surveys were administered and were constructed to measure increases in skills and knowledge of educational research. Individual paired comparisons were made between pre- and post- survey results by paired samples t-test and grouped according to certification completion. Survey data were compiled and analyzed using Microsoft Excel and Stata.

RESULTS: The total number of registrants was 53 and the average number of workshops attended was 5. Twenty-nine registrants completed certification, for which the criterion is completion of six sessions. The total cost of the week of sessions was $16,179, which calculates to $305 per registrant or $558 per certificate. Complete pre- and post-survey data were available for 38 registrants (71.7%). All items had mean increases self-reported knowledge and skills. Among those that completed certification, comparisons demonstrated statistically significant improved knowledge and skills in 10/10 domains. Among those that did not complete certification, 4/10 domains had statistically significant improvements.

CONCLUSIONS: Engaging with the AAMC to host the MERC program locally resulted in significant cost savings considering attendance and certification typically requires national meeting registration, travel costs, and is a multi-year endeavor. Certification was associated with increased knowledge and skills in all of the domains. Even partial attendance resulted in knowledge increases. This early success has led to the planning of a second annual MERC intensive program with recruitment of attendees from more departments. Future plans include measurement of sustained self-reported knowledge and measurement of increased scholarship after attendance and certification.

A NOVEL APPROACH TO BLINDING IN A RANDOMIZED CLINICAL TRIAL (RCT) OF A COMPLEX BEHAVIORAL INTERVENTION: THE PREVENTING AMPUTATION BY TAILORED RISK-BASED INTERVENTION TO OPTIMIZE THERAPY (PATRIOT) STUDY Xiao Xiao[1]; Kimberly L. Stone[1]; Sarah Sullivan[1]; Yvonne Ye[1]; Madeline Russell[1]; Tova Bergsten[1]; Trina Wijangco[1]; Samantha M. Hill[1]; Sundar Natarajan[2]. [1]Department of Veteran's Affairs New York Harbor Health System, New York, NY; [2]VA New York Harbor Healthcare System, New York City, NY. (Control ID #2705763)

BACKGROUND: In order to generate valid results in RCTs, it is important to collect unbiased data. Behavioral intervention trials are more difficult to blind than pharmacologic trials. In our ongoing behavioral trial, PATRIOT, which aims to prevent foot complications in diabetes through improved self-care, we are intervening both face-to-face as well as remotely. Consequently blinding is more difficult. Here we illustrate the different blinding processes used.

METHODS: In the PATRIOT trial, following randomization during the baseline visit, the intervention group receives computer-based education and demonstration on how to use a special foot thermometer. Following that, intervention participants receive a comprehensive intervention that includes regular telephone counseling and tailored mailings. The control group receives health prevention strategies not related to foot care. For this complex intervention, we needed to develop new strategies to maintain blinding at the participant, research assistant (RA), counselor, outcome adjudicator and data analyst levels. We created a "Blinding Tracker" to identify unblinded and blinded staff so that participants pass from unblinded to blinded staff so that only blinded staff collect data. The integrity of the study is maintained by careful monitoring of blinding with any break in blinding being contained.

RESULTS: To date, we have enrolled 221 participants. While participants know the arm to which they are randomized, we needed to make sure that the staff collecting data are blinded. Participants are educated throughout the whole study process by the telephone counselors about the importance of blinding using non-scientific descriptions. Though the counselors know their participant's treatment assignment, they do not know their foot photography results and other outcomes. The RA's, who conduct study visits and collect data, are blinded to treatment assignment. To improve efficiency and preserve blinding, we have different RAs for different phases of a participant's progress. Initially, RAs are initially blinded, but by the end of their involvement with a particular subject, when data collection is done, they become unblinded so they can show the educational videos and demonstrate foot thermometer use. However, RA's can also become unblinded prematurely. To date, out of 96 six-month visits, there have been 26 such instances. RAs are subsequently transitioned off a particular subject to be replaced by a blinded RA. We will also control for RA blinding in the analysis. The adjudicators who read the foot photographs to determine outcomes and the statisticians are blinded to treatment assignment.

CONCLUSIONS: Novel techniques have been used to achieve and maintain blinding, but it is resource intensive. While conducting complex trials, vigilance and responsiveness are needed. Finally, blinding information should be incorporated in the analysis in order to get the most valid results.

A PALLIATIVE CARE (PC) ELECTIVE ROTATION FOR SENIOR INTERNAL MEDICINE RESIDENTS IMPROVES COMFORT LEVEL WITH PRIMARY PALLIATIVE CARE SKILLS Maie El-Sourady; Mohana Karlekar; Sumathi Misra. Vanderbilt University, Mount Juliet, TN. (Control ID #2702217)

BACKGROUND: Palliative Care (PC) specialists assist patients with serious illness, their families, and their clinicians with medical decision making, symptom management, advance care planning, and end of life care. As the population ages, the need for PC services will increase, and will exceed the supply of PC clinicians. Primary care physicians will need to feel comfortable in navigating many primary PC skills.

METHODS: We describe a 2 week PC rotation for third year internal medicine (IM) residents at a large academic medical center. Between 2012 and 2016, 32 IM residents completed a PC elective rotation. The curricular components included didactic sessions and bedside teaching on a busy inpatient PC consult service and inpatient unit. All 32 residents completed a pre and post survey during the elective rotation in which they ranked their comfort level with primary PC topics using the RedCap survey tool (1 = Need further basic

instruction, 2 = Competent to perform with close supervision, 3 = Competent to perform with minimal supervision, 4 = Competent to perform independently). They also ranked their overall comfort level in working with seriously ill and dying patients (1 = very uncomfortable to 10 = very comfortable).Surveyed topics included conducting a family conference, breaking bad news, discussing DNR orders, home hospice, shift in treatment to comfort care, treatment withdrawal and advance directives, performing a basic pain assessment, using oral and parenteral opioids, adjuvant analgesics, assessing and managing difficult symptoms, and assessing decision-making capacity.

RESULTS: Prior to beginning the rotation, the IM resident average comfort level was 2.5 (range 2 to 3.5) for the above topics, indicating that their comfort was between "competent to perform with close supervision" and "competent to perform independently." After completion of the rotation, the average comfort level was 3.3 (range 2.4 to 3.5), indicating they felt that they were competent to perform these tasks with minimal supervision. IM residents also indicated an increase in their comfort level in working with seriously ill and dying patients, from 6.7 prior to 8.6 after the rotation.

CONCLUSIONS: We have shown that the self-reported comfort level of IM residents improves after a 2 week elective rotation with primary PC topics. At the end of the rotation, participants felt that they are able to perform these tasks with minimal supervision, which is reassuring as they complete residency. The limitations of this study are that it is an elective rotation, so we are unable to speak to the comfort level of IM residents who did not complete this rotation. This study raises questions as to the comfort level for PC topics of IM residents that have not participated in a PC rotation, and whether this improvement in resident comfort level translates to improved patient outcomes.

A PERSONAL TOUCH TO DECREASE NO-SHOWS Jay L. Mathur[2]; Noor Khan[1]; Mehrshid Kiazand[2]. [1]UPMC Mercy, Moon Township, PA; [2]UPMC Mercy, Pittsburgh, PA. (Control ID #2699304)

BACKGROUND: Outpatient non-attendance, or no-shows, produces major consequences for both patients and providers. A recent review of 42 studies found that telephone reminders, mostly automated, were the most effective system to reduce no-shows (9.4% reduction). Our Internal Medicine Clinic continues to have high no-show rates (27.1% annually) despite automated reminders. We sought to understand the impact personal phone reminders may have on no-show rates vs automated reminders. We were particularly interested in evaluating whether PGY1 no show rates were impacted at the beginning of their training.

METHODS: Our teaching outpatient center is divided into two separate sections, Firms A and Z, each with its own resident panel, patient sets, and dedicated staff. All patients receive automated phone reminders 48 hours prior to their office visit. Only Firm A patients also received a personal phone reminder by a staff member during the first 4 months of the academic year. We analyzed the effect of this additional personal phone reminder versus automated reminders in improving no-show rates.

RESULTS: 4,121 scheduled clinic visits from 6/29/15 - 10/31/15 were analyzed. 1,067 (25.9%) no-shows occurred over this period. The mean average scheduled visits per resident was 72.4 for A firm and 75.0 for Z firm ($p = .7188$). The cancellation rate per resident was similar in both firms (A = 22.0%, Z = 20.8% $p = .3951$). The average rate of no-shows per resident was significantly less for firm A (A =23.3%, Z = 28.7%, $p < .0007$). PGY1's did have a lower no-show rate in firm A although the numbers were not statistically significant (A = 23.5%, Z = 29.2%, $p = .0639$)

CONCLUSIONS: Personalized reminders may have resulted in significantly less no-shows in our study. We postulate that despite the cheaper and convenient alternative of automated telephone reminders, personalized reminders can reduce no-shows and lead to more efficient care and better outpatient training. Personalized reminders can also increase initial R1 clinic visits and subsequent continuity experience. Lack of statistical significance for R1 data from our review maybe from small sample size (firm A $n = 10$, Z $n = 10$).

A POSITIVE DEVIANCE APPROACH FOR LARGE-SCALE DISSEMINATION OF AN EVIDENCE-BASED HYPERTENSION PROGRAM. Shari Bolen[2]; Thomas Love[3, 2]; Randall D. Cebul[1]. [1]Case Western Reserve University, Chagrin Falls, OH; [2]MetroHealth/Case Western Reserve University, Cleveland, OH; [3]Case Western Reserve University, Cleveland, OH. (Control ID #2706516)

BACKGROUND: Improvements in blood pressure (BP) control across diverse populations is challenging. Although evidence-based interventions for BP improvement have been successfully disseminated within large integrated health systems serving insured patients, less is known regarding successful large-scale dissemination approaches of evidence-based interventions for hypertension management across multiple health systems serving diverse patients. Our objective was to compare BP control over time within diverse practices that participate in a large regional health improvement collaborative (called Better Health Partnership, BHP) which used a positive deviance approach to identify and disseminate a best practice for hypertension management across multiple health systems.

METHODS: We compared cross-sectional results for the 116,042 patients seen in July 2015 - June 2016 to the 97,847 seen in July 2011 - June 2012 at all 33 practices who reported to BHP throughout that period. Using clinics' electronic health records (EHR), patients are included in BHP's biannual reports if they have a diagnosis of hypertension, are 18+ years of age, not pregnant, and have at least two primary care visits in the past 2 years and one in the last year at a participating clinic. BHP used the reported clinic-level EHR data to identify a best practice for hypertension management between 2009–2011 based on a protocol in one health system that showed dramatic improvement and high achievement of BP control. BHP disseminated this best practice using twice yearly public reports and region-wide learning collaboratives; practice coaching for sites with lower levels of good BP control; and EHR-catalyzed patient-centered care.

RESULTS: In 2015–16, patients in the 33 practices were middle-aged (mean 62 years) and diverse (52% Female, 62% White, 32% Black and 3% Hispanic). Across seven Northeast Ohio counties, 28% lived in low-income neighborhoods (median income below $33,000). Patients in these practices showed similar characteristics across reporting periods except for insurance, which went from 5% Medicaid and 9% Uninsured in 2011–12 to 13.2% Medicaid and 3.2% Uninsured in 2015–16. Across all patients in the 33 practices, rates of good BP control (<140/90 mmHg) rose from 67 to 72% (a difference of 5.2 percentage points) from 2011–12 to 2015–16, with increases of at least 4.8 percentage points in all insurance, race/ethnicity, sex, income and educational subgroups. Most improved were patients of Hispanic ethnicity (from 62 to 71%) and the uninsured (from 59 to 66%).

CONCLUSIONS: A positive deviance approach substantially accelerated the dissemination and implementation of a best practice protocol for hypertension management across multiple health care systems with diverse patients in a regional health improvement collaborative. A specific focus on low income and minority populations may have led to the greater improvements seen in uninsured and Hispanic subgroups.

A PRECISION MEDICINE APPROACH FOR PATIENT-REPORTED MENTAL HEALTH SCORES

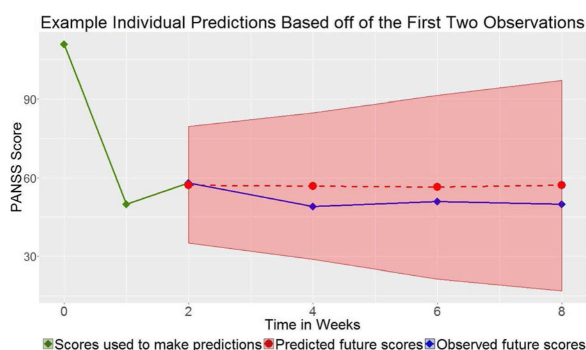
Anthony T. Fojo[2]; Katherine L. Musliner[1, 3]; Peter P. Zandi[1]; Scott L. Zeger[1]. [1]Johns Hopkins Bloomberg School of Public Health, Baltimore, MD; [2]Johns Hopkins School of Medicine, Baltimore, MD; [3]University of Aarhus, Aarhus, Denmark. (Control ID #2706653)

BACKGROUND: In recent years, precision medicine approaches have been developed for a variety of diseases. Early successes have rested on genomic data and laboratory markers. Precision medicine techniques are underutilized in the field of mental health, partly because clinical management depends on patient symptoms and not genetic targets or biomarkers. The increasing use of the electronic medical record (EMR) and patient reported outcome (PRO) data offers an opportunity to develop algorithms to predict patient outcomes on an individual level. Our objective was to develop a precision medicine framework for mental health symptom scores, which we applied to data from a clinical trial of risperidone for schizophrenia.

METHODS: We constructed a novel, multilevel prediction model that learns from serial symptom scores and predicts future symptom trajectories. We fit our model to the trial data - comprising scores on the Positive and Negative Syndrome Scale (PANSS) at weeks 0, 1, 2, 4, 6, and 8 - using Markov-Chain Monte-Carlo. We used 10-fold cross-validation to evaluate predictive accuracy, and analyzed how many observations were necessary to accurately predict outcomes at study completion.

RESULTS: Predictions were most accurate for the subsequent clinic visit, with diminishing accuracy farther into the future. Predictions of outcomes at study completion performed better after at two observations; additional observations yielded only marginal improvements. We present a sample of predictions for an individual based off of the first two clinic visits in the figure. Predictions of symptom scores at study completion based on the first two clinic visits deviated from the observed scores by a mean of 17.6 (interquartile range 6.8 to 23.0) on a scale from 30 to 210, and uncertainty intervals contained the true observation 98% of the time.

CONCLUSIONS: We demonstrate how a rigorous statistical model can leverage repeated measurements to predict disease trajectory on an individual level. Our methodology could be extended to other diseases, such as depression, anxiety, or substance abuse, where PROs are measured serially to guide treatment. Our methods could also be extended to time frames beyond eight weeks, or used to predict outcomes such as suicidal behavior or hospitalization. The systematic use of repeated PROs offers the promise of precision medicine in the field of mental health.



A QUALITATIVE ANALYSIS OF SYMPTOMATOLOGY IN OLDER HOMELESS ADULTS: RESULTS FROM THE HOPE HOME STUDY

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BACKGROUND: The homeless population is aging. Older homeless adults experience the premature development of age-related conditions, but less is known about their symptom burden or experience. Somatic symptoms (physical symptoms) increase with age. Social (loneliness) and existential (guilt, regret, hopelessness) symptoms are distinct from but can overlap with mental health symptoms such as anxiety and sadness. We used qualitative methods to characterize the experience of somatic, social, existential and social symptoms in older homeless adults.

METHODS: We conducted semi-structured interviews with participants from the HOPE HOME cohort, a longitudinal study of homeless adults age 50 and older. Inclusion criteria included: current homelessness and high somatic symptom burden, or at least one somatic symptom with high psychological, social, or existential symptom burden. Interviews covered participants' views on symptom etiology, impact on daily activities, personal strengths and management strategies. We employed Grounded Theory to analyze our data, including open coding, selective coding, and writing theoretical memos.

RESULTS: We interviewed 25 participants (60% men, 80% African American, ages 52–71). We found three emergent themes: 1) *Existential and social symptoms cause as much distress as somatic symptoms*. "My back pain actually is pretty real because I'm sleeping on cement but the thing that really gets me is the future. Sometimes there is a hopeless feeling that comes on." "Right now [my feelings are] combined because the more mental, the more physical I go through…the only thing that is really destroying me now is I want to see my mother." 2) *There is a clear relationship between the experience of homelessness and symptoms*. Participants describe how the experience of homelessness causes existential suffering that can manifest as somatic symptoms. "When I start thinking that I'm not gonna get off of this situation, my body starts to hurt, my stomach gets nauseated. It's burning like it's on fire." 3) *Participants manage symptoms with strategies from within and outside of biomedicine*, *including formal healthcare*, *religion*, *use of alternative medicines*, *and reliance on social supports*. "[When I'm feeling angry], I just start praising God until He comes and allow his spirit to wrap his arm around me; put me in a nice sleep. When I wake up, I feel a lot better."

CONCLUSIONS: The traumatic experience of homelessness causes and exacerbates physical and psychological distress. Among older homeless adults, existential symptoms are intertwined with and as distressing as somatic symptoms. To provide optimal care for this population, health care providers should screen for and address a broad range of symptoms, including somatic, psychological, existential and social.

A QUALITATIVE STUDY OF HOSPITALISTS' PERCEPTIONS OF PATIENT SATISFACTION METRICS ON PAIN MANAGEMENT

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BACKGROUND: Patient satisfaction metrics for pain management impacts federal incentive payments to hospitals. Hospitalists are key players in the delivery of high quality healthcare and are often financially compensated by their institutions for high satisfaction scores. Hospital-based initiatives to promote pain management may unintentionally contribute to excessive opioid prescribing. We aimed to understand hospitalists' perceptions of the impact of satisfaction metrics on pain management in their clinical practice.

METHODS: We conducted 25 open-ended, in-depth interviews with hospitalist physicians practicing in one of five hospitals (two university, one safety-net, one Veterans Affairs, and one private) located in Colorado or South Carolina. Four team members, two hospitalist physicians and two qualitative researchers, systematically analyzed transcribed interviews to identify emergent themes using a team-based, mixed inductive and deductive approach.

RESULTS: Hospitalists felt institutional pressure to earn high satisfaction scores for pain management, which they believed led to increased opioid prescribing. One hospitalist stated: "I'm well aware that I'm being watched for my patient satisfaction scores. So at least consciously it does not affect my position on opioids, which is not to say unconsciously it doesn't affect my decision." Hospitalists expressed concern that tying physician compensation to satisfaction scores commoditized pain to the patients' detriment. One physician recalled: "In my community practice, we were incentivized to keep people happy. It was expected that we keep up those scores. There is always pressure and you certainly don't want your patients to not be satisfied, but I think when you are given individual incentives based on that, it does sometimes change your procedures." Hospitalists believed that satisfaction scores would likely improve with more time spent at the patient's bedside discussing pain management alternatives and options, but felt they lacked the time to do so. One hospitalist explained: "I think the patient's satisfaction is mostly related to their relationship with the doctor rather than the pain. If you actually take the time to talk to the patient and they understand and they agree with you, then of course, the satisfaction scores are not going to be low." Finally, hospitalist perceived that hospital administrators interpreted high satisfaction scores as representative of quality healthcare delivery. One physician stated: "I think patient satisfaction is one of the things in medicine where it is so far removed from what is actually happening clinically at the bedside. I don't trust administrators who worry on a daily basis about patient satisfaction."

CONCLUSIONS: Patients should be educated about reasonable expectations for pain management in the hospital. Institutionally supported methods to improve physician-patient communication and engagement may promote both patient-centered, safe pain management and patient satisfaction.

A RANDOMIZED COMPARATIVE EFFECTIVENESS TRIAL OF A TRANSITIONAL CARE CLINIC: 180-DAY EFFECTS David T. Liss[1]; Christine Schaeffer-Pettigrew[1]; Emily Finch[1]; Andrew J. Cooper[1]; Avani Sheth[2]; Ashanti D. Tejuosho[1]; Caroline Teter[1]; Ronald T. Ackermann[1]. [1]Northwestern University, Chicago, IL; [2]Cook County Health and Hospital System, Chicago, IL. (Control ID #2706621)

BACKGROUND: Care transition interventions following hospital discharge can reduce subsequent rehospitalization. Early experimental evidence is mixed, particularly for vulnerable populations. This randomized trial examined a transitional care clinic for high-risk patients with no trusted medical home.

METHODS: We conducted a pragmatic comparative effectiveness trial of the Northwestern Follow-up Clinic (NFC), a transitional care clinic where a multidisciplinary care team provided coaching and assistance navigating the post-discharge transition through clinic visits and phone outreach, medication management support, social service and behavioral health coordination and transitioning to a permanent medical home. Between September 2015 and February 2016, patients were randomized to either NFC referral or referral to a federally qualified health center (FQHC); we used a 3:1 allocation ratio to meet the NFC site's capacity constraints. Following an emergency department (ED) visit, observation stay or inpatient admission, adults were eligible for inclusion if they had no medical home; were referred to the NFC by a hospital provider, or; expressed that they did not wish to return to their medical home or their medical home was insufficient to manage their needs. We examined differences in hospital care utilization during the 30 days after initial discharge (primary outcomes) and over 90-day and 180-day follow-up. Negative binomial regressions estimated differences in rates of: A) ED visits; B) observation stays; C) inpatient admissions, and; D) total hospital visits (i.e., A-C combined). Regressions adjusted for age, sex, insurance, race/ethnicity, driving distance, prior NFC use and type of initial hospital visit.

RESULTS: A total of 654 eligible patients were randomized and included in analyses (490 NFC arm, 164 FQHC arm). The sample was balanced on all sociodemographic characteristics; most patients were uninsured (34.6%) or insured through Medicaid (49.7%). At 30 days, intent-to-treat analysis demonstrated non-significant differences in adjusted rates of ED visits (incidence rate ratio [IRR] 0.82, $p = 0.46$), observation stays (IRR 0.61, $p = 0.19$) and inpatient admissions (IRR 0.67, $p = 0.16$), but there were fewer total hospital visits in the NFC arm (IRR 0.65, $p = 0.04$). After 90 days, NFC patients had fewer adjusted inpatient admissions (IRR 0.60, $p = 0.03$) and total hospital visits (IRR 0.60, $p = 0.01$). Over 180 days, NFC patients had fewer adjusted ED visits (IRR 0.62, $p = 0.04$), observation stays (IRR 0.52, $p = 0.02$), inpatient admissions (IRR 0.51, $p = 0.003$) and total hospital visits (IRR 0.49, $p < 0.001$).

CONCLUSIONS: Over 180-day follow-up, rates of all utilization outcomes under study were significantly lower in the NFC arm. These results demonstrate the potential of transitional care clinics to improve transitions and reduce hospital care use in high-need populations.

A RANDOMIZED TRIAL OF DIFFERENT LEVELS OF INPATIENT MEDICAL ATTENDING SUPERVISION OF TRAINEES Kathleen M. Finn[2]; Christiana Iyasere[2]; Yuchiao Chang[1]; Joshua Metlay[3]. [1]Harvard Medical School, Boston, MA; [2]MGH, Boston, MA; [3]Massachusetts General Hospital, Boston, MA. (Control ID #2703602)

BACKGROUND: While the relationship between resident work hours and patient safety has been extensively studied, there is limited data on the impact of different levels of inpatient attending supervision of internal medicine residents on patient safety or resident education.

METHODS: We conducted a 9-month clustered randomized trial on an academic inpatient medicine teaching service where 22 experienced faculty were asked to provide two different types of resident supervision: "routine oversight" (joining morning rounds to review new admissions only) and "responsive oversight" (joining morning rounds to review both new admissions and established patients). Each faculty served as their own control and the order of routine vs. responsive oversight was randomized for different 2-week blocks on service. The primary outcome was the rate of potential medical errors using an established algorithm based on medical record review. Secondary outcomes

included number of orders written, consultations and radiology studies. Resident education was evaluated with a time motion study to assess resident participation on rounds and surveys to assess both resident and attending perceived educational value of the two models.

RESULTS: A total of 1503 patients (5,691 patient-days) were included in the analysis. While the medical-error rate decreased by 9% from the routine oversight to the responsive oversight rounding models, this was not statistically significant (109.0 vs. 93.7 per 1000 patient days, $P = 0.26$). There was no difference in mean orders written in the morning (7 am–12 pm) or afternoon (12 pm–5 pm) in either routine vs. responsive models (63.8 vs. 81.3 total orders per day - morning, $P = 0.12$), in consultation notes (11.3 vs. 13.2 total consults notes per day, $P = 0.31$) or radiology studies (5.7 vs. 6.2 studies done per day, $P = 0.89$). A time motion analysis of 161 work rounds, found no difference in mean length of total time spent discussing established patients in the two models (202 +/− 46 min-routine vs. 202 +/− 57 min responsive, $P = 0.99$). The time a supervising resident spoke on work rounds did not change (58 +/− 20 min vs. 57 +/− 20 min, $P = 0.58$) but the time interns spoke did decrease when the attending joined rounds (64 +/− 19 min vs. 55 +/23 min, $P = 0.008$). In surveys both residents and interns reported that when an attending joined rounds they were less efficient, had decreased autonomy and had more fear of being judged. Attendings believed that the team knew their plan of care better though residents did not perceive this.

CONCLUSIONS: In an academic inpatient medical service, increased attending supervision did not significantly reduce medical errors or affect number of orders written, consultations or radiology studies. Residents perceived less autonomy and efficiency, though a time motion analysis found no difference in length of rounds or level of supervising resident participation.

A RANDOMIZED TRIAL OF INPATIENT LABORATORY TEST PRICE TRANSPARENCY IN THE ELECTRONIC HEALTH RECORD: THE PRICE TRIAL Mina Sedrak[3]; Jennifer S. Myers[4, 1]; Dylan Small[1]; Irving Nachamkin[4]; Justin B. Ziemba[5]; Dana Murray[4]; Gregory Kurtzman[1, 4]; Jingsan Zhu[1]; Wenli Wang[1]; Deborah Mincarelli[4]; Daniel Danoski[4]; Brian Wells[4]; Jeffrey S. Berns[4]; Patrick Brennan[4]; Bill Hanson[4]; C J. Dine[1, 4]; Mitesh Patel[1, 2]. [1]University of Pennsylvania, Philadelphia, PA; [2]Crescenz VA Medical Center, Philadelphia, PA; [3]City of Hope Comprehensive Cancer Center, Duarte, CA; [4]University of Pennsylvania Health System, Philadelphia, PA; [5]Johns Hopkins School of Medicine, Baltimore, MD. (Control ID #2700021)

BACKGROUND: While many health systems are considering increasing price transparency at the time of order entry, the evidence of its longer-term impact on clinician ordering behavior is unclear. Few randomized trials exist and among those conducted, they are single site, of limited duration (<6 months) and outcomes are not adjusted for patient characteristics or comorbidities.

METHODS: The Pragmatic, Randomized Introduction of Cost Data in the Electronic health record (PRICE) trial was a randomized, controlled trial conducted at three hospitals to evaluate the effect of displaying Medicare allowable fees for inpatient laboratory tests on clinician ordering behavior comparing changes during a one-year pre- and one-year post-intervention period. Test groups were randomly assigned to display fee data (intervention, $n = 30$) or not (control, $n = 30$) in the electronic health record. The main outcome measure was change in number of tests ordered per patient-day. Secondary outcome measures were change in number of tests performed per patient-day and associated fees per patient-day for tests ordered and performed. Multivariate adjusted models were fit to outcome measures adjusting for time trends and patient demographics, insurance, disposition, and comorbidity severity.

RESULTS: The sample included 98529 patients comprising 142921 admissions. Pre-intervention trends of order rates among the intervention and control groups were similar. In adjusted analyses of the intervention group compared to the control group over time, there were no significant changes in overall test ordering behavior (0.05 tests ordered per patient-day; 95% CI, −0.002, 0.09; $P = 0.06$) or associated fees (0.24 US dollars per patient-day; 95% CI, −0.42, 0.91; $P = 0.47$). Subset analyses found small but significant differences in tests ordered per patient-day based on patient intensive care unit (ICU) stay [(Patients with ICU stay: −0.16, 95% CI: −0.31, −0.01, $P = 0.04$)(Patient without ICU stay: 0.13, 95% CI, 0.08, 0.17; P <0.001)] and the magnitude of associated fees [(top quartile of tests based on fee value: −0.01, 95% CI, −0.02, −0.01; $P = 0.04$)(bottom quartile: 0.03, 95% CI, 0.002, 0.06; $P = 0.04$)]. Adjusted analyses of tests that were performed found a small but significant overall increase in the intervention group relative to the control group over time (0.08 tests performed per patient day, 95% CI, 0.03, 0.12; $P < 0.001$).

CONCLUSIONS: Displaying Medicare allowable fees for inpatient laboratory tests in the electronic health record did not lead to any meaningful or consistent changes in overall clinician ordering behavior. To our knowledge, this is one of the largest and longest evaluations of a randomized introduction of price transparency in a health care setting.

A RANDOMIZED TRIAL OF USING LOSS AVERSION AND ENHANCING GROUP-BASED INCENTIVES IN A PHYSICIAN PAY-FOR-PERFORMANCE PROGRAM Amol S. Navathe[1]; Andrea B. Troxel[2]; Amanda Hodlofski[1]; Kristen Caldarella[1]; Amelia Bond[1]; Qian Huang[1]; Shireen E. Matloubieh[1]; Lee Sacks[3]; Pankaj Patel[3]; Kevin G. Volpp[1]; Ezekiel J. Emanuel[1]. [1]University of Pennsylvania, Philadelphia, PA; [2]New York University, New York, NY; [3]Advocate Physician Partners, Chicago, IL. (Control ID #2706589)

BACKGROUND: Pay-for-performance (P4P) is the most pervasive value-based payment scheme despite little evidence of positive effects on patient outcomes. Yet, Medicare's upcoming Merit-based Incentive Payment System (MIPS) will expand traditional P4P even further. In this study, we examine whether two principles from behavioral economics, loss aversion and social pressure, can improve the effectiveness of physician financial incentives.

METHODS: We conducted a cluster randomized 3-arm clinical trial among 43 primary care and specialist practices at Advocate Physician Partners (APP), Chicago, IL. The active phase of the trial was January 1, 2016 to December 31, 2016, with follow-up through March 31, 2017. The control arm (Arm 1) was compromised of 21 physicians enrolled in the existing physician incentive payment design with quarterly performance feedback and a one-time bonus check (to be distributed April 1, 2017). Arm 2 tested the use of loss aversion among 26 physicians, in which incentive accounts were pre-funded with the total incentive dollars available over the 2016 program year. Arm 3 evaluated the performance of 24 physicians in an enhanced social pressure design that increased the group portion of the bonus to 50 percent. We performed an intention-to-treat analysis of treatment assignment on quality measure performance, including wellness (e.g. body mass index (BMI) screening), chronic care (e.g., appropriate beta blocker prescription), and mental health (e.g. depression screening) measures. Pairwise comparisons were evaluated with the Tukey range test. NOTE: Because the trial is still in follow-up period we present blinded results below - at the SGIM conference we will present final unblinded results.

RESULTS: There were 16,375 attributed patients with conditions related to APP P4P quality measures in the 2016 program year. Significant differences in performance were observed between the trial arms for 7 measures across 3 categories, though this tended to be true only in the greater than 65 age population. For example, for the 'beta blockers for chronic heart failure' measure in the chronic care category, we observed scores of 73% in Arm Y, 67% in Arm X, and 68% in Arm Z, differences of 5 and 6% ($P = 0.033$), however there was no significance for patients less than 65 years ($P = 0.75$). Similarly, for blood pressure measurement among cardiovascular disease patients over 65, we observed a score of 90% in Arm Y, 59% in Arm X, and 49% in Arm Z, differences of 31 and 41 percentage points ($P = 0.028$), while there was no significance for patients less than 65 years ($P = 0.66$). We observed similar trends for other measures such as 'depression screening and follow-up' and 'BMI assessment.'
CONCLUSIONS: The trial results suggest that the intervention in Arm Y may be a useful technique to make physician P4P incentives more effective. The performance improvements for patients over 65 may in part be explained by applicability of the quality measures.

A SAFE SPACE FOR SOLIDARITY, CONVERSATION, AND FINDING MEANING IN MEDICINE: REFLECTIVE WRITING WORKSHOPS LED BY NEAR-PEERS DURING THIRD-YEAR CLERKSHIPS Lorenzo R. Sewanan[2]; Kayleigh Herrick-Reynolds[2]; Priscilla Wang[1]; Andi Shahu[1]; Daniel Zheng[2]; John Encandela[2]; Anna Reisman[1]. [1]Yale School of Medicine, New Haven, CT; [2]Yale University, New Haven, CT. (Control ID #2704999)

BACKGROUND: Third-year medical students (MS3s) routinely experience mentally and emotionally challenging situations. They often lack the opportunity to debrief about these experiences due to time constraints, clinical hierarchy, and peer isolation during clerkships. Medical schools are increasingly incorporating reflective writing into curricula. A growing body of literature demonstrates the positive impact of reflective writing for medical students, including increased empathy and improved learning. These sessions are usually conducted by faculty facilitators, whose presence may prevent truly open discussion. We proposed that reflective writing workshops led by near-peers built into the third-year curriculum would provide a more effective model for honest reflection.
METHODS: Students and facilitators were medical students at Yale School of Medicine. The study occurred over a one-year period as MS3s rotated through four core clerkships. Facilitators were trained upperclassmen volunteers. MS3s were split into groups of 10–15 and required to attend a workshop at the end of each rotation. Rules of engagement were reviewed (confidentiality, title IX, commitment to active, judgment-free participation and listening). Workshops followed a structured but flexible series of questions progressing from warm-up questions to more challenging prompts. Evaluations were voluntary and anonymous, including (1) a paper survey of open-ended questions at the end of the session and (2) a longer, online end-of-year survey. We used a randomized iterative consensus process within a phenomenological framework to analyze the qualitative data. Major themes arising from this formal categorization process were used, along with representative quotes.
RESULTS: 266 session questionnaires were collected across 28 sessions, and 82/102 possible participants filled out the end-of-year survey. Most respondents (62%) indicated that they would attend the workshops even if not required. Our qualitative analysis revealed that the workshop provided a safe space for reflection and sharing. Many students were surprised to learn how willing peers were to share experiences. Students valued having protected time and found the prompt-based format beneficial. Common themes included challenges of patient care, medical hierarchy, interprofessional tension, and burnout. Students found that the format of writing and sharing provided solidarity within the class. Many stated that the workshops helped them process experiences not discussed before and encouraged them to focus more on emotions in clinical care. Most indicated that they would rather share negative experiences in a group led by near-peers than by faculty. Many described a desire to write and engage in active reflection in the future as a result of workshop participation.
CONCLUSIONS: The near-peer reflective writing workshops provided protected space to process difficult clerkship experiences, increased solidarity and support within the class, and encouraged MS3s to actively reflect.

A SIMULATED NIGHT ON CALL (NOC): ASSESSING THE ENTRUSTMENT OF NEAR GRADUATING MEDICAL STUDENTS FROM MULTIPLE PERSPECTIVES. Adina Kalet[1, 1]; Tavinder Ark[2]; Kinga L. Eliasz[1, 1]; Mike Nick[1, 1]; Grace Ng[1, 1]; Demian Szyld[3, 1]; Sondra Zabar[1, 1]; Martin V. Pusic[1, 1]; Thomas S. Riles[1, 1]. [1]New York University School of Medicine, New York, NY; [2]University of British Columbia, School of Population Health, Vancouver, BC, Canada; [3]Harvard Medical School, Boston, MA. (Control ID #2705395)

BACKGROUND: The AAMC has identified 13 Entrustable Professional Activities (EPAs) that all entering residents should be expected to perform on day 1 of residency without direct supervision regardless of specialty choice. We developed an immersive, Night on call (NOC) simulation to understand the measure of entrustment of all 13 Core EPAs from the perspective of patients, nurses, attendings, and peers.
METHODS: NOC is a 4-hour simulation, during which a medical student rotates through a series of authentic clinical coverage scenarios including: 4 standardized patient (SP) cases with varying degrees of complexity, each of which require first answering a call from a standardized nurse, (SN), then evaluating a SP with the SN in the room, making immediate management decisions and writing a coverage note; a phone call to an attending (Attn, an experienced clinician) to orally present (OP), and discuss the case, formulation of a clinical question and finding a best answer using digital library resources (EBM), a test of ability to recognize a pre-entrustable peer, and a handoff of 4 cases to a peer (HOff, portrayed by an senior medical student). Competency assessments were based on validated tools where available. Each rater provided an entrustment judgment. This included 9 raters providing a total of 16 entrustment judgments: 4 SPs and 3 SNs (1 rating competency and 1 rating communication each), 1 Attn based on OP, 1 peer rating based on the HOff (1 item each). Raters were trained in both case portrayal and rating reliability. This study is IRB approved. After exploring the relationships among competency measures and entrustment judgements, to test the hypothesis that NOC measures trustworthiness of our near graduates, we conducted a one-factor (entrustment) confirmatory factor analysis (CFA) with the 16-entrustment items allowing the ratings from the same raters and between raters on the same case to correlate. The CFA was conducted with a means and variance adjusted weighted-least squares estimation (WLSMV) to take the ordinal distributions of the entrustment items into account.
RESULTS: 73 medical students (39 women; Age 26.5 (+2.6) years) completed NOC. The one-factor CFA model fit the data ($\chi^2 = 155.27$, df = 112, $p < .001$, CFI = 0.97, TLI = 0.97, RMSEA = 0.07, $p > 0.05$). All but 2 of the 16 factor loadings were greater than 0.3, (Attn factor loading = 0.23 and the SP ratings from the first clinical case of NOC sequence (0.21)).

CONCLUSIONS: A single-factor model with 16 measures fit the entrustment framework within an ecologically valid simulated workplace suggesting that an individual student's clinical trustworthiness is measurable across discrete work activities. This work provides an assessment framework for the educational handoff from medical school to residency to ensure quality of care and patient safety.

A SYSTEMATIC REVIEW OF THE EXPERIENCES OF HEALTH CARE STAFF ON USING ELECTRONIC SYSTEMS FOR THE FOLLOW-UP OF PATIENT TEST RESULTS. Abdulaziz A. Mohammed[1]; Alaa Bagalagel[2]; Ahmad Noor[2]; Andrew K. Husband[1]; Simon P. Forrest[1]; Sarah P. Slight[1]. [1]Durham University, Teesside, United Kingdom; [2]King Abdulaziz University, Jeddah, Saudi Arabia. (Control ID #2706937)

BACKGROUND: Health Information Technology has the potential to improve the transfer of patient test results; [1] however, abnormal test results are still missed even with the use of electronic systems. The aim of this review was to explore health care staff experiences of using electronic systems for the follow-up of patient test results.

METHODS: The review followed the PRISMA guidelines and was registered on PROSPERO (CRD42016042944). Four databases were searched from Jan 2005-July 2016: Embase, Medline, CINAHL and PsycINFO. Primary articles were included if they focused on (1) any type of Electronic Health Records (EHRs) used for the follow-up of test results, (2) healthcare staff opinions and views of system(s), (3) any type of test result(s), (4) all disease states in both adult and paediatric populations, and (5) any health care setting. Commentaries, editorials, letters and any studies not available in English language were excluded. Three reviewers independently screened the titles, abstracts, and full texts of articles for inclusion, and also assessed the quality of those included using the Critical Appraisal Skills Programme (CASP) tool.

RESULTS: Our search returned 1,178 publications, 79 of which were duplicates. One thousand and eighty three were eliminated at the title (600), abstract (478) and full text stages (5). Fifteen articles and one abstract met our inclusion criteria. Six main themes were identified: (1) systems' design, (2) workload, (3) systems' infrastructure, (4) communication, (5) training, and (6) feedback. Users highlighted a number of benefits of using electronic systems (e.g. ability to access test results quickly). However, some reported having a lack of knowledge about system features and receiving insufficient training. [2] A proper training could highlight existing features specific to alert managements, which might be helpful in the follow-up of patient test results. On the other hand, lack of knowledge and training could increase follow-up time using electronic systems and contribute to a heavy workload. [2]

CONCLUSIONS: Users need to receive sufficient training on the use of electronic systems. More research is needed to explore how electronic systems could be further improved. This review only focused on healthcare staff experiences and did not cover patients' experiences. References: Singh H, Arora H, Vij M, Rao R, Khan M, Petersen L. Communication outcomes of critical imaging results in a computerized notification system. J Am Med Inform Assoc. 2007;14:459–466. doi: 10.1197/jamia.M2280. Hysong SJ, Sawhney MK, Wilson L, et al. Understanding the management of electronic test result notifications in the outpatient setting. *BMC Medical Informatics and Decision Making*. 2011;11:22. doi:10.1186/1472-6947-11-

A SYSTEMATIC REVIEW ON THE IMPACT OF SURGICAL INCIDENTS ON MEDICAL AND NON-MEDICAL OPERATING STAFF. Naresh Serou[1, 2]; Lauren M. Sahota[1]; Andrew K. Husband[1]; Simon P. Forrest[1]; Krishna Moorthy[2, 4]; Sarah P. Slight[1, 3]. [1]Durham University, Teesside, United Kingdom; [2]Imperial College Healthcare NHS trust, London, United Kingdom; [3]Newcastle upon Tyne Hospitals NHS Foundation Trust, Newcastle upon Tyne, United Kingdom; [4]Imperial College London, London, United Kingdom. (Control ID #2700381)

BACKGROUND: The occurrence of surgical incidents can have a devastating effect, not only on the patient and their families, but also on the health professionals involved.

METHODS: The aim of this review was to explore the effect of surgical incidents on operating staff and what different coping strategies they used. This review followed the PRISMA-P reporting guidelines and was registered with the PROSPERO database (number: 42016042175). Studies were eligible for inclusion if they were primary research or reviews that focused on the effect of surgical errors on operating theatre staff in any health care setting. We were interested in articles that included data about the professional and personal impact of a surgical incident on staff, and the different coping mechanisms used by staff. We conducted the search in June 2016: MEDLINE in Process (Ovid) Jan 1950-Present, EMBASE (Ovid) Jan 1974-Present, CINALH 1982-Present, and PsycINFO 1967-Present. A customised data extraction form was used to capture pertinent information from included studies and the Critical Appraisal Skills Programme (CASP) tool to appraise their quality.

RESULTS: A total of 3,918 articles were identified, with 667 duplicate articles removed, and 3,251 excluded at the title (540), abstract (2,386) and full text (304) stages. Twenty-one articles (19 full text articles, 2 review articles) were included in the final review, eight of which focused on the impact of a surgical incidents on surgeons and anaesthetists. Only two articles involved theatre nurses and operating theatre team. Five key themes emerged: 1) the emotional impact on health professionals, 2) organisation culture and support, 3) individual coping strategies, 4) learning from surgical complications, 5) recommended changes to practice. Most articles reported that health professionals used different coping strategies in the aftermath of a surgical incident. Some surgeons discussed the event with their peers (more likely amongst senior surgeons), while others chose to reflect on the incident privately. Irrespective of different coping mechanisms used, informal open discussion with peers was viewed as helpful to regain self-confidence and positive thinking. Studies recommended establishing a mechanism by which deaths, serious incidents and never events were reviewed at an organisational level.

CONCLUSIONS: Health professionals can suffer emotional distress and use different coping strategies in the aftermath of a surgical incident. This review excluded studies that focused solely on the effect of malpractice claims on health professionals; these studies may have provided further insights on the emotional effects of incidents. Future research is needed to explore whether the impact of surgical complications differs amongst the wider operating theatre team.

ABNORMAL LFTS: FINDING THE NEEDLE IN THE…STACK OF NEEDLES? Andrew Schreiner[2]; William P. Moran[2]; Jingwen Zhang[1]; Justin Marsden[2]; Patrick D. Mauldin[2]. [1]MUSC, Charleston, SC; [2]Medical University of South Carolina, Charleston, SC. (Control ID #2707614)

BACKGROUND: Primary care physicians commonly encounter liver function tests in patients. The prevalence of abnormal liver function tests (LFTs) ranges from 9 to 21.7% in the general population, and the cause often remains unknown. Abnormal LFTs may indicate a wide range of pathologic processes, including cirrhosis, a leading cause of liver transplantation and death in patients with liver disease. The goal of this research is to better understand the burden of abnormal liver function tests in the primary care setting.

METHODS: We performed a retrospective analysis of patients with abnormal liver function testing in the primary care setting. We searched the electronic health record of an academic, internal medicine, patient-centered medical home (PCMH) at the Medical University of South Carolina (MUSC) over an 8 year period with patients seen by the clinic at least once, and with at least 1 abnormal liver function test element. Abnormal liver function tests were stratified by the degree to which they were abnormal and the pattern of abnormality.

RESULTS: Since 2008, the clinic provided care to 30,891 unique patients, of whom 26,907 underwent liver function testing, and 11,945 possessed at least one abnormal result. Total bilirubin values 3 times the ULN occurred in 722 patients, AST 3 times the ULN occurred in 2,177 patients, ALT 3 times the ULN in 1,399 patients, and alkaline phosphatase 3 times the ULN occurred in 362 patients. The proportion of these patients retested with similar results is shown in Table 1 (attached). Cholestatic patterns occurred in 2.9% of the test results, mixed patterns in 17.6% of the results, and hepatocellular injury patterns in 79.6% of the results.

CONCLUSIONS: Patients with abnormal liver function tests present to primary care physicians with remarkable frequency. Though most tests results fall into patterns of mild abnormality (<2 times the ULN) with a hepatocellular injury pattern, a wide array of abnormalities and patterns do appear.

Table 1: Proportion of Patients with Abnormal Liver Function Tests with Similar Results on Repeat

	Total bilirubin	AST	ALT	Alk phos
Abnormal (<2X ULN)	56.50%	63.20%	58.90%	67.40%
3X ULN	76.30%	59.90%	61.60%	69.60%
p-value	< 0.001	0.004	0.062	0.398

ACCESS TO A SCALE AND SELF-WEIGHING HABITS AMONG PUBLIC HOUSING RESIDENTS Carolyn Bramante[1]; Jeanne M. Clark[2]; Kimberly Gudzune[2]. [1]Johns Hopkins, Baltimore, MD; [2]Johns Hopkins University, Baltimore, MD. (Control ID #2702362)

BACKGROUND: Regular self-weighing is an effective weight management tool. This activity is contingent on an easily accessible scale; however, few studies examine how many people actually have regular access to a scale. Financial constraints might preclude the purchase of a scale, particularly among low-income populations that are disproportionately affected by obesity. Our objective was to determine the proportion of low-income public housing residents who have access to a scale and their self-weighing habits, as well as determine individual characteristics associated with scale access.

METHODS: We conducted a cross-sectional survey of randomly selected households in public housing developments in Baltimore, MD. We asked participants if they had “regular access to a scale where they can weigh themselves,” and to describe their self-weighing habits (“I weigh myself daily” with responses dichotomized as ‘never or hardly ever/no scale access’ versus ‘some/about half/much of the time/always’). We then used t-tests or Chi^2 tests, as appropriate, to examine the association of scale access with the following characteristics: age, gender, marital status, education, employment, food insecurity, smoking status, physical activity, diet, BMI, and health status.

RESULTS: Overall, 266 head of households participated (48% response rate). Mean age was 45 years, 86% were women, 95% were black, and 54% were obese. Only 32% reported having access to a scale; however, 78% of people who had access reported engaging in at least some self-weighing. Table 1 compares characteristics between those with and without access to a scale. Residents who had access to a scale were significantly older ($p = 0.03$) and significantly less likely to be disabled/unemployed ($p = 0.01$) or food insecure ($p < 0.01$). We found no other statistically significant associations with any other factors.

CONCLUSIONS: While only one-third of public housing residents have access to a scale, those who do have access self-weigh with some regularity. Economic status appears to be a factor influencing scale access in this population, as we found a significant inverse association with markers of low economic status. Therefore, addressing economic barriers to scale ownership may be a reasonable target for future weight management interventions in low-income populations.

Table 1. Characteristics associated with scale access

	No Scale Access (N=181)	Access to a Scale (N=85)	p-value
Demographics			
Mean age (years)	43	47	0.03
% Female	88	81	0.11
% Single	80	74	0.32
% Less than high school education	38	26	0.13
% Disabled/unemployed	77	61	0.01
% Food insecure	74	53	<0.01
Health behaviors			
% Never smoker	27	31	0.56
% Physically active	18	24	0.31
% High fruit/vegetable intake	25	26	0.94
% High added sugar intake	28	20	0.18
Health status			
Mean BMI (kg/m^2)	32	32	0.84
% Heart failure	4	5	0.92
% Hypertension	57	55	0.74
% Diabetes	21	18	0.64
% Depressive symptoms	33	27	0.36

ACCESS TO MEDICAL CARE FOR AMERICANS WITH EXCHANGE-BASED INSURANCE: EARLY EVIDENCE FROM THE NATIONAL HEALTH INTERVIEW SURVEY Ilana B. Richman[3]; Douglas K. Owens[1]; Jay Bhattacharya[4]; Steven Asch[2]. [1]VA Palo Alto/Stanford University, Stanford, CA; [2]VA/Stanford, Menlo Park, CA; [3]Yale University School of Medicine, New Haven, CT; [4]Stanford University School of Medicine, Stanford, CA. (Control ID #2706424)

BACKGROUND: In 2016, an approximate 12.7 million Americans purchased health insurance through exchanges established by the Affordable Care Act. Plans sold on the exchanges, though, have been criticized for offering excessively narrow networks, which may limit access to care. The goal of this study was to evaluate access to care for those with exchange-based coverage compared to those with employer-sponsored insurance.

METHODS: We used data from the National Health Interview Survey, an annual, nationally representative survey, during 2014 and 2015. We included adults ages 18–64 who had either an employer-sponsored plan or an individual plan purchased on an exchange. In evaluating access to care, we used logistic regression to adjust for age, sex, race/ethnicity, poverty status, employment status, health status, history of uninsurance, and survey year. Results are expressed as predicted probabilities.

RESULTS: Our analysis included 15,795 adults, of whom 2,023 had purchased insurance on an exchange. Exchange participants were older (43.6 vs 41.3 years, $p < 0.001$) and were less likely to be white (74% vs 84%, $p < 0.001$) than those with employer sponsored coverage. Those with exchange-based plans were less likely to be working (67% vs 85%, $p < 0.001$), were more likely to have a household income below 400% of the federal poverty level (74% vs 40%, $p < 0.001$), and were more likely to be in poor or fair health (10% vs 5.6%, $p < 0.001$). Those who purchased insurance on the exchanges were less likely to identify a usual source of care (79% vs 84%, $p < 0.001$) and were more likely to have had trouble finding a primary care physician (6.6% vs 3.2%, $p < 0.001$) than those with employer-sponsored coverage. Those with exchange-based coverage were also more likely to have waited for appointments (7.2% vs 5.1%, $p = 0.007$) and were more likely to have had trouble affording specialty care (6.8% vs 3.9%, $p < 0.001$). In spite of these differences, those with exchange-based coverage were not less likely to receive treatment for chronic conditions including hypertension (82% vs 83%, $p = 0.70$) and hypercholesterolemia (72% vs 76%, $p = 0.32$). Lastly, despite barriers to care, those with exchange-based coverage were more likely to report that their coverage was an improvement from the year prior (31% vs 11% $p < 0.001$), though more also reported that their coverage was worse (18% vs 11%, $p < 0.001$).
CONCLUSIONS: Although exchange-insured patients faced some barriers to care compared to those with employer-sponsored insurance, differences were small and compared favorably to previously published rates among the uninsured. Those with exchange-based coverage also received care for chronic conditions at rates similar to those with employer-sponsored insurance. Many with exchange-based insurance viewed their coverage as an improvement, likely reflecting a prior history of uninsurance or underinsurance. Tracking access to care will be even more crucial as the federal policy environment changes.

ACCESSIBILITY OF OUTPATIENT BEHAVIORAL HEALTHCARE IN ONE METROPOLITAN AREA Hannah Spellman[2]; Daniel J. Coletti[1]; Leslie Rosenberg[1]; Lauren Block[1, 2]. [1]Northwell Health, Lake Success, NY; [2]Hofstra Northwell School of Medicine, Hempstead, NY. (Control ID #2706395)

BACKGROUND: The USPSTF recommends screening for depression in primary care, provided that adequate systems are in place to ensure timely and "appropriate" follow-up. It is unclear whether adequate access exists for patients with non-emergent behavioral health needs. The objective of this project was to assess availability of outpatient behavioral healthcare within two densely populated counties in the New York metropolitan area.
METHODS: The cross-sectional survey included all community-based, hospital-affiliated, and university-affiliated outpatient behavioral health centers located in Nassau and Queens Counties in NY. Facilities were compiled from the Northwell General Internal Medicine Directory of Behavioral Health Services and service directories from the local county Department of Health. Calls were made by a single caller with a predetermined script weekdays from June through July 2016, between 10 am and 4 pm. Data collected were summarized and analyzed with descriptive statistics.
RESULTS: The inclusion criteria were met by 40 facilities. Contact was made with 93% of facilities within three calls, but only 50% of facilities on the first call. Over half of the facilities (55%) had intake appointments available within the week; however, only 20% had *treatment* appointments within the week, and only 3% offered an appointment with a prescribing provider within a week. Within one month, 53% of facilities had psychotherapy treatment appointments and 32% also had medication evaluation appointments. Two-thirds (65%) of facilities had waits of more than a month to see a prescribing provider. The availability of additional treatment services varied widely, with 68% offering a provider who spoke a language other than English. 86% of facilities accepted an assortment of public and private insurance plans, and 76% of facilities had an income-based sliding payment scale for uninsured patients.
CONCLUSIONS: The availability of intake appointments masks longer wait-times for medication management. Shorter wait times to intake may help patients with urgent needs find adequate treatment, and longer wait times to medication management may be suitable for patients with mild behavioral health problems. However, behavioral healthcare may be inadequate for patients with moderate diagnoses who will not be treated urgently, but who should not wait the length of time to an appointment. More research is needed to assess the true adequacy of behavioral healthcare for adults in our region and nationwide. Integrating additional behavioral healthcare services into primary care settings might improve access.

ACCULTURATION IS ASSOCIATED WITH DIETARY PATTERNS IN SOUTH ASIANS IN AMERICA Meghana D. Gadgil[2]; Namratha R. Kandula[1]; Alka M. Kanaya[2]. [1]Northwestern University, Chicago, IL; [2]University of California, San Francisco, San Francisco, CA. (Control ID #2699896)

BACKGROUND: Cultural beliefs and practices may affect dietary patterns in South Asians. We aimed to determine whether the strength of cultural beliefs and practices affects adherence to a particular dietary pattern in South Asians in the United States.
METHODS: We conducted a cross-sectional analysis including South Asians aged 40–84 years without known cardiovascular disease who were enrolled in a community-based cohort called Mediators of Atherosclerosis in South Asians Living in America (MASALA). A validated food frequency questionnaire, a multi-dimensional measure of traditional cultural beliefs and assessment of cultural practices were collected at baseline. We used principal component analysis with varimax rotation to determine dietary patterns, and multivariable logistic regression models for associations with cultural beliefs and practices.
RESULTS: Of the 892 participants included in our analysis, 47% were women. We identified 3 major dietary patterns, which we termed "Animal Protein," "Fried snacks, Sweets, High-fat dairy" and "Fruits, Vegetables, Nuts, Legumes." A weaker traditional cultural beliefs score was associated with higher odds of adherence to the Animal Protein dietary pattern [OR(95%CI) 1.66 (1.40, 1.97)] and lower odds of adherence to the Fried snacks, Sweets, High-fat dairy pattern [0.76 (0.64, 0.90)]. Participants who do not fast [3.34 (1.27, 8.83)], eat South Asian food in restaurants [5.56 (1.09, 28.29)], shop at South Asian grocery stores {11.91(2.26, 62.71)], eat outside of the home [0.26 (0.16, 0.42)] or who have fewer South Asian friends [5.50 {1.13, 26.63)] had higher odds of consuming the "Animal Protein" dietary pattern (all $p < 0.05$). Those who do not fast [0.25 (0.10, 0.63)] or shop at South Asian grocery stores [0.15 (0.04 .53)] were less likely to consume the "Fried Snack, Sweets and High-fat dairy" dietary pattern (all $p < 0.05$). There was no significant association of strength of cultural beliefs or practices with the Fruits, Vegetables, Nuts and Legumes pattern.
CONCLUSIONS: South Asians in the United States with stronger traditional cultural beliefs and practices were more likely to consume the Fried Snacks, Sweets and High-fat dairy dietary pattern, and less likely to consume the Animal Protein pattern. Prevention programs should consider how to modify these dietary patterns as part of comprehensive risk reduction in South Asians.

ACUTE AMBULATORY ASSESSMENT TO AVOID ADMISSION (5ALPHA): A QUALITY IMPROVEMENT STUDY Tara O'Brien[2, 1]; Robert Wu[2, 3]; Ian Stanaitis[1]; Geetha Mukerji[2, 1]; Minnie Rai[1]; Sam Sabbah[2, 3]. [1]Women's College Hospital, Toronto, ON, Canada; [2]University of Toronto, Toronto, ON, Canada; [3]University Health Network, Toronto, ON, Canada. (Control ID #2700001)

BACKGROUND: In Canada, changing patient demographics caused by aging and increased patient multimorbidity has contributed to an increased number of emergency department (ED) visits and hospitalizations. The University Health Network (UHN) in Toronto, Ontario has experienced a 6% yearly increase in ED visits and general internal medicine (GIM) hospitalizations. The goal of this quality improvement (QI) initiative is to prevent GIM referrals and inpatient admissions at UHN by providing rapid follow up to patients in a short stay medical unit staffed by a GIM physician, the Acute Ambulatory Care Unit (AACU) at Women's College Hospital (WCH).

METHODS: This was a pre-post design study, using the Model for Improvement QI framework. For UHN ED patients who required an urgent GIM consultation but were stable for discharge, we provided a follow up in the AACU within 24–48 hours of discharge. Consent was obtained from patients and data was collected prospectively. Process measures were collected including patient demographics, need for inpatient admission, and impact of AACU as perceived by the ED physician. The primary outcome was the monthly rates of GIM consults at the Toronto General Hospital (TGH) and hospitalizations at UHN. Qualitative data was collected using a patient experience survey. The investigators met monthly to review referrals and patient outcomes and PDSA cycles were used to improve the model of care delivery over time.

RESULTS: A total of 788 patients were seen in the AACU over a one-year period. The mean age of patients was 56, 52% females and 46% had 3 or more chronic medical conditions. The three most common reasons for referral were anemia (7%), hypertension (6%) and abdominal pain (6%). The rate of TGH GIM consults remained stable at a mean of 570 consults per month despite a 3.5% increase in ED visits. Similarly the number of inpatient admissions at UHN remained unchanged with a mean of 975 per month. While in the AACU, 36% of patients had medical imaging, 27% had subspecialty consultation and 24% had non-invasive cardiac testing. Additional follow up in the AACU was required in 58% of patients and 2.5% required transfer back to UHN for admission. The goal of the referral as perceived by the ED physician was to avoid admission, avoid GIM consult and provide rapid follow up in 27 37 and 63% of cases respectively. Results from the patient experience survey demonstrated that 77% of patients were extremely satisfied with their care in the AACU and 92% would recommend this experience to other patients.

CONCLUSIONS: This QI initiative successfully provided safe rapid follow up to GIM patients discharged from the ED in the AACU, resulting in perceived avoidance of GIM consult or admission and high patient satisfaction. Our cross-institutional model of care likely contributed to the flattening of inpatient admissions at UHN which had been steadily increasing. This model of care is a potential scalable solution to address the problem of hospital overcrowding.

ACUTE MYOCARDIAL INFARCTION READMISSION RISK PREDICTION MODELS: A SYSTEMATIC REVIEW OF MODEL PERFORMANCE Lauren N. Smith; Anil N. Makam; Douglas Darden; Ethan Halm; Oanh K. Nguyen. UT Southwestern Medical Center, Dallas, TX. (Control ID #2700088)

BACKGROUND: Hospitals are subject to federal financial penalties for excessive 30-day hospital readmissions for acute myocardial infarction (AMI). Prospectively identifying AMI patients at high risk for readmission could help prevent 30-day readmissions by enabling targeted interventions. However, the effectiveness of AMI readmission risk prediction models is unknown.

METHODS: We systematically searched Ovid MEDLINE, Embase, the Cochrane Library, and CINAHL databases from inception through March 2016 for studies of risk prediction models for 30-day hospital readmission among adults with AMI. Two independent reviewers abstracted data and assessed the risk of bias.

RESULTS: We identified 4532 unique titles; after full-text review, we identified 8 studies describing 9 unique risk prediction models across both academic and community hospitals. Seven studies assessed models predicting all-cause 30-day readmissions; of these, we included only the 5 studies that assessed model performance in a validation cohort in our final analysis (Table). Three studies only included patients ≥65 years old. Observed readmission rates ranged from 13.0–19.7%. Four models used administrative data, 1 used electronic health record data, and 1 used 'hospital data' not otherwise specified. Models included between 7–37 predictors; comorbidities, demographic characteristics, and utilization metrics were the most frequently included predictors. Most models ($n = 4$), including the Centers for Medicare and Medicaid Services (CMS) AMI administrative model had modest discrimination (C-statistic range 0.62-0.66). A modified version of the CMS AMI model enriched with idiosyncratic combinations of SES variables had the best discrimination (C-statistic 0.76 for both); but this was assessed among Medicare fee-for-service beneficiaries in a single state, potentially limiting generalizability. Predicted readmission rates ranged from 8% among the lowest risk individuals to 35.7% among the highest risk individuals, though these data were unavailable for 3 of 5 studies.

CONCLUSIONS: We found a limited number of validated AMI readmission risk prediction models with modest predictive ability. Future modeling strategies should assess the potential impact of including more clinically detailed data on improving model performance.

Table – Summary of Acute Myocardial Infarction-Specific Risk Prediction Models for 30-Day Readmissions

Study	Model	Setting	Validation cohort (N)	Domains of Predictors [a]	No. of predictors	Discrimination (c-statistic) [b]	Calibration [c]
Hebert et al, 2014	EHR Model	1 AMC in Ohio, USA	594	D, C, L, U, M	7	0.66	Not reported
Hilbert et al, 2014	Administrative Model	California State Inpatient Database	1,171	D, C, U, P	31	0.65	9.6-35.7% [d]
Krumholz et al, 2011	CMS Administrative Model	National Medicare data	(1) 100,285 (2) 220,803 (3) 130,944	D, C	31	(1) 0.63 (2) 0.62 (3) 0.59	(1) 8-32% (2) 8-32% (3) 13-31%
Nagasako et al, 2014	SES-Enriched CMS Administrative Model	All non-federal hospitals in Missouri	25,726	D, C, U, SES	37	0.76[e]	Not reported
	CMS Administrative Model			D, C	31	0.76[e]	Not reported
Yu et al, 2015	Hospital-specific models	3 U.S. hospitals in urban and rural settings	20-fold cross validation using 20% of each hospital cohort; N not reported	D, C, U, L, P, M	Variable by hospital site, range 11-12	0.66[f]	Not reported

Abbreviations: AMC, academic medical center; CMS, Centers of Medicare & Medicaid Services; EMR, electronic medical record; SES, socioeconomic status

[a] (D), Demographics; (SES), Socioeconomic;(C) Comorbidities; (U) Utilization; (L) laboratory results; (V) vital signs; (I) imaging; (P) procedures; (M) medications

[b] Discrimination is for predicting all-cause 30-day readmission in the validation cohort unless otherwise specified

[c] Range of mean predicted risk for all-cause 30-day readmission by decile in validation cohort unless otherwise specified

[d] Reported for nodes within a decision tree rather than for deciles

[e] Data obtained from contacting study author

[f] Reported for only hospital site #2

ADAPTING A HEALTH SYSTEM INTERVENTION FROM KAISER PERMANENTE TO IMPROVE HYPERTENSION MANAGEMENT AND CONTROL IN A LARGE NETWORK OF SAFETY NET CLINICS Valy Fontil[1, 2]; Reena Gupta[1]; Kirsten Bibbins-Domingo[1, 2]. [1]University of California San Francisco, San Francisco, CA; [2]Zuckerberg San Francisco General Hospital, San Francisco, CA. (Control ID #2703857)

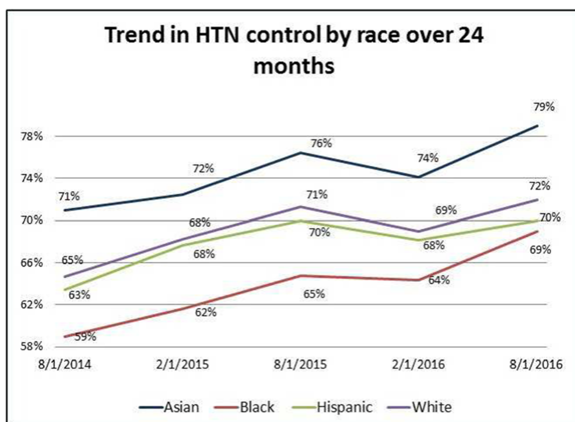
BACKGROUND: Nearly half of Americans have uncontrolled blood pressure (BP). Health system interventions that include evidence-based hypertension (HTN) treatment algorithms have successfully improved BP control in high-functioning integrated health systems such as Kaiser Permanente (KP),

but it is unclear whether these interventions can work in safety-net clinics that disproportionately care for populations at highest risk for HTN. National efforts to improve population control and to reduce disparities in HTN will require adaptation of proven interventions to safety-net settings.

METHODS: We used the precede-proceed framework to adapt KP's treatment algorithm within a multi-component health system intervention for HTM management, implement it in a network of 12 safety-net clinics in the San Francisco Health Network, and evaluate its impact on BP control. We evaluated the program's effectiveness in improving the BP control rate (proportion of patients whose BP is at the target goal) and use of recommended medications such as fixed-dose combination drugs (FDC) at 24 months post-intervention. We used linear regression analyses to assess for post-intervention trends in BP control and use of FDCs. We assessed BP control rates by race and examined trends in ACE-inhibitor monotherapy in African Americans, which is associated with lower efficacy and delays in achieving BP control.

RESULTS: At 24 months post-intervention, there was a significant trend in increasing rates of BP control (65 to 72%, $P < 0.01$). Improved BP control occurred in blacks (59 to 67%, $P < 0.01$) Whites (65 to 73%, $P < 0.01$), and Latinos (63 to 73%, $P < 0.01$). Improved BP control among Asians did not reach statistical significance (71 to 75%). Use of fixed-dose combination drugs increased from 8 to 15% ($P < 0.01$). ACE-inhibitor monotherapy among blacks trended downward but remained high (33 to 14% $P < 0.01$).

CONCLUSIONS: Adaptation of a HTN treatment intensification algorithm from Kaiser Permanente led to improved BP control at a large network of safety-net clinics. Our findings can inform best practices for health system interventions to improve BP control at safety-net clinics which must play a pivotal role in achieving improved BP control and reducing HTN disparities.



ADDICTION TREATMENT ORGANIZATIONS' ADOPTION OF ELECTRONIC HEALTH RECORDS: A NATIONAL SURVEY AT THE ONSET OF HEALTH REFORM Peter D. Friedmann[1, 2]; Donna Wilson[1, 2]; Christina Andrews[4]; Harold Pollack[3]; Thomas D'Aunno[5]; Keith Humphreys[6]. [1]UMass Medical School - Baystate, Springfield, MA; [2]Baystate Health, Springfield, MA; [3]University of Chicago, Chicago, IL; [4]University of South Carolina, Columbia, SC; [5]New York University, New York, NY; [6]Stanford University, Palo Alto, CA. (Control ID #2705630)

BACKGROUND: Electronic Health Record (EHRs) are essential technology for health care organizations to participate in health reform innovations. Addiction treatment organizations were excluded from federal initiatives to promote adoption of EHRs; their use of EHRs is uncertain.

METHODS: This analysis uses data from a 2014 survey of a national random sample of addiction treatment organizations. Directors and supervisors responded to detailed questionnaires about program structure and processes, including adoption of EHRs.

RESULTS: Of 692 responding programs, directors of 390 (weighted 55%) reported having an EHR and another 160 (weighted 24%) planned to adopt one within 2 years. Only 157 (weighted 22%) participated in Health Information Exchanges. In multinomial logistic models, correlates of having an EHR were state funding for EHR adoption (OR 3.5, 95% CI 1.2–10.6); private not-for-profit (OR 3.6, 95% CI 1.4–9.2) or public (OR 4.6, CI 1.1–19.5) compared to for-profit ownership; having accreditations (e.g. JCAHO, CARF) (OR 2.96, CI 1.4–6.5); being a new program (OR 8.3, CI 1.4–50.9); having an average caseload greater than 40 clients (versus 10; OR 10.2, CI 2.4–43.5); and reporting more perceived barriers to an EHR (OR 0.81, CI 0.72–0.92). Planning for EHR adoption within 2 years was correlated with increasing perceived competition (OR 2.5, 95% CI 1.1–5.6). State implementation of the Affordable Care Act did not influence EHR adoption.

CONCLUSIONS: Only 55% of addiction treatment programs had an EHR at the advent of health reform. Another 24% planned to adopt with 2 years. State funding, non-profit or public ownership, larger caseload, and fewer perceived barriers appeared to be related to EHR adoption. Fewer than one-quarter participate in Health Information Exchanges. These technological limitations may constrain addiction treatment organizations ability to participate in innovations and modernization resulting from health reform.

ADDRESSING COMPLEX PATIENTS' PSYCHOSOCIAL PRIORITIES DURING TIME-LIMITED PRIMARY CARE VISITS

Eilann C. Santo[1]; Michelle T. Vo[2]; Richard W. Grant[2]. [1]Kaiser Permanente Northern California, San Francisco, CA; [2]Kaiser Permanente Northern California, Oakland, CA. (Control ID #2706484)

BACKGROUND: Providing patient-centered primary care during time-limited visits is challenging. Complex patients in primary care often present with both medical and psychosocial concerns. Given the important impact of psychosocial issues on medical management, addressing patients' psychosocial concerns is essential to providing effective, patient-centered clinical care. As part of an ongoing multi-site, randomized trial examining patient priorities, we had the unique opportunity to examine how patient self-identified psychosocial vs medical visit priorities were addressed by their primary care physicians.

METHODS: Patients identified their top 1 or 2 visit priorities in the waiting room prior to a primary care visit as part of the Aligning Patient and Provider Priorities clinical trial (ClinicalTrials.Gov NCT02707146). We categorized patient visit priorities as either psychosocial (e.g. depression, anxiety, substance use, stress, or personal safety) or medically related. We performed a structured chart review of visit progress notes, after-visit summaries, and follow up secure email messages to determine whether the provider addressed the patient's visit priority. Evidence that the priority was addressed was based on documentation in progress note, change to problem list, prescription of diagnostic or therapeutic interventions, referral to specialist, or communication about the problem through after visit summary or secure messages. We used Fisher's exact tests to compare provider action for psychosocial vs. medically related patient priorities.

RESULTS: Patients in our cohort ($n = 103$) had a mean age of 62 (SD 12) years; 69.9% were female, 43.0% were African American, and 53.4% had a history of a mental health disorder. Nearly one quarter of patients (18.6%)

reported a psychosocial concern as one of their top two priorities for their primary care visit. Overall, patients listed 137 unique priorities (1.3/patient). Psychosocial priorities were less likely to be addressed during the visit compared to medically related priorities (62.5% vs 91.2% $p = 0.001$). Similarly, psychosocial priorities were less likely to receive clinical action or follow up (50.0% vs 86.7%, $p < 0.0002$) or post-visit information from a primary care doctor than medically related health priorities (12.5% vs 33.6%, $p = 0.05$).
CONCLUSIONS: Our findings suggest that patient psychosocial priorities are less likely to be addressed by primary care physicians than medically related priorities. To provide truly patient-centered primary care for patients with complex disease, physicians should be sure to acknowledge patients' psychosocial concerns and provide the same guidance and follow up as medically related problems.

ADDRESSING THE SOCIAL NEEDS OF HYPERTENSIVE PATIENTS: THE ROLE OF PATIENT-PHYSICIAN COMMUNICATION AS A PREDICTOR OF MEDICATION ADHERENCE Antoinette Schoenthaler[1]; George Knafl[2]; Kevin Fiscella[3]; Gbenga Ogedegbe[1]. [1]NYU School of Medicine, New York, NY; [2]UNC Chapel Hill, Chapel Hill, NC; [3]University of Rochester School of Medicine & Dentistry and Wilmot Cancer Center, Rochester, NY. (Control ID #2701644)

BACKGROUND: Poor medication adherence is a significant public health problem in patients with hypertension. The patient-physician relationship offers an ideal opportunity to address patient non-adherence as physicians' communication skills contribute to as much as 50% of the quality of care patients' receive. Despite this evidence, there is no empirical data on how the informational and relational aspects of patient-physician communication affect patient's actual medication-taking behaviors. The aim of this study was to evaluate the impact of patient-physician communication on medication adherence among a sample of primary care physicians and their Black and White hypertensive patients.
METHODS: Cohort study of 92 hypertensive patients (mean age: 60 years) and 27 primary care physicians (mean age: 36 years) in two safety-net primary care practices in New York City. Patient-physician encounters were audiotaped at baseline; medication adherence data were gathered continuously over the 3-month study with an electronic monitoring device. Audiotape analyses of patient-physician communication were coded using the Medical Interaction Process System. Six categories of communication were computed: 1) patient centeredness; 2) patient assertiveness; 3) psychosocial focus; 4) information exchange; 5) physician disclosure-promoting; and 6) physician verbal dominance. Frequencies of content codes were also calculated for the proportion of the discussion specific to: hypertension; antihypertensive medications; patient-physician social conversation; and discussions about patient's social circumstances (i.e., patient's living situation, relationship with spouse/partner). Adaptive statistical modeling methods based on likelihood cross validation were used to analyze the adherence data.
RESULTS: The majority of patients were Black, 58% women, and most were seeing the same physician for at least 1 year. Approximately half of physicians were White (56%), 67% women, and have been in practice for 6 years. Fifty-eight percent of patients exhibited poor adherence to prescribed antihypertensive medications. Two categories of patient-physician communication predicted poor medication adherence in the multivariate adaptive logistic regression model: fewer discussions about patients' social circumstances (OR: 6.03, 95CI:2.15-17) and about their antihypertensive medications (OR: 5.64, 95CI:1.49-21.3).
CONCLUSIONS: The odds of poor medication adherence are nearly six times greater when patient-physician interactions do not address patients' social circumstances or their medication regimen. These findings support the importance of adherence counseling and attending to the social determinants of health in routine care of low-income patients in ambulatory practices.

ADOLESCENTS AND ADULTS WITH DOWN SYNDROME RARELY RECEIVE AGE-, GENDER-, AND SYNDROME-SPECIFIC PREVENTIVE HEALTHCARE Kristin M. Jensen[1, 2]; Elizabeth J. Campagna[2]; Elizabeth Juarez-Colunga[2, 2]; Desmond K. Runyan[2]; Allan V. Prochazka[1]. [1]University of Colorado School of Medicine, Aurora, CO; [2]University of Colorado, Aurora, CO. (Control ID #2705315)

BACKGROUND: Down syndrome (DS) has known preventive healthcare recommendations that require lifelong supervision. Given the increasing life expectancy of persons with DS into their 50s, they now face age- and gender-specific health conditions in addition to their DS-specific comorbidities. However, their medical care is increasingly provided by PCPs less familiar with the special health risks of DS. In this retrospective study, we evaluate adherence to DS- and age/gender-specific preventive recommendations among adolescents and adults with DS.
METHODS: Using Medicaid claims data (2006–2010) in CA, CO, MI, and PA, we defined our cohort as DS patients ≥12yo who were enrolled in Medicaid for ≥45/60mo without concurrent Medicare. Providers were considered PCPs if they billed ≥10 well exams in a year. Patients without a PCP were excluded ($n = 450$) for a total of 3501 patients. PCPs with ≥80% of their well-examinations billed as well-child or well-adult examinations were categorized as child- or adult-focused, respectively. The remaining PCPs were classified as mixed-focus. Age-appropriate PCPs are defined as having a focus consistent with a patient's age: 12–17yo = child-focused, ≥26 = adult-focused; 18–25yo are in transition and can be appropriately seen by any PCP. Levels of adherence to DS- and age/gender-specific preventive screening activities were classified as good (≥80%), moderate (50– <80%), and poor (<50%). Differences in adherence were evaluated using Pearson's chi-squared tests.
RESULTS: Our cohort was 52% male, with 21% adolescent (12-17yo), 32% transition age (18-25yo), and 47% adult (≥26 yo). 52% of the cohort (40% of adults) received primary care from child-focused PCPs, with the remaining split equally between adult- and mixed-focus PCPs. Less than half of our cohort had ≥1 well examination during the study (44% of those with an age-appropriate PCP vs. 37% of those without an age-appropriate PCP, $p < 0.001$). Influenza vaccination rates were similarly low (age-appropriate PCP 33%; age-inappropriate PCP 38%, $p = 0.003$). Most preventive healthcare recommendations had poor adherence (<50%) regardless of whether they were DS- or age/gender-specific: well examinations; vaccinations; breast, cervical, and colon cancer screenings; sleep apnea; and hearing. Lipids, vision, prostate cancer, and thyroid screenings met moderate adherence (50– < 80%). Echocardiograms to screen for acquired valve disease were highly utilized in patients with preexisting congenital heart disease (89%) but less so in those without congenital heart disease (22%, $p < 0.001$)
CONCLUSIONS: Adherence to age/gender- and DS-specific preventive healthcare recommendations was low during this 5 yr study in adolescents and adults with DS, regardless of patient age or PCP focus. Given the medical complexity of this otherwise vulnerable population, this represents a significant opportunity to improve primary care for persons with DS to decrease morbidity and improve overall health.

ADVANCED CARE PLANNING AT AN ACADEMIC PRIMARY CARE CLINIC Carlene P. Partow; Omar Mesina; Leslie Sheu; Brent Kobashi. University of California, San Francisco, San Francisco, CA. (Control ID #2692158)

BACKGROUND: Advanced care planning (ACP) is becoming increasingly important in a primary care setting due to the growing aging population. Despite this, recent studies show that conversations around ACP between patients and their providers are low, as low as 30% even among terminally ill cancer patients.[1] Providers and clinic leaders are turning to completion of Advanced Directive (AD) and, in some cases, Physician Orders for Life-Sustaining Treatment (POLST) forms as objectives measures of physician ACP conversations. Little is known about ACP practices in academic primary care settings where patients with complex medical issues often receive care.
METHODS: We sought to understand current local practice of AD and POLST form completion at our urban academic primary care clinic at the University of California, San Francisco, and explored physician barriers to having these conversations. We extracted patient data from our clinic's electronic health record to determine AD and POLST completion rates. Concurrently, we administered an anonymous 13-question electronic survey to physicians, residents, medical students and nurse practitioners. The survey was designed to: 1) assess provider comfort conducting ACP conversations, 2) identify the greatest barriers to ACP, and 3) gain feedback on interventions to increase rates of AD and POLST completion. In addition, we collected qualitative data through provider focus groups.
RESULTS: As of October 7, 2016, 2,578 out of 23,216 (11%) of patients have ADs completed and only 618 (3%) have POLSTs completed. Among patients 60 years of age and older, 19% had an AD and 6% had a POLST. Fifty-nine of the 77 (77%) providers completed the survey. Thirty-four of the 59 providers (58%) did not believe AD/POLST completion rates were satisfactory and 41% were unsure. Fifty-seven (97%) providers identified time as the greatest barrier to ACP. Additional barriers included logistical uncertainty with AD form completion (29%) and concern with patient discomfort (24%). Provider focus groups confirmed that time was the most important barrier and provider discomfort was a greater factor for residents.
CONCLUSIONS: Completion of AD and POLST forms are crucial for successful ACP, but completion rates in our academic primary care setting remains low. Our provider surveys and focus groups suggest there are opportunities for improving completion rates and establishing best practices for introducing ACP to patients. As next steps, we plan to provide both patients over the age of 60 and their providers with AD and POLST forms during appointment check-in to encourage patients and providers to discuss ACP during their visit. Additionally, flyers will be placed in exam rooms to remind both patients and physicians to complete AD and POLSTs. We hope this intervention will serve as a model for improving the rate of ACP in an outpatient setting. [1] Temel, J.S., Greer, J.A., Admane, S. et al. J GEN INTERN MED (2010) 25: 150. doi:10.1007/s11606-009-1161-z

ADVERSE CHILDHOOD EXPERIENCES IN ADDICTION MEDICINE PATIENTS RECEIVING BUPRENORPHINE THERAPY

Kristin Rodriguez; Scott Davis; Zach Ferguson; Krishna Suthar; Martina Jelley. University of Oklahoma School of Community Medicine, Tulsa, OK. (Control ID #2706820)

BACKGROUND: It is well established that adults with a significant history of adverse childhood experiences (ACEs) are more likely than their non ACE-affected counterparts to experience poor health outcomes. In a prior study conducted at the University of Oklahoma School of Community Medicine (OUSCM) in 2012, a team of ACE researchers gathered data on 354 patients in Internal Medicine, Family Medicine, and Community Health that indicated the prevalence of ACEs was higher (0–1 ACE, 35.5%; 2–3 ACEs, 27.3%; 4 or more ACEs, 37.2%) than the cohort examined in the original CDC ACE study (0–1 ACE, 62.1%; 2–3 ACEs, 25.4%; 4 or more ACEs, 12.5%). Data from that original ACE study also indicate that individuals with exposure to 4 or more ACEs have a 7- to 10-fold increased risk for drug abuse and addiction compared to their non ACE-affected peers. Data from the OUSCM study indicated a mean ACE score associated with any substance abuse in our patient population of 3.62. Having experienced traumatic events has been acknowledged as a significant risk factor for substance abuse. To our knowledge, there is no available literature examining the prevalence of ACEs in patients treated for substance use disorder with buprenorphine.
METHODS: We conducted a survey of current adult patients in the OU addiction medicine practice to determine the prevalence of ACEs in patients treated for substance use disorder with buprenorphine. Patients were approached to complete the self-administered survey during a regular clinic visit with their addiction medicine physician. The survey included demographics, ten ACE screening questions, and information about the patient's substance use history.
RESULTS: Forty-eight patients completed the survey. Analysis indicated that 20.8% of these patients had experienced 0–1 ACE, 20.8% 2–3 ACEs, and 58.3% had 4 or more ACEs. The prevalence of 4 or more ACEs in this sample of patients is much higher than than our primary care population (37.2%) or CDC (12.5%) samples. The mean ACE score was 4.52. Patients in this sample reported high levels of several of the ACE categories: emotional abuse (52.1%), emotional neglect (47.9%), parental divorce (71.1%), household alcohol or drug abuse (78.7%), household mental illness (47.9%), and family member incarceration (29.2%).
CONCLUSIONS: We found that the prevalence of ACEs in a sample of patients treated for substance use disorder with buprenorphine is considerably higher than in the general population and in our primary care patients. Screening for ACEs in this population and investigating treatment approaches that include ACE awareness deserves further study, as this may improve success rates of medication assisted addiction treatment.

AGE, GENDER AND RACIAL DIFFERENCES IN THE ASSOCIATION BETWEEN TIME-VARYING DEPRESSIVE SYMPTOMS AND MORTALITY

Kelsey Bryant[2]; Deanna Jannat-Khah[5]; Yulia Khodneva[6]; Jessica R. Singer[4]; Monika M. Safford[3]; Nathalie Moise[1]. [1]Columbia University Medical Center, New York, NY; [2]Columbia University Medical Center, New York Prebyterian, New York, NY; [3]Weill Cornell Medical College, New York, NY; [4]New York Presbyterian Hospital - Columbia University Medical Center, New York, NY; [5]Weill Cornell Medical School, New York, NY; [6]University of Alabama, Birmingham, AL. (Control ID #2706480)

BACKGROUND: Depressive symptoms relapse and remit, and the timing of the relationship between depressive symptoms and mortality remains poorly elucidated. We recently demonstrated that time-varying depressive symptoms may be associated with all-cause and noncardiovascular (CVD) disease mortality, suggesting a proximal association. Here, we aim to identify whether age, gender, and race modify the association between time-varying depressive symptoms and mortality.
METHODS: Reasons for Geographic and Racial Differences in Stroke (REGARDS) is a prospective cohort study of black and white individuals (≥45 years) without a history of CVD or active cancer recruited between 2003 and 2007. The associations between time-varying depressive symptoms (CES-D ≥4 vs. <4) and all-cause and nonCVD mortality were measured using Cox

proportional hazard regression analyses adjusting for demographic (age, gender, region, income, health insurance, education), medical (blood pressure, cholesterol, antihypertensives, statins, aspirin, antidepressants, cardiovascular disease, body mass index, diabetes, renal disease, pulmonary disease and cognitive impairment), behavioral (smoking, alcohol use, physical inactivity, medication adherence), and physiologic (C-reactive protein, functional status, and stress) risk factors. *P*-values for interaction terms were reported. All results were stratified by self-reported health status to isolate the effect of depressive symptoms on mortality.

RESULTS: Of the 29491 participants included in the analysis, 3253 (11%) had elevated depressive symptoms at baseline. The mean age was 65 (9.4) years; 55.1% were female; 41.1% black, 46.4% reported excellent/very good health. Depressive symptoms were measured at baseline and on average 5 and 7 years later. In those with excellent/very good self-reported health, time varying depressive symptoms were significantly related to: all cause mortality, particularly in those 45–65 years (vs. ≥65 years) (aHR = 1.56 [1.01-2.42] vs. aHR = 1.48 [1.21–1.81], $p = 0.018$) and nonCVD mortality, particularly in males (vs. females) (aHR = 1.72 [1.28–2.31] vs. aHR = 1.44 [1.04–2.00], $p = 0.006$) and blacks (vs. whites) (aHR = 1.80 [1.28–2.54] vs. aHR = 1.47 [1.10–1.96], $p = 0.025$).

CONCLUSIONS: In this large cohort of non-institutionalized adults with excellent/very good self-reported health status, we demonstrate that depressive symptoms appear to be associated with an increased proximal risk of mortality, particularly in those 45–65 years old, blacks, and males. In light of recent increases in mortality rates amongst middle-aged males, our study lends further support to calls for improved diagnosis and treatment in these high-risk groups who often fail to come into contact with healthcare providers.

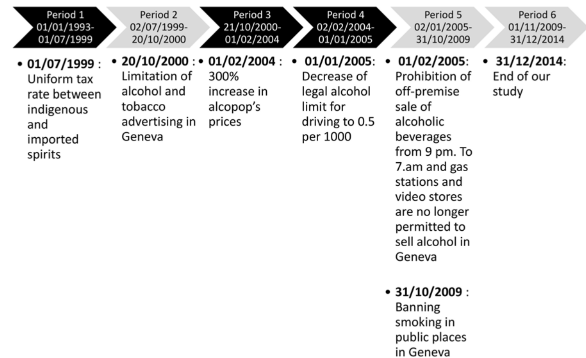
ALCOHOL POLICY CHANGES AND 22-YEAR TRENDS IN INDIVIDUAL ALCOHOL CONSUMPTION IN A SWISS ADULT POPULATION: A 1993–2014 CROSS-SECTIONAL POPULATION-BASED STUDY Shireen Dumont[1]; Pedro Marquez-Vidal[4]; Thierry Favrod-Coune[1]; Jean-Marc Theler[1]; Jean-Michel T. Gaspoz[2]; Barbara Broers[1]; Idris Guessous[1, 3]. [1]Geneva University Hospitals, Geneva 14, Switzerland; [2]University Hospitals, Geneva 14, Switzerland; [3]University of Lausanne, Lausanne, Switzerland; [4]University Hospital of Lausanne, Lausanne, Switzerland. (Control ID #2704839)

BACKGROUND: Evidence on the impact of legislative changes on individual alcohol consumption is limited. We assessed trends in individual alcohol consumption of a Swiss adult population following the public policy changes that took place between 1993 and 2014, while considering individual characteristics and secular trends.

METHODS: We used data from the "Bus Santé" study, an annual health survey conducted in random samples of the adult population in the State of Geneva, Switzerland. Individual alcohol intake was assessed using a validated food frequency questionnaire. Individual characteristics including education were self-reported. Seven policy changes (six about alcohol and one about tobacco) that occurred between 1993 and 2014 defined 6 different periods. We predicted alcohol intake using quantile regression with multivariate analysis for each period adjusting for participants' characteristics and tested significance periods. Sensitivity analysis was performed including drinkers only, the 10th percentile of highest drinkers and smoker's status.

RESULTS: Data from 18,963 participants collected between 1993 and 2014 (aged 18–75 years) were included. Between 1993 and 2014, participants' individual alcohol intake decreased from 7.1 to 5.4 g/day (24% reduction, $p < 0.001$). Men decreased their alcohol intake by 34% compared to 22% for women ($p < 0.001$). The decrease in alcohol intake remained significant when considering drinkers only (28% decrease, $p < 0.001$) and the 10th percentile highest drinkers (24% decrease, $p < 0.001$). Consumption of all alcoholic beverages decreased between 1993 and 2014 except for the moderate consumption of beer, which increased. After adjustment for participants' characteristics and secular trends, no independent association between alcohol legislative changes and individual alcohol intake was found.

CONCLUSIONS: Between 1993 and 2014, alcohol consumption decreased in the Swiss adult population independently of policy changes.



Study period divided in 6 periods according to policy changes between 1993–2014

ALGORITHMS FOR MANAGING CONCERNING BEHAVIORS IN PATIENTS PRESCRIBED OPIOIDS FOR CHRONIC PAIN: A DELPHI STUDY Jessica S. Merlin[4]; Sarah Young[8]; Joanna L. Starrels[1]; Soraya Azari[5]; E. J. Edelman[7]; Jamie Pomeranz[9]; Payel J. Roy[2]; William Becker[6]; Jane M. Liebschutz[3]. [1]Albert Einstein College of Medicine & Montefiore Medical Center, Bronx, NY; [2]Boston University Medical Center, Boston, MA; [3]General Internal Medicine, Boston Medical Center, Boston University School of Medicine., Boston, MA; [4]University of Alabama at Birmingham, Birmingham, AL; [5]University of California, San Francisco, San Francisco, CA; [6]VA Connecticut Healthcare System, West Haven, CT; [7]Yale University School of Medicine, New Haven, CT; [8]SUNY Binghamton, Binghamton, NY; [9]University of Florida, Gainesville, FL. (Control ID #2700506)

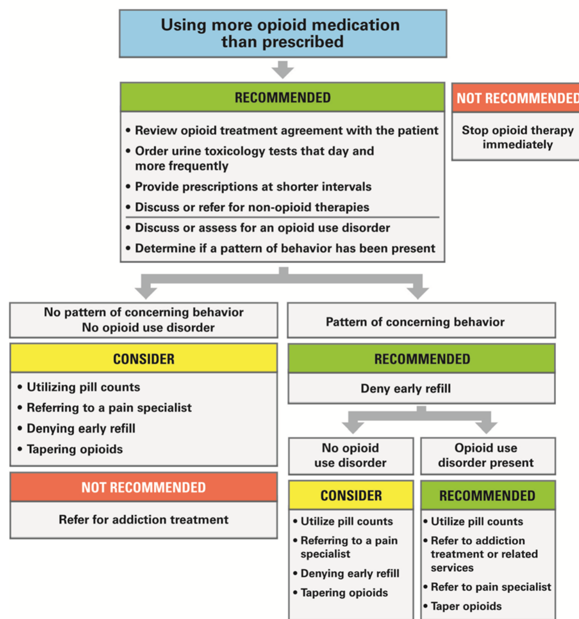
BACKGROUND: Opioid prescribing and addiction have increased dramatically in the last decade. Current guidelines recommend careful monitoring of patients prescribed long-term opioid therapy (LTOT) for chronic pain, and will likely lead to increased identification of concerning behaviors. Minimal research informs strategies to manage these behaviors, which pose an important management challenge and potential source of burnout for primary care providers. Our objective was to establish consensus treatment approaches for common and challenging concerning behaviors that arise among patients on LTOT.

METHODS: We used a Delphi approach, which allows for generation of consensus by a panel of experts. Participants were experts in chronic pain and opioid prescribing recruited from professional societies and other expert groups. The Delphi process consisted of four online rounds: brainstorming to identify common and challenging behaviors, identification of management strategies for each behavior, and two rounds to establish consensus and explore disagreement/uncertainty.

RESULTS: The most frequently-cited common and challenging behaviors were missing appointments, taking opioids for symptoms other than pain, using more opioid medication than prescribed, asking for an increase in opioid dose, aggressive behavior, and alcohol and other substance use. Results are

synthesized in 7 management algorithms (see Figure for example). Across algorithms, participants agreed that patient education and information gathering were important approaches. Participants also agreed that stopping opioids is not an important intiial approach to these behaviors.

CONCLUSIONS: These algorithms provide much-needed guidance on how to manage several important concerning behaviors among patients on LTOT. Future research is needed to investigate the impact of the algorithms on patient outcomes. The long-term goal of this program of research is to provide primary care providers with a decision-support algorithm to manage concerning behaviors in patients on LTOT.



AMBULATORY CARE-SENSITIVE EMERGENCY VISITS AMONG PATIENTS WITH MEDICAL HOME ACCESS Dina H. Griauzde; Laurence F. McMahon; Linda M. Balogh; Floyd J. Brinley; John Crump; Mark Ealovega; Audrey Fan; Yeong Kwok; Kristen Krieger; Thomas O'Connor; Elisa Ostafin; Heidi Reichert; Jennifer Meddings. University of Michigan, Ann Arbor, MI. (Control ID #2698154)

BACKGROUND: Ambulatory care-sensitive conditions (ACSCs) are a group of acute and chronic conditions for which early and effective management in the primary care setting may prevent an Emergency Department (ED) encounter. Among insurers, ambulatory care-sensitive ED encounters are used as a quality metric to guide payment. Accordingly, the Patient Centered Medical Home (PCHM) model aims to reduce ambulatory care-sensitive ED encounters through strategies such as extended clinic hours, yet it is unknown whether patients attempt to access their medical home prior to ED presentation. Further, certain symptoms may not be appropriate for management in the primary care setting (e.g. chest pain), even if they are ultimately attributed to an ambulatory-sensitive condition (e.g. gastroesophageal reflux). This study aims to (1) characterize patterns of ED utilization for ACSCs among patients with established primary care within a General Medicine medical home and (2) to describe the appropriateness of the care location (e.g. ED vs. primary care clinic).

METHODS: We conducted a retrospective chart review using our institution's Electronic Health Record of ambulatory care-sensitive ED encounters that occurred between January 1, 2014 and December 31, 2014 among patients of a General Medicine medical home. Ten General Medicine physicians reviewed a random sample ($n = 263$) of these encounters and abstracted from the medical record the day and time of ED presentation and the source of ED referral (e.g. patient self-referral vs. physician referral). Physicians also assessed the appropriateness of the care location (e.g. Emergency Department vs. primary care). Inter-rater reliability was assessed using the kappa statistic.

RESULTS: Compared to all other days of the week, the fewest number of ED visits occurred on weekend days, and nearly half of patients (47 percent) with ACSCs presented to the ED after business hours (8 am to 3:59 pm). Most patients (83 percent) were self-referred to the ED. Among the 119 cases considered appropriate for management by General Medicine, almost all (95 percent) of these patients were self-referred to the ED. The ED was considered the most appropriate care location for over half (54 percent) of the reviewed encounters.

CONCLUSIONS: Patients diagnosed with ambulatory care-sensitive conditions often present to the ED without contacting their medical home. Frequently, the ED is indeed the most appropriate location to manage the patient's presenting condition.

AMBULATORY VISIT INTENSITY FOR PATIENTS WITH TYPE 2 DIABETES: A REPORT FROM THE HIGH VALUE HEALTHCARE COLLABORATIVE Brooke Herndon. Dartmouth-HItchcock, Lebanon, NH. (Control ID #2708887)

BACKGROUND: In the setting of high and rising prevalence of type 2 diabetes among US adults, guideliens for clinical interventions and quality targets abound. Yet, how to organize medical care to efficienty achieve these best practices is not clear. Visit frequency yielding the greatest value for both individual patients and society remains especially uncertain. We sought to determin whether poor glucose control is associated with more frequent ambulatory visits among adult patients with type 2 diabetes who are medically homed at High Value Healthcare Collaborative (HVHC) member organizations.

METHODS: We conducted a retrospective cohort study of patients 18 years and older with type 2 diabetes who received at least 12 months of ambulatory care at organizations that were members of the High Value Healthcare Collaborative between February 2013 and February 2015. HVHC is a voluntary association of 14 non-profit US health care organizations with a common goal of improving quality while reducing costs. Our primary exposure is the patient HbA1c value at the start of a qualifying 12 month observation period. Our main outcome measure is the mean number of ambulatory visits with primary care or endocriniology clinicians per person in the 12 months following index HbA1c, and our secondary outcome measure is the proportion of those visits provided by an endocrinology specialist. We adjusted for age, sex, race, ethnicity, and poverty status.

RESULTS: We examined visit frequency for 103,220 patients from nine system-specific cohorts ranging in size from 693 to 30,973 patients. Race, ethnicity, sex, poverty status, and index HbA1c value varied substantially across sites. In unadjusted analyses, the overall mean ambulatory visit rate was 4.6 visits per year and ranged from 2.0 to 5.4 visits per year across member organizations. The proportion of annual visits with an endocrinology specialist was 3.7% overall and ranged from 0.3 to 11.4%. The association between index HbA1c value and annual visit rate was very modest ranging from 4.5 for patients with an index HbA1c less than 7.0 to 4.8 for those with an index HbA1c value of 9 or greater.

CONCLUSIONS: Mean ambulatory visit frequency varied across HVHC organizatons but only correlated meaningfully with index HbA1c value at 2 sites. In contrast, the proportion of visits delivered by endocrinology specialists was low across sites but did increase with higher index HbA1c values across all sites studies

AN ANALYSIS OF STUDENTS' REFLECTIVE WRITING PROVIDES A WINDOW INTO PROFESSIONAL IDENTITY FORMATION, RESILIENCE, AND BURNOUT PROTECTION IN THE DENVER HEALTH LONGITUDINAL INTEGRATED CLERKSHIP (DH-LIC)

Michelle Cleeves[2]; Mim Ari[3]; jennifer gong[4]; Jennifer Adams[1]. [1]Denver Health, Denver, CO; [2]Denver Health and Hospital Authority, Denver, CO; [3]Cook County, Chicago, IL; [4]University of Colorado School of Medicine, Aurora, CO. (Control ID #2706503)

BACKGROUND: Burnout, prevalent among practicing physicians, is also found in U.S. medical students. Undergraduate medical educators are therefore ideally placed to address burnout during the clinical years when professional identity begins to take shape. Students in longitudinal integrated clerkships (LICs) complete core clerkships longitudinally working with core faculty preceptors. LIC students finish 3rd year with more positive attitudes about their clerkships, stronger patient-centeredness, and more confidence in their patient care abilities compared to traditional 3rd year students. In the DH-LIC, students learn exclusively in Denver's only safety-net hospital system, providing care for the underserved for the duration of their 3rd year. The DH-LIC curriculum incorporates reflective exercises designed to help students process their experiences in this setting. Through qualitative analysis, these reflections provide insight into students' professional identity formation, resiliency, and strategies protecting against burnout.

METHODS: DH-LIC students completed reflective writing exercises followed by facilitated small group discussions throughout 3rd year. Topic included: social determinants of health, boundary setting with patients, and closure with patients. The authors analyzed 2 years of essays ($n = 45$ essays, 15 students). Through an iterative process we identified themes, then independently coded to find agreement among coders on consistent themes within and across essays. We then totaled the percentage of students reflecting on each theme.

RESULTS: Reflections were firmly rooted in understanding the system of disadvantage constraining patient care (100% of students recognized the impact of patient disadvantage & 87.7% healthcare system failure on patients' health) and a commitment to treat patients as people (60% demonstrated sympathy & empathy for patients and 73% humility when learning from patients). Reflections also revealed behaviors & attitudes that demonstrated efficacy & self-monitoring. Common themes included: advocating for & engaging with patients (86.67%), understanding provider vulnerability & learning to set professional boundaries (73%), valuing continuity with patients (60%), & feeling valued by patients & preceptors (60%). More than 60% of students identified these behaviors & attitudes as key to their role and identity as physicians. Students identified the LIC structure (100%) and positive & negative role models (73%) as contributing to these experiences.

CONCLUSIONS: Through the course of the LIC year, students demonstrate a developing sense of professional identity consonant with that needed to provide compassionate care to the underserved. Analysis of the reflective essays acted as a window into the themes gleaned from the students' experience. Student reflections demonstrated self-efficacy, identification of and commitment to key values, and resilience in the face of challenges.

AN E-LEARNING MODULE ON CHRONIC LOW BACK PAIN IN OLDER ADULTS: EFFECT ON MEDICAL RESIDENT ATTITUDES, CONFIDENCE, KNOWLEDGE, AND PRACTICE PATTERNS

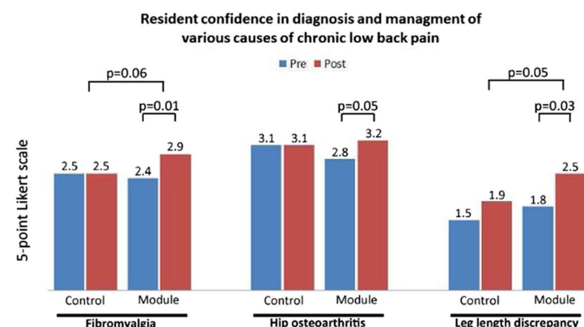
Zachary G. Jacobs[2]; Michael Elnicki[1]; Subashan Perera[2]; Debra K. Weiner[2]. [1]University of Pittsburgh, Pittsburgh, PA; [2]University of Pittsburgh Medical Center, Pittsburgh, PA. (Control ID #2672639)

BACKGROUND: Chronic low back pain (CLBP) negatively impacts the lives of millions of Americans each year, posing an enormous financial burden; this is in large part due to an inadequacy of chronic pain education. The goal of this study is to investigate the feasibility of using an online module to teach medical residents about CLBP in older adults, and to determine its impact on their attitudes, confidence, knowledge, and ability to evaluate and manage CLBP in the clinic.

METHODS: All categorical internal medicine residents at the University of Pittsburgh Medical Center from 2015–2016 were assigned to intervention ($N = 73$) or control groups ($N = 70$) based on clinic schedule. The intervention group was instructed to complete an online, self-guided module previously developed by a panel of experts. The control group was exposed instead to the Yale "Office-Based Medicine Curriculum" on CLBP. Knowledge, attitudes and confidence were assessed pre- and post-intervention. Knowledge was assessed with 1) the *KnowPain-12 survey* (a validated, 12-item questionnaire), and 2) ten multiple choice CLBP-specific questions written by pain specialists. A reviewer masked to group assignment conducted a retrospective review of resident clinic encounters, rating physical exams and diagnoses as either beginner or advanced based on terms used in documentation.

RESULTS: Survey results from pre- ($N = 44$) and post-intervention ($N = 42$) showed no improvement on the 10-item multiple choice test or the KnowPain-12 survey in either group (60% average on both metrics). There were tendencies for greater improvements in the intervention group compared to controls in confidence in managing fibromyalgia (2.4 to 2.9 vs 2.5 to 2.5; $p = 0.06$) and leg length discrepancy (1.8 to 2.5 vs 1.5 to 1.9; $p = 0.05$). Those exposed to the module were also more likely to use more advanced diagnosis codes (15% vs 5%) and physical exam documentation (62% vs 45%) compared to controls.

CONCLUSIONS: This study demonstrates the use of an online module is a feasible method for teaching medical residents about CLBP. One of the most startling findings is the paucity of knowledge amongst participants. These data highlight the importance of developing effective methods for educating clinicians about chronic pain. While the module did not lead to greater overall improvements on knowledge tests, it did lead to improved resident confidence, and greater sophistication in evaluating patients with CLBP.



AN ELECTRONIC HEALTH RECORD-ENABLED (EHR) UNIVERSAL MEDICATION SCHEDULE TO PROMOTE ADHERENCE: A PRAGMATIC TRIAL Guisselle del Salto[1]; Deesha Patel[1]; Laura M. Curtis[1]; Ruth Parker[3]; Fred Rachman[4]; Sarah S. Rittner[4]; Elizabeth Adetoro[4]; Andrew Hamilton[4]; Michael S. Taitel[2]; Jenny Jiang[2]; Amisha Wallia[1]; Michael S. Wolf[1]. [1]Northwestern University, Chicago, IL; [2]Walgreens Co, Deerfield, IL; [3]Emory University, Atlanta, GA; [4]Alliance of Chicago Community Health Services, Chicago, IL. (Control ID #2705084)

BACKGROUND: Many patients misunderstand prescription medication (Rx) instructions, and this has been repeatedly linked to medication errors, adverse drug events and poor adherence. Patients with limited literacy and English proficiency, and those with more complicated drug regimens, are especially at risk of unintentional misuse. We collaborated with federally qualified health centers and a national pharmacy chain to impart a health literacy 'best practice' - the Universal Medication Schedule (UMS) - via EHR and mobile technologies to better convey dosing instructions and help organize multi-drug regimens among type 2 diabetic patients.
METHODS: We randomized 59 providers from 11 practices to usual care or one of two intervention arms: 1. UMS Arm: Leveraging the GE Centricity EHR platform, patients received 1) UMS Rx instructions that guided patients to take all of their medication at 4 standard time intervals (morning, noon, evening, bedtime); 2) a single-page, plain language medication information sheet in English and Spanish that was designed following health literacy best practices was generated with an After Visit Summary (AVS) once ordered; and 3) A complete list of patients' current medications mapped to UMS intervals was automatically generated with the AVS to help patients consolidate their entire regimen to the 4 standard daily intervals. 2. UMS + SMS: Patients also were exposed to the UMS tools at the point of care, but also received SMS text reminders about when to take medicines based on UMS intervals. 452 English and Spanish-speaking type 2 diabetic patients who were prescribed 3+ medications for chronic conditions and could receive text messages were assessed by phone at baseline, 3 months, and 6 months. Patient outcome measures include medication knowledge, demonstrated proper use, medication adherence (measured by self-report and pill count) and clinical outcome measures.
RESULTS: In multivariable analyses, no significant differences in any of the outcomes were found by study arm. By six months, however, patients receiving the UMS + SMS intervention were significantly more knowledgeable of their medications' indication (Adjusted Odds Ratio (AOR) 1.43, 95% Confidence Interval (CI) 1.06-1.93, $p = 0.02$) and adherent to their regimen according to self-report of missed doses (AOR 2.33, 95% CI 1.02-5.31, $p = 0.045$). No differences in rates of proper use, adherence via pill count, or clinical outcomes count were noted. In addition, no interactions between study arm and literacy level or language were found to be statistically significant.
CONCLUSIONS: Our trial tested embedding the UMS and tools within an EHR platform at primary care practices. While we did find an effect on self-reported adherence and even knowledge, this health literacy intervention did not improve adherence via the more objective metric of pill count, nor clinical outcomes. Furthermore, these benefits only occurred with the UMS + SMS intervention, and not UMS arm alone.

AN EMOTIONAL WELL-BEING CAMPAIGN: MESSAGING FOR THE PUBLIC Jessica Kaltman[1]; Sophie Feller[1]; Lello Tesema[1]; Enrico G. Castillo[1, 2]; Kenneth B. Wells[1]. [1]UCLA, Los Angeles, CA; [2]Los Angeles County, Los Angeles, CA. (Control ID #2706351)

BACKGROUND: As part of the Affordable Care Act, the National Prevention Council comprising multiple federal agencies and led by the Office of the Surgeon General (OSG) was created. In 2011, the council released the National Prevention Strategy which identified seven prevention priority areas to target in order to improve the health of the nation. Mental and emotional well-being (EWB) is one of the seven priority areas setting the foundation to develop a national EWB campaign. An important aspect of a successful campaign is to understand the terminology currently used to discuss this issue amongst the American public. We conducted a rapid review of the popular media to understand how the concept of EWB is portrayed to the public.
METHODS: A rapid review of popular media sources was conducted between June 8, 2016 to July 5, 2016 to assess the terminology used by the media to discuss the subject of EWB. Google alerts, which prospectively pulls articles from media outlets on topics specified by search terms, were created for 18 terms related to EWB. These terms were chosen from the academic tradition (e.g., thriving, flourishing, coping, positive psychology, grit and resilience), interviews with key community and academic stakeholders and commonly used terminology (e.g., well-being, wellness, emotional fitness, and emotional well-being). Additionally, the websites for *New York Times*, *Washington Post*, *The Atlantic*, and *New Yorker* magazine were searched separately, as Google Alerts excludes these outlets. A team of three people reviewed over 150 media articles that used the terminology chosen. Articles were evaluated for use of the terminology.
RESULTS: Our findings demonstrate that happiness, resilience and stress pervade the public media. Thriving, and occasionally grit, are terms applied to topics not related to well-being and are more often used to describe crops, athletes, sports teams and economies. Importantly, EWB did not appear to be a widely-referenced term in the popular media. Happiness was used in ways that most closely related to EWB research and interventions.
CONCLUSIONS: A review of the popular media lends insight into how the media process and the public receive information related to EWB. These preliminary findings may carry implications on the challenges in developing unified public messaging on EWB. The preference of the media to use terms other than EWB should be taken into consideration when messaging about an EWB initiative.

AN EMR-BASED RANDOM GLUCOSE PREDICTIVE MODEL TO DETECT DIABETES AND DYSGLYCEMIA OUTPERFORMS NATIONAL SCREENING GUIDELINES Michael E. Bowen; Hua Lin; Ildiko Lingvay; Ethan Halm. UT Southwestern Medical Center, Dallas, TX. (Control ID #2705886)

BACKGROUND: Random blood glucose (RBG)-based case findings strategies perform better than national screening guidelines to detect undiagnosed diabetes in community-based studies. However, the performance of electronic medical record (EMR)-based RBG predictive models using real-world clinical data is unknown.
METHODS: We conducted a retrospective cohort study using EMR data from a large, integrated, safety-net health system and developed a model to predict diabetes (A1C $\geq$ 6.5 or fasting blood glucose (FBG) $\geq$ 126 mg/dL) and dysglycemia (A1C $\geq$ 5.7 or FBG $\geq$ 100 mg/dL). Non-pregnant primary care patients, age 18–64, with an index visit and a resulted diabetes screening test (A1C or FBG) between June 1, 2011 and December 31, 2014 and $\geq$1 outpatient RBG value 12 months prior to the screening test were eligible. We excluded patients with diagnosed diabetes or prediabetes on or 18 months before the index visit using ICD9 codes and lab results. Patient demographics, comorbidities, and diabetes risk factors were extracted from the EMR. We built RBG-

only and a RBG+risk factor (RF) models to predict diabetes and dysglycemia using logistic regression with backwards selection to retain age, race, BMI, and hypertension in the final RBG+RF model. The most recent RBG prior to the date of the screening test was the primary predictor. In a subgroup analysis of patients with >1 RBG value ($N = 8{,}060$), we also modeled mean RBG as a predictor. We report model c-statistics as a measure of discrimination.

RESULTS: A total of 22,058 patients met inclusion criteria. Mean age was 49 years and mean BMI was 31. Overall, 60% were female, 84% were non-Caucasian, 59% had hypertension, and 54% had a family history of diabetes. All patients satisfied American Diabetes Association Screening criteria and 62% met the 2015 USPSTF Diabetes screening criteria. C-statistics in the RBG-only models were 0.88 (undiagnosed diabetes) and 0.73 (undiagnosed dysglycemia). In the RBG+RF model, c-statistics to detect undiagnosed diabetes (0.91) and dysglycemia (0.78) were significantly higher than the RBG-only models ($p < 0.01$). Both the RBG-only and RBG+RF models performed significantly better than the 2015 USPSTF Screening to detect undiagnosed diabetes (0.57) and dysglycemia (0.61) ($p < 0.001$). In the subgroup with >1 RBG, c-statistics for the RBG +RF models using mean RBG performed slightly better than those using the most recent glucose to detect undiagnosed diabetes (0.91 vs. 0.89) and dysglycemia (0.79 vs 0.77) ($P < 0.01$).

CONCLUSIONS: Predictive models using only a single, most recent RBG to detect diabetes and dysglycemia are superior to national screening guidelines, and adding diabetes risk factors commonly available in the EMR further improves performance. Further validation using prospectively collected screening tests is needed to address potential biases in retrospective EMR data.

AN EVIDENCE MAP OF THE WOMEN VETERANS' HEALTH RESEARCH LITERATURE (2008–2015) Elisheva Danan[1]; Kristine E. Ensrud[2]; Erin E. Krebs[1]; Eva Koeller[1]; Tina L. Velasquez[1]; Roderick MacDonald[1]; Nancy Greer[1]; Timothy Wilt[1]. [1]Minneapolis VA Health Care System, Minneapolis, MN; [2]Univeristy of Minnesota/VA Health Care System, Minneapolis, MN. (Control ID #2705633)

BACKGROUND: Women comprise the most rapidly growing population of Veterans seeking care at the Department of Veterans Affairs. Clinical, research and policy initiatives to serve female Veterans exist, yet the corresponding literature has not been systematically reviewed since 2008. In 2015, VA Women's Health Services and the VA Women's Health Research Network jointly requested an updated literature review to assess the scope of research related to female Veterans, determine if research was aligning with priority areas and guide planning.

METHODS: As part of the VA Evidence-based Synthesis Program we conducted a systematic review and created an evidence map of research related to female Veterans' health published from January 2008 to December 2015. We searched the MEDLINE, CINAHL and VA HSR&D databases to find literature related to female Veterans' health. From included studies, we extracted study characteristics including healthcare topic, design, participant number, proportion women, research setting, funding source, and more. We organized and presented results via visual representation and text summary within and across healthcare topics. We identified patterns, strengths and gaps.

RESULTS: We identified 2,276 abstracts that were independently assessed for relevance. Eligible articles ($k = 437$) were sorted into 39 healthcare topics and described according to 14 additional study characteristics. Nearly half the articles were related to mental health (207/437 studies, 47%), particularly post-traumatic stress disorder, military sexual trauma, and substance abuse (these 3 topics comprised 61% of the mental health articles). Few studies addressed common chronic diseases often seen by general internists such as diabetes and hypertension (3 studies) or depression and anxiety (4 studies). Nearly all (396/437, 91%) articles described observational studies. Less than 2% (8/437) presented primary findings of randomized trials. We found growth in the number of articles published per year. In the first half, 2008–2011, 134 studies were published, whereas more than double that (303 articles) were published from 2012–2015. The number of studies within smaller VA priority topic areas increased over time, including post-deployment health, reproductive health, access and utilization, and healthcare organization and delivery. We excluded many identified studies that included female Veterans from our evidence map because they did not stratify results by gender, thereby limiting their applicability to female Veterans.

CONCLUSIONS: Female Veterans' health and healthcare literature grew substantially from 2008–2015. Observational studies in mental health make up the majority of recent research, though additional research agenda priority areas demonstrate progress. Methodological and health condition gaps remain. This evidence map can inform clinical, research, and policy initiatives.

AN EXPENSIVE WHITE COAT Salam Hawa[1]; Raynata Ramkhelawan[1]; Ravneet Randhawa[1]; Niket Sonpal[2]. [1]American University of Antigua, Newark, NJ; [2]Touro College of Osteopathic Medicine, New York, NY.
(Control ID #2706288)

BACKGROUND: A dream is a mere goal sometimes cut short by reality; this is one realization made by many medical students striving towards their career. As the years pass and the financial burden grows, the reason of dreaming of a medical degree, whether an innate passion, parental demand, or simply a change in career path, is no longer the only significant factor in making career decisions. The purpose of this survey is to collect data to investigate the level of impact of how accumulated debt imposes on the choice of specialty by medical students and residents. Studies have shown a trending decline in primary care with a simultaneous inclination towards specialty medicine.

METHODS: The survey consisted of 26 questions administered via Google forms and made accessible for 20 days. The questions were designed to acquire the demographics of each student pertaining to the accumulated loans, level of financial understanding, and furthermore how accumulated debt affects their medical specialty choice.

RESULTS: At the end of the 20 day period, there were 118 responses collected. Of total respondents, 56.8% were in the 1st or 2nd year of medical school, 40.7% were in there 3rd or 4th year, and 2.5% were in their 1st to 3rd year of residency. Of 118 respondents, only 117 responded regarding total accumulated debt; and among those responses, 14 will be excluded due to their lack of a specified answer. Among the remaining respondents, 30.09% have an accumulated debt of less than $60,000, 34.95% have between $60,001 to $140,000, 22.33% have between $140,001 to $220,000, and 12.6% have above $220,001. When asked if loan amounts were sufficient to cover their obligations, there were 116 responses. Of those responses, 28 were excluded due to lack of a specified answer. Of the remaining responses, 60.22% stated their loans were sufficient and 39.77% stated they were not able to meet their financial obligations with their loans. When asked if the amount of accumulated debt provoked a change in the choice of specialty, 117 responses were collected. Among those, 17 responses will be excluded due to their lack of specified answer. Among the remaining responses, 52% stated their choice did not change and 48% stated it did.

CONCLUSIONS: Upon review, most students fall within the debt range of $60,001 to $140,000 and the majority of students stated loans sufficiently covered their needs and furthermore indicated debt was not a factor in choice of field. However, there is a substantial 39.77% of students who counteract this notion and a greater 48% who indicated their interest in pursuing a high paying specialty serves as a means to pay their accumulated debt. Further comparisons in the changing rates of medical school costs versus compensation rates for physicians will be essential in defining the root of the problem.

AN IN-DEPTH CASE STUDY OF ADAPTING PATIENT EXPERIENCE DATA COLLECTION FOR LOWER LITERACY PATIENT POPULATIONS USING TABLETS IN CLINIC Courtney Lyles[1]; Lina Tieu[1]; Alicia Hobbs[2]; Erin E. Curtis[2]; Urmimala Sarkar[1]. [1]University of California, San Francisco, San Francisco, CA; [2]San Francisco Department of Public Health, San Francisco, CA. (Control ID #2705455)

BACKGROUND: Healthcare policy supports the inclusion of patient experience in healthcare quality measurement and reporting. However, response rates to the gold-standard, paper-based Consumer Assessment of Healthcare Providers and Systems (CAHPS) surveys are low and differ significantly by racial/ethnic and language subgroups. There is little discussion about whether CAHPS captures the true domains of patient healthcare experience, how to improve reporting for underserved patient populations, or whether data collection via mobile technology might result in higher response rates from more representative populations.

METHODS: Our study sought to 1) design and evaluate tablet-based CAHPS administration, and 2) conduct formative qualitative work to create shorter, lower literacy patient experience items (informed by CAHPS) and explore broader concepts of patient experience among vulnerable patients. We partnered with a start-up company Shift Health to create a tablet interface that was visually attractive and simple to use and created multi-lingual, low-literacy questionnaires. Next, we used 25 think-aloud interviews with patients to validate a new literacy-appropriate tablet questionnaire compared to the standard paper version, eliciting their perspectives about using a tablet-based survey to report their care experiences.

RESULTS: Of the 25 participants, 52% were male, 80% were non-White, and 68% had limited health literacy; the mean age was 53. Almost a quarter (24%) and over a third (36%) had never used a smartphone or tablet, respectively. Patients answered the majority of questions similarly on the paper vs. tablet versions, but strongly preferred the tablet, even among those without significant previous experience using mobile technology: “This [the tablet] is quite easy to do, because everything is easy to read. You just literally have to point your finger at your answer.” Patients emphasized the importance of reporting feedback to their clinics, particularly concerning wait times, quality of provider communication, and ability to access care, and valued the option to complete the survey at the point of care: “It’s better in the clinic because you’re in the same environment.” The final literacy-appropriate questionnaire made concrete improvements to the CAHPS items, including 1) reducing the total number of items from 31 to 17 while preserving core domains, 2) reducing the reading level required to understand survey questions from 7th to 5th grade (Flesch-Kincaid test), and 3) adding open-ended questions to capture patient-directed perspectives of care.

CONCLUSIONS: As we move forward with federal policy supporting patient experience data collection, this study provides clear next steps to ensure under-represented and vulnerable patient perspectives are engaged and represented in this process. If designed with patient input, tablet-based surveys may be a feasible and effective method for collecting patient experience data at the point of care.

AN INTERDISCIPLINARY STRATEGY FOR IMPROVING HAND HYGIENE ON AN INPATIENT MEDICINE UNIT Katherine A. Hochman[2]; Nicole Adler[1]; Lisa Gumbrecht[3]; Brian Bosworth[1]. [1]NYULMC, New York, NY; [2]New York University School of Medicine, New York, NY; [3]NYU Langone Medical Center, New York, NY. (Control ID #2701187)

BACKGROUND: The CDC reports that 5% of hospitalized patients develop hospital acquired infections, which are responsible for 100,000 deaths annually. Poor hand hygiene compliance on the Medicine service placed patients at higher risk for infection and was the impetus for our Clean Hands Save Lives Initiative.

METHODS: The Clean Hands Save Lives initiative was a triple-prong systems-based strategy that required the leadership of the medical director and nurse manager and the engagement of the entire floor. First, unit leadership dedicated a portion of the the morning unit-based safety huddle to identify daily handwashing champions. Each day a new group of champions was identified, including 2 nurses, one one floor patient unit technician, and two physicians. Champions were responsible for reinforcing correct hand hygiene procedures in real time, promoting a culture of “if you see something, say something.”Each week, 35 different health care providers were hand-hygiene champions, hardwiring best practice. Second, proper hand hygiene procedures were reinforced at the safety huddle several times a week and Purell dispensers were installed outside every patient room.Third, an email was sent to each team member regarding the hand hygiene initiative at the start of each rotation. Real-time feedback on hand hygiene technique was provided by unit leadership.

RESULTS: At the start of the initiative in quarter 1 of 2015, hand hygiene compliance for the 17 East Medical Unit was at 64%. By quarter 1 of 2016, hand hygiene compliance was at 93 and has remained above 90% for the past 4 quarters (Figure 1).

CONCLUSIONS: Successful implementation of our Clean Hands Save Lives Initiative on a hospitalist led medicine unit was due in large part to making this a daily focus of all members of the team, leading to unit culture change. The interdisciplinary approach to the problem, daily reinforcement of the initiative, regular education of unit staff and ease of practicing proper hand hygiene all were contributing factors to its success and sustainability. The initiative is now practiced in all units on the Medicine service.

AN INTERVENTION TO REDUCE BLACK-WHITE CANCER TREATMENT DISPARITIES: THE CASE OF EARLY STAGE NON-SMALL CELL LUNG CANCER Samuel Cykert[1]; Lloyd Edwards[2]; Paul Walker[3]; Rohan Arya[4]; Peggye Dilworth-Anderson[2]. [1]University of North Carolina, Chapel Hill, NC; [2]UNC Gillings School of Global Public Health, Chapel Hill, NC; [3]ECU Brody School of Medicine, Greenville, NC; [4]University of South Carolina School of Medicine, Columbia, SC. (Control ID #2702897)

BACKGROUND: African-Americans (AA) with lung cancer experience a higher annual death rate compared to Whites (W) with AA men particularly affected (79 vs 66 deaths per 100,000 population). Despite this risk, Bach and others have shown that treatment rates for AA patients with early stage disease lag behind rates for W. In this report, we describe results from a multisite interventional trial designed to optimize lung surgery and overall treatment rates for all patients and reduce treatment disparities.

METHODS: Baseline rates for curative surgery and radiation were established using 3-year chart review for all patients with biopsy proven lung cancer at 3 institutions. We then prospectively recruited AA and W patients with newly diagnosed stage I or II non-small cell lung cancer. Patients were identified at initial visit either through biopsy proven disease or a Bayesian probability algorithm. Informed consent was obtained. Intervention components for enrolled patients included: (1) entry into a real time electronic registry that provided warnings for missed appointments or unfulfilled, pre-designated milestones in care, (2) quarterly feedback of treatment rates by race and co-morbid illness to cancer care personnel, and (3) provision of a specially trained navigator to enhance communication with affected patients and between patients and the care team. Descriptive statistics, bivariate analyses, and logistic regressions were performed with a primary outcome of surgical treatment for lung cancer cure and a secondary outcome of surgery or stereotactic radiation for cure.

RESULTS: Baseline surgical rates from the retrospective analysis of 714 early stage, non-small cell patients were 69% for W and 66% for AA patients. Using logistic regression controlling for comorbidities, COPD, age, and other demographic data, we determined the odds ratio for surgery for AA compared to W lung cancer patients as 0.64 (95% CI 0.43, 0.96). When surgery was combined with stereotactic radiation for cure, the treatment rates improved to 80% for W and 76% B. The same regression analysis applied to combined treatment rates yielded an OR of 0.61 (95% CI 0.40, 0.96) for AA vs W. 244 patients were recruited prospectively including 89 AA (36%) for the intervention. The mean age for this group was 65.7 years; 54% were women. Findings in the intervention group show an overall surgical rate of 74% (74.8% W, 71.4%AA, $p = 0.6$). Combined treatment rates increased to 91.9% for W and 94.1% AA patients ($p = 0.5$). Logistic regression was performed comparing the intervention group to the baseline group. Results showed that overall treatment improved for both W and AA, the surgical and overall treatment disparity resolved, while age, COPD, and clinical stage remained significant predictors of treatment.

CONCLUSIONS: Results from an interventional study designed to optimize lung cancer treatment and narrow Black-White treatment disparities appear promising and could be applicable in reducing other cancer disparities.

ANALYSES OF VENTILATION PERFUSION (VQ) SCAN RESULTS AS COMPARED WITH CLINICAL PROBABILITY OF PULMONARY EMBOLISM IN A PREDOMINANTLY BLACK POPULATION Fasil Tiruneh; Ahmad A. Awan; nicole hunt; nahom tegegn; Daniel Larbi. Howard University, Washington DC, DC. (Control ID #2700608)

BACKGROUND: Current guidelines suggest the use of the more specific Wells score could safely reduce the number of unnecessary scans. There is a lack of research to support whether these guidelines apply to the Black population.

METHODS: A retrospective descriptive study to determine the diagnostic utility of VQ scan was conducted among patients who were seen during January 2012 to January 2016. The study population included patients who underwent VQ scan for evaluation of pulmonary embolism. A total of 180 charts were reviewed and 49 were excluded due to poor quality data. A review of the initial history and physical progress notes, as well as discharge summaries was performed. Clinical presentation and Wells probability of pulmonary embolism were compared with the results of the scan.

RESULTS: We collected data on 131 patients who underwent VQ scan for evaluation of pulmonary embolism. The median age of the study population was 63.02 ± 16.12 years. Majority of the study population 121 (92.4%) was black. Sixty four (48.9%) VQ scans were done for a low clinical probability for pulmonary embolism as defined by the well's clinical score. The most common clinical presentations were shortness of breath (SOB) 74 (58%), Leg pain 39 (29.8%), chest pain 36 (27.4%), and syncope 4 (3.1%). Sixty two (96.9%) patients with low clinical probability had low probability VQ scan($p = 0.030$). Among patients who did CT angio and VQ scan, low probability scan was noted in patients with no pulmonary embolism in CT in 25(96.2%) ($p = 0.006$).

CONCLUSIONS: Using the accepted guidelines in which a high pretest probability leads to further imaging and a low probability leads to a D-dimer blood test, use of the more specific Wells score could safely reduce the number of unnecessary scans. [13]The combination of a negative D-dimer with a low or moderate clinical probability can safely exclude pulmonary embolism in many patients.[14]This was reflected in our study, which showed that in patients with normal D-dimer, the result of VQ scan was low probability in 100%. However, no statistically significant correlation was observed between elevated d-dimer and results of VQ scan. In view of this finding, we suggest even in patients with elevated d-dimer other possible diagnosis should be explored. The study showed strong correlation between low clinical probability and low probability VQ scans and its utility to safely rule out PE in a predominantly black population. Studies conducted in other populations have detected similar findings.

Correlation between the clinical pretest probability with *VQ scan probability. Sixty two (96.9%) patients with low clinical probability had low probability VQ scan.($p = 0.030$)

	Low Probability VQ scan n(%)	Intermediate Probability VQ scan n(%)	High Probability VQ scan n(%)	Total n(%)
Low clinical probability	62(96.9%)	2(3.1%)	0(0.0%)	64 (100.0%)a
Moderate clinical probability	46(93.9%)	0(0.0%)	3(6.1%)	49 (100.0%)
High clinical probability	10(76.9%)	1(7.7%)	2(15.4%)	13 (100.0%)

*VQ - Ventilation perfusion scans. *p*- Value: a 0.030

ANXIETY AND DEPRESSION IN UNIVERSITY STUDENTS EXPERIENCING INTIMATE PARTNER VIOLENCE: PRELIMINARY FINDINGS OF A CROSS-SECTIONAL STUDY Danny Lee[1]; Arif Pendi[2]; Alfonzo Valdez[2]; Jose L. Aguilar[3]; Kate Basia Wolitzky-Taylor[4]; Joshua Lee[4]; Kasim Pendi[3]; David Safani[2]. [1]Virginia Commonwealth University School of Medicine, Yorba Linda, CA; [2]University of California Irvine, Orange, CA; [3]University of California Riverside, Riverside, CA; [4]University of California Los Angeles, Los Angeles, CA. (Control ID #2685507)

BACKGROUND: Intimate partner violence (IPV) is an under-reported but commonly occurring phenomenon affecting people of all ages. Among university students, IPV and its consequences are not thoroughly studied. Given that anxiety and depression may follow IPV, it is imperative to research IPV and its potential effects in university students, a group already characterized by high rates of anxiety and depression. Furthermore, recent reports have suggested that the mental health sequelae of IPV may cause greater long-term harm than physical injuries. This may indicate a need for internists to screen for anxiety or

depression in this sub population. Thus, this study had the following objectives: (1) report the prevalence of IPV in university students and (2) investigate the association between IPV and both anxiety and depression.
METHODS: A cross-sectional study design was employed; an anonymous survey was sent to all professors at a large public university in the United States with a request to forward the link to undergraduate and/or graduate students. The instrument consisted of a socio-demographic questionnaire, HITS Domestic Violence Screening Tool, Generalized Anxiety Scale 7 (GAS-7), and Patient Health Questionnaire-9 (PHQ-9). Full-time students over the age of 18 were included; part-time students or those below the age of 18 were excluded. Participants that screened positive for IPV according to HITS were compared via *t*-test to those that screened negative in terms of their continuous scores on the GAS-7 (for anxiety) and PHQ-9 (for depression). All standardized scales (HITS, GAS-7, and PHQ-9) have displayed adequate validity and reliability according to the literature. Analyses were conducted with IBM® SPSS® Version 22.
RESULTS: Completed responses ($n = 396$; 24% female; 86% undergraduates) were scored on the HITS Domestic Violence Screening Tool. Approximately 5% of student respondents (18 of 396 participants) screened positive for IPV. This group exhibited greater anxiety (10.83 ± 5.711 versus 6.23 ± 5.355; $p = 0.003$) and greater depression (12.06 ± 6.384 versus 7.34 ± 6.266; $p = 0.007$) compared to respondents that screened negative for intimate partner violence.
CONCLUSIONS: A small but significant minority of respondents reported IPV. This group was associated with significantly greater anxiety and depression, suggesting that experience of intimate partner abuse is correlated with increased generalized anxiety and depression severity. As a result, this sub-group of students may benefit from augmented screening efforts for anxiety and depression by general internists. Given that university students have already been associated with a large burden of anxiety and depression, those that have experienced intimate partner violence may subsequently experience greater disorder severity.

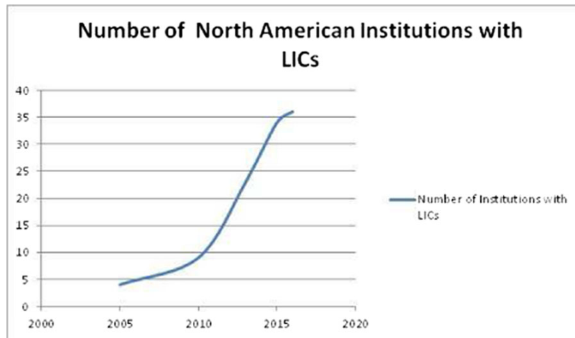
ARE ALL PATIENTS IN FEDERALLY QUALIFIED HEALTH CENTERS EQUALLY READY TO USE HEALTH INFORMATION TECHNOLOGY? Nazia Naz S. Khan; Karen Kelly-Blake; Gurpreet Chahal; Saman Kandola; Zhehui Luo; Ade B. Olomu. Michigan State University, East Lansing, MI. (Control ID #2705525)

BACKGROUND: Health information technology (HIT) has emerged as an innovative way to engage, empower patients and improve access to health care. However, patients navigating health care in low resource communities may not benefit from this potential even when information and communication technologies are readily available. Our objectives were: 1) to assess Federally Qualified Health Center (FQHC) patient readiness and interest in adopting telecommunication, i.e. cell phone, text message and email to communicate with healthcare providers, and 2) to determine whether there are differences in the readiness and usage of technology between FQHC clinics.
METHODS: This analysis is part of the larger Office-Guidelines Applied to Practice (Office-GAP) study designed to improve secondary prevention of heart disease for DM and CVD patients in FQHCs in Michigan. Office-GAP is a quasi-experimental design with 2 FQHC clinics. 499 patients were enrolled in Office-GAP program. 304 patients completed the Technology Usage Readiness Survey, which evaluated their readiness, interest, and barriers to health information technology for communication with providers. There were 153 patients in Clinic 1 and 151 in Clinic 2. Data were analyzed using descriptive statistics and logistic regression models. We adjusted for education, race, insurance, smoking and depression between the two clinics.
RESULTS: Mean age was similar (52 years +/− 11) between Clinic 1 and 2. In Clinic 1, 37% had no high school degree compared to 52% in Clinic 2. Whites comprised 37% of patients in Clinic 1 and 24% in Clinic 2. There was no difference in the percentage of Black patients between the two clinics. We compared Clinic 1 and Clinic 2 patient responses in adjusted analyses: have a cell phone (OR = 1.3, 95% CI = 0.7–2.7); ability to text controlling for having a cellphone (OR = 0.9, 95% CI = 0.4–1.8); like doctors to text controlling for having a cellphone (OR = 1.8, 95% CI = 1.0–3.2); access to internet/email (OR = 1.6, 95% CI = 0.9–2.9); like doctors to email (OR = 1.5, 95% CI = 0.8–2.9). Out of 151 patients in Clinic 2, 55 patients were immigrants: 38% had cell phone; 16% had the ability to text; 13% like doctors to text, 22% have access to internet/email, and 9% like doctors to email them about their conditions.
CONCLUSIONS: We found a statistically significant difference in patient readiness to engage/communicate with their providers using text messages between the two FQHCs. Immigrant patients are less ready to use mobile health (m-Health). With the push for m-Health, assessment of individual clinic patient populations is necessary before telecommunication interventions are implemented. With differences in patient population who have cellphone, ability to text and email it is evident that many patients in FQHCs are not ready to adopt m-Health.

ARE LONGITUDINAL INTEGRATED CLERKSHIPS (LICS) AT A TIPPING POINT? A NORTH AMERICAN SURVEY OF INTERNAL MEDICINE CLERKSHIP DIRECTORS Lindsay A. Mazotti[4, 6]; Jennifer Adams[1]; Bruce Peyser[2]; Katherine C. Chretien[5]; Briar Duffy[7]; David Hirsh[3]. [1]Denver Health, Denver, CO; [2]Duke, Durham, NC; [3]Harvard Medical School, Cambridge, MA; [4]Kaiser Permanente Oakland, Oakland, CA; [5]Washington DC VAMC, Washington, DC; [6]University of California San Francisco, San Francisco, CA; [7]Univeristy of Minnesota, Minneapolis, MN. (Control ID #2688452)

BACKGROUND: LICs are an example of educational innovation, fueled by a desire to improve educational continuity and address the "hidden curriculum." The number of North American (NA) institutions adopting LICs is increasing, but the extent of the change remains unknown. Clerkship Directors (CDs) in Internal Medicine (IM) can provide information on LIC program growth, as every school has an IM clerkship. CDs serve as leaders within institutions and are likely aware of or directly involved in LICs. This study aims to quantify the number of current and planned LICs at NA schools and to characterize the intended purpose of starting LICs.
METHODS: In 2015, the Clerkship Directors in Internal Medicine (CDIM) survey included a section on LICs. This section queried the number of current and planned LICs, their duration and capacity, and the purpose of starting a new LIC.
RESULTS: The response rate was 76% (94/123) of CDIM schools, representing 67% (94/146) of NA medical schools. Thirty six percent ($n = 34/94$) of responding schools have ≥1 LIC. Thirty schools have year-long LICs. The majority (22/34) of LICs are <5 years old. Nineteen institutions are planning a new LIC or increasing the number of students participating in LICs, nine of which are schools without existing LICs. CDs believe LICs are being implemented to foster continuity of care, support students' patient-centeredness, advance interprofessional education, and address workforce shortages. Four schools are converting their entire class to an LIC experience.
CONCLUSIONS: The number and scope of LICs are increasing across NA, especially in the last 5 years. The increase in LICs may be due to early adopters

having demonstrated the benefit of LICs, the compatibility with sought-after goals of medical education, the value of tests of change, and the ability to observe the change first before adopting. Applying the theory of diffusion innovation[1] suggests that a critical momentum may now exist such that the LIC innovation may now be self-propagating. [1] Rogers EM. Diffusion of Innovations.1995.



ARE PATIENTS TRANSFERRED TO HOSPITALS THAT CAN APPROPRIATELY TREAT THEM? Stephanie Mueller[1]; Jie Zheng[3]; Endel J. Orav[1]; Jeffrey L. Schnipper[2]. [1]Brigham and Women, Boston, MA; [2]Brigham and Women's Hospital, Boston, MA; [3]TH Chan Harvard School of Public Health, Boston, MA. (Control ID #2703663)

BACKGROUND: Patients are often transferred between hospitals to provide access to specialty care, although receiving hopsitals are not always chosen based solely on patient need. We evaluated the frequency with which patients are transferred to hospitals with availability of required specialty services.

METHODS: We performed a retrospective analysis using 2013 CMS Master Beneficiary and Inpatient claims files merged with 2013 American Hospital Association data. Eligible beneficiaries included those continuously enrolled in Medicare A/B with an acute care hospitalization claim, excluding Medicare managed care and ESRD beneficiaries. We defined transferred patients as those with corresponding "transfer in/out" claims, or either claim with corresponding hospital admission/discharge within 24 hours. We identified top primary diagnoses at time of transfer using ICD-9 codes, selected those requiring specialty services via expert opinion, and used McNemar's test to compare the availability of each specialty service between receiving and transferring hospitals, stratified by diagnosis.

RESULTS: Of the 101,507 transferred patients, 46,030 (45.3%) had a primary diagnosis requiring a specialty service. For each diagnosis, availability of each corresponding specialty service was more often present at the receiving compared to the transferring hospital (Table), although depending on diagnosis, in 35–85% of transfers, services were just as available at the transferring hospital, and in 7–28% of transfers, the receiving hospitals did not have availability of any corresponding specialty service.

CONCLUSIONS: In this national evaluation of transferred patients, we found patients requiring specialty services are transferred to hospitals more likely to have appropriate services compared to transferring hospitals, implying appropriate transfer. However, exceptions to this rule were frequent, suggesting other possible reasons for transfer in these instances, warranting further investigation into hospital transfer practices.

Table. Availability of Specialty Services at Receiving versus Transferring Hospitals

Primary Diagnosis with Corresponding Specialty Services, n(%)	Transferring Hospital	Receiving Hospital	p-value
AMI (n=13,018)			
Presence of adult cardiology service	8,989(69.1)	11,650(89.5)	<0.0001
Presence of adult interventional cardiac catheterization	5,447(41.8)	11,708(89.9)	<0.0001
Presence of cardiac surgery services	1,895(14.6)	11,443(87.9)	<0.0001
Presence of cardiac ICU	4,049(31.1)	10,824(83.2)	<0.0001
Presence of any pertinent specialty service	9,607(73.8)	11,781(90.5)	<0.0001
CHF (n=7,643)			
Presence of adult cardiology services	4,976(65.1)	6,970(91.2)	<0.0001
Presence of cardiac ICU	2,568(33.6)	6,474(84.7)	<0.0001
Presence of any pertinent specialty service	5,228(68.4)	7,047(92.2)	<0.0001
Sepsis (n=6,982)			
Presence of other intensive care	803(11.5)	3,072(44.0)	<0.0001
Presence of Medical ICU	5,648(80.9)	6,430(92.1)	<0.0001
Presence of any pertinent specialty service	5,795(83.0)	6,465(92.6)	<0.0001
Arrhythmia (n=6,887)			
Presence of adult cardiology services	4,566(66.3)	6,129(89.0)	<0.0001
Presence of cardiac ICU	2,266(32.9)	5,696(82.7)	<0.0001
Presence of adult cardiac electrophysiology	2,045(29.7)	5,943(86.3)	<0.0001
Presence of any pertinent specialty service	4,862(70.6)	6,233(90.5)	<0.0001
Stroke (n=3,640)			
Presence of neurological services	2,512(69.0)	3,225(88.6)	<0.0001
Presence of magnetic resonance imaging (MRI)	2,930(80.5)	3,178(87.3)	<0.0001
Presence of any pertinent specialty service	3,079(84.6)	3,272(89.9)	<0.0001
GI Bleed (n=3,089)			
Presence of endoscopic ultrasound services	1,134(36.7)	2,524(81.7)	<0.0001
Presence of optical colonoscopy services	2,079(67.3)	2,638(85.4)	<0.0001
Presence of virtual colonoscopy	596(19.3)	1,853(60.0)	<0.0001
Presence of any pertinent specialty service	2,261(73.2)	2,833(91.7)	<0.0001
Renal Failure (n=2,185)			
Presence of hemodialysis services	763(34.9)	1,578(72.2)	<0.0001
Hip Fracture/Dislocation (n=1,690)			
Presence of orthopedic services	1,374(81.3)	1,502(88.9)	<0.0001
Chest Pain (n=896)			
Presence of adult cardiology services	578(64.5)	784(87.5)	<0.0001

Abbreviations: AMI=Acute Myocardial Infarction, CHF=Congestive Heart Failure, GI=Gastrointestinal

ASKING IS NEVER BAD. I WOULD VENTURE ON THAT! : PATIENT PERCEPTIONS OF PAIN SCREENING IN VA PRIMARY CARE Karleen Giannitrapani[4]; Marie C. Haverfield[3]; Roger T. Day[3]; Jesse Holliday[3]; Steven Dobscha[1]; Robert D. Kerns[2]; Karl Lorenz[3]. [1]Portland VAMC, Portland, OR; [2]VA Connecticut, West Haven, CT; [3]VA Palo Alto Healthcare System, Menlo Park, CA; [4]Veterans Health Administration, Menlo Park, CA. (Control ID #2705833)

BACKGROUND: It is now more than 15 years since the 'Pain as the 5th Vital Sign' routine pain screening initiative was implemented in Department of Veterans Affairs (VA) primary care settings. However, the patient perspective on and experience of routine pain screening has not been characterized. The objective of this study is to understand patients' perspectives on and preferences about pain screening in primary care.

METHODS: We conducted semi-structured qualitative phone interviews with 35 Veterans from five outpatient clinics associated with three large VA medical centers. These were recorded and professionally transcribed; all personally identifying patient information was redacted. Using content analysis methods, we coded transcripts for perceptions of and experiences with routine pain screening in VA primary care. We compared codes across transcripts to identify key themes.

RESULTS: We identified five key themes: 1) Patients affirm it is important to screen for pain because some patients, particularly older ones, may not feel comfortable bringing it up: "if your focus is on managing pain then the question should always come from the provider… to ask a veteran 65-plus to bring up pain… (they) may not be accustomed to talking about their pain because in prior generations that was a sign of weakness." 2) Patients believe it is important to ask about function in relation to pain. One patient suggested: " ask has your pain ever inhibited you from completing a task this last week?" if you leave it…open like that… if you say, "a task," you allow the veteran to determine what level that task is." 3) Patients want to be screened for pain over being screened for something more broad like quality of life: "I'd rather have the nurse ask me about pain because the nurse can't do anything more for my quality of life". 4) Patients recommend asking about pain over a look back period and not just pain now: "when you ask me right then and there I might not be feeling any pain. But the thing that drove me to the clinic might've been a 5 or a 6." 5) In order for it to be an 'appropriate' use of clinic visit time patients want to know providers are going to use the information collected in pain screening: "I'm a process guy…the question is what do you do with that information about my pain."

CONCLUSIONS: Patients endorse the perceived value of pain screening, especially when they perceive pain to be actionable, and because some patients may not report it. Patients highlighted the perceived value of function and

chronicity in assessing pain. These perspectives can inform improving the identification and management of pain in primary care.

ASSESSING MOTIVATION AND BARRIERS TO WEIGHT LOSS

Christina Fahey; Abigail Lawson; Garrett Oberst; Dylan Woolum; David Rudy; Stephanie A. Rose. University of Kentucky, Lexington, KY. (Control ID #2705367)

BACKGROUND: Obesity and its comorbidities continue to increase in prevalence across the United States. While patients and physicians are increasingly recognizing the importance of weight loss, patients continue to express barriers to losing weight. Understanding these barriers, both medical and personal, can improve care by tailoring weight loss programs to each individual. The aim of this study was to assess barriers to weight loss in patients enrolled in a primary-care based weight loss program, through studying motivations for weight loss and self-efficacy in avoiding situations that trigger poor dietary choices.

METHODS: Patients with a BMI ≥30 kg/m^2 or a BMI ≥25 with obesity related comorbidities were invited to enroll in the Physician Weight Management Clinic in a university-based Internal Medicine Clinic. Patients were asked to complete a survey that included validated questions from the Treatment Self-Regulation Questionnaire (TSRQ), which measures motivation (autonomous [AM], versus controlled [CM]) for weight loss, and validated questions from the Weight Efficacy Lifestyle Questionnaire (WEL-Q), which measures self-efficacy in the ability to resist making poor dietary choices in certain situations. All weight loss clinic patients were asked to complete the survey, but only patients who gave consent to be part of the study were analyzed.

RESULTS: Of 114 consented patients, 27 completed the survey. Mean patient AM for weight loss was 6.2, while mean CM was 3.0 (ranges = 1 [low motivation] to 7 [high motivation]). Patients felt most confident in resisting poor dietary choices in situations involving Positive Activities (mean confidence = 6.4), followed by situations involving Physical Discomfort (6.3), situations involving Social Pressures (6.0), situations involving Availability (5.3), and situations involving Negative Emotions (4.6) (range 0 [low confidence] to 9 [high confidence]).

CONCLUSIONS: Of the surveyed patients, we found that internal confidence for losing weight was greater than external motivators. We also found that situations in which patients had the least confidence in resisting poor dietary choices were those associated with negative emotions. Patients had the most confidence in resisting poor choices in situations associated with positive activities. Limitations include generalizability, as we surveyed patients already in a weight loss program. Future goals include comparing individual barriers to weight loss outcomes, administration of a follow-up survey every 3 months to re-assess self-efficacy and motivations, and comparing motivation and confidence between patients enrolled in and not enrolled in a weight loss program. Assessing individual barriers to weight loss is critical in order to tailor weight loss programs appropriately. This research shows the areas patients struggle with the most and thus provides physicians with the best areas in which to focus treatment.

ASSESSING OUTCOMES FOR MEDICAL STUDENTS INVOLVED IN THE EMORY PIPELINE PROGRAM

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BACKGROUND: The Emory University Pipeline Program is a multi-tiered mentorship and educational program comprised of students from five Atlanta Public Schools, Emory College, Rollins School of Public Health, and Emory University School of Medicine that provides a three year health science enrichment curriculum for underprivileged high school students. High School students in the program receive longitudinal mentorship from Emory undergraduates in the areas of college preparation and career interest development. They also receive in-depth exposure to the health science fields through enrichment curricula taught by graduate students. While Pipeline has conducted annual evaluations of high school and undergraduate members' satisfaction with the program, career skills development, and health science knowledge, Pipeline has not been evaluated in terms of its effect on graduate members' careers. Specifically, our study sought to assess the impact of Pipeline on medical student alumni's teaching ability, communications skills, career preparation, and mentorship involvement.

METHODS: We created a 28 question online survey that was sent via email to the 40 alumni who participated in Pipeline while medical students at Emory University School of Medicine as of 2014. The survey assessed what effect participation in Pipeline had in the following domains: teaching ability and comfort, communication skills, career preparation and fulfillment, and mentorship. A portion of survey responses were scored on a 1 (Strongly Disagree) to 5 (Strongly Agree) Likert scale and the second survey portion inquired about continued participation in extracurricular teaching and mentoring. Likert scale responses of 4 or 5 were used to indicate a beneficial impact of Pipeline, and scores of 3 or below were interpreted to indicate that Pipeline had no impact or a negative impact.

RESULTS: Out of 40 alumni who received the survey, 24 began the form and 21 completed all sections. Pipeline alumni reported benefit in their teaching ability in small group settings (100%, $n = 23$) and lecture settings (91.3%, $n = 23$), and 78.3% ($n = 23$) of respondents reported engaging in teaching activities outside of those required on service. 82.6% ($n = 23$) of alumni reported participating in Pipeline improved their ability to communicate with patients, and 91.3% ($n = 23$) indicated that Pipeline strengthened their ability to communicate with undergraduates and medical students. Many of the respondents (79.2%, $n = 24$) agreed that participating in Pipeline helped clarify the types of settings in which they would like to practice. Furthermore, 95.5% ($n = 22$) of Pipeline alumni endorsed continued participation in mentorship relationships beyond Pipeline.

CONCLUSIONS: The Emory Pipeline Program enhanced medical students' teaching and communication abilities. Pipeline alumni also continued to participate in high rates with teaching and mentorship activities. Participation in Pipeline programs should be encouraged to facilitate the development of clinician educators.

ASSESSING THE EFFECTIVENESS OF A TRAINING INTERVENTION ON COMMUNITY HEALTH CENTER STAFF'S ABILITY TO IMPLEMENT DIABETES GROUP VISITS

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BACKGROUND: Group visits, which supplement one-on-one medical care with patient education and social support, have been shown to improve outcomes among adults with diabetes. We designed and evaluated the

effectiveness of a training intervention to prepare community health center (CHC) staff to implement and sustain diabetes group visits. We also identified facilitators and barriers to the adoption of this care model, our aim being to help guide best practices in its widespread implementation.

METHODS: This 18-month pilot study included monthly webinars and two in-person learning sessions designed to guide the execution of six monthly group visits by twenty-six CHC staff at seven sites within the MidWest Clinicians' Network. We conducted surveys assessing staff preparedness to implement group visits before Learning Session 1 (LS1), after LS1, and after Learning Session 2 (LS2). Most questions were scored on a scale from 1 = strongly disagree to 5 = strongly agree. Questions asking the degree to which factors were barriers to group visits were scored from 1 = major barrier to 4 = not a barrier. We used paired t-tests to assess for change between pre- and post-LS1 values and between post-LS1 and post-LS2 values. $P < 0.05$ was considered significant. We performed a qualitative analysis of audio-recorded team check-ins and telephone interviews to identify challenges and successes of the group visit programs.

RESULTS: The surveys showed increased staff awareness of: group visit barriers from 3.74 ± 0.76 (mean ± SD) pre-LS1 to 4.30 ± 0.47 post-LS1 ($P = 0.004$), and to 4.83 ± 0.38 post-LS2 ($P = 0.0005$); benefits of the group visit model from 3.96 ± 0.71 pre-LS1 to 4.48 ± 0.51 post-LS1 ($P = 0.0001$); and key factors for group visit success from 3.00 ± 0.92 pre-LS1 to 4.26 ± 0.45 post-LS1 ($P = 0.0000$). From post-LS1 to post-LS2, the degree to which transportation, concerns regarding individual medical attention, and concerns regarding patient privacy impeded group visits improved from: 2.04 ± 0.76 to 2.50 ± 0.79 ($P = 0.0144$), from 3.00 ± 0.68 to 3.67 ± 0.49 ($P = 0.0036$), and from 3.00 ± 0.83 to 3.56 ± 0.51 ($P = 0.0014$), respectively. General preparedness to conduct group visits increased from 3.78 ± 0.85 pre-LS1 to 4.17 ± 0.39 post-LS1 ($P = 0.01$). Group visit facilitators included: thorough preparation and knowledge about the care model; a motivated team; experienced diabetes educators; supportive CHC leadership; and adequate space for the visits. Common barriers included patient barriers (recruitment, transportation, motivation), and staff barriers (time limitations).

CONCLUSIONS: While CHC staff noted several barriers to the implementation of diabetes group visits, our training intervention increased staff confidence, preparedness, and awareness of key group visit elements. Facilitators to sustaining group visits included preparation-, team-, and facility-related factors. Future research is needed to assess our training program in a larger sample of CHC sites and assess the impact of diabetes group visits on patient outcomes.

ASSESSING UTILIZATION OF PRIMARY CARE PRACTICES BY PATIENTS WITH SELF-REPORTED EXCESSIVE ALCOHOL USE

Dennis Keselman[1]; Jeanne Morley[2, 1]; Laura Harrison[3]; Linda DeMasi[3]; Vladislav Fomin[1]; Megan O'Grady[4]; Nancy Kwon[3, 1]; Jonathan Morgenstern[2, 1]; Joseph Conigliaro[2, 1]; Sandeep Kapoor[3, 1]. [1]Hofstra Northwell School of Medicine, Hempstead, NY; [2]Northwell Health, Great Neck, NY; [3]Northwell Health, New Hyde Park, NY; [4]The National Center on Addiction and Substance Abuse, New York, NY. (Control ID #2705317)

BACKGROUND: There is widespread consensus that screening patients for alcohol misuse and providing brief interventions in primary care settings could lead to improvements in clinical outcomes through early identification, reduction in alcohol misuse, and reduction of alcohol related comorbidities. This would explain the healthcare cost savings seen with SBIRT interventions. However, there are no large-scale data on the primary care utilization patterns of patients who potentially misuse alcohol. The Screening, Brief Intervention, and Referral to Treatment (SBIRT) program implemented at a Level-III Patient-Centered Medical Home incorporates universal screening of patients for potential alcohol misuse, and data from the alcohol screens, together with demographic data, can be used to better understand the patterns of primary care utilization in specific populations.

METHODS: Patients were screened by frontline staff for potential alcohol misuse during all appointments. Patients who screened positive for potential alcohol misuse ($n = 998$), along with a cohort of patients of similar demographics who screened negative ($n = 968$) between 7/1/15 and 6/30/16 were included in a chart review. The chart review obtained data from AllScript Electronic Health Record about each patient's SBIRT alcohol "pre-screen" score using the AUDIT-C standardized tool, demographic information, insurance type, appointment type, number of visits to the PCMH, and the total scheduled appointment time for all their visits to the PCMH. The data was inputted into a HIPPA-certified database system (REDcap) and then analyzed using SPSS and SAS Studio.

RESULTS: Patients that pre-screened positive for potential alcohol misuse used primary care less (mea$n = 87.79$ min and 2.50 visits) than the control group of patients who pre-screened negative (mea$n = 110.33$ min and 3.44 visits) over the 1-year period ($p < 0.0001$). Hispanic/Latino, African-America/Black, middle aged (35–64 years), uninsured, and Medicaid patients have the largest disparities in primary care utilization between the pre-screen positive and negative groups ($p < 0.01$).

CONCLUSIONS: This study shows that patients who drink at higher-risk levels utilize primary care services less, as opposed to more. Hispanic/Latino, African-American/Black, middle-aged, uninsured, and Medicaid patients have the largest disparities in primary utilization between the pre-screen positive and negative groups. This underutilization highlights the importance of identifying patients in need of services at every potential touch point to maximize opportunity for intervention, as well as enhancing outreach and patient engagement. Understanding these primary care utilization patterns will better illustrate future directions for improving care for different patient populations, including those at risk for alcohol misuse.

ASSESSMENT OF A CURRICULUM ON INTIMATE PARTNER VIOLENCE (IPV) FOR INTERNAL MEDICINE RESIDENTS

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BACKGROUND: Intimate partner violence (IPV) is a widespread problem in the US, affecting 1 in 4 women and 1 in 7 men. IPV is associated with detrimental physical, mental, and behavioral health consequences. However, there are no standardized IPV requirements in medical education. Studies show that physicians in training and practice have limited IPV knowledge and desire more education. Existing curricula for medical students and practicing physicians have improved IPV knowledge and screening. There are little data for IPV education in residency, particularly for internal medicine residents who are primary care providers during training and beyond. This study aimed to evaluate a curriculum designed to improve residents' knowledge, attitudes, and practices in caring for patients who are IPV victims.

METHODS: 15 first-year internal medicine residents at Johns Hopkins-Bayview participated in two, 1-hour classes during July and August of 2016. The first class included a speaker with IPV experience, a case discussion, and a didactic presentation. The second part reviewed evidence for IPV interventions and focused on patient-doctor communication using role plays. Data were

collected via voluntary, pre- and post-curriculum surveys with questions adapted from the validated tool, PREMIS (Physician Readiness to Manage Intimate Partner Violence Survey). Changes in IPV knowledge, attitudes, and practices were compared using 2-tailed t-tests. Additional responses evaluating the curriculum in the post-test were described.

RESULTS: 15 first year residents participated in the baseline survey and 12 participated after the educational intervention. IPV knowledge was high at baseline and did not improve except for one question about health consequences of IPV ($p = 0.032$). Assessment of attitudes showed an existing recognition of IPV and its health impact, which did not change. The curriculum produced significant changes in self-efficacy including improved confidence in detecting IPV ($p = 0.022$), documenting IPV ($p = 0.000035$), and referring to resources ($p < 0.00001$). Participants reported increased comfort with managing their emotions regarding IPV ($p = 0.0080$) and discussing IPV with female (<0.00001) and male ($p = 0.021$) patients. Self-reported frequency of IPV screening for females remained the same ($p = 0.45$) but improved for male patients ($p = 0.033$). All participants agreed or strongly agreed that after the curriculum they would be more skillful in discussing IPV, more likely to screen for IPV, and better equipped to refer to IPV resources.

CONCLUSIONS: A curriculum for residents improved their confidence and comfort in addressing IPV. After training, all participants felt they were more prepared to screen for IPV, discuss IPV, and refer to resources. Incorporating IPV curricula into residency may promote greater detection of IPV and better care for victims.

ASSESSMENT OF ADHERENCE TO DEPRESSION MANAGEMENT GUIDELINES USING UNANNOUNCED STANDARDIZED PATIENTS: ARE RESIDENT PHYSICIANS EFFECTIVELY MANAGING DEPRESSION IN PRIMARY CARE? Sondra Zabar[1]; Kathleen Hanley[1, 3]; Amanda Watsula-Morley[1]; Lisa Altshuler[1]; Heather Dumorne[1]; Andrew B. Wallach[2, 3]; Barbara Porter[2, 3]; Adina Kalet[1]; Colleen Gillespie[1]. [1]NYU School of Medicine, New York, NY; [2]Bellevue Hospital, New York, NY; [3]Gouverneur Healthcare Services, New York, NY. (Control ID #2705368)

BACKGROUND: All physicians need to be skilled at diagnosing, treating, and managing depression. We designed an unannounced standard patient (USP) case to assess residents' clinical skills in addressing depression and explored how those skills are associated with residents' general clinical skills in order to design targeted curriculum on depression.

METHODS: The USP was a 26 y.o. male presenting as a new patient to a clinic complaining of fatigue and problems sleeping. Goals of the case were to diagnose a common presentation of depression and make a treatment/follow-up plan. The USP was trained to have a positive PHQ 2 & PHQ 9, family history of depression, and be willing to engage in medication and/or therapy if offered. A post-visit checklist was used by the SPs to assess communication, patient education, and assessment skills using behaviorally anchored items rated as not done, partly done, or well done. A systematic chart review was conducted to examine treatment, quality of documentation, and referrals. Case fidelity was checked by audiotape and confirmed by PHQ 9 score in the EHR. Evidence-based treatment was defined as prescribing an SSRI and/or providing a psychiatric referral; if neither of those, scheduling follow-up for within 2 weeks.

RESULTS: 122 residents saw the USP case from 2009–2015. Mean visit length = 45 min, SD 25 (14 to 183 min). The patient was screened for depression with a PHQ 2 in 93% of visits; 82% also had a PHQ 9. Overall, 77 residents (63%) provided appropriate treatment: 8% prescribed an SRRI, 23% provided a referral, 19% did both, 7% prescribed a sleep aid and <2 week follow-up, and 43% provided a combination of these treatments. 45 residents (37%) did not provide appropriate treatment: 27 (60%) prescribed a sleep aid and follow-up >2 weeks and 18 (40%) provided no treatment/referral and follow-up >2 weeks. There were no differences in exploration of medical history or substance use, but 83% of residents who treated appropriately had a PHQ 9 compared to 62% of residents who did not treat appropriately. 71% also included depression on the problem list compared to 13% of residents who did not treat appropriately. Residents who treated appropriately had significantly better clinical skills assessed by the USP including: overall communication (71% vs. 54%, $p = 0.00$), information gathering (72% vs. 55%, $p = 0.01$), relationship development (75% vs. 60%, $p = 0.03$), patient education (55% vs. 21%, $p = 0.00$), and patient activation skills (33% vs. 13%, $p = 0.01$).

CONCLUSIONS: Although almost all residents obtained the relevant information, only about 50% of residents diagnosed depression. PHQ 9 appears to be associated with providing more effective treatment, supporting the importance of health system screening protocols. Residents' communication and depression-specific patient education and activation skills seem to be related to how they identify and manage depression, suggesting that interventions to build these skills may lead to higher quality care.

ASSESSMENT OF SELF-REPORTED MEDICATION ADHERENCE TO INHALED COTICOSTEROIDS AMONG ADULTS WITH ASTHMA AND CHRONIC OBSTRUCTIVE PULMONARY DISEASE. Neelima C. Tangirala[2]; Li Chen[2]; Michael S. Wolf[4]; Rachel O'Conor[4]; Juan P. Wisnivesky[3]; Alex Federman[1]. [1]Icahn School of Medicine at Mount Sinai, New York, NY; [2]Mount Sinai Health System, New York, NY; [3]Mount Sinai School of Medicine, New York, NY; [4]Northwestern University, Chicago, IL. (Control ID #2707002)

BACKGROUND: Regular use of inhaled corticosteroids (ICS) is the standard of care for patients with persistent asthma and chronic obstructive pulmonary disease (COPD). In research, adherence to ICS is often measured using the 10-item Medication Adherence Report Scale (MARS), a self-reported medication adherence assessment designed to minimize social desirability bias. However, there are limited data on the validity of this measure.

METHODS: Data for this analysis were obtained from the baseline interviews from two cohort studies that examined the association of health literacy with self-management behaviors among adults ages 65 and older with asthma ($n = 452$) and adults ages 40 and older with COPD ($n = 393$). Patients for both studies were recruited from primary care practices in New York City and Chicago. In both studies, research assistants administered the MARS in English or Spanish as part of the baseline assessment. ICS adherence was also objectively measured over a 4-week period, within 3 months of the baseline interview, using electronic monitoring devices that record every actuation of the ICS inhaler, both metered dose and dry powdered devices. Adequate adherence by MARS assessment was defined as a score ≥4.5 based on prior literature, and by electronic monitoring as actuation of ≥80% of doses prescribed. We assessed the criterion validity using correlations between self-reported adherence and electronic adherence. Receiver Operating Characteristic (ROC) curve analysis of the continuous value for MARS scores against the dichotomized outcome of adherence as measured electronically was also performed.

RESULTS: In the study of asthma patients, 78% were prescribed ICS medications and MARS and electronic adherence data were available for 75 and 53% of all patients respectively. In the study of COPD patients, 30% were prescribed ICS medications and MARS and electronic adherence data were available for 87 and 24% of all patients respectively. There were no significant differences between patients missing MARS or electronic data and those with complete data for either study. Among patients with asthma, the continuous values for adherence measured by self-report and electronically were weakly correlated ($r = 0.33$, $p < 0.001$); similarly, the agreement between the discrete measures was weak (kappa 0.30, $p < 0.001$). Findings were similar for COPD patients: $r = 0.29$, $p = 0.003$; kappa 0.27, $p = 0.005$. Area under curve (AUC) values generated from ROC analysis was 0.68 and 0.69, for asthma and COPD patients, respectively.

CONCLUSIONS: Commonly used measure for adherence performed weakly compared to electronic monitoring in separate populations of patients with asthma and COPD. Investigators measuring self-reported medication adherence among patients with these pulmonary diseases should consider using alternative instruments or using objective measures exclusively

ASSESSMENT OF THE SAFETY AND TOLERABILITY OF THE ANTIBIOTIC RIFAXIMIN FOR IRRITABLE BOWEL SYNDROME (IBS): A POOLED ANALYSIS OF THREE PHASE 3 STUDIES

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BACKGROUND: IBS prevalence in North America is approximately 12%, and studies suggest females are almost twice as likely to have IBS as males. Substantial differences in the gut microbiota (eg, composition and diversity) have been observed in patients with IBS vs healthy individuals. The nonsystemic antibiotic rifaximin 550 mg, taken 3 times daily for 14 days, is indicated for diarrhea-predominant irritable bowel syndrome (IBS-D) in adults. Given that IBS symptoms may be episodic or chronic, patients may require repeated courses of therapy. To gain a better understanding of the rifaximin safety profile, a pooled analysis evaluated safety and tolerability of rifaximin in IBS.

METHODS: This was a post hoc pooled analysis of two phase 3 studies (Trials 1 and 2; rifaximin 550 mg or placebo 3 times daily for 2 weeks) and double-blind retreatment phase of a phase 3 study (Trial 3; 2 courses of rifaximin 550 mg or placebo 3 times daily for 2 weeks, with courses separated by 10 weeks). Safety was assessed through 10 weeks posttreatment in Trials 1 and 2, and through 4 weeks posttreatment after second treatment course in Trial 3. Analysis included patients with ≥1 dose of study medication and ≥1 postbaseline safety assessment.

RESULTS: The analysis included 952 rifaximin-treated and 942 placebo-treated patients. Most AEs were mild to moderate in intensity. The most common AEs (≥2% of patients in rifaximin group) were upper respiratory tract infection, headache, and nausea (Table).. Increased alanine aminotransferase levels were reported in 1.6% (rifaximin) and 1.2% (placebo) of patients. Constipation was reported in 0.7% (rifaximin) and 1.6% (placebo) of patients. Only 1 serious AE in rifaximin group (alcohol withdrawal syndrome) was considered related to study drug. One patient developed a serious AE of *Clostridium difficile* posttreatment. This patient had a history of *C difficile* and received a 10-day course of cefdinir for a urinary tract infection; the AE was not considered to be drug-related but likely due to cefdinir exposure.

CONCLUSIONS: This pooled safety analysis of 952 rifaximin-treated patients supports the safety and tolerability profile of rifaximin in an adult population with IBS.

Table. AE Summary

Parameter, n (%)	Rifaximin ($n = 952$)	Placebo ($n = 942$)
Any AE	480 (50.4)	477 (50.6)
Severe AEs	39 (4.1)	59 (6.3)
Drug-related AEs	81 (8.5)	109 (11.6)
Serious AEs	14 (1.5)	19 (2.0)
AEs leading to study discontinuation	9 (0.9)	9 (1.0)
Upper respiratory tract infection	47 (4.9)	47 (5.0)
Headache	42 (4.4)	51 (5.4)
Nausea	39 (4.1)	31 (3.3)
Diarrhea	34 (3.6)	25 (2.7)
Abdominal pain	32 (3.4)	37 (3.9)
Nasopharyngitis	29 (3.0)	43 (4.6)
Sinusitis	24 (2.5)	23 (2.4)
Urinary tract infection	23 (2.4)	26 (2.8)
Bronchitis	22 (2.3)	22 (2.3)

ASSOCIATION BETWEEN GENDER MINORITY STATUS AND SELF-REPORTED MENTAL AND PHYSICAL HEALTH IN THE U.S.

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BACKGROUND: Gender minorities, including transgender and gender non-conforming individuals, experience disparities in mental and physical health. Prior investigations are limited in size and geographic scope due to the lack of national survey data on gender identity.

METHODS: We pooled 2014 and 2015 Behavioral Risk Factor Surveillance System (BRFSS) data and analyzed measures of participant-reported mental health and physical function among gender minority adults (transgender 1,173, representing an estimated 727,983 adults; gender non-conforming 270, representing 184,038 adults) compared to cisgender peers (314,450 representing 162,400,000). We used bivariable and multivariable analyses to identify differences by gender minority status. We performed logistic regression to assess the effects of age, education, race, employment status, and income. We performed analyses using SAS 9.4 and utilized survey procedures to account for the complex sampling design and were weighted to reflect national estimates.

RESULTS: Compared to cisgender adults, gender minority adult respondents are younger (19.2% vs 24.4% under 30 years-old), less likely to be white (69.9% vs 56.7% white, non-Hispanic), less likely to be employed (57.2% vs 50.8% employed) and have lower annual household incomes (15% vs 22.1% less than $20,000; all p <0.001). After adjusting, gender minority participants are at increased odds compared to cisgender peers of self-reported fair or poor health and self-reported serious difficulty concentrating, remembering, or making decisions. In sub-group analyses, transgender respondents are at increased odds compared to cisgender peers of self-reported serious difficulty concentrating, remembering, or making decisions. Gender non-conforming respondents are at increased odds compared to cisgender peers of self-reported fair or poor health, self-reported serious difficulty concentrating,

remembering, or making decisions, and self-reported limitation in any way because of physical, mental, or emotional problems (all $p < 0.001$).

CONCLUSIONS: Significant self-reported mental and physical health disparities exist for transgender and gender non-conforming adults in the United States; these disparities persist even when adjusting for known protective factors, such as employment or income. These disparities in self-reported mental and physical health beg the need for additional research into potentially unmeasured stressors transgender and gender non-conforming people experience. In addressing mental and physical health, clinicians should be sensitive to the need to be aware of the unique needs of gender minorities.

Adjusted Odds Ratio of Gender Minority Status and Self-Reported Mental and Physical Health Outcomes

	Gender Minorities OR [95% CI]	Sub-Group Analyses Transgender (MTF or FTM) cOR [95% CI]	Gender Non-Conforming OR [95% CI]
Fair/Poor Health	1.25 [1.10, 1.42]*	1.13 [0.98, 1.31]	1.89 [1.43, 2.49]*
Difficulty concentrating, remembering, or making decisions	1.51 [1.30, 1.75]*	1.48 [1.19, 1.66]*	1.97 [1.44, 2.69]*
Limitation in any way because of physical, mental, or emotional problems	1.13 [1.00, 1.28]	1.04 [0.91, 1.19]	1.56 [1.22, 2.07]*

OR adjusted Odds Ratio; CI Confidence Interval; MTF male-to-female; FTM female-to-male

* $p < 0.001$

ASSOCIATION BETWEEN PURPOSE IN LIFE AND GLUCOSE CONTROL AMONG OLDER ADULTS

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BACKGROUND: Greater purpose in life is associated with lower rates of certain chronic conditions such as cardiovascular disease and stroke. Whether purpose in life can protect against development of prediabetes or type 2 diabetes is unknown. The objectives of our study were to examine associations between purpose in life and subsequent (1) change in hemoglobin A1c (HbA1c) and (2) development of clinically meaningful categories of abnormal glucose metabolism (i.e., prediabetes or type 2 diabetes) among US adults. We hypothesized that greater levels of purpose in life would be associated with smaller increases in HbA1c and lower rates of developing abnormal glucose metabolism compared to lower levels of purpose in life.

METHODS: We conducted a national study of 3,907 adults age 50 and older who did not have type 2 diabetes or prediabetes and were participants in the Health and Retirement Study. Baseline purpose in life was measured using a 7-item, validated adaptation of Ryff and Keyes' Scales of Psychological Well-Being and grouped into tertiles (high, medium, low). We used multivariable linear regression to examine the association between baseline purpose in life and change in HbA1c from baseline to 4-year follow-up. Multivariable logistic regression was used to examine the association between baseline purpose and incident prediabetes or type 2 diabetes over the same period.

RESULTS: After adjusting for sociodemographic factors, body mass index, physical activity, and physical and mental health factors, change in HbA1c was 0.07 percentage points lower among participants with high purpose than those with low purpose (95% CI −0.12 to −0.02; $p = 0.011$). Participants with high purpose had lower odds of developing prediabetes or type 2 diabetes than those with low purpose (adjusted odds ratio 0.78; 95% CI 0.62 to 0.98; $p = 0.037$).

CONCLUSIONS: Among older adults, greater purpose in life is associated with a lower incidence of prediabetes or type 2 diabetes. Strategies to promote greater purpose in life should be tested as part of type 2 diabetes prevention efforts.

ASSOCIATION OF CITIZENSHIP STATUS WITH KIDNEY TRANSPLANTATION IN PATIENTS ON MEDICAID

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BACKGROUND: Although undocumented immigrants can receive emergency dialysis in the US regardless of their ability to pay, most states do not provide them with subsidized care for renal transplantation, a more cost-effective form of renal replacement therapy that provides better outcomes for patients. The objective of the study was to determine whether undocumented immigrants have similar outcomes to U.S. citizens after receiving kidney transplants covered by Medicaid.

METHODS: In this observational cohort study, we identified from the United States Renal Data System and followed for 5 years all adult patients on Medicaid who received their first kidney transplant from 1990–2011 and categorized them by citizenship status. We applied Cox proportional hazards frailty models with transplant center as a random effect to estimate the hazard ratios (HR) and 95% confidence intervals (CI) for all-cause graft loss.

RESULTS: Of 10,495 patients, 8660 (82%) were U.S. citizens, 1489 (14%) were permanent residents, and 346 (3%) were undocumented immigrants. Undocumented immigrants were younger, healthier, on dialysis longer, and more likely to have had a living donor. 71% were transplanted in California, and 61% were transplanted after 2005. We identified 42 graft failures in undocumented immigrants (3.7/100 person-years) and 2,445 in U.S. citizens (7.9/100 person-years). Undocumented immigrants had a lower unadjusted risk of graft loss compared to US citizens (HR 0.48, 95% CI: 0.35–0.65). Results were attenuated but still significant when adjusted for demographics, comorbidities, dialysis, and transplant-related factors (HR 0.67, 95% CI: 0.46–0.94).

CONCLUSIONS: Only 3% of patients with Medicaid transplanted in the US were undocumented immigrants. The transplants occurred mostly in California, have increased in recent years, and our study suggests that they do no worse, and perhaps even better, than US citizens. Policymakers should consider expanding coverage for kidney transplantation in undocumented immigrants is it leads to high quality outcomes while lowering the overall costs of renal replacement therapy in these patients.

ASSOCIATION OF HYPERTENSION AMONG SELF-REPORTED BINGE DRINKERS IN A PATIENT-CENTERED MEDICAL HOME WITH A SCREENING, BRIEF INTERVENTION, AND REFERRAL TO TREATMENT PROGRAM Vladislav Fomin[1]; Jeanne Morley[2, 1]; Laura Harrison[3]; Linda DeMasi[3]; Dennis Keselman[1]; Megan O'Grady[4]; Nancy Kwon[3, 1]; Jonathan Morgenstern[2, 1]; Joseph Conigliaro[2, 1]; Sandeep Kapoor[3, 1]. [1]Hofstra Northwell School of Medicine, Hempstead, NY; [2]Northwell Health, Great Neck, NY; [3]Northwell Health, New Hyde Park, NY; [4]The National Center on Addiction and Substance Abuse, New York, NY. (Control ID #2705251)

BACKGROUND: 70 million adults in the United states have hypertension, of which only half is properly controlled. Binge drinking has been found to be associated with a modest increase in blood pressure and in certain populations, with an increased prevalence of hypertension. There is not an established link between self-reported binge drinking and prevalence of hypertension in a diverse urban population. This study sought to compare self-reported drinking patterns with blood pressure and hypertension status at the time of visit.

METHODS: The Screening, Brief Intervention, and Referral to Treatment (SBIRT) protocol has been implemented within the workflow of a Level-III Patient-Centered Medical Home, in which every patient is given a standardized three question pre-screen (AUDIT-C) to evaluate their drinking patterns. We used data from this pre-screen in connection with a linked AllScripts Electronic Health Record to collect demographic and patient visit data. 998 patients who screened positive for potential alcohol misuse over the past year (7/1/15-6/30/16) were controlled matched based on age, gender, race and ethnicity ($n = 968$). AllScripts Electronic Health Records were linked to the patients' responses to the pre-screen questionnaire and were used to collect patient data at time of visit. Hypertensive status was qualified as either having a systolic blood pressure greater than 140, having a previous diagnosis of hypertension, or being currently treated for hypertension. Data was analyzed using SPSS software. The primary statistical tool used was a logistic regression with covariates.

RESULTS: When adjusted for age, BMI, and tobacco usage, there was no association found between the rate of hypertension and binge drinking compared with those who screened negative for potential alcohol misuse (p >0.05). Similarly, there was no association found between hypertension and those who screened positive for potential alcohol misuse when compared to those who screened negative ($p > 0.05$). When compared to non-binge drinkers, binge drinkers had an average of 3.7 units (mmHg) higher systolic blood pressure with no significant difference in diastolic blood pressure ($p > 0.05$). When compared to those who screened negative for potential of alcohol misuse those who screened positive had an average of 2.5 units (mmHg) higher systolic blood pressure and 1.4 units higher diastolic blood pressure ($p < 0.05$).

CONCLUSIONS: This study illustrates that self-reported binge drinking and alcohol consumption over healthy NIAAA guidelines did not correlate with a diagnoses of hypertension in our population of patients. The modest trend towards increased blood pressure highlights the importance of understanding a patient's alcohol consumption when addressing, counseling and managing elevations in blood pressure. Irrespective of diagnosis of HTN, alcohol misuse is associated with higher BP's which may have long term implications if treated early.

ASSOCIATION OF PLANT-BASED PROTEIN WITH SLEEP QUALITY AND DURATION IN WOMEN Allison Crawford[1]; Brooke Aggarwal[1]; Heidi M. Greenberger[1]; Ming Liao[2]; Marie-Pierre St-Onge[1]. [1]Columbia University, New York, NY; [2]Columbia University Medical Center, NEW YORK, NY. (Control ID #2705746)

BACKGROUND: Experimental evidence has demonstrated that diet composition affects sleep; however, examinations in a non-experimental context are few. The purpose of this study was to assess the relation between sleep duration and quality and plant-based dietary protein intakes.

METHODS: Women, age 20–75 ($n = 106$), were recruited from an urban academic health center. Study population characteristics were as follows: mean age 40+/−18 years, 61% white, 83% employed, 93% college degree, 24% current/former smokers, 61% chronic disease, and 44% BMI <25 kg/m^2. Participants taking sleep medications ($n = 20$) and/or participants with missing data ($n = 7$) were excluded from the analyses; analytic population $n = 82$. Sleep quality and duration were assessed using the Pittsburgh Sleep Quality Index (PSQI) and the Insomnia Severity Index (ISI). Dietary history was obtained using the Block Brief Food Frequency Questionnaire (FFQ). Food items were coded as plant or animal based. Total protein was calculated for each food using the USDA Food Composition Database. The sum of daily protein from plant-based foods was calculated as a percentage of total daily caloric intake. The proportion of energy consumed from protein included only food items coded as plant-based in this analysis. The associations between the proportion of plant-based protein energy intake and sleep variables were assessed using logistic and linear regression models. Logistic regression models included sample medians for plant-protein intake (≥4% vs. <4) and ISI score (<7 vs ≥7); recommended cut points were used for sleep duration (<7 vs. ≥7 h) and sleep quality (PSQI score <5 vs ≥5). Multivariate adjustment included age, race, education, income, and smoking status.

RESULTS: Sample mean sleep duration was 6.70+/−1.35 hours, sleep quality scores 5.50+/−3.74, and mean plant-protein daily consumption 4.07%+/−1.51%. In bivariate linear models, percentage of plant-based protein intake was positively associated with sleep duration ($ß = 0.22$, $p = 0.04$). Higher percentage of plant-based protein intake was also associated with better sleep quality ($ß = -0.571$, $p = 0.02$), and lower insomnia ($ß = -0.87$, $p = 0.046$). In bivariate logistic models, consuming ≥4% of energy from plant protein was associated with lower odds of short sleep duration (OR 0.27, CI 0.10–0.74, $p = 0.01$) and there was a trend for higher sleep quality (OR 0.41, $p = 0.07$). In multivariate adjusted logistic models, the association of plant-based protein intake with sleep duration was statistically significant (p =0.01) and marginally significant for sleep quality ($p > 0.05/\leq 0.11$) and in the expected direction for both.

CONCLUSIONS: Plant-based protein consumption in women was associated with sleep duration and possibly with better sleep quality. Completion of cohort recruitment will increase statistical power to test these associations. Limitations include possible confounding for unmeasured covariates.

ASSOCIATION OF STRUCTURED ASYNCHRONOUS VIRTUAL VISITS FOR HYPERTENSION FOLLOW-UP IN PRIMARY CARE WITH BLOOD PRESSURE CONTROL AND USE OF CLINICAL SERVICES David M. Levine[2]; Ronald F. Dixon[3]; Jeffrey A. Linder[1]. [1]Brigham and Women's Hospital, Boston, MA; [2]Brigham and Women's Hospital and Harvard Medical School, Boston, MA; [3]Massachusetts General Hospital and Harvard Medical School,, Boston, MA. (Control ID #2704278)

BACKGROUND: Optimal management of hypertension requires frequent monitoring and follow-up. Novel, pragmatic interventions are needed to engage patients, maintain blood pressure control, and enhance access to busy primary care practices. "Virtual visits" are structured asynchronous online interactions between patients and their primary care clinicians to extend medical care beyond the initial office visit. Virtual visits have high patient and clinician satisfaction, but clinical outcomes and subsequent utilization of primary and other health care are unknown.
METHODS: We studied patients presenting to primary care practices with a principle diagnosis of hypertension at a large health care network in the Northeast United States. The exposure group was every patient who had engaged in a hypertension virtual visit. After a visit where hypertension was discussed, clinicians could ask their patients to follow-up online. A patient entered blood pressure, adherence, and other items. Once submitted, the clinician responded with treatment decisions. The usual care group was drawn from all patients who presented to a primary care office for hypertension in the same network, but where virtual visits were not yet available. For both groups, the "pre-visit" and "post-visit" time periods were 180 days before and after the index visit. We used logistic regression to create a propensity score of receiving a virtual visit. We propensity-score matched on age, gender, language, partner status, veteran status, smoking, race/ethnicity, health insurance, total chronic conditions, mean pre-visit systolic blood pressure (SBP), total pre-visit antihypertensive medications, and pre-visit primary care visits, specialist visits, emergency visits, and inpatient admissions. We developed multivariable linear and negative binomial regression models to examine the difference-in-differences in mean SBP change, primary care visits, specialist visits, emergency department visits, and inpatient admissions from the pre to the post period between virtual visit and usual care patients.
RESULTS: Of the 1,051 virtual visit patients and 35,050 usual care patients, we propensity-score matched 878 patients from each group. Both groups were 61 years old, 43% female, 85% White, and had about 5 chronic conditions. Virtual visit patients completed a mean of 2.5 (95% CI, 2.3 to 2.7) virtual visit encounters. Compared to usual care, virtual visit patients had an adjusted 0.9 (95% CI, 0.4 to 1.5) fewer primary care office visits and 0.4 (95% CI, 0.03 to 0.7) fewer specialist visits. There was no significant adjusted difference in SBP control (0.6 mmHg [95% CI, −2.0 to 3.1]), emergency department visits (0.0 more visits [95% CI, 0.0 to 0.01]), or inpatient admissions (0.0 more visits [95% CI, 0.0 to 0.1]).
CONCLUSIONS: In a propensity-matched cohort of primary care patients with hypertension, virtual visit participation was associated with equivalent blood pressure control and reduced in-office primary and specialty care utilization.

ASSOCIATION OF TRIGLYCERIDES TO HDL RATIO WITH CARDIOMETABOLIC DISEASE OUTCOMES May Yang; Joseph Rigdon; Sandra A. Tsai. Stanford University School of Medicine, Stanford, CA. (Control ID #2701588)

BACKGROUND: In the US annually, cardiovascular disease (CVD) is the leading cause of death for men and women and roughly 1.4 million people receive a new diagnosis of diabetes. Due to the importance of early intervention, accurately assessing patients' risk for cardiometabolic disease, such as CVD and diabetes, may be clinically beneficial. An elevated plasma triglyceride (TG)/high-density lipoprotein cholesterol (HDL-C) ratio reflects insulin resistance and has been associated with a higher cardiometabolic risk in European and Asian populations. Whether TG/HDL-C predicts CVD is less understood. A database of ethnically diverse patients in an academic center was used to study the association between TG/HDL-C and cardiometabolic disease outcomes.
METHODS: The Stanford Translational Research Integrated Database Environment (STRIDE) identified patients who were over the age of 50 with available data from January 2008 through December 2015. Demographic information and laboratory results were extracted from the database. Data on cardiovascular risk factors and CVD and diabetes diagnoses were collected through chart review. Using a TG/HDL-C ratio measured in 2008, high-risk patients were identified based on previously studied cutoffs (>2.5 for females, >3.5 for males). Logistic regression modeling with adjustments for relevant confounders was used to estimate associations between risk category and diagnosis of CVD or diabetes in follow-up.
RESULTS: One thousand patient charts were reviewed, 29.5% of which were categorized as high-risk by TG/HDL-C ratio. Of the 762 subjects who did not have a diagnosis of diabetes in 2008, 26.1% were categorized as high-risk by TG/HDL-C. There were 14.6% of high-risk TG/HDL-C subjects and 7.1% of low-risk TG/HDL-C subjects diagnosed with diabetes in follow-up. After adjusting for cofounders, high-risk TG/HDL-C ratio was associated with a diabetes diagnosis in follow-up (OR = 1.61, 95% CI: 0.93–2.78) with borderline significance. Asian ancestry significantly increased the risk of diabetes diagnosis in follow-up (OR = 4.82, 95% CI: 2.4–9.7). Of the 772 patients free of CVD diagnoses in 2008, 28.6% were categorized as high-risk by TG/HDL-C. There were 15.4% of high-risk TG/HDL-C subjects and 7.4% of low-risk TG/HDL-C subjects diagnosed with CVD in follow-up. After adjusting for confounders, high-risk TG/HDL-C ratio significantly increased the risk of CVD diagnosis in follow-up (OR = 1.79, 95% CI: 1.03–3.1).
CONCLUSIONS: TG/HDL-C ratio can be used in conjunction with other cardiometabolic risk factors such as body mass index (BMI) to determine risk of diabetes and CVD. The logistic regression findings further suggest that alternative TG/HDL-C criteria may be necessary to identify Asian patients most at risk for diabetes.

ASSOCIATIONS BETWEEN INCARCERATION AND VIRAL LOAD AND HIV TRANSMISSION RISK AMONG HIV-POSITIVE MEN WHO HAVE SEX WITH MEN IN THE US
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BACKGROUND: While new HIV infections have decreased in recent years, new infections are not decreasing among men who have sex with men (MSM), especially MSM of color. Studies have shown that, in general, people at risk for and living with HIV have increased interaction with the criminal justice system than the general population, but little is known about the relationship between criminal justice history and HIV risk among MSM. This study seeks to measure associations between recent and prior history of incarceration and HIV risk behavior and viral load in HIV-positive MSM.
METHODS: The Veterans Aging Cohort Study Survey Substudy (VACS Survey) is an observational cohort of veterans living with HIV that began in 2002 that was designed to evaluate the role of alcohol use with clinical outcomes. We analyzed VACS Survey data from the 2011–2012 follow-up, and include men who reported having at least one male sex partner in the year prior to the survey and who provided data regarding incarceration history ($N = 487$). The

independent variable of interest is self-reported history of incarceration (recent, ever, or never), and the dependent variables are detectable viral load and HIV risk behaviors: injection drug use (IDU), 2+ sexual partner in past 12 months, sex without a condom in the past 12 months, sex without a condom due to alcohol or drug use, and sex with partners who had other sexual partners. Covariates included age, race, education, relationship status, income, and homelessness.

RESULTS: Participants had a mean age of 52 years (sd = 9.5) and included 292 (60%) African-American, 131 (27%) white, and 64 (13%) of other race/ethnicity. The prevalence of incarceration history was 40%. In both unadjusted and adjusted models for age, education, marital status, income, and homelessness, recent and prior incarceration versus no incarceration were strongly associated with having a detectable HIV viral load (recent adjusted odds ratio [AOR] 3.25 95% CI: 1.35–7.83; prior AOR: 3.30 95% CI: 1.84–5.91). Those with a history of incarceration also had significantly higher odds of past 12 month IDU (recent AOR 17.11, 95% CI: 2.78–105.48; prior AOR 6.10, 95% CI 1.15–32.44). Recent and prior incarceration were strongly associated with having two or more sex partners (recent AOR 2.74, 95% CI: 1.25–6.02; prior AOR 1.71, 95% CI 1.11–2.64) and engaging in sex without a condom due to alcohol (recent AOR 14.34, 95% CI: 3.17–64.74; prior AOR 8.30 95% CI: 2.25–30.63) or drug use (recent AOR 5.74 95% CI 1.83–18.03; prior 2.90 95% CI: 1.13–7.42 respectively) and with partners who had other partners (recent AOR 3.31, 95% CI: 1.42–7.72; prior AOR 2.62, 95% CI 1.47–4.68).

CONCLUSIONS: Among HIV positive MSM, incarceration is linked with multiple proximate determinants of HIV transmission including detectable viral load, IDU and high risk sexual activity. This study highlights the importance of targeting this population for intervention following release from incarceration as a means of reducing new HIV infections.

ASSOCIATIONS OF SELF-REPORTED PAIN AND PAIN-RELATED FUNCTION WITH OBJECTIVE PHYSICAL PERFORMANCE IN VETERANS WITH CHRONIC MUSCULOSKELETAL PAIN

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BACKGROUND: Chronic musculoskeletal pain affects over 60% of veterans in primary care clinic and is the most common cause of physical disability in the US. Despite this, measuring pain-related physical function remains a challenge. Though self-report measures are the gold standard for pain outcome assessment, their relationship to objective physical performance is unclear. Our objective was to examine associations of self-reported pain-related functional impairment and pain severity with objective physical performance among veterans with chronic musculoskeletal pain.

METHODS: The Strategies for Prescribing Analgesics Comparative Effectiveness (SPACE) trial enrolled 264 veterans (primary care patients of the Minneapolis VA Health Care System) aged 21–80 with chronic (≥6 months) musculoskeletal back or hip/knee arthritis pain for randomization to opioid or non-opioid medication therapy. At baseline, participants completed two self-report measures of pain-related functional impairment—Brief Pain Inventory (BPI) Interference scale and Roland Disability Questionnaire (RDQ)—and a measure of pain severity, the BPI Severity scale. Participants completed study-staff-assessed physical performance measures including 6 meter gait speed, chair stand test, and the Fullerton Advanced Balance Scale (FAB). We compared baseline self-reported and objective measures via general linear regression models adjusted for participant age and sex, considering BPI Interference as the primary measure.

RESULTS: 259 patients had complete pain-related measures at baseline. On average, each one point higher on the 0–10 BPI-Interference scale was associated with 0.2 s slower 6 meter walk ($p < 0.0001$), 0.5 fewer chair stands in 30 s ($p < 0.0001$), and 1.1 points lower on the Fullerton Advanced Balance Scale ($p < 0.0001$). Similarly, higher self-reported pain severity (BPI-Severity) and pain-related impairment on the RDQ were also significantly associated with worse objective physical performance by all measures (gait speed, chair stands, and FAB).

CONCLUSIONS: Measures of self-reported pain-related functional impairment and pain severity were strongly associated with objective physical performance in this population of veterans with chronic musculoskeletal pain. These findings support the validity of patient-reported measures of pain-related function. Future analyses will examine whether self-reported pain measures and physical performance respond similarly to pain treatment over the 12-month SPACE trial. Further research may identify subcategories of patients and pain conditions in which self-reported pain measures relate differently to observed physical performance, and may clarify roles of additional pain dimensions such as pain sensitivity.

AT-THE-BEDSIDE WALKING INTERDISCIPLINARY ROUNDS - STREAMLINED COMMUNICATION BUT NOT YET THE ANSWER FOR PATIENT SATISFACTION

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BACKGROUND: Prior To March 2016 interdisciplinary rounds were held in the back of the nurses' stations on two inpatient medial units. Patients satisfaction scores around the discharge process and communication were consistently low. Medical director and nurse manager dyad leadership teams redesigned interdisciplinary rounds to improve communication between the patient and the health care team.

METHODS: With the At-The-Bedside Walking Interdisciplinary Rounds initiative, every patient is visited by the entire interdisciplinary team each afternoon. The interdisciplinary team consists of the Hospitalist, the unit nurse manager, the bedside nurse, the care manager, the social worker and the medicine resident. Each visit takes 3–5 min and is led by the resident, who starts by introducing every member of the team. Importantly, the patient is surrounded by every person on the team (a design to be literally and figuratively patient centric). Rounds are structured around four simple questions designed to effectively communicate the diagnosis, the milestones for discharge and the discharge disposition and date. Updated information is written on the patient's white board, located at the foot of the bed. Patients and caregivers have an opportunity to ask clarifying questions. Moreover, the patient can experience first-hand the collaboration that takes place amongst the team members with a streamlined and unified message. The team will use a video language access network for interpreter services for those patients who feel more comfortable speaking in their native language. For those patients who prefer not to discuss discharge planning in large groups, members of the team will return individually.

RESULTS: When comparing pre (Q1CY2016, $N = 81$) and post (Q2CY2016, $N = 80$) intervention top box HCAHPS patient satisfaction scores, the results were

mixed. Care transitions improved slightly from 46 to 48 and communication with doctors increased from 74 to 75%. Communication with nurses decreased from 78 to 75%. Discharge information, however, improved from 78 to 84%.
CONCLUSIONS: While these early results are disappointing, we believe that patient centered care starts with streamlined communication at the bedside with the interdisciplinary team. We will be tweaking how to better contextualize these rounds for patients in the future.

ATTITUDES TOWARD PEOPLE LIVING WITH HIV AMONG MEN WHO HAVE SEX WITH MEN USING AND NOT USING PREP: IMPLICATIONS FOR PREP DISSEMINATION

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BACKGROUND: HIV Pre-exposure Prophylaxis (PrEP) with antiretroviral medications is highly effective in preventing HIV acquisition, but social barriers to access have hampered adoption among certain groups at highest risk, including young Black and Latino men who have sex with men (YBLMSM). Little is known about the relationship between PrEP adoption and attitudes toward people living with HIV (PLWHA). We conducted a qualitative study interviewing YBLMSM on their views on PrEP and HIV to identify differences between PrEP adopters and non-adopters and inform PrEP uptake interventions.
METHODS: We conducted individual semi-structured interviews with YBLMSM recruited through Facebook from July 2015 to November 2015. Patients met inclusion criteria if they were between 18 and 29 years of age, had engaged in condomless anal sex with a man in the past year, were HIV negative by self-report, were living or working in the Bronx, New York, and were fluent in English or Spanish. We continued interviews until reaching thematic saturation and used a modified grounded theory approach for analysis. Two investigators independently coded all interviews using an iteratively developed codebook.
RESULTS: Participants ($n = 19$) all identified as gay and had a primary care provider. About half ($n = 10$) used PrEP at the time of interview (adopters). Three themes related to attitudes toward PLWHA emerged that differed between adopters and non-adopters: relationships with people with HIV, HIV status disclosure, and severity of HIV. Most participants knew a PLWH, but adopters were more likely to have a close friend with HIV or multiple friends with HIV. Although both adopters and non-adopters had experienced sexual encounters where an PLWH withheld their status, those who adopted PrEP viewed the experience in a more positive light and framed it in the context of challenges around HIV stigma and disclosure. Non-adopters were more likely to view HIV as a severe diagnosis, while adopters were more likely to view HIV as a chronic illness.
CONCLUSIONS: Although PrEP is used to prevent HIV acquisition, our findings suggest that PrEP adoption in YBLMSM is associated with more accepting views of PLWH. Reduction of HIV stigma is a potential focus of interventions promoting PrEP adoption, offering a way to unify future HIV treatment and HIV prevention strategies around a common goal of reducing HIV disparities.

ATTRITION AMONG WOMEN VETERAN COMMUNITY CARE USERS NEW TO VA

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BACKGROUND: The Veterans Health Administration (VA) purchases care in the community for many patients, and disproportionately for women. Little is known about the patient experience of community care, especially for new patients who are forming their first impressions of VA. For women newly joining VA, we characterized facility-level variability in use of community care, then examined whether use of community care predicted attrition from VA.
METHODS: Among women Veterans with 1+ VA primary care (PC) clinic visit in fiscal year 2011 who were new to VA (no VA or fee basis use in the prior 8 years), those with at least one outpatient or inpatient non-VA (fee) medical care visit in the year following T0 (date of first outpatient visit) were "community care users." Attrition was defined as no VA care in person-specific years 2–3 following T0.
RESULTS: Among the 18,395 new women VA primary care patients nationally, 5,555 (30.2%) were community care users in their first year of VA care. Across facilities, 1.7 to 69.9% (median 35%) were community care users. The attrition rate of was 7.8% for community care users vs 19.3% for others; this pattern was similar for patients at VA Medical Centers (VAMCs) and Community-Based Outpatient Clinics (CBOCs). In a logistic regression, odds of attrition were lower for community care users than for others (adjusted OR 0.43, 95% CI 0.38-0.48), controlling for age, race/ethnicity, marital status, urban/rural residence, service-connected disability, receipt of care from a designated women's health provider, and receipt of care in a VAMC versus CBOC.
CONCLUSIONS: Nearly one in three new women PC patients received community care at least once within a year of joining VA, although community referral rates varied markedly by facility. Those who received part of their care through VA's community care program had less than half the odds of attriting from VA in the subsequent 2 years compared to women who did not. While further inquiry is needed regarding how assignment to a facility with low versus high reliance on community care impacts the patient experience, these findings offer some reassurance that sending new women patients out to the community for care not available at the local VA does not adversely affect attrition, a patient-centered construct.

AWARENESS OF BULLYING IN INTERNAL MEDICINE RESIDENCIES: RESULTS OF A NATIONAL SURVEY OF INTERNAL MEDICINE PROGRAM DIRECTORS

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BACKGROUND: Bullying in medical education has been described as a significant and ubiquitous problem in studies of residents and medical students. American and international studies cite upwards of 50% of trainees reporting experiencing bullying, most commonly in its verbal form. Being bullied creates psychological pressure which can lead to mental health consequences including depression, anxiety, and post-traumatic stress disorder. The authors conducted this study to describe perceptions of internal medicine (IM) program directors about the bullying of internal medicine residents.
METHODS: The 2015 Association of Program Directors in Internal Medicine (APDIM) Annual survey was sent to 368 program directors (PDs) with APDIM membership, representing 92.9% of the IM residency programs. To understand internal medicine PDs' perspectives and awareness about bullying in their programs, several questions about bullying were included in the annual

survey. Bivariate analyses were performed on PD characteristics and program characteristics with regard to their answer to the following specific question, "To the best of your knowledge, were one or more of your trainees bullied during the last academic year?"

RESULTS: A total of 227/368 (61.6%) of PDs responded to the survey. Less than one third of respondents (71/227, 31%), reported being aware of bullying in their residency program during the previous year. There were no significant differences between those reporting bullying in their programs and those who did not when gender, tenure as PD, geographic location, or specialty of PD were considered in the analyses (all $p > 0.05$). Those who acknowledged bullying in their program were more likely to agree that bullying was a problem in graduate medical education ($p < 0.0001$), and that it had a significant negative impact on the learning environment ($p < 0.0001$).

CONCLUSIONS: Most IM PDs believe that bullying does not occur in their training programs. Because bullying is thought to negatively affect the learning environment and threaten the well-being of trainees, program directors may wish to more proactively assess its actual prevalence.

AZITHROMYCIN IS ASSOCIATED WITH IMPROVED SURVIVAL IN PATIENTS WITH HEALTHCARE-ASSOCIATED PNEUMONIA

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BACKGROUND: Many studies of patients hospitalized with healthcare-associated pneumonia (HCAP) have demonstrated worse survival for those patients who received HCAP concordant therapy as compared to community-acquired pneumonia (CAP) concordant therapy. We hypothesize that this is because azithromycin is a part of CAP concordant therapy, but not HCAP concordant therapy. Therefore the purpose of this study was to examine the association of azithromycin use with 30-day mortality for patients hospitalized with HCAP after adjusting for potential confounders.

METHODS: We conducted a retrospective national study using Department of Veterans Affairs administrative data of patients hospitalized at any Veterans Administration acute care hospital. We included patients >65 years hospitalized with pneumonia in fiscal years 2002–2012 with at least 1 HCAP risk factor. HCAP risk factors include prior hospital admission <90 days, nursing home residency, prior outpatient intravenous antibiotics <90 days, and hemodialysis. Our outcome was 30-day mortality. We used a generalized linear mixed effect model ("multilevel regression") to control for potential confounders, including sociodemographics, comorbid conditions, prior outpatient health care utilization, and severity of illness, as well as for the admitting hospital.

RESULTS: We identified 26,113 patients who meet the inclusion criteria and 7,864 (29.8%) received azithromycin as part of their inpatient antibiotic therapy. After adjusting for potential confounders, we found that 30-day mortality was significantly lower in those who received azithromycin (odds ratio 0.60, 95% confidence interval 0.55-0.64) as part of their inpatient antibiotic therapy.

CONCLUSIONS: In patients hospitalized with pneumonia with HCAP risk factors, we identified a significant association between azithromycin use and 30-day mortality. Our study suggests that for patients with HCAP, azithromycin use may be associated with improved outcomes. Randomized clinical trials are needed to identify what are the best empiric antibiotics regimens for patients hospitalized with healthcare-associated pneumonia.

BARRIERS AND FACILITATORS AFFECTING THE IMPLEMENTATION OF SUBSTANCE USE SCREENING IN PRIMARY CARE CLINICS: A QUALITATIVE STUDY OF PATIENTS, PROVIDERS, AND STAFF

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BACKGROUND: Alcohol and drug use is a leading cause of morbidity and mortality that frequently goes unidentified in medical settings. As part of a multi-phase study to implement the NIDA Common Data Elements for collecting substance use screening information in electronic health records (EHRs), we interviewed key clinical stakeholders with a goal of identifying barriers and facilitators affecting the implementation of substance use screening in primary care clinics.

METHODS: Focus groups and individual qualitative interviews were conducted with 67 stakeholders, including primary care patients, medical providers (faculty and resident physicians, nurses), and medical assistants, in two urban academic health systems. Themes were identified, discussed, and revised through an iterative process, and mapped to the Knowledge to Action (KTA) framework (Graham, 2006), which guides the selection and implementation of new clinical practices.

RESULTS: Factors affecting implementation based on KTA elements were identified from participant narratives. Identifying the problem: Participants unanimously agreed that having knowledge of a patient's substance use is important because of its impacts on health and medical care, that substance use is not properly identified in medical settings, and that universal screening is the best approach. Adapting knowledge: The majority of patients and providers stated that the primary care provider should play a key role in substance use screening and interventions. There was discrepancy of opinion regarding the optimal approach to delivering screening. Some felt that patients should self-administer questionnaires, while others thought that patients would be more comfortable having face-to-face discussions with their primary care provider - though not with other members of the care team. Many providers reported that being able to take effective action once unhealthy substance use is identified is crucial. Assessing barriers: Patients expressed concerns about confidentiality, 'denial', and providers' lack of empathy. Barriers identified by providers included individual-level factors such as lack of knowledge and training, and systems-level factors including lack of time, resources, and space, disjointed communication between members of the medical team, and difficulty accessing addiction treatment.

CONCLUSIONS: Based on these findings, we designed and are testing an implementation strategy utilizing universal screening, patient self-administered questionnaires, and EHR-integrated clinical decision support to assist providers in conducting brief motivational counseling and linking patients to behavioral health services, to address unhealthy substance use in primary care clinics.

BARRIERS AND MOTIVATORS TO DIABETES CONTROL IN A NAVIGATOR-PHOTOVOICE INTERVENTION: A QUALITATIVE ANALYSIS

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BACKGROUND: Diabetes mellitus is a major public health issue that disproportionately affects minorities and individuals with low socioeconomic

status and has major implications on patients' daily lives. We developed and pilot tested a community-based diabetes self-management intervention using photovoice and group education sessions to explore diabetes disease control.

METHODS: Patients with poorly controlled diabetes living in Boston census tracts that we had previously identified as having large numbers of patients with diabetes and who receive primary care at Boston Medical Center, the largest safety-net hospital in New England, were invited to participate in 6 group sessions held at a local library. Sessions included photovoice, a methodology whereby patients use photography and write accompanying narratives to facilitate deeper thinking about controlling their diabetes. We designed three photovoice missions, each with different prompts for participants to take photos in their day-to-day lives related to diabetes. After each mission, a patient navigator facilitated discussions to elucidate patients' experiences. The navigator also invited guest speakers to provide educational presentations (e.g., dentistry) based on requests from participants. Sessions were audio recorded and transcribed. We coded transcripts for themes of barriers and motivators in diabetes control.

RESULTS: The majority of participants ($n = 16$) were 67% female (67%), and African American or Black (89%). Less than half had greater than a high school education. Participation in the group sessions was 68.8% amongst all participants averaged over all sessions. The most common barriers mentioned by participants were 1.) issues with self-control over diabetes self-management ("I have a love affair with food."), 2.) lack of dietary knowledge ("Does it matter if it's white, wheat, or whole wheat [bread]?"), and 3.) frustration and fatigue towards self-management of diabetes ("I've gotten to the point where I'm rebellious. I don't take insulin and I won't take my medication."). Subanalysis of statements related to frustration and fatigue showed that common root issues include the chronic nature of diabetes and no demonstration of improvement in participants' disease control despite individual efforts. Motivators included interpersonal elements, such as the intervention's group sessions ("I enjoy coming down here because you don't feel so alone because a lot of times you don't mention diabetes but it's always in your head."), clinicians, family members, and caregivers.

CONCLUSIONS: The combination of perceived lack of self-control and frustration and fatigue, often related to the chronicity of diabetes and poor outcomes in disease control, is concerning for the development of burnout in the diabetic patient population. Interventions to build resilience in diabetics should be considered. Participants were generally receptive to the group sessions, which may be enhanced by hosting sessions at a community-based location.

BARRIERS AND STRATEGIES FOR TAPERING LONG-TERM OPIOID MEDICATIONS: A QUALITATIVE STUDY OF PRIMARY CARE PROVIDER EXPERIENCES Laura C. Kennedy[2]; Ingrid A. Binswanger[3, 1]; Shane Mueller[1, 3]; Cari Levy[5, 4]; Daniel Matlock[4, 2]; Susan L. Calcaterra[4, 6]; Steve Koester[3]; Joseph W. Frank[4, 5]. [1]Kaiser Permanente Colorado, Denver, CO; [2]University of Colorado, Aurora, CO; [3]University of Colorado Denver, Denver, CO; [4]University of Colorado School of Medicine, Aurora, CO; [5]VA Eastern Colorado Health Care System, Denver, CO; [6]Denver Health Medical Center, Denver, CO. (Control ID #2701272)

BACKGROUND: Since 1999, prescribing of opioid medications quadrupled, as has the rate of drug overdose deaths. Growing observational evidence describes the dose-dependent risks of opioids, but evidence of long-term benefits is lacking. Healthcare providers increasingly seek to taper or discontinue chronic opioid use, but little evidence exists on how to approach this challenging process. We sought to explore primary care providers' (PCPs) experiences discussing and implementing tapers of long-term opioid therapy with patients in their clinical practice.

METHODS: We conducted 6 semi-structured, in-person focus groups with PCPs. A multidisciplinary team developed the focus group interview guide, with areas of focus on discussing risks and benefits of opioid medications with patients, approaches to opioid tapering, and barriers and facilitators to tapering opioids. Focus groups were recorded, transcribed, and coded in ATLAS.ti. We performed qualitative analysis in a mixed inductive-deductive manner and identified themes through an iterative, multidisciplinary, team-based approach.

RESULTS: PCPs ($N = 40$; 70% non-Hispanic white, 85% physicians) at a large academic medical center, an urban safety-net hospital, and a VA medical center participated. Emergent themes were identified in 2 domains: 1) barriers to tapering, and 2) strategies to facilitate tapering. Barriers to tapering opioids include providers' pessimism, limited time and lack of patient-provider trust. One provider noted, "*The patient has to be receptive to the idea. If you don't have that as a baseline, I don't think there's anything you can say where they will be willing to do it*." Describing the impact of time constraints, one provider stated, "*This is never the only conversation I'm having with a patient in that room and patients never come to discuss that, so to sneak that into a visit where they might have three or four other agenda items… can be quite difficult*." Regarding trust, one provider perceived that patients "*fear that if they tell me their pain is better I might decrease their medicine*." Facilitators emerged as both provider- and system-level strategies. Providers sought to connect with patients by demonstrating empathy ("*I understand you're in pain. I get it*"), using simple language ("*This puts you at higher risk of death*") and planning ahead ("*We're going to talk about coming down so it's almost like a quit date*"). A clinic-wide upper limit on opioid dosing supported their efforts to taper opioids. One provider noted, "*The triggering point of the discussion was that new change in policy establishing a new ceiling dose of opiates. So, it's out of my hands*."

CONCLUSIONS: Discussing and implementing opioid tapering presented significant challenges for time-strapped providers. A feasible primary care model to support tapering of long-term opioid therapy may involve communication training for providers, dedicated time to discuss tapering opioids, and clinic-wide policies establishing upper-limits on opioid dosing.

BARRIERS TO IMPLEMENTATION OF A TRANSITIONAL CARE INTERVENTION: A QUALITATIVE ANALYSIS Jeffrey L. Schnipper[1, 3]; Hilary Heyison[1]; Cherlie Magny-Normilus[1]; Elyse R. Park[2]; Nyryan V. Nolido[1]; Ryan Thompson[2, 3]; Gwen Crevensten[2, 3]. [1]Brigham and Women's Hospital, Boston, MA; [2]Massachusetts General Hospital, Boston, MA; [3]Harvard Medical School, Boston, MA. (Control ID #2706649)

BACKGROUND: Transitions from hospitals to the ambulatory setting are high risk periods for patients. Many interventions have been tried, with varying degrees of success, and often the problem has been with implementation rather than theoretical efficacy of the intervention. The objective of this analysis was to better understand barriers to implementation in the context of a real-world quality improvement study.

METHODS: We developed, implemented, refined, and evaluated a multi-faceted, multi-disciplinary transitions intervention across two hospitals and 18 primary care practices within a Pioneer Accountable Care Organization. We then conducted focus groups of 2–8 clinicians each that were part of or affected by the intervention: inpatient and outpatient physicians, nurses, pharmacists, and care coordinators. We used a semi-structured qualitative interview guide to

standardize data collection. Preliminary themes, including barriers to implementation, were identified a priori using the Systems Engineering Initiative for Patient Safety model of work-system design, then iteratively refined. Each focus group session, approximately 60 min each, was audio-recorded, transcribed, and then uploaded into NVivo 11 (QSR, Melbourne, 2012). Two coders independently coded all transcripts then met to resolve discrepancies.

RESULTS: A total of 8 focus group interviews were conducted, involving 21 participants. Several barriers to implementation of the intervention were identified. Regarding those related to the inherent nature of the intervention, barriers included complexity of certain tasks, such as post-discharge phone calls, relative to the personnel carrying them out, as well as the number of personnel involved. Logistical barriers included different modes of communication between inpatient and outpatient nurses, having enough advanced warning of a pending discharge to perform medication counseling, and lack of staffing to conduct the intervention on weekends. Handoffs between roles and locations was a barrier, with inadequate information systems to keep everyone on the same page and communicate important issues to be followed up. Several providers linked the lack of sufficient staffing for this intervention to the institution's lack of commitment to improving transitions of care. The barriers most often cited by providers were lack of communication and lack of time availability/"bandwidth," followed by lack of institutional commitment, difficult patient population, competing priorities, variable staffing, and logistics.

CONCLUSIONS: This qualitative analysis identified several barriers to the success of transitional care interventions. While some barriers were specific to the intervention being studied, many provide generalizable lessons learned to improve the success of future transitional care interventions.

BEYOND HEALTH INSURANCE: REMAINING DISPARITIES IN U.S. HEALTH CARE IN THE POST-ACA ERA Benjamin D. Sommers[1,2]; Caitlin McMurtry[1]; Robert Blendon[1]; John Benson[1]; Justin Sayde[1]. [1]Harvard School of Public Health, Brookline, MA; [2]Brigham & Women's Hospital, Boston, MA. (Control ID #2704169)

BACKGROUND: The Affordable Care Act (ACA) has reduced the U.S.'s uninsured rate to an historic low, though it faces an uncertain future after the 2016 election. However, coverage is only one of many factors that may contribute to racial and income-based disparities in health care access, affordability, and quality. There has been little post-ACA analysis of remaining disparities in health care and how much of a role health insurance coverage still plays in these gaps.

METHODS: Using a novel national telephone survey of over 8,000 Americans conducted in late 2015, we examined disparities between low-income and high-income adults, and between racial/ethnic minorities and whites. We examined three main outcomes: self-reported quality of care, cost-related delays in care, and emergency department (ED) use due to lack of available appointments. We conducted a series of cross-sectional regression analyses, starting with models that only took into account income or race, and then sequentially adjusted for health insurance, state of residence, demographics, and health status, in order to assess the extent to which disparities were mediated by insurance differences. Then we used multivariate regression to assess respondents' views of whether quality and affordability had improved over the past 2 years and whether the ACA was helping them.

RESULTS: Quality of care ratings were significantly worse among lower-income adults than higher-income adults. Only 10–25% of this gap was explained by health insurance coverage. Cost-related delays in care and ED use due to lack of available appointments were nearly twice as common in the lowest-income group, and less than 40% of these disparities was explained by insurance. There were significant racial/ethnic gaps: reported quality of care was worse among blacks and Latinos than whites, with 16–70% explained by insurance. In contrast to these disparities, lower-income and minority groups were generally *more* likely than whites or higher-income adults to say that the ACA was helping them and that the quality and/or affordability of care had improved in recent years.

CONCLUSIONS: Our post-health reform survey shows ongoing stark income and racial disparities in the health care experiences of Americans. We find evidence that the ACA has helped narrow some of these gaps, suggesting that a potential repeal of the law poses significant risk particularly to low-income groups and racial/ethnic minorities. But even if the ACA survives in some form under the new administration, the law's coverage expansion should not be considered the primary solution to racial and socioeconomic disparities in health care, since health insurance coverage only explains a moderate portion of ongoing disparities in affordability, quality, and access. Additional policy attention will be needed to address these serious problems in the post-ACA era.

BP REPAIRED: EFFECT OF REPEAT MEASUREMENT OF INITIALLY ELEVATED BLOOD PRESSURE ON BLOOD PRESSURE CONTROL Douglas Einstadter[2]; Shari Bolen[3]; Randall D. Cebul[1]. [1]Case Western Reserve University, Chagrin Falls, OH; [2]MetroHealth Medical Center, Cleveland, OH; [3]MetroHealth/Case Western Reserve University, Cleveland, OH. (Control ID #2704668)

BACKGROUND: Hypertension (HTN) affects nearly 70 million people in the US. However, only 53.0% of HTN patients seen in primary care have their BP controlled to <140/90 mm Hg according to national surveys. BP measurement error is recognized as a major cause of poor BP control. Although many aspects of measurement error have been described, the effect of a second BP measurement on overall clinic-measured BP control in real-world practices has not been reported. We evaluated the effect of a second BP measurement on the rate of elevated BP among more than 48,000 patients with diagnosed HTN and followed in primary care at an urban safety-net health system.

METHODS: In mid-2015, we introduced an electronic health record (EHR) prompt to remind staff to repeat a BP measurement for HTN patients whose initial BP was ≥140/90 mm Hg. To evaluate the effect of repeating the BP, we obtained all recorded BP values for HTN patients who were seen in a primary care clinic between January and December, 2016 at MetroHealth, an urban safety-net system in Cleveland, Ohio. We compared the rate of BP control based on the first recorded BP with that of the final recorded BP at each visit. We also determined the change in systolic BP (final-initial) overall and by age, sex, race, insurance and initial systolic BP subgroups.

RESULTS: From January through December, 2016 there were 130,687 primary care office visits for 48,007 patients with HTN. The mean age was 61 years, 59% were female, 43% black, and 30% Medicaid or uninsured. The initial BP was ≥140/90 at 50,684 (39%) visits and an initially high BP was re-measured at 42,464 (84%) visits. The median change (final-initial) in systolic BP was −10 mm Hg (IQR −2 to −18). Among those with a repeat BP, 37% of final BPs were <140/90. Thus, repeating the BP increased the overall HTN control rate by 12% (i.e., 39% × 84% × 37%) from 61 to 73%. Control of BP on repeat measurement was not associated with age, sex, race or insurance type. However, BP change was positively associated with the initial BP value; the higher the initial systolic BP, the greater the change in final systolic BP. While the absolute BP change was greatest for patients with the

highest initial systolic BP, those closest to the control threshold were most likely to have normalization of their BP on repeat measurement.

CONCLUSIONS: Repeat measurement of an initially elevated BP resulted in a meaningful improvement in overall BP control, comparable to that seen with addition of an antihypertensive medication. The absolute BP change was greater for patients with a higher initial systolic BP, but patients with an initial BP value closer to the goal were more likely to normalize on repeat. Implementing routine repeat measurement for an initially elevated BP may contribute to improved decision-making around hypertension management and should be included as a component of programs to improve BP control.

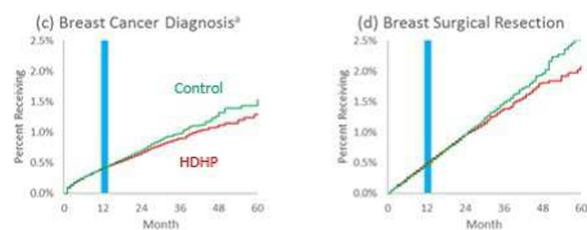
BREAST CANCER DIAGNOSIS AND TREATMENT BEFORE AND AFTER HIGH-DEDUCTIBLE INSURANCE ENROLLMENT James F. Wharam[1]; Fang Zhang[2]; Christine Lu[2]; Anita Wagner[2]; Larissa Nekhlyudov[4]; Craig C. Earle[3]; Stephen B. Soumerai[2]; Dennis Ross-Degnan[2]. [1]Harvard Medical School and Harvard Pilgrim Healthcare, Boston, MA; [2]Harvard Medical School and HPHCI, Boston, MA; [3]Ontario Institute for Cancer Research, Toronto, ON, Canada; [4]Harvard Medical School, Boston, MA. (Control ID #2702914)

BACKGROUND: Primary care physicians play a key role in ensuring appropriate cancer screening, initial workups for breast cancer, and timely transitions through subsequent oncologic care. High-deductible health plans (HDHP) have recently become the predominant commercial health insurance product in the US and the centerpiece of Affordable Care Act replacement proposals. However, HDHP effects on patients undergoing evaluation and treatment for cancer are unknown.

METHODS: We studied Optum health insurance claims and enrollment data derived from a large national health insurer. We used a controlled segmented survival design to examine employer-mandated HDHP transitions, minimizing selection bias. We included approximately 273,000 intervention group women age 25–64 without evidence of breast cancer prior to inclusion. These women were continuously enrolled for 1 year in a low-deductible (≤$500) plan followed by up to 4 years in a HDHP (≥$1000) after an employer-mandated switch. Women were included on a rolling basis and followed between 2004–2012. The comparison group comprised contemporaneous, 1:1 propensity score-matched women whose employers offered only low-deductible plans. Primary outcome measures included times to first diagnostic breast imaging (diagnostic mammogram, breast ultrasound, or breast MRI), breast biopsy, breast cancer diagnosis, and surgical resection (lumpectomy or mastectomy) and were analyzed using segmented survival models adjusted for age group, race/ethnicity, education level, poverty level, US region, index month, and duration of enrollment prior to baseline.

RESULTS: At follow-up, HDHP members experienced delays in receipt of diagnostic imaging (adjusted hazard ratio, aHR: 0.97 [0.94,0.99]), biopsy (aHR: 0.94 [0.89,0.99]), breast cancer diagnosis (aHR: 0.82 [0.74,0.90], Figure), and surgical resection (aHR: 0.90 [0.84,0.98], Figure) compared with controls (*p*-values comparing follow-up aHRs with baseline aHRs: 0.013, 0.026, 0.002, and 0.004, respectively).

CONCLUSIONS: HDHP enrollment was associated with delays in breast cancer diagnostic testing, diagnosis, and surgical resection. Such delays might lead to adverse long-term breast cancer outcomes among HDHP members. Primary care physicians, oncologists, and population health managers should consider closely monitoring women at risk for breast cancer who are enrolled in HDHPs.



Time to first (c) breast cancer diagnosis and (d) breast surgical resection 12 months before and 48 months after a mandated HDHP switch (red line), compared to contemporaneous control group women who remained in low-deductible plans (green line).

BREAST CANCER RISK ASSESSMENT IN A PRIMARY CARE, FEDERALLY QUALIFIED COMMUNITY HEALTH CENTER POPULATION Mita S. Goel. Northwestern University, Chicago, IL. (Control ID #2710534)

BACKGROUND: Since 2005, the U.S. Preventive Services Task Force (USPSTF) has recommended genetic counseling for women at increased risk of breast cancer or ovarian cancer due to BRCA mutations, however, only 18% of primary care physicians use a formal breast cancer risk calculator to identify women at high risk. As a result, we sought to evaluate the feasibility and impact of two methods of assessing the risk of having a genetic mutation increasing breast cancer risk (i.e., in person and via the patient portal) within a primary care setting in a federally qualified community health center (FQHC).

METHODS: We identified women ages 18 and older with established care with Internal Medicine, without a breast cancer diagnosis. To assess possible need for genetic counseling and testing, we administered the Breast Cancer Genetics Referral Tool (B-RST). This test takes approximately 5 min to complete and relies primarily on patient-reported family history. Results are reported as “positive” or “negative.” A positive result connotes increased risk of a genetic mutation and the possible need for detailed genetic counseling. For in-person assessment, we approached all adult women in the waiting area at the FQHC prior to a scheduled appointment and introduced the study. A research assistant administered the B-RST survey in English or Spanish to consenting women. We are currently administering the B-RST through a secure, online patient portal to remaining eligible women who are enrolled in the portal. These women receive an online, secure message with information about breast cancer risk and the B-RST survey. All patients were informed of their results and were given information to assist with interpretation of results. For those patients with positive results, study staff also notified their primary care providers, who were provided detailed information on how to refer patients for genetic counseling, if desired.

RESULTS: For in-person recruitment, we identified 177 eligible women, of whom 168 consented to participate for a 95% recruitment rate. The mean age of participants was 46 years; 144 (95%) were Latina, and 103 (61%) preferred Spanish. Of women surveyed in-person, 38 (23%) reported a family history of breast or ovarian cancer and 4 (7%) had positive scores on the B-RST. For online assessments, we sent messages to 10 women so far, of whom 3 responded, for a response rate of 30%. Mean age was 44 years, and 7 (70% were Latina). One person had a family history of breast or ovarian cancer; none had positive B-RST scores. We are awaiting final data on assessment results from both methods, as well as data regarding referrals for genetic counseling and testing.

CONCLUSIONS: We identified previously unrecognized risk of BRCA gene mutations in a substantial number of women, highlighting the importance of developing systematic methods of risk assessment in this population.

BURNOUT AMONG PRIMARY CARE PROVIDERS AND STAFF IN SMALL TO MEDIUM SIZED PRIMARY CARE PRACTICES: EARLY FINDINGS FROM EVIDENCENOW

Samuel T. Edwards[2, 3]; Miguel Marino[2]; Bijal A. Balasubramanian[1]; Steele H. Valenzuela[2]; Rachel Springer[2]; Leif Solberg[4]; Alex Preston[1]; Deborah Cohen[2]. [1]University of Texas School of Public Health, Dallas, TX; [2]Oregon Health & Science University, Portland, OR; [3]VA Portland Health Care System, Portland, OR; [4]HealthPartners Institute, Minneapolis, MN. (Control ID #2705392)

BACKGROUND: Clinician burnout is associated with poorer health care quality but it is unknown what practice characteristics are associated with clinician and staff burnout in small to medium sized primary care practices.

METHODS: *Study Design and Sample*: We performed a cross-sectional survey of a large nationwide sample of small to medium sized primary care practices participating in the Agency for Healthcare Research and Quality's EvidenceNOW initiative. The seven cooperatives of EvidenceNOW work with 1685 primary care practices in seven regions of the United States to improve the delivery of heart health care. Surveys were fielded at the beginning of EvidenceNOW from 9/22/2015-10/03/2016. *Measures*: A practice survey was administered to practice leadership that collected characteristics such as practice size, ownership, staffing, patient demographics, provider panel size, urban/rural location, and registry use. A practice member survey administered to practice clinicians and staff included questions on job type, years employed, hours worked per week, and burnout. Burnout was assessed using a single item 5-level measure as used in the Physician Worklife Study. A score of 3 or higher indicated burnout. *Analysis*: We conducted a person-level, generalized estimating equation logistic regression to assess the relationship between practice/person characteristics and burnout. Analyses accounted for clustering of clinicians/staff by practice using robust sandwich standard errors.

RESULTS: Of 1685 enrolled practices, 1468 returned surveys (87% response rate). We analyzed a subset of 904 practices in which >1 practice member survey and a practice survey was returned. Among these practices, 5,953 practice members returned surveys, a mean of 6.6 respondents per practice. Burnout was present in 16.9% of respondents overall, but was higher among physicians (22.3%) than other job types (nurse practitioner = 18.9%, clinical staff = 18.3%, non-clinical staff = 16.8%). Correlates of burnout included physician respondent (MD vs. non clinician, OR 1.38, 95% CI 1.07–1.79), non-solo practice (2–5 clinician practice vs. solo practice, OR 1.92, 95% CI 1.36-2.71), more years in practice (4–8 years in practice vs. < 4 years OR 1.63, 95% CI 1.38-1.93) and rural location (urban vs. rural OR 0.65, 95% CI 0.46–0.91). Clinician panel size, patients seen per week per clinician, staff/clinician ratio and practice ownership were not associated with burnout.

CONCLUSIONS: Burnout is prevalent in small to medium sized primary care practices, but at a lower frequency than seen in prior studies and physicians have only slightly higher levels of burnout than other staff members. Members of solo practices have lower odds of burnout, while clinician panel size, patients seen per week and staffing levels are not associated with burnout, suggesting practice autonomy is a more important determinant of burnout than workload. Policy efforts to bolster primary care should focus on promoting practice characteristics associated with less burnout.

BURNOUT AND COPING IN INTERNAL MEDICINE RESIDENTS

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BACKGROUND: Physician burnout is a syndrome characterized by emotional exhaustion, depersonalization, and a low sense of personal accomplishment. It is thought to be a consequence of chronic work-related stress. Coping is how one deals with stress and may affect burnout. The objective of our study was to determine the correlations between assessed burnout and coping mechanisms.

METHODS: All internal medicine residents at the University of Pittsburgh are assessed annually in June for burnout using the Maslach Burnout Inventory-General Survey (MBI-GS) beginning prior to the start of the internship year. Residents are considered to have at least one manifestation of professional buronout if they have a high level of either emotional exhaustion or cynicism. In addition, all residents are asked to complete a Brief COPE survey which measures 14 different coping mechanisms. We analyzed all surveys completed from 2010–2015. Spearman correlation was used to determine the relationship between emotional exhaustion and cynicism and coping at each time point. Residents were stratified into post graduate year (PGY).

RESULTS: We analyzed 1,144 surveys from 587 residents. There were 397 pre intern and 309 PGY-1, 227 PGY-2, and 211 PGY-3 assessments respectively. 577 (50%) of the surveys were from women. When evaluating the relationship between burnout and maladaptive coping mechanisms at each PGY level, we found small to moderate correlations between emotional exhaustion with behavioral disengagement (r = 0.18–0.37), self-blame (r = 0.27–0.45), self-distraction (0.18–0.32,), and venting (0.15–0.47). There were small to moderate correlations with cynicism and behavioral disengagement (r = 0.19–0.40), self-blame (r = 0.24–0.35), self-distraction (r = 0.14–0.34) and venting (r = 0.12–0.38). Denial (r = 0.13–0.20) and substance use (r = 0.15–0.22) had small correlations with emotional exhaustion. There were also small correlations with denial (r = 0.10–0.26), humor (r = 0.13–0.21) and substance use (r = 0.10–0.29). with cynicism. When evaluating the relationship between adaptive coping and burnout, we found a small correlation with the use of acceptance with emotional exhaustion (r = 0.10–0.24) and cynicism (r = 0.11–0.15). No other adaptive coping mechanisms consistently correlated at each PGY with emotional exhaustion or cynicism.

CONCLUSIONS: The use of maladaptive coping mechanisms correlated with professional manifestations of burnout. The strongest correlations were seen with behavioral disengagement, self-blame, self-distraction and venting. This suggests that the assessment of coping mechanisms could identify residents at risk for burnout and could serve as an early warning sign for high risk residents.

CAN A WEB-BASED TRACKING & FEEDBACK TOOL IMPROVE BREAST CANCER TREATMENT AT SAFETY-NET HOSPITALS?

Nina A. Bickell[3]; Maria Castaldi[2]; Ajay Shah[5]; Alan Sickles[6]; Theophilus Lewis[7]; Shalini Arora[8]; Kevin Clarke[12]; Peter Pappas[9]; Margaret Kemeny[10]; Anitha Srinivasan[11]; Rebeca Franco[3]; Kezhen Fei[1]; Michael Parides[1]; Ann S. McAlearney[4]. [1]Icahn School of Medicine at Mount Sinai, New York, NY; [2]Jacobi Medical Center, Manhasset, NY; [3]Mount Sinai School of Medicine, New York, NY; [4]The Ohio State University, Columbus, OH; [5]Bronx-Lebanon, Bronx, NY; [6]NYU Lutheran Medical Center, Brooklyn, NY; [7]Kings County Hospital Center, Brooklyn, NY; [8]Elmhurst Hospital Center, Elmhurst, NY; [9]The Brooklyn Hospital Center, Brooklyn, NY; [10]Queens Hospital Center, Jamaica, NY; [11]Metropolitan Hospital Center, New York, NY; [12]Newark Beth Israel Medical Center, Newark, NJ. (Control ID #2688645)

BACKGROUND: System failures, a cause of underuse in which doctors order care, patients don't refuse but care doesn't ensue, tend to happen more at safety net hospitals (SNH). Tracking & follow-up approaches that close referral loops

in SNHs may reduce underuse. In a randomized trial, we tested a Tracking & Feedback (T&F) tool to reduce underuse of adjuvant breast cancer treatment.
METHODS: We recruited 5 community & 5 municipal SNHs that serve a large proportion of minorities in the NYC metropolitan area. We implemented rapid case ascertainment, a T&F tool and trained point persons at each site to determine if women with newly operated stage 1–3 breast cancer, connected with the oncologist since such connections are associated with getting treated. The tool created a daily "to do" reminder for point persons to ascertain if patients were seen by the oncologist. Point persons then relayed this information to surgeons to follow through as they deemed necessary. Underuse includes: no RT after lumpectomy or mastectomy with >4 positive nodes; no chemo for HR- and no hormonal therapy for HR+ tumors >1 cm; no trastuzumab for Her2+ tumors. We interviewed key informants about tool usefulness. We conducted intention to treat and pre-post analyses to assess tool and implementation effectiveness, respectively.
RESULTS: Pre-intervention, despite randomizing hospitals, intervention (INT) hospitals had fewer whites (4% vs 14%; $p = 0.0005$), poorer follow-up approaches (0.68 vs 0.80; $p = 0.07$), less Medicaid & uninsured patients (36% vs 62%; $p < .0001$) and more underuse (28% vs 15%; $p = 0.002$) compared to control (CNTL) hospitals; comorbidities and stage were similar. The RCT found no difference in underuse rates (9% at INT & 11% at CNTL hospitals; $p = 0.8$). Because randomization did not result in equivalent distributions, we modeled pre- ($N = 403$) and post ($N = 191$) populations controlling for time period and clustering & found that hospitals with better follow-up (OR = 0.82; 95% CI: 0.71–0.96) had less underuse. In settings with poor follow-up & tracking approaches, key informants found the tool useful.
CONCLUSIONS: While the RCT findings were negative, they suggest a T&F tool may help reduce underuse in SNHs with poor follow-up capabilities.

CAN WE LINK STANDARDIZED ASSESSMENT OF RESIDENTS' CLINICAL SKILLS WITH PATIENT OUTCOME DATA? Adina Kalet[2]; Colleen C. Gillespie[2]; Lisa Altshuler[2]; Heather Dumorne[2]; Kathleen Hanley[2]; Andrew B. Wallach[1]; Barbara Porter[2]; Sondra Zabar[2]. [1]Bellevue Hospital, New York, NY; [2]New York University School of Medicine, New York, NY. (Control ID #2702671)

BACKGROUND: At Bellevue Hospital Center (BHC), we have a robust Unannounced Standardized Patient (USP) program, where trained actors portraying real patients in the clinical setting, incognito, assess the residents' skills following their visit. We sought to determine the relationship between USP ratings of residents' skills and clinical outcomes among the residents' continuity patient panels to define educationally sensitive patient outcomes.
METHODS: We assembled a retrospective cohort of PGY 2 internal medicine residents with at least 2 USP visits between 7/1/14-6/30/15 and ambulatory care patient panels at BHC. The two outcome variables were the percentage of hypertensive patients in the residents' panel with blood pressure (BP) <140/90, and the average of the most recent glycosylated hemoglobin (HbA1C) result among the residents' patients with diabetes. The predictor variables included mean USP ratings of residents' clinical skills and mean faculty rating of the residents' clinic notes (scored for quality on a 0 to 3 scale). USPs used a behaviorally anchored checklist (not done, partly done, well done) for the following domains: communication, case specific assessment, patient education, physical examination, professionalism, management plan, patient satisfaction, and patient activation measure. We tested the correlations between USP scores with BP and HbA1C control, and then developed multivariate, linear regression models of USP scores on BP and HbA1C scores, respectively, each controlling for Avg. Chronic health score (ACHS, derived by scoring different clinical conditions by acuity and used to determine if the panel is getting sicker over time) and total number of patients in the panel (TNPP) because these variables were correlated with both the outcome and predictor variables.
RESULTS: 29 PGY 2 residents had a mean of 2.5 (SD 1.0) USP visits during the study period. Residents' patient panels size varied (median 124, range 62–171) and mean patient age was 48 years (SD 1.4). Patient Activation scores were correlated with Average Chronic Health Score ($r = .482$, $p = .008$) and Panel Average last A1c ($r = -.311$, $p = .10$). Patient activation scores explained 16% variance in the mean panel last HgA1c, (adjusted R2 .137, $p = .08$). Case specific Assessment & Patient Education skills across USP cases explained 21.5% of the variance and the Average Chart Note Score explained 14.4% of the variance in % of Hypertension controlled (adjusted R2.378, $p < .009$).
CONCLUSIONS: This exploratory study suggests that learnable resident clinical skills are associated with quality of care indicators for HTN and DM control. In particular, being able to activate patients, assess and educate them and write high quality notes are pathways to quality care. Next steps are to confirm these findings in a larger dataset. Doing so will help align medical education with patient safety and care quality and provide guidance for educational and clinical research aimed at improving the health of populations served.

CARDIOVASCULAR GENETIC RISK TESTING FOR TARGETING STATIN THERAPY IN THE PRIMARY PREVENTION OF CARDIOVASCULAR DISEASE: A COST-EFFECTIVENESS ANALYSIS Jamie A. Jarmul[2, 3]; Mark J. Pletcher[4]; Stephanie Earnshaw[5]; Morris Weinberger[3]; Daniel Jonas[2]; Christy Avery[3]; Kristen Hassmiller Lich[3]; Stephanie Wheeler[3]; Michael Pignone[1]. [1]Dell Medical School, UT-Austin, Austin, TX; [2]UNC-Chapel Hill, Durham, NC; [3]Gillings School of Global Public Health, Chapel Hill, NC; [4]University of California-San Francisco, San Francisco, CA; [5]Research Triangle Institute, Research Triangle Park, NC. (Control ID #2705618)

BACKGROUND: It is unclear whether additional risk stratification using novel risk factors improves clinical decision-making about statin use for primary prevention in patients with intermediate atherosclerotic cardiovascular disease (ASCVD) risk beyond traditional risk factors. Cardiovascular genetic risk testing is one option for risk stratification. The objective of this study was to estimate the cost-effectiveness of testing for a 27-SNP cardiovascular genetic risk score (cGRS) to target statin therapy in the primary prevention of ASCVD.
METHODS: The UNC-RTI Coronary Heart Disease Prevention Model is a state-transition Markov model that can be used to compare incidence of ASCVD, mortality, quality of life, and costs with and without a prevention intervention, for specific clinical scenarios. In the model, a specific clinical scenario is defined by age, sex, and ASCVD risk factors, including systolic blood pressure, total cholesterol, HDL cholesterol, smoking status and anti-hypertensive medication use in non-diabetic, ASCVD-free individuals. We updated this model to evaluate the cost-effectiveness of testing for a 27-SNP cGRS. We tested a set of clinical scenarios that included 45-year-old, 55-year-old, and 65-year-old men and women, each with an intermediate 10-year ASCVD risk of 7.5%. Our primary outcome measure was cost per quality-adjusted life-year (QALY) gained. We performed one-way and two-way deterministic sensitivity analyses for key parameters, including statin disutility, statin medication costs and cGRS testing costs, as well as a global probabilistic sensitivity analysis.
RESULTS: Under base case assumptions for statin disutility (disutility = 0.001) and cost ($4/month), the preferred strategy is to treat all patients at 7.5% risk with

statins without cGRS testing. Results were similar for patients at lower or higher ASCVD risk (2.5–10%).In deterministic sensitivity analyses, we found that for certain clinical scenarios, such as a 65-year-old man with a 10-year predicted ASCVD risk of 7.5%, cGRS testing can be cost-effective under a very limited set of assumptions; for example, when the cost of obtaining a cGRS test is $100, statin cost of $15/month and statin disutility is 0.013, the preferred strategy (using a willingness-to-pay of $50,000/QALY) is to obtain a cGRS test and treat if cGRS is intermediate or high. However, even when a cGRS testing strategy was preferred, the probabilistic sensitivity analysis showed that the probability of cost-effectiveness at a willingness-to-pay threshold of $50,000/QALY was less than 50%.

CONCLUSIONS: Our analyses demonstrate that testing for a 27-SNP cGRS is not a cost-effective approach for targeting statin therapy in the primary prevention of ASCVD.

CARDIOVASCULAR HEALTH EFFECTS OF 100% FRUIT JUICE VERSUS WHOLE FRUIT IN POSTMENOPAUSAL WOMEN: RESULTS FROM THE WOMEN'S HEALTH INITIATIVE

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BACKGROUND: One hundred percent fruit juice is rich in nutrients like potassium and polyphenols, but it is also high in naturally occurring sugars and thus may be associated with adverse cardiometabolic health effects. We investigated whether 100% fruit juice and whole fruit were independently related to incident hypertension or incident type 2 diabetes.

METHODS: We included postmenopausal women 50–79 years of age enrolled in the Women's Health Initiative. The risk of incident hypertension was analyzed in 80,539 participants and risk of incident diabetes in 114,219 participants. One hundred percent fruit juice and whole fruit intake were assessed by baseline food frequency questionnaire. Standardized questionnaires assessed medical history and other characteristics at baseline and every 6–12 months during follow-up. Cox regression, adjusted for demographic, socioeconomic, behavioral, and dietary variables (including total energy intake) was used to estimate hazard ratios (HR) for the associations between 100% fruit juice and whole fruit consumption and incident hypertension and diabetes during a mean of 7.8 years of follow-up.

RESULTS: In multivariable analyses comparing the highest versus lowest quintiles of consumption, there was no association between 100% fruit juice consumption (highest quintile mean 9.5 ± 3.7 ounces/day versus lowest quintile mean 0.5 ± 0.4 ounces/day) and incident hypertension (HR 1.00, 95% CI 0.97–1.03) or incident diabetes (HR 0.98, 95% CI 0.92–1.04). There was also no association between whole fruit consumption (highest quintile mean 2.5 ± 0.6 servings/day versus lowest quintile mean 0.3 ± 0.1 servings/day) and incident hypertension (HR 1.02, 95% CI 0.98–1.05) or incident diabetes (HR 1.03, 95% CI 0.96–1.10).

CONCLUSIONS: Consumption of 100% fruit juice up to 9.5 ounces/day or whole fruit up to 2.5 servings/day was not associated with risk of incident hypertension or diabetes among postmenopausal US women.

CAREGIVER BURNOUT IN A SCRIBE MODEL AND PHYSICIAN FINANCIAL PRESSURES IN OUTPATIENT PRIMARY CARE PRACTICES

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BACKGROUND: Primary care redesign initiatives in outpatient practice include evolving roles for front-line staff, including physicians, medical assistants, nurses and administrative staff. Changing roles and added responsibilities may contribute to caregiver burnout and may also affect physicians' perception of financial pressures. We assessed burnout levels of caregivers practicing in a scribe model vs. usual care and physician perception of financial pressures in outpatient primary care practices in a large, integrated health system.

METHODS: We created a survey including the Maslach Burnout Inventory (MBI) as well as a 1-item question from the RAND-American Medical Association Survey addressing perceived source of financial pressures for physicians. The survey was distributed electronically using REDCap to 813 outpatient primary care employees including physicians, medical assistants, nurses, and administrative staff at diverse practice sites in an integrated health system.

RESULTS: Ten respondents who reported not working in primary care were excluded. Of the remaining 803 participants, 285 surveys were completed (response rate 35%), including 76 physicians, 79 medical assistants(MAs) and 47 nurses; 65% of respondents worked in Internal Medicine and 35% in Family Medicine at 29 practice sites. Twenty-one percent of respondents worked at the health system for < 2 years and 33% for > 10 years. Nine (12%) physicians worked with a scribe and 26 (33%) MAs and 4 (33%) licensed practical nurses (LPNs) performed scribing duties. On the MBI, 38% of physicians scored high for emotional exhaustion, 24% for depersonalization, while 58% scored high on personal accomplishment. Among MAs and LPNs, 27% scored high for emotional exhaustion, 9% for depersonalization, and 45% on personal accomplishment. No significant differences in MBI scores were noted between physicians or MAs and LPNs who worked in a scribe model compared to those who did not. When asked which factors were important in determining compensation, physicians rated the following as "very important:" Factors reflecting your own productivity (45%), Results of satisfaction surveys completed by your patients (23%), Specific measures of quality of care such as rates of preventive care services for your patients (28%), Results of practice profiling i.e. comparing your pattern of using medical resources with that of other physicians (16%), and The overall financial performance of the practice (31%).

CONCLUSIONS: A significant number of physician and non-physician staff in outpatient primary care report burnout even while reporting high personal accomplishment. Interestingly, burnout scores were unrelated to participating in a scribe model vs. usual care. Physicians perceive financial pressures related to their own productivity, quality measures, and patient satisfaction as very important to their compensation. Efforts to reduce stressors on caregivers in outpatient primary care teams are needed.

CEFTRIAXONE VERSUS AMPICILLIN/SULBACTAM ON THE TREATMENT OF ASPIRATION PNEUMONIA -A PROPENSITY SCORE ANALYSIS FROM A DATA OF JAPANESE MULTICENTER REGISTRY

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BACKGROUND: Incidence of aspiration pneumonia is increasing in Japan in association with increase of the number of elderly people. In Japan, ampicillin/sulbactam (ABPC/SBT) and ceftriaxone (CTRX) is preferred for the treatment of aspiration pneumonia with the aim of covering the full spectrum of the oral anaerobes and for the treatment of community acquired pneumonia (CAP), respectively. However, comparison of ABPC/SBT with CTRX on the treatment of aspiration pneumonia has not been investigated.

METHODS: This study is an analysis of prospectively registered data from 4 Japanese hospitals for patients with community-onset pneumonia from September 2011 to January 2013 (the Adult Pneumonia Study Group-Japan: APSG-J). Aspiration pneumonia is defined as the one including at least one of the aspiration related factors which was set preliminarily. A total of 637 consecutive patients with aspiration pneumonia treated by CTRX or ABPC/SBT were enrolled. Propensity score was estimated from the 29 pre-treatment variables including age, sex, comorbidities, use of oral steroids, aspiration related factors, vital signs, laboratory data, and findings of a chest x-ray. Propensity score matching successfully got 164 patients into CTRX and ABPC/SBT groups. The primary endpoint defined as in-hospital mortality was compared between the two groups.

RESULTS: In the propensity-matched cohort, the primary endpoint was observed in 22 patients (6.7%) over a median follow-up period of 25.9 days. In-hospital mortality rates were not significantly different with CTRX compared with ABPC/SBT (4.3% [95% CI: 1.7–8.6] versus 9.1% [95% CI: 5.2–14.7], $P = 0.12$).

CONCLUSIONS: This study found that mortality benefit of patients treated with CTRX as a first line treatment for aspiration pneumonia was not superior to that with ABPC/SBT.

CENTRAL ROLE OF RELATIONSHIPS IN PROMOTING CAREERS IN GLOBAL HEALTH Brent C. Williams; Jason Bell; Katherine Hughey; Patricia Mullan. University of Michigan, Ann Arbor, MI. (Control ID #2700138)

BACKGROUND: Medical school curricula in global health most often center around providing coursework and structured, often scholarly, field experiences. Few studies have examined the role of non-curricular aspects of students' experience in facilitating careers in global health. To guide and refine the Global Health and Disparities (GHD) Path of Excellence at the University of Michigan Medical School, now in its sixth year, we examined the relative value of curricular and non-curricular aspects of the GHD Path to medical students.

METHODS: The GHD Path includes: a) four-year mentoring relationship with a GHD Advisor; b) completion of a scholarly field project; c) small group activities in the second year that include group exercises and interactions with GHD faculty and senior students; and d) a team-based Mini Field Project in the second year focusing on leadership skills. In the spring of 2016 we administered a survey to the 41 graduating UM Medical students who participated in GHD throughout medical school. For each component of the GHD Path, students were asked to rate the extent to which {component of GHD} "provided VALUE to you" and "provided a positive IMPACT on your professional development." Response categories were "Strongly Disagree (SD)", "Disagree (D)", "Neutral (N)", "Agree (A)" and "Strongly Agree (SA)".

RESULTS: Twenty-seven (67%) of the 41 students completed surveys. Other than the capstone project, *all components rated as high value or impact by >80 % of students concerned relationship-building* (*Table*).

CONCLUSIONS: Building personal and professional relationships is as important as field experience, and more important than coursework, to developing a career in global health among medical students. Possible mechanisms include role modeling, increased motivation through sense of community, and resources available through social networks. Providing these results are confirmed in future studies, programs designed to promote careers in global health should create, nurture, and measure opportunities for students to develop personal and professional relationships related to their career paths.

Percent of students who Agree/Strongly Agree that "{GHD activity} provided 'VALUE to you' and a 'Positive IMPACT on your Professional Development'"

GHD ACTIVITY	VALUE	IMPACT
Your GHD Advisor	89	78
Interaction with other students	89	89
Capstone project	82	81
Other GHD Faculty	78	81
Meet the professor dinners	74	52
M2 mini-field project	67	67
Noon seminars	67	48
Small group seminars	63	52

CENTRALIZED VACCINE REMINDER/RECALL TO IMPROVE ADULT VACCINATION RATES AT AN URBAN SAFETY NET HEALTH SYSTEM Laura P. Hurley[1, 3]; Brenda Beaty[4, 3]; Steven Lockhart[3]; Dennis Gurfinkel[3]; Kristin Breslin[1]; L Miriam Dickinson[2, 3]; Anne Libby[2, 3]; Allison Kempe[3, 2]. [1]Denver Health, Denver, CO; [2]University of Colorado, Aurora, CO; [3]University of Colorado, Anschutz Medical Campus, Aurora, CO; [4]Unviersity of Colorado, Aurora, CO. (Control ID #2702047)

BACKGROUND: Adult vaccination rates are well below Healthy People 2020 goals. Reminder/recall (R/R) is a proven method to increase immunizations, but is underutilized. Centralized R/R using a public health collaborative reduces the burden of an individual practice conducting reminder/recall, and, in prior pediatric trials, has been shown to be effective at increasing immunization rates. However, centralized R/R has not been tested in adult populations. Our objectives were to assess effectiveness and implementation costs of centralized vaccine reminder/recall using the Colorado Immunization Information System (CIIS) vs. usual care for adult vaccine delivery.

METHODS: From September 2015 to April 2016, we randomized 25,039 healthy adults, 16,897 high-risk adults, and 5332 adults ≥ 65 to centralized R/R (R/R) or usual care (TAU) within an urban safety net healthcare system in Denver, CO. In the centralized R/R arm, healthy adults who needed an influenza and/or Tdap, and high-risk adults and seniors who needed an influenza, and/or Tdap, and/or pneumococcal vaccine (PPSV23 or PCV13) were sent up to 3 reminder/recalls by autodialed telephone or mail. Documentation of receipt of any of needed vaccines in CIIS within six months was the primary outcome. We assessed effectiveness of the intervention using multivariable modeling controlling for gender, age, race, ethnicity, insurance type and history of vaccine refusal. Implementation costs were assessed with activity-based accounting for time spent on R/R tasks and supplies in the R/R arm.

RESULTS: In the healthy 19–64 year-old population, 18.6% in the R/R group vs. 17.9% in the TAU group received any needed targeted vaccine (AOR 1.06, 95%CI 0.98-1.14). In the high-risk 19–64 population, 28.1% in the R/R group vs. 26.7% in the R/R group received any needed targeted vaccine (AOR 1.07, 95%CI 1.001-1.15). In the senior population, 33.2% for the R/R group vs. 29.8% for the TAU group received any needed targeted vaccine (AOR 1.15, 95%CI 1.02-1.30). Receipt of influenza vaccine for the 19–64 high-risk and senior populations was the source of the difference in receipt of any needed vaccine in R/R and TAU arms. 26.6% of 19–64 high risk adults in the R/R group received influenza vaccine compared to 25% in the TAU group ($p = 0.02$) and 32% of seniors in the R/R group received influenza vaccine compared to 28.6% in the TAU group ($p = 0.007$). Total R/R resource costs were $14,868.16 for the trial, and the cost per person receiving at least one vaccine was $3.29.

CONCLUSIONS: Centralized R/R was effective at increasing influenza vaccination rates in vulnerable adult populations over a short period of time, without burdening the practices and at a low cost.

CHALLENGES WITHIN INPATIENT ROUNDS: A MULTI-INSTITUTIONAL QUALITATIVE STUDY Raphael Rabinowitz[3]; Oliver Hulland[3]; Jeanne M. Farnan[2]; Lisa Kearns[4]; Michele Long[5]; Bradley Monash[1]; Priti Bhansali[6]; H. Barrett Fromme[2]. [1]University of California, San Francisco, Mill Valley, CA; [2]University of Chicago, Chicago, IL; [3]The University of Chicago Pritzker School of Medicine, Chicago, IL; [4]The Ohio State University, Columbus, OH; [5]University of California San Francisco, San Francisco, CA; [6]Children's National Medical Center, Washington, DC. (Control ID #2701124)

BACKGROUND: Attending rounds is an important activity for both patient care and education at teaching hospitals. There is a relative lack of studies addressing stakeholders' perceptions of challenges and barriers to the rounding experience. This study characterizes perceptions of medical students, pediatrics and internal medicine housestaff and faculty about the challenges faced during inpatient rounds.
METHODS: The authors conducted focus groups with a purposive sample of medical students and internal medicine and pediatrics interns, residents, and faculty at 4 teaching hospitals to determine their perceptions of the purpose of rounds. Participants volunteered unsolicited comments about challenges faced during rounds without directly being asked this question. The constant comparative method was used to identify themes and codes in a secondary analysis of these comments.
RESULTS: The study identified 4 themes: problems with how rounds are run, challenges to teaching, external problems, and problems specific to family-centered rounds (FCR). Problems with how rounds are run related to challenges that emerged from improper or unsatisfactory rounding facilitation by team leaders, and included excessive variability in rounds, poorly defined roles and expectations, and problems with presentations. Challenges to teaching included tension between education and service, decreased physical exam instruction, and decreased role modeling. External problems included systemic issues that impacted rounds such as time pressures and problems with technology. Problems with FCR were exclusively mentioned during pediatrics focus groups, mostly by residents, and encompassed difficulties introduced by the incorporation of patients and families on rounds, including decreased learning, loss of complexity in discussion, and unhelpful for patients and families.
CONCLUSIONS: Challenges described by study participants varied by training level and specialty. Conflicting frustrations with the rounding experience by its participants indicates widespread misunderstanding of the priorities of other stakeholders in the rounding experience. The acknowledgement of problems related to how rounds are run suggests that faculty development initiatives and resident as teacher (RAT) curricular innovations aimed at standardizing a set of best practices may have a significant impact on educational outcomes for new participants on rounds. More research is needed to identify these practices and the best methods to promote them. A tension between teaching objectives and external problems imposed by a compressed and fragmented workday due to duty hours implementation underscores a need for creative innovations in rounding efficiency to maximize their bedside educational value. Finally, resident-specific concerns about FCR indicates the need to better educate residents about the value of patient interactions and family-centered rounds.

CHANGES IN HEALTH AND WELL-BEING AMONG FIRST-YEAR RESIDENTS Christopher Wee[1]; Jacob A. Petrosky[2]; Lauren Mientkiewicz[3]; Krishna K. Patel[4]; Charles Kwon[2]; Allan Siperstein[5]; Xiaobo Liu[2]; Michael Rothberg[2]. [1]Cleveland Clinic Foundation, Cleveland, OH; [2]Cleveland Clinic, Cleveland, OH; [3]Akron Children's Hospital, Akron, OH; [4]Mid America Heart Institute, Kansas City, MO; [5]Cleveland, Cleveland, OH. (Control ID #2703204)

BACKGROUND: Training conditions for physicians may affect their ability to serve as healthy role models to patients. There is limited data, however, on how trainees' health and wellness habits are affected by GME training. Our objective was to measure differences in self-reported health and health behaviors at the beginning and end of the PGY-1 year.
METHODS: We invited incoming PGY-1 trainees in all specialties at the Cleveland Clinic during orientation to participate in an anonymous online survey, through a mass e-mail invitation. The 31-question instrument included previously validated questions regarding self-reported health habits, well-being, and nutrition practices, including average hours slept, average days exercising per week, and servings of fruits and vegetables consumed. Self-reported health status was assessed on a scale of 1 (excellent) to 5 (poor). At the end of the year, a follow-up survey was sent to those who had responded initially. Baseline and follow-up measures were compared using paired T-test or Wilcoxon signed rank sum test as appropriate.
RESULTS: Of 170 interns who were sent invitations, 59 (35%) started the initial survey and 34 (58%) of these responded to the follow-up survey. Only the 34 individuals who completed both surveys were included in the longitudinal analyses. Average age was 27, 17 were in internal medicine, 5 in a preliminary year, 4 in pediatrics, and the remainder in other specialties. Twelve were married or in long-term relationships, and 50% lived alone. Only 3 of the respondents had children. Over the course of the year, self-reported weight did not change significantly (157.2 lbs initially v 154.8 lbs at follow-up), number of hours slept decreased (7.3 v 6.3 hrs $p < 0.001$), as did days exercised per week (3.3 v 2.4 days $p = 0.005$), but the length of workouts did not change. There was no change in alcohol consumption. Breakfast and lunch habits changed significantly, with more people skipping breakfast (17.7% v 41.2%) and eating lunch out at follow-up (38.2% v 70.4%). Dinner habits and consumption of fruits and vegetables did not change. Respondents noted feeling less happy and more worn out at follow-up. When asked to rate their general health, at both the initial and follow-up survey, the median answer was 2 (very good). However, when asked to compare their health at the time of the survey to 1 year prior, during the initial survey, the average respondent answered "about the same," while during the follow-up survey, they answered, "somewhat worse than 1 year ago" ($p < 0.001$).
CONCLUSIONS: While training to become health professionals, interns' own health habits deteriorated. Further studies should explore the relationship between health habits and burnout, and whether adherence to constructive habits could mitigate the effects of trainee burnout.

CHANGES IN SELF-REPORTED GENERAL HEALTH, PHYSICAL HEALTH, AND MENTAL HEALTH FOLLOWING THE AFFORDABLE CARE ACT'S MEDICAID EXPANSION Tyler N. Winkelman[1, 2]; Virginia W. Chang[3, 3]. [1]University of Michigan, Ann Arbor, MI; [2]VA Ann Arbor Healthcare System, Ann Arbor, MI; [3]New York University, New York, NY. (Control ID #2699823)

BACKGROUND: The adoption of Medicaid expansion in some states and not others provided a unique natural experiment to study the effects of

Medicaid. Research stemming from this natural experiment suggests that Medicaid expansion increased health insurance coverage, improved access to care, and reduced cost-related barriers to prescription drugs among low income individuals. Findings with respect to health outcomes, however, have been more mixed. Therefore, we analyzed recently released national data from the Behavioral Risk Factor Surveillance System (BRFSS) to assess the relationship between Medicaid expansion and self-reported health measures among low-income individuals.

METHODS: We used 2011–2015 BRFSS data, which provided 3 years of data prior to implementation of Medicaid expansion and 2 years of follow-up data in the majority of expansion states. Our study sample consisted of all individuals age 18–64 with household incomes below $15,000, targeting individuals who would have qualified for Medicaid coverage in expansion states. As in prior work, we excluded five states that had previously expanded Medicaid. Our outcomes were self-reported general health, poor physical health days, poor mental health days, and disability following Medicaid expansion. We used a difference-in-differences approach to estimate the effect of Medicaid expansion on our outcomes of interest. Our key independent variable was equal to 1 for individuals living in states where expansion was in effect during the month of their interview. Estimates were obtained with multivariable linear probability models and adjusted for age, race/ethnicity, sex, education, marital status, and children, as well as state-level and quarter-year fixed effects. We used BRFSS sampling weights and estimated robust standard errors clustered at the state level to account for serial autocorrelation.

RESULTS: In adjusted analyses of the influence of Medicaid expansion, we found that expansion was associated with a significant reduction in fair/poor self-rated health (2.5 percentage points [95% CI, −3.5 to −1.5]). While expansion was not associated with a statistically significant change in the number of poor physical health days (−0.20 days [95% CI, −0.68 to 0.28]), it was associated with a significant reduction in the number of poor mental health days (−0.52 days [95% CI, −0.99 to −0.04]). Change in disability prevalence did not vary between expansion and non-expansion states ($P = 0.73$). Adjusted linear time trends prior to expansion (2011 to 2013) for all outcomes were similar in expansion and non-expansion states ($P > .05$ for all comparisons).

CONCLUSIONS: To our knowledge this is the first national study to report positives changes in self-reported general health following the ACA's Medicaid expansion provision, driven by changes in mental health. Whether these trends continue to improve will likely depend on whether policymakers choose to improve or repeal the ACA in the coming months.

CHANGES TO OUTPATIENT HYPERTENSION AND DIABETES MEDICATIONS IN OLDER ADULTS FOLLOWING UNRELATED HOSPITALIZATIONS

Timothy Anderson[1]; Siqi Gan[1, 2]; Kathy Fung[1, 2]; Ying Shi[1, 2]; Michael A. Steinman[1, 2]. [1]University of California, San Francisco, San Francisco, CA; [2]San Francisco VA Medical Center, San Francisco, CA. (Control ID #2705026)

BACKGROUND: Transient elevations of blood pressure and serum glucose are common in hospitalized older adults. Although these perturbations usually have little long-term significance, they may lead inpatient clinicians to make changes to outpatient regimens, even when patients are hospitalized for conditions that do not typically require aggressive blood pressure or glucose management. Unnecessary changes made to stable outpatient regimens during a hospital stay can easily become over-treatment once patients return home, exposing them to increased risks of serious adverse drug events including hypoglycemia, syncope and falls. We thus sought to evaluate how often patients' diabetes and hypertension regimens are changed following hospitalization for unrelated conditions.

METHODS: We used national VA and Medicare data to assemble a retrospective cohort of veterans age 65 years and older who received regular care in VA outpatient settings, had hypertension and/or diabetes and were hospitalized in a VA medical center in 2011 with pneumonia, urinary tract infection or venous thromboembolism. Using VA pharmacy dispensing records, we identified medications in use prior to hospitalization and medications prescribed in the peri-discharge period. We compared admission medications to medications in use at discharge to identify changes in regimens. Changes were classified as medication additions, discontinuations and dose changes.

RESULTS: 9,795 veterans were included in our cohort of whom 7,635 had hypertension and 4,079 had diabetes. The majority of patients were male (98%) and the median age was 78 (IQR 70–84). Patients were prescribed a median of 7 medications on admission (IQR 5–10). Patients with hypertension were prescribed a median of 2 anti-hypertensives (IQR 1–3) and patients with diabetes a median of 1 hypoglycemic medications (IQR 0–2). 4,836 (63%) patients with hypertension experienced a change to their anti-hypertensive medications, of which 39% experienced at least one anti-hypertensive discontinuation and 38% at least one anti-hypertensive addition. 1,589 (39%) patients with diabetes experienced a change to their diabetes medications, of which 23% experienced at least one hypoglycemic discontinuation and 20% at least one hypoglycemic addition. Overall, medication changes were common, 94% of patients experienced at least one medication change following hospitalization and the median number of medication changes was 5 (IQR 3–7). The majority of patients experienced at least one medication addition (81%) and at least one medication discontinuation (72%).

CONCLUSIONS: Over half of patients in a national cohort of older veterans hospitalized for common medical conditions experienced changes to their outpatient hypertension and diabetes medications at discharge. These high rates of changes have the potential to impact adherence and expose patients to serious adverse drug events upon discharge.

CHOOSING DAILY LABS IN THE HOSPITAL: EVALUATION OF NOVEL MINNESOTA LAB APPROPRIATENESS CRITERIA (MLAB)

Caleb Murphy; Jill Bowman Peterson; Alisa Duran. University of Minnesota, Minneapolis, MN. (Control ID #2703276)

BACKGROUND: Daily lab testing despite patients' clinical and lab stability is identified as an area of inappropriate health care spending in the Society of Hospital Medicine's Choosing Wisely list.[1] Approximately 25% of daily labs are inappropriate, leading to overtreatment and increased spending, yet guidelines for identifying such labs do not exist.[2] The objective of this study was to create and apply the Minnesota Lab Appropriateness Criteria (MLAB) to properly identify inappropriate labs compared to the national average of 25%.

METHODS: MLAB were created by two internists at the University of Minnesota experienced in hospital medicine and high value care, reviewed by the Alliance for Academic Internal Medicine High Value Care Workgroup, and revised. 50 medicine admissions (hospitalization 2–10 days, non-ICU, non-cirrhotic patients) were randomly selected. Using MLAB, two reviewers independently rated appropriateness of basic metabolic panels (BMP) and complete blood counts (CBC) from each hospitalization using both a dichotomous scale (DS; appropriate/inappropriate) and a three-point Likert scale (LS; 1 = inappropriate, 2 = equivocal, 3 = appropriate).

RESULTS: 461 daily labs (253 BMPs, 208 CBCs) from the 50 admissions were reviewed. Using MLAB, 24.1% (95%CI 18.8–29.4%) of BMPs and 25.0% (95%CI 19.1–30.9%) of CBCs were rated inappropriate on the DS. On the LS, 20.2% (95%CI 15.2–25.1%) of BMPs were inappropriate and 7.1% (95% CI 4.0–10.3%) were equivocal, while 16.8% (95%CI 11.7–21.9%) of CBCs were inappropriate and 12.0% (95%CI 7.6–16.4%) were equivocal. When comparing raters on the DS, κ was 0.68 (95%CI 0.58–0.78) for BMPs and 0.77 (95%CI 0.68–0.87) for CBCs. Weighted κ on the LS was 0.58 (95%CI 0.49–0.67) for BMPs and 0.62 (95%CI 0.52–0.72) for CBCs.

CONCLUSIONS: Using MLAB, raters identified 24.1% of BMPs and 25.0% of CBCs as inappropriate, consistent with previously reported figures. This suggests MLAB correctly identifies inappropriate daily lab ordering. When assessed on the LS, inappropriate lab rates dropped as more labs were identified as equivocal. Yet appropriate test rates also dropped; thus, equivocal tests were not just comprised of tests previously identified as inappropriate on the DS. Interrater reliability between raters showed moderate to substantial agreement using both the DS and LS; with more agreement on the DS. MLAB offer an accurate and reliable method of assessing BMP and CBC appropriateness, with potentially important applications in high value care initiatives and medical education. These criteria, when applied prospectively, could potentially translate to cost savings across health systems and help reduce unnecessary daily lab testing in the hospital. References: 1. Bulger J, Nickel W, Messler J, et al. Choosing Wisely in Hospital Medicine: Five opportunities for improved healthcare value. J Hosp Med. 2013. 8:486–92. 2. Zhi M, Ding EL, Theisen-Toupal J, et al. The landscape of inappropriate laboratory testing: a 15-year meta-analysis. PLoS ONE. 2013. 8:e78962.

CLINICAL DECISION SUPPORT (CDS) TOOLS FOR ACE INHIBITOR THERAPY IN HEART FAILURE: HELPFUL OR HASSLE?

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BACKGROUND: Electronic health record (EHR)-based clinical decision support tools (CDS) incorporate individualized data to produce patient-specific recommendations at the point-of-care. However, these tools are often limited in their effectiveness, which may be due to poor consideration of usability. The purpose of this study was to evaluate the utilization of a CDS intervention to increase prescription of Angiotensin Converting Enzyme inhibitor (ACEi) or Angiotensin Receptor Blocker (ARB) for patients with heart failure.

METHODS: We performed a retrospective study of hospitalized patients with heart failure from the time of CDS implementation, 7/10/13, through 11/30/15. The CDS that we investigated offers providers an opportunity to prescribe an ACEi or ARB or report a contraindication to therapy for patients with documented heart failure. All patients with an EF ≤ 40% who were not on an ACEi or ARB at time of discharge were included in the study. We identified the number of patients for whom the CDS triggered; of those, we categorized provider response as: dismissed, ordered an ACEi/ARB, or contraindication reported. We then performed manual chart review to identify the CDS reported contraindication and structured chart abstraction with standard guidelines to identify gold standard contraindications. We compared each CDS contraindication to gold standard contraindications to determine their accuracy.

RESULTS: Out of the 618 subjects who had an EF ≤ 40% but no ACEi or ARB at the time or discharge, 435/618 (70%) had a triggered CDS. Of these 435 subjects for who a CDS was triggered, 180 (41%) were dismissed, 225 (52%) had a contraindication response and 30 (7%) had a prescription for an ACEi/ARB therapy. Overall the accuracy of the documented CDS was 42% (Table 1).

CONCLUSIONS: The CDS that we reviewed was poorly utilized and contraindications documented in the tool poorly correlated with patient clinical status reflected elsewhere in the EHR. These findings identify this CDS as a possible impedance to user workflow. One way to improve CDS tools at the point of care is through thorough usability testing and consideration of physician workflow prior to implementation.

Table 1: Clinical Decision Support (CDS) recorded contraindication to therapy and accuracy of reported contraindication versus gold standard of chart abstraction. Contraindications are listed in order of display in the CDS tool

Contraindication:	CDS	Accuracy
Allergies	4	50%
Aortic Stenosis	4	100%
Patient refusal	9	Not Assessed
Angioedema	0	–
Hyperkalemia	9	78%
Hypotension	43	34%
Renal Artery Stenosis	2	0%
Renal impairment	135	44%

*there were 19 cases with contraindication reported as "other"

CLINICAL DECISION SUPPORT DECREASES VARIABILITY IN CTPA YIELD

Safiya Richardson; Lauren McCullagh; Sundas Khan; Vinodh Mechery; Guang Qui; Salvatore Pardo; Thomas McGinn. Hofstra Northwell School of Medicine, New York City, NY. (Control ID #2705685)

BACKGROUND: Effective clinical decision support (CDS) will be instrumental in bringing the best available evidence to the point of care. Current estimates indicate that only 20–50% of care provided is evidenced based. CDS has demonstrated an ability to improve management and standardize care. Practice variability is a particular challenge in Emergency Rooms (ERs) where overcrowding and medical urgency lead to an overdependence on intuition. Here we focus on the impact of a CDS tool designed to standardize provider estimation of pre-test probability of pulmonary embolism (PE) before computed tomography pulmonary angiogram (CTPA). We measure the change in variability of the percent of tests positive for PE (CTPA yield) after CDS implementation.

METHODS: A CDS tool was built in Allscripts Sunrise Electronic Medical Record at a large academic tertiary care hospital. Tool design was based on previously published work examining ER workflow and usability testing of triggers. Orders for CTPA, V/Q scan or d-dimer are routed to the PE Wells Calculator which presents Wells' Criteria, calculates risk of PE and offers an order set based on risk. We performed a before and after analysis. To avoid potential seasonal variation, due to the start of new trainees in July, we determined the pre-intervention control period to be April to June, 2014 and the post-intervention period to be April to June, 2016. The primary outcome event was CTPA yield, a validated measure of CTPA ordering accuracy. Only providers who ordered CTPAs during both the pre- and post-intervention period were included in the analysis. Variability was assessed using the coefficients of variation.

RESULTS: A total of 45,105 patients were seen in the ER during the analysis periods, resulting in 910 CTPA orders completed to evaluate for PE. During the pre-intervention period monthly CTPA yield varied from 4 to 9%, demonstrating wide variability in accuracy of provider assessment of pre-test probability for PE. During the post-intervention period the yield demonstrated less variability, varying from 10 to 12%. The coefficient of variation was 0.67 during the pre-intervention period vs 0.06 during the post-intervention period. These

were significant results as there was non-overlap of the 95% CI for the coefficients of variation for pre- and post- intervention.

CONCLUSIONS: CDS designed to assist provider estimation of pre-test probability of PE decreased monthly variability in CTPA yield in the ER. Thoughtfully designed and extensively usability tested CDS can improve quality and standardize care.

CLINICAL MEDICAL STUDENT RESILIENCE AND EXPERIENCES WITH STRESSFUL CLINICAL EVENTS Jennifer Houpy; Wei Wei Lee; James N. Woodruff; Amber Pincavage. University of Chicago, Chicago, IL. (Control ID #2693005)

BACKGROUND: Although medical students face numerous stressors during their clinical years, little is known about their resilience. The objective of this study was to characterize medical student resilience and experiences with difficult clinical events.

METHODS: Anonymous electronic surveys were provided to all third year (MS3) and fourth year (MS4) medical students at the University of Chicago in the spring of 2016 to assess resilience (10 item Connor Davidson Resilience Scale (CD-RISC 10)), experiences with difficult clinical events, and burnout (non-proprietary single-item burnout measure).

RESULTS: 62 MS3s and 55 MS4s (response rate 66%) completed surveys. The mean CD-RISC 10 score was 28.2 ± 6.37 (range 10–40, possible range 0–40, 40 indicating most resilient) and lower than in a general population sample (32.1 ± 5.80, $p < 0.001$). Mean resilience was higher in males (30.47 ± 6.14 vs. 26.43 ± 6.02, $p = 0.001$), MS4s (29.68 ± 5.98 vs. 26.91 ± 6.47, $p = 0.023$), and those reporting no burnout symptoms (30.44 ± 5.44 vs. 25.00 ± 6.29, $p < 0.001$). There was no significant difference based on age, undergraduate major, or path to medical school. Over 80% of students had experienced the following clinical events: dealing with difficult patients, difficult family discussions, systems issues, poor team dynamics, chronic narcotic patients, and difficult encounters with other staff. 55% had experienced medical errors. Students found poor team dynamics most stressful. After difficult clinical events, 71% of students reflected on them often, 62% would prefer to discuss them with their team that same day, and only 5% of would prefer not to discuss them. Most students had talked to peers (91%) about difficult clinical events, while only 37% discussed them with their attending and 60% with the team resident. MS4s spoke with attendings (48% vs. 27%, $p = 0.043$) and residents (72% vs. 49%, $p = 0.017$) more than MS3s did. Resilience was higher in students who reported having skills to cope with difficult clinical events (29.47 ± 5.91 vs. 22.98 ± 5.93, $p < 0.001$) and who were comfortable discussing medical errors with peers (30.48 ± 5.99 vs. 25.14 ± 5.64, $p < 0.001$). Most students (64%) believed resilience training would be helpful and best delivered during third year (66%). Only 27% believed they had sufficient training. The top topics identified included difficult team interactions, finding meaning in daily work, and dealing with disappointment.

CONCLUSIONS: Resilience in clinical medical students was lower than in the general population. Students had some insight into their resilience. Although students wanted to discuss difficult clinical events with their team, most students discussed them with peers. Students endorsed a need for resilience training during the third year. More curricula promoting resilience are needed.

CLINICIAN BURNOUT IN SMALL NORTH CAROLINA PRIMARY CARE PRACTICES APPEARS LOWER THAN EXPECTED: AN INITIAL SNAP SHOT FROM EVIDENCE NOW. Samuel Cykert[2]; Darren A. DeWalt[1]; Bryan Weiner[3]; Janet Freburger[4]. [1]UNC School of Medicine, Chapel Hill, NC; [2]University of North Carolina, Chapel Hill, NC; [3]University of Washington, Seattle, WA; [4]University of North Carolina Chapel Hill, Chapel Hill, NC. (Control ID #2706811)

BACKGROUND: Given the rapid implementation of electronic health records (EHR), new reporting programs, and the looming changes anticipated from the Merit-based Incentive Payment System and alternative payment models, healthcare leaders and policymakers fear that clinicians, especially in small practices, will experience severe burnout. Evidence Now is a national initiative funded by AHRQ designed to reduce cardiovascular risk among adult patients in small primary care practices and study the effect of practice facilitation as a means of accelerating this effect. We report initial results of a baseline survey of North Carolina (NC) clinicians who are participating in the project. We focus on a validated, single item measure of burnout. Prior studies using national samples documented 60% of the workforce experiencing burnout.

METHODS: The full practice member survey was sent to clinicians from 186 practice sites between February and November of 2016. The items include a validated single item burnout question, an adaptive reserve scale (ARS), and multiple questions concerning the use of evidence-based guidelines. The burnout item consisted of 5 possible responses: 1) I enjoy my work. I have no symptoms of burnout. 2) Occasionally I am under stress and I don't always have as much energy as I once did but I don't feel burned out. 3) I am definitely burning out and have one or more symptoms of burnout such as physical and emotional exhaustion. 4) The symptoms that I'm experiencing won't go away. I think about frustrations a lot. 5) I feel completely burned out and often wonder if I can go on. I am at the point where I may need some changes or may need to seek some sort of help. We also obtained information on payer mix, personnel, and EHR satisfaction.

RESULTS: 158 practice member surveys were received from the practice sites. The mean burnout score was 1.87 (SD +/− 0.5). 18% reported no burnout while 60% agreed with response 2. 20% of clinicians admitted to burnout described in response 3 while 1% said the symptoms were persistent (response 4). No one agreed to the most severe response (5). A negative correlation between ARS and burnout was strong ($r = -.57$, $p < 0.001$). Linear regression was performed to identify factors associated with worse burnout including EHR satisfaction, FTE clinicians, FTE staff, provider visits per day, practice ownership, payer mix, PCMH status, regular data discussions, and ARS. The r-squared for the model was 0.38. PCMH recognition and FQHC status were associated with higher burnout while high adaptive reserve and more visits per provider were associated with less.

CONCLUSIONS: Burnout was lower than expected in a large cross section of clinicians in small NC primary care practices suggesting a resilient workforce in these practices. While the associations of higher burnout in FQHC's and lower burnout with high adaptive reserve were expected, associations with PCMH recognition and higher provider volume were somewhat paradoxical and need further exploration.

CLOSING THE SPECIALTY REFERRAL LOOP: AN IMPERATIVE FOR A RESILIENT PRIMARY CARE NETWORK Malhar Patel; Colin O'Leary; Priscille Schettini; Kevin Shah. Duke University School of Medicine, DURHAM, NC. (Control ID #2702417)

BACKGROUND: A critical function of large primary care practices is connecting patients with specialists. Consistently closing the loop on all patient referrals is a patient safety imperative as identified by The Joint Commission. Our project sought to identify referral completion rates, gaps in referral documentation, and how wait times of referrals affect completion rates.

METHODS: From a large primary care network, we analyzed specialty referrals ($N = 106{,}885$) in FY2016 across 22 high volume subspecialties, excluding procedural and ancillary service referrals. For referrals with appointment scheduling data, we characterized appointment completion, cancellation rates, and wait times. We stratified these referrals into three categories of wait times (<30 days, 31–60 days, and >60 days) and analyzed each category's completion rates.

RESULTS: For 93,584 referrals, a total of 106,885 appointment scheduling attempts were made in FY2016. Some unique referrals had multiple scheduling attempts. Of the 106,885 appointment scheduling attempts, 63,360 (59.3%) had known appointment dates, while 43,525 (40.7%) referrals had no recorded appointment date. Of the referrals without appointment dates, 40.3% were indicated as scheduled (although no date was provided) and 59.7% were not scheduled for reasons including patient self-scheduling or declining. We restricted our analysis further to the 63,360 appointments with documented appointment dates. Of these, 56.9% resulted in completed appointments, 29.3% in cancelled appointments, 7.3% in appointments scheduled after FY2016, and 6.5% in patient no shows. Of canceled referrals, 53.6% were rescheduled, while 46.4% were not. Almost a third of referrals (30.9%) had wait times longer than 30 days. Average wait times for each specialty ranged from 10.6 to 84.7 days. Referrals in wait time categories <30 days, 31–60 days, and >60 days had appointment completion rates of 65.8%, 43.3%, and 29.3%, $p < .001$, respectively. Sub-analyses of 3 specialties (endocrinology, nephrology, and urology) demonstrated that, while wait times varied by specialty, the rate of appointment completion consistently decreased as wait times increased.

CONCLUSIONS: Our analysis of specialty referrals in a large academic primary care practice demonstrates opportunities to close the loop on specialty referrals. Specifically, we found numerous referrals that were not scheduled, did not have appointment dates, or did not have documented completion. Our analysis showed a correlation between increasing wait time and decreasing referral completion rate, as well as wait time variability by specialty. These analyses are likely generalizable to primary care practices making a large number of referrals. This study underscores the need for methods to track patients and ensure the loop is closed between primary and specialty care. This would not only improve patient safety and care, but also advance the Quadruple Aim by reducing burnout in health care providers frustrated by incomplete care for their patients.

CLUSTER ROUNDS: A NEW TECHNIQUE IN BEDSIDE MEDICINE

Nousha Hefzi; Emmanuel Akintoye; Courtney M. Moore; Sajith Matthews; Diane L. Levine. Wayne State University School of Medicine, Detroit, MI. (Control ID #2707041)

BACKGROUND: Proficient physical examination (PE) skills are critical tools in physical diagnosis. A decline in the ability to correctly perform the PE has led to adverse preventable medical errors including missed or delayed diagnosis and incorrect diagnosis.[1] To strengthen the PE skillset of junior medical students on the Internal Medicine clerkship, we utilized an innovative method to teach PE and diagnosis. "Cluster rounds" involves an attending physician gathering multiple patients with the same disease to demonstrate the variability of findings in patients with the same diagnosis. The goal of cluster rounds is to 1) improve PE skills, 2) improve diagnostic skills through the PE, 3) provide an opportunity for direct observation of bedside skills, and 4) increase the confidence of medical students when performing a history and PE on their own.

METHODS: Cluster rounds involve a 5 min history and a 10–15 min PE per patient for a given diagnosis. 11 sessions with 4 patients per a session were conducted. Each session focused on a single diagnosis (endocarditis, congestive heart failure, inflammatory bowel disease, breast cancer, osteomyelitis, arthritis/gout, lead toxicity, opioid toxicity, COPD, and cirrhosis). 8–9 students attended each session with 4 performing the actual PE. Pre- and post-session surveys using a Likert scale were developed to assess 70 student impressions. Impact of the cluster rounds on the students' self-perception was assessed in two ways: first, by percentage increase in perception to at least the level of 'strongly agree' using McNemar's test. Second, by the difference in the median Likert score before and after cluster round using Wilcoxon signed-rank test.

RESULTS: Prior to the cluster round, most participants felt to some degree that they were able to perform the PE on their own without assistance. However, only 2–14% of the participants strongly agreed to each of the questions. Compared to the pre-assessment, there was significant increase in the proportion of participants that moved to the level of 'strongly' or 'very strongly' for able to perform (14% vs 69%, $p < 0.001$), comfortability (12% vs 62%, $p < 0.001$), confidence (7% vs 60%, $p < 0.001$), able to teach (2% vs 52%, $p < 0.001$) and able to use PE finding to make diagnosis (14% vs 67%, $p < 0.001$). In addition, there was significant increase in the median Likert score across all endpoints: 3 vs 4 ($p < 0.001$), 3 vs 4 ($p < 0.001$), 3 vs 4 ($p < 0.001$), 2 vs 4 ($p < 0.001$), and 3 vs 4 ($p < 0.001$) respectively.

CONCLUSIONS: All participants agreed that cluster rounds complemented their IM clerkship curriculum and was valuable in enhancing their PE skillset. This preliminary data illustrates the potential for this innovative method to enhance students' clinical practice skills in comfortably performing a PE and utilizing its findings to make a diagnosis, as well as teaching the exam to peers. With further studies, cluster rounds can potentially be a critical educational experience with regards to students' comfort in PE.

COLLABORATE AS A MEASURE OF PATIENT-CENTERED CARE: A VALIDATION OF A POTENTIAL POINT-OF-CARE ASSESSMENT IN THE VA.

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BACKGROUND: Many organizations have identified patient-centered care as a critical aspect of quality. Yet it is unclear how and when to best measure patients' perceptions of the extent to which their care meets the criteria of patient-centeredness. The objective of this paper was to assess the validity of the CollaboRATE, a brief measure of patient-centered communication (PCC) with potential for point-of-care administration. The CollaboRATE asks respondents to evaluate their providers' efforts to (1) help them understand their health issues, (2) listen to the things that matter most to them about their health issues, and (3) include what matters most in choosing what to do next in the patient's care.

METHODS: We conducted a mail survey of outpatients ($n = 1019$) and inpatients ($n = 767$) at 8 Department of Veterans Affairs medical centers, half of which were designated as leaders in patient-centered care. Surveys included 1) the CollaboRATE; 2) the Communication Assessment Tool (CAT), an

established, longer measure of patient-centered communication; 3) measures of patient satisfaction; 4) self-reported health and functional status (PROMIS −29); and 5) the Lorig measure of healthcare self-efficacy. We calculated Cronbach's alpha to assess reliability, and Pearson correlations to assess concurrent validity with the CAT and construct validity with the various proximal and distal patient-reported outcomes.

RESULTS: Internal consistency reliability of the CollaboRATE was excellent in both the inpatient and outpatient samples (r = 0.96, 0.97, respectively). Concurrent validity of the CollaboRATE was demonstrated by statistically significant and strong correlation with the CAT (r. = 0.84, 0.85); $p < .001$). Construct validity was demonstrated in both samples by a strong and statistically significant correlation with the proximal outcome of overall care satisfaction in the outpatient and inpatient samples (r = 0.81 and 0.74, respectively; $p < .001$), and by weak to modest but conceptually consistent and statistically significant positive relationships with the more distal outcomes of patient-reported physical health (r = 0.12, 0.15, $p < .001$) and social functioning (r = 0.18, 0.21, $p < .001$) and healthcare self-efficacy (r = 0.23, 0.25, $p < .001$), and negative relationships with anxiety, depression, fatigue, and sleep quality and disturbance (r's −0.10 to −0.27).

CONCLUSIONS: We found strong evidence of reliability and validity for the CollaboRATE in both inpatient and outpatient samples of Veterans. These findings support the use of the CollaboRATE as a brief measure of patient-centered communication. In the outpatient setting, CollaboRATE could be administered immediately following an outpatient visit using any of a variety of modes of administration such as, a Kiosk check-out stop, hand-out postcard-size survey with drop-off box, or using a survey application on a tablet or laptop computer. In the inpatient setting this could be conducted at bedside or immediately prior to discharge.

COLLABORATIVE CARE FOR DEPRESSION AMONG PATIENTS WITH LIMITED ENGLISH PROFICIENCY: A SYSTEMATIC REVIEW Maria E. Garcia[3]; Lisa Ochoa-Frongia[3]; Nathalie Moise[1]; Adrian Aguilera[4]; Alicia Fernandez[2]. [1]Columbia University Medical Center, New York, NY; [2]UCSF, San Francisco, CA; [3]University of California, San Francisco, San Francisco, CA; [4]University of California, Berkeley, Berkeley, CA. (Control ID #2706421)

BACKGROUND: Individuals with limited English proficiency (LEP) face unique challenges in accessing and engaging in mental health care. While many studies report improvement in depressive symptoms among patients enrolled in collaborative care, few studies have evaluated the effectiveness of this model among LEP individuals, whose depression rates are high.

METHODS: To investigate the effectiveness of collaborative care in the treatment of depressive symptoms among individuals with LEP, a systematic review of English articles was performed using online PubMed, PsychINFO, CINAHL and EMBASE databases thru September 15, 2016. Studies were included if they were RCTs, cohort, or case–control studies evaluating collaborative care for depression in primary care among LEP patients. Included studies described the 3 key components of collaborative care: 1) care coordination and care management, involving multi-professional patient care with a social worker or therapist, primary care providers, and a consulting psychiatrist, 2) regular/proactive monitoring and treatment to target using validated clinical rating scales by a designated care manager, and 3) regular, systematic psychiatric caseload reviews and consultation for patients demonstrating no clinical improvement. Two reviewers independently examined titles and abstracts and extracted information on participants' characteristics, type of intervention, features of collaborative care, preferred participant language, and outcome measures.

RESULTS: The search yielded 15 papers, representing 9 studies: 5 RCTs, 3 cohort studies and 1 case–control study. The studies had 4885 total participants and 2564 LEP participants (52%). The majority of LEP participants (2335, or 91%) spoke Spanish. The heterogeneity in study design and outcome definitions precluded a meta-analysis; only 2 studies had the same outcome definition. Follow-up times varied greatly, and ranged from 3 months to 2 years. Four of five RCTs reported more improvement in depressive symptoms among individuals in the intervention group compared to the usual care group. The last RCT had similar improvement between intervention and control groups but had high rates of psychiatry follow-up among both groups. Among non-RCTs, 2 studies reported that Spanish language preference was associated with depressive symptom improvement; the last 2 non-RCTs demonstrated improvement in depressive symptoms but had no usual care control groups.

CONCLUSIONS: All but one study reported improved depressive symptoms in LEP individuals treated with collaborative care. While limited by the small number of LEP participants (particularly Asian patients) and the heterogeneity of study designs and outcomes, this systematic review suggests that collaborative care may be an effective model for the treatment of depression among LEP populations. Future studies should more explicitly detail participants' language preference and cultural adaptations made to the model to treat LEP individuals.

COLLABORATIVE CARE TO ALLEVIATE SYMPTOMS AND ADJUST TO ILLNESS (CASA): PRIMARY EFFICACY RESULTS FROM THE CASA RANDOMIZED CLINICAL TRIAL OF A PALLIATIVE SYMPTOM AND PSYCHOSOCIAL CARE INTERVENTION IN HEART FAILURE David Bekelman[5, 4]; Larry Allen[5]; Brack Hattler[4]; Edward P. Havranek[2]; Diane Fairclough[1]; Connor F. McBryde[3]; Paula Meek[5]. [1]Colorado School of Public Health, Auroa, CO; [2]Denver Health Medical Center, Denver, CO; [3]Denver VA Medical Center, Denver, CO; [4]Eastern Colorado Health Care System, Denver, CO; [5]University of Colorado AMC, Aurora, CO. (Control ID #2704174)

BACKGROUND: Palliative care provided by specialists shows promise in improving symptoms and quality of life in patients with chronic heart failure. However, there is limited high-quality data for what works in the outpatient setting. Furthermore, because there are relatively few palliative care specialists, scalable interventions that can be used in routine outpatient care are needed. The CASA trial determined whether a team-based intervention improved health status (i.e., symptoms, function, and quality of life) and other outcomes in outpatients with heart failure compared to usual care.

METHODS: Patients with heart failure and poor self-reported health status were recruited from a VA, an academic health system, and an urban safety net health system. Patients with dementia, metastatic cancer, major mental illness, or active substance abuse were excluded. The CASA intervention included a nurse who addressed persistent symptoms (e.g., shortness of breath, fatigue, pain) and a social worker who provided psychosocial care. Patients were also reviewed with a study primary care provider, cardiologist, and palliative care physician who wrote orders for medications and tests for patients' primary providers to consider. The primary outcome was heart failure-specific health status at 6 months, measured using the Kansas City Cardiomyopathy Questionnaire (range, 0–100, higher is better; the study was designed to have 90% power to detect a clinically meaningful difference of 6). Secondary outcomes included depression (Patient Health

Questionnaire-9), overall symptom distress (General Symptom Distress Scale), specific symptoms (PEG pain, PROMIS fatigue, shortness of breath), hospitalizations, and mortality. Data were analyzed using mixed models.
RESULTS: 314 patients were randomized (157 intervention, 157 control). Participants were generally male (77%), white (63%), with a mean age of 65.5 years, and 57% had reduced ejection fraction. At 6 months, mean KCCQ score improved 5.5 points in the intervention arm and 2.9 points in the control arm (difference, 2.7; 95% confidence interval −1.3, 6.6; $p = 0.19$). Among secondary outcomes, depressive symptoms and fatigue improved at 6 months with CASA (effect sizes of −0.29 and −0.30, respectively, $p = 0.02$ for both). There were no changes in overall symptom distress, pain, shortness of breath, or hospitalizations. Mortality at 12 months was similar (CASA, 10/157; usual care, 13/157; $p = 0.52$).
CONCLUSIONS: This randomized trial of the CASA intervention did not demonstrate a significant improvement in heart failure-specific health status. Secondary outcomes of depression and fatigue, which have been difficult symptoms to address in heart failure, did improve. Alternate or more intensive interventions should be evaluated to improve health status in the symptomatic heart failure population.

COLLECTING DATA ON PATIENTS' SEXUAL ORIENTATION, GENDER IDENTITY, AND SEX ASSIGNED AT BIRTH IN A CLINICAL SETTING: PERSPECTIVES OF PROVIDERS, PATIENTS, AND REGISTRATION STAFF Karey Kenst[2]; Robert Coulter[3]; Aswita Tan McGrory[2]; Lenny Lopez[1]. [1]University of California San Francisco, San Francisco, CA; [2]Massachusetts General Hospital, Boston, MA; [3]University of Pittsburgh, Pittsburgh, PA. (Control ID #2707079)

BACKGROUND: The Institute of Medicine recommends that healthcare organizations collect information about patients' sexual orientation, gender identity, and sex assigned at birth (SOGI). Healthcare organizations are beginning to collect these data. This study investigated providers', registrars', and patients' perspectives to: (1) understand the issues and nuances regarding collecting SOGI data; and (2) elucidate preferred processes for asking about SOGI.
METHODS: We conducted a mixed methods study with participants of diverse sexual orientations and gender identities. Using a random sampling strategy, we conducted surveys with 104 patients and administered follow-up semi-structured interviews with 16 patients. We also conducted surveys with 13 primary care providers and semi-structured interviews with 15 registrars, 13 LGBTQ (lesbian, gay, bisexual, transgender, and queer) providers, and 18 LGBTQ community members. Surveys and interviews covered the following topics: opinions about collecting SOGI data in clinical settings; storing, accessing, and using SOGI data; cognitive testing of previously recommended SOGI questions; and processes for administering questions. Applied thematic analyses were conducted with a grounded theory approach.
RESULTS: LGBTQ community members and patients overwhelmingly wanted healthcare providers to know their SOGI. Patients and providers agreed that knowing SOGI information would help providers avoid making assumptions about LGBTQ patients' identities and health care needs. All participants thought SOGI data could also be used to monitor for disparities. Barriers included: LGBTQ participants feared discrimination or mistreatment and providers were concerned with making patients uncomfortable. Registrars had the most hesitancy and discomfort asking SOGI, fearing they would upset patients and be unable to address patients' distress. However, they thought that ongoing training would be required to appropriately support registrars. LGBTQ participants wanted additional response options that were inclusive of a wide range of identities (e.g., non-binary, asexual). Transgender participants wanted to be asked about current gender identity first followed by sex assigned at birth. A private setting for registration was recommended and patients and providers thought SOGI data should be stored in their medical records and be accessible to clinical providers. Participants believed ongoing education of patients, providers, and registrars about SOGI data collection and usage was necessary for successful implementation.
CONCLUSIONS: Participants thought that collecting SOGI was important and that staff training and policies were essential to assure appropriate implementation and equitable use of these data. There are many nuances to collecting SOGI data but collecting it allows healthcare organizations to identify disparities and implement targeted initiatives to improve care and achieve health equity for LGBTQ populations.

COMMUNICATION GAPS BETWEEN PCPS AND HOSPITALISTS AROUND TESTS PENDING AT THE TIME OF DISCHARGE Karen J. Blumenthal; Megan M. Meehan; Ryan Thompson. Massachusetts General Hospital, Boston, MA. (Control ID #2703692)

BACKGROUND: Effective communication and care coordination between primary care physicians (PCPs) and hospitalists are essential for safe care transitions between inpatient and outpatient settings. Inadequate care coordination at discharge can result in a lack of necessary follow-up, and in some cases may lead to patient harm. Previous work has suggested that as many as 41% of patients discharged from a medicine service are discharged with one or more test results pending. Standardizing communication between PCPs and hospitalists, particularly around follow-up of tests results pending at discharge, could result in fewer missed test results, less delay in action on these results, and improved patient outcomes. The objective of this study was to determine current communication practices between PCPs and hospitalists at our institution with regard to test results pending at discharge from the inpatient medicine service.
METHODS: We administered a cross-sectional web-based survey to all PCPs ($n = 165$) whose patients are admitted to a hospitalist/inpatient medical team, and all hospitalists ($n = 96$) working at a single, large academic medical center. The survey asked about frequency and perceived efficacy of communication between hospitalist and PCP with regard to pending test results. We summarized survey responses using frequencies to compare communication practices between PCPs and hospitalists.
RESULTS: Fifty-two percent of PCPs and 46% of hospitalists responded to the survey. Our survey found significant differences between hospitalists and PCP regarding knowledge about tests pending at discharge. Seventy-five percent of hospitalists reported "always" (34%) or "usually" (41%) making the PCP aware of tests that need follow-up after discharge, while only 26% of PCPs reported "always" (4%) or "usually" (22%) being made aware by hospitalists of pending tests that need follow-up after discharge ($p < 0.001$). Additionally, 77% of hospitalists reported that they expect that the PCP will follow-up the results of pending tests after discharge. In contrast, only 22% of PCPs report that it is "always" or "usually" clear who is responsible for following-up test results pending at discharge.
CONCLUSIONS: Our study suggests that there is a large gap in perceptions and expectations between PCPs and hospitalists around pending tests at discharge. Our study also revealed ambiguity around who is responsible for following-up pending test results after discharge. These results highlight the need for interventions to develop and standardize the communication of pending tests at the time of discharge as a step to improving patient safety and outcomes following discharge.

COMMUNICATION SKILLS AND VALUE-BASED MEDICINE: UNDERSTANDING RESIDENTS' VARIATION IN CARE USING UNANNOUNCED STANDARDIZED PATIENT VISIT

Kathleen Hanley[1, 3]; Amanda Watsula-Morley[1]; Lisa Altshuler[1]; Heather Dumorne[1]; Adina Kalet[1]; Barbara Porter[2, 3]; Andrew B. Wallach[2, 3]; Colleen Gillespie[1]; Sondra Zabar[1]. [1]NYU School of Medicine, New York, NY; [2]Bellevue Hospital, New York, NY; [3]Gouverneur Healthcare Services, New York, NY. (Control ID #2705415)

BACKGROUND: Training residents to effectively practice value-based care is challenging. We hypothesized that residents with better communication skills would order fewer unnecessary tests and prescribe more appropriate care. We used a USP case of a patient with uncontrolled asthma to examine the relationship between value-based care and communication skills.

METHODS: A 25 year-old female USP presented as a new patient to a medicine resident's clinic, reporting asthma since childhood with worsening symptoms over the past few months. At the time of the visit, she was using her albuterol inhaler multiple times daily, without any additional asthma treatment, and was unsure whether she was using it properly. Data was collected using two forms of assessment: a post-visit USP checklist and a systematic review of the corresponding clinic note to examine treatment recommendations including referrals and quality of documentation. The USP checklist measured communication, patient education, and assessment skills. Each response option included descriptive behavioral anchors and was rated as not done, partly done, or well done. Domain scores were calculated as percent items rated well done.

RESULTS: 141 USP visits were made from 2009 to 2016 with a mean visit length = 88 min, SD = 28 min (range: 40 to 180 min). Almost all residents (92%) evaluated the patient's asthma with a pulmonary examination. The most common treatment prescribed was albuterol and an inhaled steroid, with or without a spacer (79%). The majority of residents (53%) did not order any additional studies; 21% ordered one study, and 26% ordered two or more studies. Study orders fell into one of three categories: gold (appropriate/recommended: PFTs, flu shot, HIV), grey (pulmonary consult, HCG), or inappropriate (TSH, A1C). Across the 141 visits, 129 studies were ordered; 46% were gold, 5% were grey, and 49% were inappropriate. The most common study ordered was a PFT (31%). 87% of single study orders were gold, but 92% of multiple orders included at least one inappropriate study. Residents who did not order any studies had significantly higher patient education and counseling skills than residents who ordered one or more studies (54% vs 34%, $p = 0.00$) and were more likely to explain how to correctly use an inhaler than residents who ordered one or more studies (48% vs 27%, $p = 0.01$). These residents also had significantly higher management and treatment skills (61% vs 39%, $p = 0.00$) and overall communication skills (68% vs 55%, $p = 0.01$). There were no significant differences between groups in medications prescribed or in quality of documentation.

CONCLUSIONS: Effective communication skills may contribute to value-based care through appropriate patient education and ordering of fewer inappropriate studies. Rigorous curricula and assessment of resident's patient education skills should be in place to help both patients and health care system achieve value-based care.

COMMUNITY HEALTH SPECIALIST TRAINING FOR LIBRARIANS: IMPROVING KNOWLEDGE AND CONFIDENCE IN ADDRESSING THE SOCIAL DETERMINANTS OF HEALTH

Anna U. Morgan[2]; Bernadette A. D'Alonzo[2]; Roxanne Dupuis[2]; Alexander Reisley[2]; Heather Klusaritz[1]; Carolyn C. Cannuscio[1]. [1]Perelman School of Medicine, U. of Pennsylvania, Philadelphia, PA; [2]University of Pennsylvania, Philadelphia, PA. (Control ID #2706512)

BACKGROUND: Hosting over 1.5 billion in-person visits annually, and often serving as a lifeline for the highly vulnerable, public libraries can be partners in population health. Public library staff, however, report feeling ill-equipped to address the health and social challenges facing many of their patrons. The aim of this study was to train public library staff in pertinent health-related topics and evaluate their comfort, confidence, and preparedness in assisting vulnerable patrons.

METHODS: Our interdisciplinary team of individuals with medical, social work, and public health backgrounds conducted a needs assessment of library staff and local residents in Philadelphia to determine the most pressing challenges facing the community. We then developed a 12-hour, case-based training curriculum for library staff. Topics addressed in the training–homelessness, mental illness and substance use, immigration, and trauma–were selected based on findings from the needs assessment. Each case was designed to help staff "recognize" high-risk patrons, "engage" them in conversation, and "refer" them to appropriate community-based services. Participants were surveyed before and after each session and asked to rate on a scale of 1–10 how "comfortable," "confident," and "prepared" they felt when presented with each case. Responses (before and after) were compared using a paired t-test. Participants were also interviewed 4 months post-training about their daily work, how they had used the training, and for additional feedback. Interviews were transcribed and analyzed for key themes using an iterative process.

RESULTS: 11 individuals participated in the training (81% female, age 26–65, 45% African-American, 45% white, 9% Asian). Staff included managers, adult and children's librarians, library assistants, and security guard. Participants reported a significant improvement in comfort, confidence, and preparedness in almost all cases. Nine (81%) of the library staff completed semi-structured interviews. Overall, participants were positive, stating that the curriculum boosted their confidence about their current work. They also reported feeling more capable of assisting vulnerable patrons. However, several had not yet used many of the resources presented because they had not encountered patrons whom they identified as needing extra assistance.

CONCLUSIONS: A 12-hour case-based training curriculum to teach public library staff to "recognize, engage and refer" patrons to appropriate resources significantly increased the preparedness, comfort, and confidence of staff in assisting vulnerable patrons with health and social needs, thereby increasing the capacity for public libraries to serve as partners in improving population health. Future training programs should strive to provide resources in a more accessible format, continue to assist staff in defining their role as public health partners, and assess the impact such training programs have on vulnerable patrons.

COMMUNITY HEALTH WORKER SUPPORT VERSUS COLLABORATIVE GOAL-SETTING FOR DISADVANTAGED PATIENTS WITH MULTIPLE CHRONIC DISEASES: A RANDOMIZED CLINICAL TRIAL

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BACKGROUND: A growing number of Americans have multiple chronic conditions. Collaborative goal-setting between patients and providers can improve

chronic disease control, but may be insufficient in patients with unaddressed socioeconomic needs. Community health workers (CHWs), trained laypeople who share socioeconomic background with patients, can effectively improve chronic disease outcomes. Unfortunately, most prior CHW interventions have been disease-specific. The study team created IMPaCT (Individualized Management for Patient-Centered Targets), a standardized CHW intervention that addresses 'upstream' socioeconomic and behavioral barriers *across* diseases. In a prior randomized clinical trial of hospitalized patients with a variety of diagnoses, this intervention improved post-hospital access to primary care, mental health and quality of care while decreasing recurrent hospital readmission. For this study we adapted the IMPaCT intervention for use in the outpatients with multiple chronic conditions. Our objective was to compare the effects of collaborative goal-setting versus goal-setting plus CHW support on chronic disease control.

METHODS: We performed a single-blind, randomized clinical trial in two urban academic adult internal medicine clinics. We enrolled 302 participants who were residents of high-poverty neighborhoods, uninsured or publicly insured, and diagnosed with ≥2 chronic diseases (diabetes, obesity, tobacco dependence, hypertension). All participants met with their primary care provider to collaboratively set a chronic disease management goal for one of their multiple conditions. Patients randomly assigned to CHWs also received six months of tailored support.

RESULTS: The mean age of the cohort was 56.3 years (SD 13.1), 94.7% were black and 96.3% had a history of a traumatic event. Participants were diagnosed with an average of 2.5 of the eligibility chronic conditions. We found differences in the six-month change in chronic disease control between CHW support vs goal-setting alone arms (△HbA1c −0.4 vs 0.0, △BMI −0.3 vs. -0.1, △CPD −5.5 vs. -1.3, △SBP −1.8 vs. -11.2, overall $p = 0.08$). Patients receiving CHW support also showed greater improvements in mental health (2.3 vs. -0.2, $p = 0.008$) and reported higher quality primary care that was comprehensive (49.2% vs. 39.7%, $p = 0.01$) and supportive of disease self-management (62.9% vs 38%, $p = 0.0002$). Thirty-two percent of patients in the goal-setting arm were hospitalized at one-year versus 23% in the CHW support arm ($p = 0.11$). There were no differences in patient activation or self-rated physical health.

CONCLUSIONS: CHW support led to modest improvements in diabetes, obesity and smoking, but not in hypertension. CHW support improved mental health and quality of primary care, and may have reduced hospitalizations. Standardized CHW interventions can improve key health outcomes *across* multiple diseases for high-risk patients.

COMPARING LIFE-YEARS LOST VS. NUMBER OF DEATHS IN THE US OVER THE PAST 20 YEARS Glen B. Taksler; Michael B. Rothberg. Cleveland Clinic, Cleveland, OH. (Control ID #2698725)

BACKGROUND: Leading causes-of-death are typically reported by number of deaths. Assessing life-years lost to each cause may provide better context.

METHODS: We assembled national data on life-years lost to each cause-of-death and analyzed changes over the past 20 years, using all death certificates filed with the National Vital Statistics System for 2015 and 1995. Specifically, we defined "life-years lost" as remaining life expectancy for each decedent's age, sex and race. We summed life-years lost across all individuals in 2015 and 1995, and calculated the share of life-years lost to each cause-of-death. To better understand reasons for the change in life-years lost between 1995 and 2015, we redefined life-years lost as the product of 3 terms: the mortality rate, population size and life expectancy. We employed a first-order Taylor series expansion for each age (single-year increments), sex, race and cause-of-death subgroup, allowing us to approximate the change in life-years lost by a weighted average of the change in disease-specific mortality rates, the change in population size and the change in life expectancy.

RESULTS: Heart disease caused the most deaths in both years, but cancer was responsible for 23% more life-years lost in 2015. Life-years lost to heart disease declined 6% since 1995, led by a 42% decline for acute myocardial infarctions, whereas life-years lost to cancer increased 16%. Accidents caused twice the share of life-years lost as deaths in 2015 (10.6% vs. 5.4%), and rose in importance since 1995 because of a 4.5-fold increase in life-years lost to accidental poisonings, primarily overdoses. The entire gains of the past 20 years in preventing and treating HIV were offset by the increase in accidental deaths. Suicides and homicides disproportionately burdened younger individuals. Improvements in disease-specific mortality rates contributed to a 28% reduction in life-years lost since 1995, and saved 1.5 million more life-years for heart disease than cancer. However, total life-years lost increased by 17%, due to population growth (mostly for ages 50–64 y, 16.1% contribution) and longer life expectancy (mostly for white males, 5.0% contribution). Among elders aged ≥80 y, increases in disease-specific mortality rates for Alzheimer's disease caused more growth in life-years lost than all other increases combined. Measuring life-years lost highlighted racial disparities in heart disease (+20.8% for black males vs. -4.6% for white males), homicides and perinatal conditions.

CONCLUSIONS: Life-years lost may provide better context than number of deaths for understanding mortality trends. Focusing on life-years provides a better estimate of the societal burden of disease (e.g., cancer has already surpassed heart disease as the leading cause of life-years lost) and highlights racial disparities. Based on current trends, future progress in secondary prevention and treatment of chronic heart conditions, cancer, addiction and neurodegenerative disease appear critically important.

COMPARING PATIENTS' EXPERIENCES WITH ECONSULT AND REFERRAL FROM PRIMARY TO SPECIALTY CARE: RESULTS FROM A NATIONAL SURVEY Sara L. Ackerman[3]; Scott Shipman[4]; Drayton Moody[1]; Meaghan Quinn[4]; Ariana Afshar[2]; Nathaniel Gleason[1]. [1]UC San Francisco, Nathaniel Gleason, CA; [2]UCSF, San Francisco, CA; [3]University of California, San Francisco, San Francisco, CA; [4]American Association of Medical Colleges, Washington, DC. (Control ID #2706848)

BACKGROUND: eConsults enable primary care providers (PCPs) to request advice from specialists via an electronic health record. Research has demonstrated high clinician satisfaction with eConsults as well as their potential to improve specialty care access. However, to date there has been no large-scale assessment of patients' experience with eConsult. As part of a national dissemination of an eConsult model developed at the University of California, San Francisco, we sought to compare the experiences of eConsult patients with patients referred for an office appointment with a specialist.

METHODS: An email-initiated online survey was administered at 9 academic medical centers in 2016. We identified all referral and eConsult orders to participating specialties from primary care visits with adult patients. We filtered out patients with: a) orders from PCPs who did not submit at least one eConsult in the prior month, to control for provider influences on patient experience; and b) more than one order in the prior month, to reduce confusion about which referral or eConsult was the subject of the survey. A total of 28,160 patients (eConsult/ref) were invited to participate during the nine-month study.

RESULTS: 7,264 patients responded (14% eConsult; 86% referral), a 26% response rate. Respondents' mean age was 57, 66% were women, and on average they reported more formal education and less ethnic diversity than the general population (83% identified as white). Referral patients were more likely than eConsult patients to identify the correct order type resulting from their primary care visit (72% vs. 40%; $p < 0.001$). Nearly all respondents (96% eConsult; 99% referral) agreed with their PCP's order decision. Approximately 82% of both referral and eConsult patients were satisfied with the specialist's recommendations. Among patients who had received information from a PCP about their recent eConsult (84%), 96% agreed that the PCP's communication of the specialist's recommendations was prompt; 97% agreed that the PCP clearly explained the specialist's advice; and 79% agreed they had an opportunity to ask questions. 52% of communications from PCPs to patients about eConsult results took place via secure email; 33% were by phone or in-person. 32% of referral patients and 77% of eConsult patients would prefer an eConsult rather than an in-person appointment with a specialist for a similar problem in the future.

CONCLUSIONS: Across nearly all measures, eConsult patients were as satisfied as standard referral patients with their consultation experience. The high proportion of referral patients who expressed a preference for eConsult for a similar problem in the future also suggests acceptability among patients previously unfamiliar with the service. The lack of awareness of eConsult orders among many respondents, and delays in conveying the specialist's advice, suggest room for improvement in patient involvement in eConsult decision making and communication.

COMPARING THE VALUE OF CARE DELIVERED BY U.S. NURSE PRACTITIONERS, PHYSICIAN ASSISTANTS, AND PHYSICIANS IN THE EMERGENCY DEPARTMENT John N. Mafi[1, 2]; Peter Smulowitz[3]; Robert Brook[2, 1]; Bruce E. Landon[4, 5]. [1]David Geffen School of Medicine at UCLA, Los Angeles, CA; [2]RAND Corporation, Santa Monica, CA; [3]Beth Israel Deaconess Medical Center, Harvard Medical School, Boston, MA; [4]Harvard Medical School, Boston, MA; [5]Beth Israel Deaconess Medical Center, Boston, CA. (Control ID #2706948)

BACKGROUND: Prior research has found that nurse practitioners and physician assistants (NPs, PAs) provide similar quality and efficiency of care to physicians for routine and low-complexity care in the ambulatory setting. Few studies, however, have compared the value of care between NPs/PAs and physicians managing potentially higher acuity cases in the emergency department (ED) setting.

METHODS: Using nationally representative data from the National Hospital Ambulatory Medical Care Survey on visits to ED providers, we compared utilization of health services among NPs/PAs and physicians from 2009–2013. Outcomes included overall use of hospital admissions, imaging studies, diagnostic tests, procedures (e.g., suturing), and medications given in the ED or upon discharge. We also evaluated use of 4 low value services recently highlighted by the Choosing Wisely Campaign for 5 common conditions: use of (1) CT/MRI for back pain, headache, or syncope, (2) plain x-rays for back pain, (3) antibiotics for upper respiratory infection or skin abscess after drainage, (4) opioids for back pain or headache, as well as hospital admissions for each of the 5 conditions. We excluded red flags for each condition (e.g., hypotension on presenting vital signs for skin abscess) and estimated weighted logistic regression models adjusting for age, sex, race/ethnicity, triage severity assigned by a triage nurse, whether the patient came from a nursing home, primary diagnosis category (e.g., cardiovascular, neurological), chronic comorbidities (e.g., diabetes, HIV), insurance status (e.g., Medicare), urban location, geographic region, and year.

RESULTS: We identified 100,535 physician visits and 20,387 NP/PA visits (39% of NPs/PAs saw patients alone vs. 61% of NPs/PAs saw patients alongside a physician), representing ~515 million ED visits during the study period. Compared with physicians, NP/PA patients were younger (mean age 42.7 vs. 46.5 years, $p < 0.001$) and had lower triage severity (6.7% vs. 12.2% immediate or emergent cases, $p < 0.001$). In adjusted analyses, NPs/PAs utilized similar amounts of hospital admissions (~10%, aOR 0.97 [0.84-1.11], imaging (~50%, aOR 0.96 [0.90–1.02]), diagnostic tests (~79%, aOR 0.92 [0.84–1.01]), and procedures (~49%, aOR 1.04 [0.95–1.15]), but used more medications (83.9% vs. 81.5%, aOR 1.18 [1.04–1.33]) compared with physicians. When focusing on use of low value services, utilization patterns were largely similar except for use of antibiotics: 59.7% for NPs/PAs vs. 53.7% for physicians, aOR 1.28 [1.03–1.58].

CONCLUSIONS: In this large and nationally representative analysis, NPs/PAs prescribed more medications and low value antibiotics than physicians after controlling for patient characteristics, although practice patterns for other services remained otherwise equivalent between the two groups. These findings suggest that aside from greater medication and antibiotic use, NPs/PAs seem to provide similar value and efficiency of care compared with physicians among the measures we studied.

COMPARING THE VISIT CHARACTERISTICS AMONG PHYSICIANS AND ADVANCED CARE PRACTITIONERS Aditi Patel; Parth Parikh; Xiaobo Liu; Michael B. Rothberg. Cleveland Clinic, Cleveland, OH. (Control ID #2707362)

BACKGROUND: To reduce physician burden and decrease costs, health systems are increasingly employing advanced care practitioners, including nurse practitioners (NP) and physician assistants (PA). Studies have shown that patient satisfaction and quality of care are similar between primary care physicians (PCP) and NPs. These comparisons generally focus on specific problems and have not assessed the complexity of the patient or the visit. Our objective was to understand patient and visit characteristics of same day visits among the three provider types.

METHODS: A retrospective analysis of adult patients with same day office visits to either a physician, PA or NP was performed. Of the 19,864 patients screened, 400 patients seen by each provider were randomly selected. Patient demographics (age, race, sex and insurance type) were extracted electronically. Two team members manually extracted the following visit-related variables: visit complexity (simple problems addressed by following algorithms or complex problems requiring diagnostic acumen), duration of complaint (acute vs. chronic), number of additional problems addressed, number of prescription and non-prescription medications prior to the visit and groups requiring extra attention (i.e. patients on insulin, opiates, warfarin and oral hypoglycemic). The ANOVA F-test or Kruskal-Wallis test was used to evaluate relationships between continuous measures and setting (described as Median, IQR). Pearson's chi-square test or Fisher's exact test was used to assess associations between categorical measures.

RESULTS: After excluding 9 repeat visits within the study period, our sample contained 1191 unique visits. Physicians were less likely to see patients compared to PAs and NPs who were female (60.6% vs 70.7% vs 66.9% $p = 0.01$), African American (3.8% vs 14.3% vs 14.1% $p < 0.001$) or who had commercial insurance (59.3 vs 72.2 vs 62.4 $p < 0.001$). There was no difference in frequency of acute problems (84.1% vs 88.7% vs 85.4% $p = 0.69$). Physicians were more likely to address additional problems compared to PA

and NP's (35.6% vs 25.8% vs 25.3% $p = 0.001$), and problems that require diagnostic acumen (44.9% vs 33.8% vs 30.3% $p < 0.001$), At the time of the visit, patients of NPs took more prescription medications (Median 4, IQR 2–6) than patients of physicians (3,1-5) or PAs (2,1–4) ($p < 0.001$).

CONCLUSIONS: The patients seen by physicians, PAs and NPs differ in a number of ways that suggest they are not interchangeable..Patients of NPs take more prescription medications but physicians see more complex medical complaints. Physicians also address additional problems more often.

COMPARISON OF MEDICAL STUDENT SELF ASSESSMENT AND FACULTY ASSESSMENT OF PERSONAL AND PROFESSIONAL DEVELOPMENT SKILLS Christopher Mattson; Jeanne M. Farnan; James N. Woodruff; Wei Wei Lee. University of Chicago, Chicago, IL. (Control ID #2706759)

BACKGROUND: In 2013, the Association of American Medical Colleges (AAMC) included "Personal and Professional Development (PPD)" as a competency domain to be taught in medical school. While most schools have elements of PPD programming in place, assessment of student progress towards competency attainment has not been well studied. In addition, little research has focused on assessing differences between student self assessment and faculty assessment of PPD skills.

METHODS: After conducting a literature review on core PPD competencies, we developed a 48-question survey consisting of Likert scale questions and open-ended questions assessing PPD goals that was given to MS2 students in February 2016. A parallel 8-item survey was developed for faculty to evaluate relevant PPD domains during the MS2 clinical skills (CS) course and Scholarship and Discovery (S&D) experience in the spring and summer of 2016. For our data analysis, we compared the student self-assessments to matched faculty assessments from their CS preceptors and S&D mentors. Using paired t-tests, we analyzed the data for agreement between student self-ratings and faculty ratings. We also analyzed the data for agreement between the two different faculty raters.

RESULTS: There were 28 students for whom there was a self-assessment, a CS assessment and a S&D assessment. Self-assessment scores were significantly lower than CS assessments for each of the 8 PPD competencies assessed. Self-assessments were significantly lower than S&D assessments for 7 of the 8 competencies. There was no statistically significant difference found for "Complying with rules and regulations". There was also no statistically significant difference between CS assessments and S&D assessments for any of the 8 PPD competencies. Of the 28 S&D mentors included in the data set, 17 (60.7%) rated the student as being "Highest performance (top 10%)" in comparison to other medical students with whom the mentor had worked previously. Eight (28.6%) rated the student as being "Above average performance (11-25%)", 1 (3.6%) rated the student as being "Average performance (26-50%)" and 2 (7.1%) said they had never before mentored a medical student on a scholarly project. Thirty-five out of fifty six (62.5%) total faculty assessments gave a rating of 5 out of 5 for all competencies.

CONCLUSIONS: Over half of the S&D mentors rated their students as being in the top 10% of students which suggests that grade inflation contributes to the discrepancy in student and faculty assessments. This is supported by the fact that the majority of CS and S&D faculty uniformly rated students 5/5 for all domains. The data is consistent with trends in the literature, which have shown grade inflation in other aspects of medical education. The data also makes it difficult to provide meaningful PPD feedback to students. Future work should focus on faculty training to improve PPD assessment skills and also on providing opportunities for students and faculty to review and discuss discordant scores.

COMPARISON OF PERICARDIAL EFFUSION SIZE AND PHYSIOLOGY AS ASSESSED BY ECHOCARDIOGRAPHY AND COMPUTED TOMOGRAPHY Samuel Huxley; Joshua Meskin. Medical College of Wisconsin, Milwaukee, WI. (Control ID #2693780)

BACKGROUND: While literature supports usage of computed tomography (CT) to assess pericardial thickness and presence of pericardial effusion (PE), how CT compares to echocardiography (echo) in determining PE size or findings of tamponade physiology (TP) is unknown. Our goal is to compare echo and CT in sizing a PE and determining TP.

METHODS: A retrospective chart review was performed using 122 patients who had an echo that showed a PE and who had a chest CT within three days of the echo. The presence of TP and qualitative sizes of PE on CT and echo were obtained and compared (Table 1).

RESULTS: Patients with TP on echo had a range of PE sizes on CT from trace to large, but 90% of those with TP on echo had a PE of at least moderate size on CT. All patients with large PE by CT had TP on echo. TP by CT did not predict with significance TP by echo [Odds ratio 2.09; 95% confidence interval (CI): 0.58 to 7.09, $p = 0.24$]. The correlation of sizing between echo and CT was variable, being strongest at the size boundaries [Spearman's $\rho = 0.784$, $p < 0.0001$]. If a PE was trace or absent on CT, 84% of PEs were sized similarly on echo. If a PE was moderately large to large on CT, 86% of PEs were sized similarly on echo. If a PE was sized between small and moderate on CT, only 66% of PEs were sized similarly on echo.

CONCLUSIONS: Our data suggest that identifying TP by CT does not correlate with those findings on echo and that sizing between modalities does not correlate well for mid-range sized PEs.

		Qualification by CT				
		None+ trace	Small	Moderate	Large	Total
Qualification by echocardiogram	None+trace	36	11	3	0	50
	Small	3	9	4	0	16
	Moderate	4	7	22	2	35
	Large	0	0	9	12	21
	Total	43	27	38	14	122

Table 1: Frequencies of qualitative PE size by CT and echocardiogram

COMPLEMENT OR CONFLICT: RESIDENT AND FACULTY PERCEPTIONS OF SERVICE AND EDUCATION AT A COMMUNITY-BASED INTERNAL MEDICINE TRAINING PROGRAM Stacie K. Nishimoto. California Pacific Medical Center, San Francisco, CA. (Control ID #2707244)

BACKGROUND: Service is intrinsic to patient care. However, recent ACGME resident survey questions about service and education imply a conflicting relationship between the two and seem to equate "service" with "scut". This study uses clinical vignettes to investigate this question and aims to (1) investigate resident and faculty perceptions of service and education (2) ascertain what aspects of patient care positively and negatively affect perceptions, and (3) evaluate perceptions of how the program balances service and education."

METHODS: This cross-sectional study design used clinical vignettes to investigate resident and faculty perceptions of service and education at a

medium-sized university-affiliated community internal medicine program. We used an anonymous electronic survey instrument to collect qualitative and quantitative data responses. Participants for the study were recruited from the following groups: Internal Medicine Trainees (IMT) (81 residents, chief residents and fellows) and Teaching Faculty (TF) (50 core faculty and program leaders). Analyses included quantitative and qualitative assessments. Main themes were identified from vignette comments and multiple choice questions to showcase how residents and faculty conceptualize "service" and "education." Likert scale data were collapsed into a 4-point scale (strongly disagree/ disagree, neutral, agree/strongly disagree, not applicable).

RESULTS: Eighty participants completed surveys for an overall response rate of 61% ($N=45$; 56% IMT; $N=35$; 70% TF). Overall, 21% of respondents perceived that excessive service obligations negatively impacted the learning environment, with trainees being significantly more likely than faculty to report agreement with this statement (33% vs 6%, respectively; $p=.001$). Trainees were also significantly more likely than faculty to agree that excessive service obligations contributed to duty hour violations (21% vs 6%, respectively; $p=.03$) in their program. With some notable exceptions, faculty and trainees generally agreed on the relative service and educational values of vignette activities. Several activities ranked high in terms of both service and educational value, such as running a family meeting and seeing an urgent care clinic patient. Both quantitative and qualitative responses suggested that high "service" activities fell into two main categories: tasks that could easily be completed by non-physicians and patient care with little autonomy. For example, the top 4 reported choices in a list of activities that constituted "inappropriate or excessive service obligations" were: "calling insurance companies for prior authorizations ($N=56$)", "caring for pts when you have little autonomy (33)", "completing forms for patients (30)", and "making clinic appointments for patients at discharge (29)".

CONCLUSIONS: Service and education are not mutually exclusive. Residents perceive maximal education and service value in situations involving both complexity and connection.

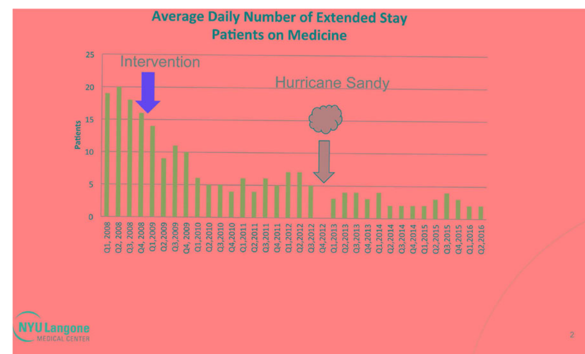
COMPLEX CARE ROUNDS: A COORDINATED INTERDISCIPLINARY STRATEGY FOR CARING FOR OUR SICKEST PATIENTS Katherine A. Hochman[2]; Anne Meara[2]; Regina Presa[2]; Thomas Sedgwick[2]; Ramon Jacobs[1]. [1]New York University School of Medicine, New York, NY; [2]NYU Langone Medical Center, New York, NY. (Control ID #2700019)

BACKGROUND: Extended stay (>30 day stay) cases strain hospital resources, psychologically burden staff, increase average length of stay (ALOS) and ultimately are not patient-centric. In 2008, extended stay patients represented 15% of the average daily census on the Medicine service. The objective of our intervention was to devise a sustainable strategy to reduce the number of extended stay patients on the medicine service and overall ALOS.

METHODS: In 2008, we convened a proactive interdisciplinary team to engage in addressing barriers to care progression and discharge. The goal was to reduce the number of extended stay patients on the medicine service and overall ALOS. The team was comprised of a hospitalist physician and leadership from Care Management, Social Work, Ethics, Finance and post-acute care. Complex Care rounds occurred twice weekly. All patients with LOS of 5 days or more were presented in a standardized format, "The Four Questions", to ensure a shared mental model. These questions are 1.) Why is the patient hospitalized? 2.) Why is the patient STILL hospitalized? 3.) What has to happen for this patient to be discharged? and 4.) When and where is this patient being discharged to safely? A special emphasis was placed on barriers to discharge (ranging from medical, social, financial, psychological), advanced care planning and contingency planning. The hospitalist physician served as a liaison to the medical staff regarding clarification of endpoints to admission.

RESULTS: Since the initiation of Complex Care Rounds, the percent of extended stay patients on the average daily census dropped from 15 to 1.5% (Figure 1). Our ALOS dropped from 6.81 days (2008) to 5.69 days (2016). It is important to note this decrease in ALOS occurred despite two important factors: 1.) our case mix index has increased dramatically from 1.47 to 1.81 during that same period and 2.) the initiation and vast expansion of our observation program siphoned off the short stay cases.

CONCLUSIONS: We have demonstrated a strategic and sustainable approach for reducing and managing patients with extended stays. Since we have achieved our initial goals, it is time to reinvent these rounds. Our new focus is mobilizing resources within the community based on disease entity and psychosocial needs.



COMPREHENSIVE OSCES AS OPPORTUNITIES FOR FACULTY TO MAKE ENTRUSTMENT JUDGMENTS: HOW ARE STANDARDIZED PATIENT ASSESSMENTS OF SKILLS PERFORMANCE ASSOCIATED WITH FACULTY ENTRUSTABILITY JUDGMENTS? Colleen C. Gillespie[1]; Kathleen Hanley[1, 2]; Jasmine A. Ross[1]; Jennifer Adams[1, 2]; Sondra Zabar[1, 2]. [1]NYU School of Medicine, New York, NY; [2]Gouverneur Healthcare Services, New York, NY. (Control ID #2705883)

BACKGROUND: Entrustable Professional Activities (EPAs) and milestones are expert judgments made based on many formative assessments. Their validity is dependent on the number of assessments but attention is increasingly being paid to having a "fair" sample of observations equally distributed across residents and contexts. OSCEs provide such a consistent, fair sample of behavior assessed under controlled conditions but have mostly used been used to provide granular skills feedback. We explore how faculty judge the "entrustability" of residents based on observing OSCE cases and then how these entrustments relate to OSCE skills performance.

METHODS: In an 11-case OSCE for primary care residents ($n=25$; PGY1-3), SPs rated skills in communication (information gathering, relationship development, education/counseling), assessment, patient education (case-specific), physical exam, professionalism, treatment plan, patient satisfaction and patient activation. Summary scores were calculated as % items rated well done (vs not or partly done; internal consistency > .72). Faculty observers then judged how much supervision

the resident would need in actual practice to handle the case: 1-requires direct supervision, 2-requires indirect supervision, 3-ready for unsupervised practice, or 4-can supervise others. Mean entrustment rating across cases was correlated with clinical skills.

RESULTS: Mean entrustment =2.46 (SD .37), falling between *requires indirect supervision* and *ready for unsupervised practice*. On average, residents were judged to need direct supervision in .40 cases (SD .65), indirect supervision in 4.76 (SD 2.03), ready for unsupervised practice in 2.92 (SD 1.80), and able to supervise others in 1.07 cases (SD 1.15) with PGY1 residents needing direct and indirect supervision in more cases than PGY2 and 3 ($p = .037$). Associations between OSCE performance and faculty entrustment ranged from essentially zero (communication sub-domains of information gathering and education/counseling; case-specific patient education; patient satisfaction) to negative (communication sub-domain of relationship development $r = -.25$, $p = .16$; professionalism $r = -.21$, $p = .22$) to positive (case-specific assessment, $r = .35$, $p = .07$; physical exam $r = .30$, $p = .13$; treatment plan $r = .40$, $p = .04$; patient activation $r = .51$, $p = .008$). Associations between skills performance and entrustment ratings varied by case.

CONCLUSIONS: OSCEs provide a valuable opportunity for faculty to make entrustment judgments based on observing the same, complete encounter across many trainees. Entrustment judgments appear to be capturing elements of competence related to but different from SP assessments of performance, including especially “bottom line” aspects of practice such as assessment, physical exam, treatment plans and patient activation. Interestingly, we consider patient activation skills to be an “educationally sensitive patient outcome” i because both teachable and associated with patient outcomes and our results support the importance of this skill set.

CONDITION-RELATED SIDE EFFECTS AND BELIEFS ABOUT CANCER AND DIABETES Chloe Soukas[1]; Kimberly A. Muellers[1]; Juan Wisnivesky[2]; Jenny J. Lin[1]. [1]Icahn School of Medicine at Mount Sinai, New York, NY; [2]Mount Sinai School of Medicine, New York, NY. (Control ID #2707558)

BACKGROUND: Urinary dysfunction is a side effect of both prostate cancer treatment and as some diabetes medications. In patients with both newly diagnosed and chronic conditions, it is important to consider how symptoms impact patient beliefs about illness. We undertook this study to assess the effect of cancer diagnosis on experience of urinary symptoms in patients with diabetes. We also evaluated how differential experience of side effects impacts patients’ beliefs about diabetes among diabetes patients with or without cancer.

METHODS: We recruited patients with diabetes and early-stage prostate cancer and enrolled age-, gender- and hemoglobin A1c-matched patients with no cancer history. All patients were prescribed an oral hypoglycemic agent, and all cancer patients began treatment in the past 6 months. Urinary symptoms were assessed using the EPIC short form and dichotomized by no symptom versus any symptom during the past four weeks. Patient beliefs were assessed by the Beliefs and Illness Perceptions Questionnaire. We used chi-squared tests to assess differences in cancer and non-cancer patients’ symptoms, reported beliefs about diabetes, and symptom experience and itemized beliefs stratified by cancer status.

RESULTS: We surveyed 31 prostate cancer and 89 diabetic non-cancer patients. We found no overall difference in cancer and non-cancer patients’ beliefs (all items $p > 0.05$). Cancer patients were more likely to report urine leakage, poor urinary control, poor overall urinary function, painful urination, and frequent urination in the past 4 weeks. There was no difference in experience of weak urine stream. Non-cancer patients had associations between urine leak and more emotional impact (55% vs. 25%, $p = 0.045$; $p > 0.1$ for cancer); between poor urinary function and less emotional impact (23% vs. 50%, $p = 0.025$; $p > 0.05$ for cancer); and weak urine stream and concern (100% vs. 71%, $p = 0.032$; $p > 0.1$ for cancer). Among cancer patients, there were associations between poor urinary control and concern (87% vs. 38%, $p = 0.013$; $p = 1.0$ for non-cancer); between painful urination and emotional impact (67% vs. 20%, $p = 0.043$; $p = 1.0$ for non-cancer); and between frequent urination and impact on daily life (35% vs. 0%, $p = 0.033$ for cancer; $p > 0.05$ for non-cancer). Both cancer (45% vs. 0%, $p = 0.026$) and non-cancer (45% vs. 21%, $p = 0.012$) patients reported more emotional impact with frequent urination.

CONCLUSIONS: Patients with diabetes and prostate cancer were more likely to experience urinary problems in the past 4 weeks than other diabetes patients. There was no difference between cancer and non-cancer patients’ beliefs about diabetes. Although urinary symptoms appeared to differentially affect cancer and non-cancer patients’ beliefs about diabetes, the results of this analysis reveal a complex relationship between cancer, symptom experience and disease belief. Further exploration of symptom attribution and beliefs about illnesses in patients with multiple conditions may be valuable to improving disease management.

CONFLICTING MAMMOGRAPHY SCREENING GUIDELINES: WOMEN’S PERCEPTIONS OF SCREENING EFFICACY Michael G. Knight[2, 3]; Carmen E. Guerra[1]; Marilyn M. Schapira[2]. [1]Perelman School of Medicine, University of Pennsylvania, Philadelphia, PA; [2]University of Pennsylvania, Philadelphia, PA; [3]Crescenz VA Medical Center, Philadelphia, PA. (Control ID #2707227)

BACKGROUND: Breast cancer continues to be the second leading cause of cancer death, and has the highest rate of new cancer cases, among US women. National initiatives have worked to combat these persistent rates through community health education, and increasing access to mammography. However, such initiatives now face the challenge of conflicting recommendations surrounding mammography. In this study, we sought to describe the awareness of conflicting mammography guidelines, and its association with perceptions about mammography among a group of women who had previously undergone screening mammography.

METHODS: A survey was designed with questions, adapted from the Theory of Planned Behavior, to assess the awareness of conflicting mammography guidelines and attitudes about mammography. A convenience sample of women over the age of 21, who had previously undergone mammography, was used. Participants were recruited from community events in the New York area. Awareness of conflicting mammography guidelines was defined by a response of “strongly disagree”, “disagree”, or “neither agree or disagree” for one or more statements that experts agreed on the age of initiation, screening interval, or age of discontinuation of routine mammography. Beliefs that having a mammogram would prolong life or prevent breast cancer were measured on a 5-point Likert scale from 1 (Strongly Disagree) to 5 (Strongly Agree). Descriptive statistics were used to define the study population, and generate response distributions for survey items. Bivariate analysis using chi-square or t-tests was used to examine the relationship between awareness of conflicting guidelines and attitudes about mammography.

RESULTS: There were 70 study participants; 87% were Black, 15% had a family history of breast cancer, and 2% had a personal history of breast cancer. Sixty-one percent (61%) were aware of conflicting mammography screening

guidelines. When compared to participants who were not aware of conflicting guidelines, these women were less likely to agree with the following: Having a mammogram would "..help me to live longer" mean (SD), 3.4 (1.2) vs. 4.1 (1.0) ($p = 0.013$) and "..help me in the prevention of breast cancer" 3.3 (1.4) vs 4.1(1.1) ($p = 0.012$). Participants who were aware of the conflicting guidelines were also more likely to believe that private insurance companies made recommendations for mammography screening 25.6% vs 7.4% ($p = 0.057$). There was no difference in other perceived barriers, behavioral control, or intentions to have a mammogram.

CONCLUSIONS: Awareness of conflicting mammography guidelines in women who have undergone mammography is associated with perceptions of decreased efficacy of mammography with respect to breast cancer prevention and mortality reduction. These results warrant further study and consideration by healthcare providers and guideline generating organizations on the possible association that the ongoing controversy on mammography guidelines may have with patient perceptions about mammography.

CONSUMERS AND USE OF A LARGE NATION-WIDE PRIMARY CARE TELEMEDICINE SERVICE Kathryn A. Martinez; Mark Rood; Nikhyl Jhangiani; Adrienne Boissy; Michael B. Rothberg. Cleveland Clinic, Cleveland, OH. (Control ID #2702041)

BACKGROUND: Advancements in mobile technology have ushered in a new area of consumer-directed health applications. Interest is high, however, little is currently known about the provision of primary care via telemedicine. The objective of this study was to characterize consumers and their use of a large nation-wide telemedicine service.

METHODS: We analyzed all completed primary care encounters between January 2013 and August 2016 from the Online Care Group primary care telemedicine service, one of the largest telehealth companies in the U.S. Patient characteristics, including age, sex, and geographic region were provided by the user. Encounter characteristics, including time of day, wait time, visit length, connection type (mobile device, computer, or telephone), and whether patients used a coupon were recorded by the telemedicine system. Patient diagnosis and prescription receipt were recorded by the visit provider. At encounter conclusion, users rated their satisfaction with their visit provider and with the telemedicine system, on scales of 0 to 5 stars. They were also asked where they would have sought care otherwise (doctor's office, emergency department, urgent care/retail clinic, or done nothing). We generated descriptive statistics regarding users and use of the telemedicine service.

RESULTS: There were 56,863 completed telemedicine encounters during the study period by 601 providers; 60% of patients were female, mean age was 35.2 years (Interquartile Range (IQR): 27–45 years) and 9% were <18 years. Most were from the South (34%), followed by Midwest (29%), West (23%), and Northeast (14%). The majority (62%) accessed the system via mobile device and a third (32%) by computer. Twenty-two percent used a coupon. Mean wait time was 5.1 min (IQR: 1.2-6.1 min) and mean visit length was 7.1 min (IQR: 3.4-8.8 min). Most accessed the service during working hours: 27% called between 7 am and noon and 34% called between noon and 5 pm. Only 6% of users called between midnight and 6 am. Eighty-five percent rated their visit provider 5 stars, and 78% rated the telemedicine service 5 stars. Thirty percent were diagnosed with upper respiratory infections, followed by urinary conditions (8%), dermatological conditions (5%), and mental health/lifestyle issues (4%). Overall, 57% of users received a prescription. Had they not used the telemedicine service, 44% reported they would have visited an urgent care/retail clinic, 28% would have sought care at a doctor's office, 21% would have done nothing, and 6% would have gone to the emergency department.

CONCLUSIONS: Users were young and most accessed the system via mobile device. Both average wait time and visit length were short. Use of the telemedicine service appears to serve primarily as a substitute for urgent care/retail clinics, and to a lesser extent physician visits. However a significant number of users would have forgone care entirely were the service not available.

CONTRACEPTIVE COUNSELING QUALITY AND EFFECTIVE CONTRACEPTIVE USE AMONG WOMEN VETERANS: DATA FROM THE ECUUN STUDY Lisa S. Callegari[3, 6]; E. Bimla Schwarz[1]; Xinhua Zhao[5]; Maria K. Mor[4]; Sonya Borrero[2]. [1]University of California, Davis, Sacramento, CA; [2]University of Pittsburgh and VA Pittsburgh, Pittsburgh, PA; [3]VA Health Services Research & Development, Seattle, WA; [4]VA Pittsburgh Healthcare System, Pittsburgh, PA; [5]VA Puget Sound Health Care System, Pittsburgh, PA; [6]University of Washington, Seattle, WA. (Control ID #2706328)

BACKGROUND: Nearly half of pregnancies in the US are unintended, and the majority of these occur in women not using or inconsistently using contraception. Understanding associations between contraceptive counseling quality and effective contraceptive method use could inform efforts reduce unintended pregnancy.

METHODS: We analyzed data from the "Examining Contraceptive Use and Unmet Need among Women Veterans" (ECUUN) study, a national telephone survey of women veterans ages 18–45 years who received primary care in VA in the past year. This analysis was limited to women at risk of unintended pregnancy (heterosexual intercourse within the past year; not pregnant or trying to conceive; no history of hysterectomy, sterilization, or infertility) who reported receiving contraceptive counseling in the past year. Counseling quality was measured using six Likert-scale questions assessing whether patients' concerns were addressed, risks/benefits of options were discussed, and patients' views were elicited regarding which method they thought was best for them. Composite scores of how many items to which participants responded "agree" or "strongly agree" were calculated (0–6) and categorized as high (score = 6), moderate (score 3–5), and low (score < 3) quality. Our outcome was contraceptive method used at last sex, categorized as highly effective (intrauterine device, implant), moderately effective (injection, pill, patch, ring), and less effective (barrier, withdrawal)/no method. Logistic regression assessed associations between counseling quality and use of effective methods (moderately or highly effective) and, among those using effective methods, use of highly effective methods, controlling for age and race.

RESULTS: Of the 365 women veterans in our sample, 42 (12%) reported low quality counseling, 144 (40%) moderate quality, and 179 (49%) high quality. In unadjusted analyses, women reporting low quality counseling were less likely to use highly effective methods compared to women reporting high or moderate quality counseling (2% vs 20 and 18%, respectively) and more likely to use less effective methods/no method (36% vs 21 and 19%, respectively), with similar proportions (60-63%) using moderately effective methods across counseling quality groups [overall $p = 0.02$]. In adjusted analyses, women

reporting low quality counseling were less likely to use effective methods than women reporting high quality counseling (adjusted OR[aOR]:0.42, 95%CI 0.20, 0.89). Among the 286 women using effective methods, women reporting low quality counseling were less likely than women reporting high quality counseling to use a highly effective method (aOR:0.12, 95%CI 0.003, 0.81).

CONCLUSIONS: Quality of contraceptive counseling is associated with effective contraceptive method use among women Veterans. Facilitating higher quality contraceptive counseling may represent an opportunity to improve contraceptive outcomes and reduce unintended pregnancy.

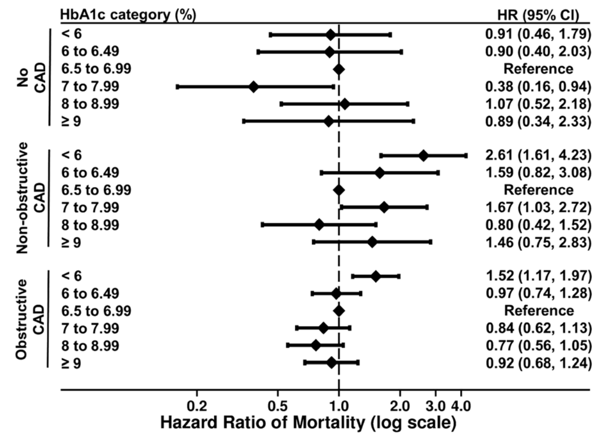
CORONARY ARTERY DISEASE SEVERITY MODIFIES THE ASSOCIATION BETWEEN GLYCEMIC CONTROL AND MORTALITY AND INFORMS PERSONALIZED DIABETES MANAGEMENT TARGETS Sridharan Raghavan[3, 4]; Wenhui G. Liu[3]; Michael Ho[1]; Margaret E. Plomondon[3]; David Magid[3]; David Saxon[2, 3]; Steven M. Bradley[5, 3]; Thomas M. Maddox[1]. [1]Eastern Colorado Health Care System, Denver, CO; [2]University of Colorado, Aurora, CO; [3]VA Eastern Colorado Health Care System, Denver, CO; [4]University of Colorado School of Medicine, Denver, CO; [5]Minneapolis Heart Institute, Minneapolis, MN. (Control ID #2702512)

BACKGROUND: While professional society guidelines recommend a personalized approach to diabetes management that takes into account an individual's comorbidities and diabetes-related complications, there is little evidence to guide individualization of diabetes treatment targets. We examined whether the severity of coronary artery disease (CAD) modifies the association between glycemic control and mortality and thus provides guidance in personalizing diabetes treatment.

METHODS: We studied 17,394 veterans with type 2 diabetes who underwent elective cardiac catheterization in the Veterans Affairs (VA) health care system between 2005 and 2013. The primary exposure was HbA1c level over 2 years of follow-up after index catheterization. The primary outcome was 2-year all-cause mortality, and cardiovascular versus non-cardiovascular mortality was a secondary outcome. CAD severity was categorized as no CAD, non-obstructive CAD, or obstructive CAD based on angiographic findings. Using multivariable Cox proportional hazards regression, adjusting for demographic and clinical covariates, we estimated the association between time-varying HbA1c and mortality, with an interaction term to determine effect modification by CAD severity.

RESULTS: Mean HbA1c at baseline was 7.5%; 61% had obstructive, 22% had non-obstructive, and 17% of participants had no CAD. Relative to a reference HbA1c of 6.5-7%, HbA1c <6% was associated with increased mortality risk (HR 1.55 [1.25, 1.92]), whereas HbA1c categories above 7% were not. We observed a significant interaction between HbA1c and CAD severity (interaction $p = 0.0005$). HbA1c <6% was associated with increased risk of mortality among individuals with obstructive and non-obstructive CAD, but not in those with no CAD (Figure). In secondary analysis, HbA1c <6% was associated specifically with increased risk of non-cardiovascular but not cardiovascular mortality.

CONCLUSIONS: CAD severity may inform diabetes treatment goals. In particular, the short-term risk of harm associated with lower glycemic control targets was limited to individuals with CAD on angiography. Measures of cardiovascular disease burden may help physicians optimize individualized glycemic control targets, especially with respect to minimizing harm.



CORRELATES OF OPIATE MISUSE OF PATIENTS ON CHRONIC OPIATE THERAPY FOR CHRONIC NON-CANCER PAIN IN AN ACADEMIC, SAFETY-NET PRIMARY CARE CLINIC Smita Y. Bakhai[1]; Bright Thilagar[1]; Jessica Reynolds[1]; Kenneth Leonard[2]. [1]SUNY at Buffalo, Williamsville, NY; [2]SUNY at Buffalo, Buffalo, NY. (Control ID #2690370)

BACKGROUND: Misuse and deaths associated with prescriptions opiates has increased dramatically. Efforts to curb the misuse of prescription opiates have focused on recognizing inappropriate use by patients in treatment for chronic non-cancer pain (CNCP). The primary objective of this study was to evaluate the correlates of opiate misuse based on a failed urine drug test (UDT) among patients on chronic opiate therapy (COT) for CNCP in a primary care setting.

METHODS: Utilizing medical records, we conducted a cross-sectional study of 206 subjects, between April 2011-April 2012, who were prescribed COT for at least 3 months' duration for CNCP. UDT results were used to classify subjects into three groups: 1) No Misuse, positive UDT for prescribed opiate and negative for illicit drugs and non-prescribed control substances; 2) Misuse, positive UDT for illicit drugs or non-prescribed control substances and positive or negative for prescribed opiates or overdose; 3) Potential diversion, negative for prescribed opiates and negative for illicit/un-prescribed controlled substances. Variables of interest were UDT results, patient demographics and medical, psychiatric and substance abuse history, missed medical appointments and non-adherence to non-opiate medications for other chronic diseases. Non-adherence was defined as physician documentation of medication non-adherence in medical records during clinic visit. We conducted an initial analysis comparing all groups using chi square analyses for categorical variables. Continuous variables were analyzed with ANOVA with Bonferroni corrected post hoc tests. We conducted two logistic regression analyses, one comparing groups using only those variables that were predictive of group status in the initial analyses.

RESULTS: The most commonly prescribed opiate was hydrocodone. The most commonly misused substances were marijuana, cocaine, benzodiazepines and non-prescribed opioids. Of the 206 records analyzed, 80 (38%) had a no misuse, 91 (44%) had misuse and 35 (17%) had potential diversion. In bivariate analyses, positive history of smoking (OR 3.90, 95% CI 1.69–9.03), substance use (OR 7.02, 95% CI 2.56–19.20), missed medical appointments (OR 2.85, 95% CI 1.44–5.63), and non-adherence to other medications correlated with opiate misuse group (OR 18.86, 95% CI 8.73–40.74). In logistic regression, only substance use history (OR 4.32, 95% CI 1.27–14.64) and non-adherence with non-opiate medications (OR 13.22, 95% CI 5.81–30.10) correlated with opiate misuse.

CONCLUSIONS: Non-adherence with non-opiate medications and missed appointments were significant correlates of opiate misuse based on failed UDT in a primary care setting. This study highlights the significance of reviewing medication and appointment adherence, in addition to substance abuse and smoking history.

COST OF RETRIEVING PRESCRIPTION DRUG MONITORING PROGRAM REPORTS: COMPARISON OF PHYSICIAN VERSUS DELEGATE MODELS Marcus Bachhuber[2]; Marc Larochelle[1]; Jessica Merlin[3]; Sean M. Murphy[4]. [1]Boston University School of Medicine and Boston Medical Center, Boston, MA; [2]Montefiore Medical Center/Albert Einstein College of Medicine, Bronx, NY; [3]University of Alabama Birmingham, Birmingham, AL; [4]Washington State University, Pullman, WA. (Control ID #2705307)

BACKGROUND: Prescription drug monitoring programs (PDMPs) are state-level databases of dispensed controlled substances. Clinical guidelines recommend, and an increasing number of states mandate, periodically obtaining PDMP patient reports prior to writing controlled substance prescriptions. Although the task of retrieving reports is a clerical function, it often falls to the prescribing physician. While delegates such as administrative staff members have access to PDMPs in many states, no study has compared the costs of delegates assisting physicians to obtain PDMP reports to the costs of relying solely on physicians to obtain them.

METHODS: We conducted a cost analysis with a 1 year time horizon, from the perspective of physicians (if self-employed) or their employers. We obtained estimates of the frequency of controlled substance prescribing by primary care providers from the 2011–2013 National Ambulatory Medical Care Survey. We measured time to retrieve PDMP reports by calculating the mean of 64 query attempts by 13 physicians in 5 states (30s to log in and 40s to retrieve a PDMP report). We defined two PDMP usage cases based on the frequency of queries: comprehensive (before every Schedule II-IV prescription), selective (before new Schedule II- IV prescriptions and only every 6 months for continuing prescriptions), and minimal (limited to before new Schedule II or III prescriptions and annually for continuing prescriptions). For each PDMP usage case, we calculated the labor costs (monetary value of physician or delegate time) and media costs (paper and ink).

RESULTS: Nationally, primary care providers write a new Schedule II-IV controlled substance prescription at 5.0% of visits and write a continuing Schedule II-IV controlled substance prescription at 17.8% of visits. For comprehensive, selective, and minimal PDMP usage, primary care providers spend an annual mean of 12, 11, and 6 hours, respectively, retrieving PDMP reports. The mean annual cost of this activity is an estimated $1509, $1387, and $762, respectively. The mean annual cost of the delegate model is $1105, $1023, and $710, respectively. Compared to the physician model, the delegate model results in a cost savings of $404 (27%), $364 (26%), and $52 (7%).

CONCLUSIONS: Retrieving PDMP patient reports—a clerical function—represents an opportunity cost to the payer of physician services in that it may result in forgone patient care. Alternatively, physicians may perform this activity after work hours, which could contribute to burnout. A model where delegates assist physicians can only reduce costs by up to one quarter. Ultimately, automation and integration of PDMP data into electronic health records may further reduce physician labor costs. Physicians, health care systems, and states should collaborate to ensure that PDMPs are employed in a manner that maximizes their benefit to patients and society, while minimizing their associated costs.

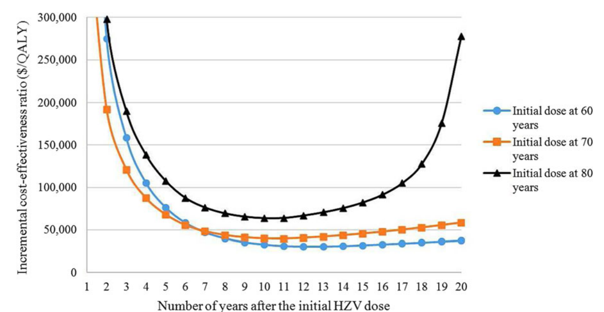
COST-EFFECTIVENESS OF A SHINGLES VACCINE BOOSTER FOR CURRENTLY VACCINATED PERSONS Phuc H. Le; Michael B. Rothberg. Cleveland Clinic, Cleveland, OH. (Control ID #2705585)

BACKGROUND: The Advisory Committee on Immunization Practices recommends a single dose of the live attenuated herpes zoster vaccine (HZV) in persons aged ≥60 years. Because the efficacy decreases to zero after 10 years, many vaccinated patients will soon be subject to an increased risk of herpes zoster and post-herpetic neuralgia. A booster might be necessary to extend protection but its cost-effectiveness is unknown. We aimed to determine the cost-effectiveness of a HZV booster and its optimal timing in immunocompetent adults first vaccinated at aged ≥60 years.

METHODS: We updated a validated Markov model to follow patients lifetime. From the societal perspective, we compared costs and quality-adjusted life years (QALYs) for no booster versus booster options. We examined a booster anytime between 1–20 years after the first dose, and conducted the analysis for persons having the first dose at different ages: 60, 70, and 80 years. The model started with the 'Healthy' state and patients could move between health states over time. Compared to no booster group, patients with a booster had an additional reduction in disease incidence and complications proportional to vaccine efficacy. Because patients entered the model already vaccinated, costs and side effects of the first dose were not included. We assumed the booster had the same efficacy and waning rate as the initial vaccination. Transition probabilities and other model inputs were based on published literature. We derived vaccine efficacy from the Shingles Prevention Study and its long-term data. All costs were expressed in 2015 US dollars ($). Costs and QALYs were discounted at 3%/year. Results were presented as incremental cost-effectiveness ratio (ICER) ($/QALY) and a threshold of $100,000/QALY was used to determined cost-effectiveness.

RESULTS: Cost-effectiveness of the booster varied by age and time since vaccination. The booster cost less than $100,000/QALY for all patients at least 5 years after the initial dose, but was most cost-effective at around 10 years. In one-way sensitivity analysis, none of the variables caused the ICER to exceed $100,000/QALY. In probabilistic sensitivity analysis, a booster at 10 years had >80% the probability of being cost-effective.

CONCLUSIONS: Under current assumptions, a booster dose of HZV could be cost-effective for vaccinated patients 10 years after initial vaccination. Future data on booster's efficacy could change the conclusion.



CREATING CONTINUITY ON A 7 ON 7 OFF HOSPITALIST STAFFING MODEL Christopher M. O'Donnell; Marsha Stern; Traci Leong; Ethan Molitch-Hou; Bruce Mitchell. Emory University, Atlanta, GA. (Control ID #2702955)

BACKGROUND: Transitions of care are a potential pitfall for miscommunication and an area of increased risk for patients. This study implemented a novel staffing model in a 7 on 7 off shift-based staffing system that focused on continuity of care on an urban academic hospitalist service. The purpose of the model was to allow hospitalists more continuity with their patients and to measure how this is associated with mortality, length of stay (LOS), and readmissions.

METHODS: This was a retrospective cohort in which matching 6 months of patient data were compared pre and post implementation of a new staffing model in 2016. The model changed from a drip system of admissions with dedicated rounders and admitters to one where rounding hospitalists admitted their own patients for daytime hours on the first four days of their week. They did not admit on their last three days. Total hospitalists involved in care were assessed as a measure of handoffs. Outcome measures included mortality, length of stay, and 30-day readmission rate.

RESULTS: We identified 2,102 patients admitted to the hospital medicine service from January 1st 2015 to June 30th 2015 and 1,870 patients admitted during the same time in 2016. Patient characteristics were found to be similar between years. There was on average 2.76 hospitalists per patient encounter in 2015 versus 2.19 in 2016 [$p < 0.001$]. Average length of stay was significantly reduced by over a half day from 6.34 days in 2015 to 5.7 days in 2016 [$p = 0.002$]. Of patients admitted prior to intervention, 46.52% had just one rounder during the hospital course while 57% had one rounder in the intervention group [$p < 0.001$]. In 2016, 23% of patients had one provider from admission to discharge compared to none in 2015 [$p < 0.001$]. There was no difference in mortality between groups. There was a direct relationship between the number of hospitalists and death in both groups with an increase odds ratio of 1.37 with each additional hospitalist added to the patient's care [$p < 0.001$]. There was no statistical difference in 30-day readmissions between years.

CONCLUSIONS: Improvement in hospitalist continuity significantly decreased patient LOS in this novel seven day staffing model. There was not a significant difference in mortality or 30-day readmission rate between groups, but there were increased odds of death with additional hospitalist handoffs. Implementing a new staffing model focusing on continuity is an inexpensive and potentially cost effective intervention for a hospitalist service.

Team	M	T	W	Th	F	Sa	Su
A	Day 1	2	3	4	5	6	7
B	Day 1	2	3	4	5	6	7
C	Day 1	2	3	4	5	6	7
D	4	5	6	7	Day 1	2	3
E	4	5	6	7	Day 1	2	3
F	4	5	6	7	Day 1	2	3
G	7	Day 1	2	3	4	5	6

Days 1-4, teams see patients newly admitted to the hospitalist service and patients signed out to them from the previous block. Days 5-7, teams continue to care for their remaining patients and do not receive any new admissions. Day 7, the team turns over to an oncoming physician through verbal and electronic sign-out.

CUSTOMIZING EMR REGISTRY REPORTING: USING DISEASE MANAGEMENT REGISTRY DATA TO IMPROVE COMMON ACO DIABETES METRICS

John Voss; William Clay; Douglas Thaggard; Ira Helenius; Katharine Schlag. University of Virginia, Charlottesville, VA. (Control ID #2703575)

BACKGROUND: Electronic medical records (EMRs) offer promise to facilitate chronic illness care quality improvement (QI) but the data may be difficult to access in readily usable form for individual clinician QI efforts. To improve diabetes mellitus (DM) control in an internal medicine resident (IMR) clinic, we developed and disseminated customized outcomes reports using EMR disease management registry data for 61 2nd & 3rd year IMRs in an internal medicine residency clinic.

METHODS: Using a locally developed structured PDSA tool, IMRs self-designed HbA1c or HBP control or foot exam QI projects for implementation over 6 months (3rd year IMRs) or 12 months (2nd year IMRs). Each IMR received a monthly report for their own clinic DM patients displaying summary run charts of HbA1C control, HBP control, and foot exam completion as well as a list of individual patients and their respective clinical values. Residents were instructed to use customary available clinic resources to achieve their project goals. To create reports, DM registry data were downloaded biweekly and processed via an R script to generate reports displaying run charts of HbA1C control (mg/dL, proportion <8%, proportion >9%), HBP control (mm Hg systolic and diastolic, % < 140/90, % < 150/90), foot exam completion (% requiring) and lists of unique patient values and individual clinician versus clinic population means. After 12 months, DM outcomes were assessed using mixed model linear or logistic regression controlling for IMR, IMR project selection, and elapsed time.

RESULTS: IMRs selecting HbA1c control projects reduced their patient's HbA1c values from a mean of 8.33 (sd = .43) to 8.07 (sd = .31) compared to 7.82 (sd = .38) to 7.84 (sd = .57) for all other residents (b coefficient for trend = 0.005 mg/dL per week, overall $p < 0.001$.) No initial meaningful difference existed in the mean proportion of patients needing a foot exam between foot exam (FE) IMRs (0.67) and non-foot exam (NFE) IMRs (0.68). Although this proportion decreased significantly over time for all residents, the proportion of patients needing a foot exam at the end of the project for FE IMRs (0.38) was substantially lower relative to NFE IMRs (0.49), and the difference in this change over time was marginally significant, $p = 0$ .08. IMRs electing to improve HBP control were unable to demonstrate improvement over time. A contributing factor may be a significantly higher proportion of patients with a BP > 150/90 at baseline (0.35) for the HBP control residents relative to non-HBP control residents (0.25), $p = 0$ .02.

CONCLUSIONS: Structured tools and custom EMR reports can be developed using free and readily available software to assist clinicians to improve chronic illness care metrics of interest in the era of value-based purchasing. These tools alone may be insufficient to improve more challenging outcomes like hypertension control without additional resources beyond individual clinician effort.

DAILY MARIJUANA USERS IDENTIFIED IN PRIMARY CARE AND EMERGENCY SBIRT SETTINGS: CHARACTERISTICS AND SCREENING RESULTS

Sandeep Kapoor[1, 3]; Jeanne Morley[2, 3]; Kristen Pappacena[4]; Cherine Akkari[4]; Camila Bernal[4]; Charles Neighbors[4, 5]; Mark Auerbach[1, 3]; Nancy Kwon[1, 3]; Jonathan Morgenstern[2, 3]; Joseph Conigliaro[2, 3]; Megan O'Grady[4, 5]. [1]Northwell Health, New Hyde Park, NY; [2]Northwell Health, Great Neck, NY; [3]Hofstra Northwell School of Medicine, Hempstead, NY; [4]The National Center on Addiction and Substance Abuse, New York, NY; [5]Yale Univeristy, New Haven, CT. (Control ID #2705043)

BACKGROUND: Marijuana is the most widely used illicit substance in the US. Its rates of use as well as rates of daily users have steadily increased over the past several years. Within primary care settings, individuals who screen positive for drugs most commonly use marijuana. An estimated 25–50% of daily users will develop cannabis use disorder, making them a potentially important focus in healthcare settings.

METHODS: This study examined the characteristics and screening results of daily marijuana users identified in healthcare settings as part of an interdisciplinary Screening, Brief Intervention, and Referral to Treatment (SBIRT)

program. Patients presenting to a Primary Care Practice (PCP) or an Emergency Department (ED) were screened for risky substance use with the AUDIT and DAST-10 and, if positive, were further assessed on psychosocial factors, substance use severity, and demographics ($n = 1604$).

RESULTS: Of the patients who screened positive and participated in the assessment, 44% used marijuana at least one day in the past 30 and 15% used marijuana 25 or more days. These daily users ($n = 239$) had relatively low DAST-10 scores (M = 3.02) and 42% screened into the moderate or higher risk category on the DAST-10 (3+). Using multivariate logistic regression analyses, we identified significant predictors of 1) being a daily user (vs. non-daily) and 2) screening as moderate/high risk (vs. low) on the DAST-10. Among the marijuana users ($n = 739$), daily use was significantly predicted by being male, Latino, and an ED patient. Among daily users, significant predictors of screening moderate/high on the DAST-10 were: younger age, being a user of other drugs, and more frequent alcohol use.

CONCLUSIONS: Findings suggest that while SBIRT programs in healthcare settings are likely to encounter daily marijuana users, the majority may screen at low risk for health or psychosocial problems. Patients who screen into higher risk categories are likely to be younger and using other substances. Therefore, interventions for daily marijuana users may need to be tailored such that interventions for lower risk patients focus on reducing marijuana use, while interventions for higher risk patients be adapted for multiple substances and younger users.

Predictors of daily marijuana use (using ≥ 25 days/month) among all marijuana users ($n = 739$)

	B	S.E.	Sig.	OR
Gender (ref: female)	0.61	0.20	**0.002**	1.84
Use of other drugs	0.01	0.21	0.96	1.01
Other Race (ref: White)	-0.31	0.26	0.24	0.73
African American (ref: White)	0.20	0.20	0.31	1.22
Hispanic/Latino	0.52	0.26	**0.047**	1.67
Age	0.01	0.02	0.63	1.00
Site Type (ref: PCP)	0.38	0.18	**0.04**	1.46
Days of Alcohol use	0.01	0.10	0.46	1.01

DAY OF THE WEEK AND PHYSICIAN DECISION MAKING Michael L. Barnett[4, 1]; Jeffrey A. Linder[2]; Hannah Neprash[3]; Anupam B. Jena[3]. [1]Brigham and Women, Boston, MA; [2]Brigham and Women's Hospital, Boston, MA; [3]Harvard Medical School, Boston, MA; [4]Harvard T. H. Chan School of Public Health, Boston, MA. (Control ID #2705781)

BACKGROUND: Physicians make dozens of clinical decisions daily, which may create the potential for "decision fatigue," whereby decision-making effort slumps over time. However, little evidence has explored this phenomenon across the week for multiple clinical decisions. We hypothesized that full-time, but not part-time, physicians would display increasing decision fatigue during the workweek for effort-intensive decisions such as avoiding narcotic prescribing and counseling on smoking cessation.

METHODS: We performed a cross-sectional analysis of the nationally representative National Ambulatory Medical Care Survey of office visits by adults from 2000–2012. The main analysis was restricted to "full-time" physicians who saw patients for ≥4 weekdays in the surveyed week. The key exposure was a visit occurring the beginning of the week (Monday/Tuesday) versus the end of the week (Thursday/Friday). We measured the rates of 3 clinical measures potentially vulnerable to decision fatigue: antibiotics for upper respiratory infections (URIs), narcotics for acute low back pain (LBP) and smoking cessation counseling for active smokers. We estimated the rates of each outcome in the beginning vs. the end of the week using logistic regression adjusting for patient and visit characteristics. We compared results for "full time" physicians with a sample of "part-time" physicians seeing patients for ≤3 weekdays in the week who should be less vulnerable to decision fatigue across the week. All estimation of results took account of the multistage probability design of the surveys.

RESULTS: From 2005–2012, the study sample contained 82,725 office visits eligible for at least one of the outcomes examined. Office visits in the beginning versus end of the week were similar across all patient characteristics measured (all $p > 0.20$). Comparing the end of the week to the beginning, after adjustment physicians were significantly more likely to prescribe narcotics for LBP (OR 1.18, 95% CI 1.05-1.32, $p = 0.006$). In contrast, physicians were less likely to perform smoking cessation counseling at the end of the week (OR 0.78, 95% CI 0.67-0.92, $p = 0.002$). Neither of these measures had statistically significant differences across the week among physicians working ≤3 days in the week ($p > 0.17$). There was no significant difference in antibiotic prescribing for URIs by day of the week for either group ($p = 0.83$).

CONCLUSIONS: We observe evidence consistent with decision fatigue among physicians over the workweek for 2 of 3 measures examined: increased rates of narcotic prescribing for LBP and decreased rates of time-intensive smoking cessation counseling. We observed these differences for full-time, but not part-time, physicians, arguing against patient selection in the end of the week driving these findings. These results suggest that strategies to improve the quality of care delivery should also address the potential contribution of decision fatigue for full-time clinicians.

DE-ESCALATION OF BROAD SPECTRUM ANTIBIOTICS FOLLOWING NEGATIVE CULTURES IN PNEUMONIA: RATES AND OUTCOMES Michael B. Rothberg[2]; Abhishek Deshpande[2]; Peter B. Imrey[2]; Pei-Chun Yu[2]; Peter K. Lindenauer[1]. [1]Baystate Medical Center, Springfield, MA; [2]Cleveland Clinic, Cleveland, OH. (Control ID #2707495)

BACKGROUND: For patients at risk for multidrug resistant organisms, including those with healthcare associated pneumonia and other severe pneumonias, recommended empirical therapy includes one agent with activity against methicillin-resistant *Staphylococcus aureus* (MRSA) and another with activity against *Pseudomonas*. Following negative blood and respiratory cultures, guidelines are unclear as to whether antibiotics should be de-escalated. We assessed the rate of de-escalation and associated outcomes among a large cohort of pneumonia patients.

METHODS: This retrospective cohort study assessed adult patients admitted with pneumonia from 2010–2015 to 168 US hospitals that participate in the Premier data base, providing administrative and microbacteriological data. We included only patients who had blood or respiratory cultures and were begun on vancomycin together with an antipseudomonal drug other than a quinolone by hospital day 1. Patients with any positive culture or who died or were discharged before hospital day 4 were excluded. De-escalation was defined as stopping vancomycin and the antipseudomonal drug by the 4th hospital day after cultures were obtained, but continuing another antibiotic. Patients were matched on propensity for de-escalation and compared on subsequent transfer to intensive care (ICU), inpatient mortality, length of stay (LOS), cost and 30-day readmission. The propensity model included patient demographics, co-morbidities and treatments received on day 4 after cultures. Certain treatments

(e.g. mechanical ventilation, vasopressors) served as proxies for severity of illness. We also compared patient outcomes across quartiles of de-escalation at the hospital level.

RESULTS: We identified 22,400 patients who met inclusion criteria. Following cultures, 4114 (18.4%) had both drugs stopped within 4 days. Hospital rates of de-escalation ranged from 0 to 67%. Median age was 72 years, 54% were male, and 39% were admitted to the ICU. Compared to patients without de-escalation, those de-escalated had similar demographics, but fewer co-morbidities and less severe disease at 1 and 4 days after culture. After propensity-matching, there were no significant differences in any of 83 measured variables. In the matched sample, patients who were de-escalated had 21% shorter LOS, 21% lower costs, and lower odds of subsequent transfer to ICU (OR 0.28; 95% CI 0.17 - 0.47)) and inpatient mortality (OR 0.71, 95% CI 0.60 - 0.83). There were no significant associations between hospital quartile of de-escalation and inpatient mortality, cost, LOS or readmission.

CONCLUSIONS: In a large US inpatient database, <20% of pneumonia patients had antibiotic coverage de-escalated following negative cultures, but there was wide variation by hospital. De-escalated patients and hospitals with high rates of de-escalation did not have worse outcomes. Following negative cultures, de-escalation appears safe in selected patients.

DECEDENTS OF OPIOID OVERDOSE: INJECTION-RELATED OVERDOSE DEATHS DIFFER FROM NON-INJECTION RELATED DEATHS. Emily E. Hurstak[1, 2]; Christopher Rowe[3]; Emily Behar[3]; Caitlin Turner[3]; Rachel Cabugao[3]; Phillip Coffin[3]. [1]UCSF, San Francisco, CA; [2]San Francisco Free Clinic, San Francisco, CA; [3]San Francisco Department of Public Health, San Francisco, CA. (Control ID #2703722)

BACKGROUND: Opioid overdose is the leading cause of unintentional injury death in the United States. Death certificates often exclude details on individual causative drugs and may underestimate heroin-related overdose deaths due to challenges in relying on toxicology alone. We propose a strategy to differentiate overdose deaths related to injection drug use (IDU) from non-injection related opioid overdoses in order to improve understanding of opioid overdose epidemiology and to guide prevention efforts.

METHODS: We reviewed all accidental drug overdose cases occurring in San Francisco County from 2006–2012 using information from the California Electronic Death Reporting System. We included cases if the death occurred in San Francisco County, was attributed to intoxication from heroin or opioid analgesics, and was not determined to be a suicide or homicide. We extracted descriptive data from decedent case narratives from the San Francisco Office of the Chief Medical Examiner (OCME), including death scene details and health history. We created a definition for injection-related overdose deaths based on review of toxicology, decedent history, and death scene details. We compared opioid analgesic overdose cases to cases involving injection drug use.

RESULTS: Between 2006–2012, we identified 255 deaths that involved IDU and 552 deaths attributed to opioids without evidence of IDU. Sixty-percent (59.6%) of IDU-related deaths could be designated as definite heroin-overdoses. Decedents of IDU-related overdose were younger (45.2 vs. 48.6 years, $p < 0.001$) and more likely to be male (76.9% vs. 67.2%, $p = 0.005$). Decedents of IDU-related overdose were more likely to be found in a single room occupancy hotel (38.4% vs. 25.3%, $p < 0.0001$) or a public space (14.5% vs. 8.2%, $p = 0.005$), compared to a private residence (40.0% vs. 56.9%, $p < 0.001$). IDU-related overdoses were more likely to be discovered by a passerby (8.6% vs. 4.5%, $p = 0.02$) or a program staff member (37.3 vs. 29.9, $p = 0.04$), rather than by a cohabitant (35.3% vs. 45.2%, $p = 0.02$). Fifty percent (49.8%) of IDU-related overdose decedents had a known prior history of IDU, compared to 10.3% of non-IDU overdose deaths. Benzodiazepines contributed to the cause of death in 8.2% of IDU-related overdoses compared to 24.3% of non-IDU deaths ($p < 0.001$).

CONCLUSIONS: We created a definition for IDU-related opioid overdose by incorporating historical details about the decedent and death scene. Using this definition, we identified differences in overdose cases that involved injection drug use compared to those that did not. Traditional opioid overdose prevention efforts target people with injection drug use. However, only a small proportion of decedents of opioid analgesic overdose have histories of injection drug use and our results suggest differences in the drug use patterns of injection-related and non-injection related overdoses. Increasing our understanding of opioid overdose will improve overdose education programs and outreach efforts to populations at risk.

DECREASING INAPPROPRIATE FRESH FROZEN PLASMA TRANSFUSIONS BY INCORPORATING EVIDENCE-BASED TRANSFUSION INDICATIONS IN THE ELECTRONIC ORDERING SYSTEM Salima Vasani[1]; Daniel Goldsmith[1]; Joseph J. Thomas[2]. [1]Capital Health Regional Medical Center, Trenton, NJ; [2]Accumen, Trenton, NJ. (Control ID #2700579)

BACKGROUND: Fresh Frozen Plasma (FFP) is a major source of coagulation factors, often indicated in bleeding due to coagulopathy. It is frequently transfused inappropriately, especially due to inadequate adherence to evidence-based transfusion guidelines. Like any other blood product, FFP transfusion is expensive and associated with serious transfusion reactions. Studies have shown that interventions that emphasize transfusion guidelines can significantly decrease inappropriate utilization of FFP. Aim of this project was to evaluate current FFP transfusion practices at our community hospital and improve utilization by reinforcing transfusion guidelines via the Computerized Physician Order Entry (CPOE) system in addition to training sessions.

METHODS: Stage I included review of FFP transfusion orders over a period of six months from April 2015 to September 2015. Evaluation included number of patients, units of FFP transfused and indications. Indications were deemed appropriate or inappropriate in accordance with institutional transfusion guidelines. Massive transfusion protocols and plasmapheresis were excluded. In October 2015, a new ordering system was incorporated in CPOE which required ordering physicians to choose from a menu of evidence-based indications for FFP transfusion. Training sessions were conducted for residents and attending physicians to reinforce transfusion guidelines. Stage II commenced after implementation of the new system, from November 2015 to May 2016. Records from the new ordering system were evaluated using the same parameters as Stage I.

RESULTS: In Stage I, total of 310 units of FFP were transfused to 101 patients. During Stage II, total of 251 units of FFP were transfused to 80 patients. A 19.04% decrease in number of units transfused and 20.8% decrease in number of recipients, after implementation of the new ordering system. Inappropriate transfusions that did not meet institutional guidelines decreased from 61 units to 25 units (from 19.6 to 9.9%). Most common indications for FFP transfusion were Gastrointestinal and Intracranial bleeding with coagulopathy. Most common inappropriate indications were bleeding without coagulopathy and elevated INR without evidence of bleeding.

CONCLUSIONS: Incorporation of transfusion indications in the electronic ordering system has the potential to decrease inappropriate Fresh Frozen Plasma transfusions by prompting ordering physicians to select evidence-based indications. This may in turn reduce cost and potentially reduce adverse transfusion reactions. This is a continuing project which will assess several other parameters in the upcoming months including number of transfusion reactions before and after implementation of the new system, reasons for inappropriate orders, and affect on pre and post-transfusion INR. Our goal is to continue education and awareness about evidence-based transfusions in order to improve quality of patient care.

DEPRESCRIBING IN POLYPHARMACY PATIENTS: A PILOT STUDY OF PRESCRIBING PRACTICES IN AN ACADEMIC PRIMARY CARE CLINIC. James L. Wofford[4]; Carolyn F. Pedley[2]; Claudia L. Campos[4]; Feben Girma[3]; Melanie Martin[1]. [1]Wake Forest, Greensboro, NC; [2]Wake Forest, Winston-Salem, NC; [3]Wake Forest Baptist Medical Center, Winston-Salem, NC; [4]Wake Forest University, Winston-Salem, NC. (Control ID #2704790)

BACKGROUND: "Deprescribing", the process of tapering, or discontinuing of drugs with the goal of minimizing polypharmacy and improving outcomes, has now become a national movement. Whether or not proponents of deprescribing can counter the forces that encourage polypharmacy (pharmaceutical marketing, attention to clinical inertia, consumer demand), a better understanding of prescribing practices in the faced of polypharmacy would be useful for ambulatory education. We explored the prescribing actions of clinicians in a single urban academic primary care clinic to determine the prevalence and types of medication changes and to compare prescribing patterns of senior clinicians with resident physicians

METHODS: We performed a one-week audit of all medication lists for return continuity visits at this community-based, academic primary care clinic, Each EMR medication list was examined for medication additions, changes, and/or deletions during that visit. Patients with polypharmacy were defined as having 10 or more medications documented on their medication list. We compared prescribing actions of senior clinicians with those of resident clinicians, and for patients with and without polypharmacy.

RESULTS: 186 patients who attended a return continuity visit during the designated audit week were seen by one of 34 clinicians (121 patients to 11 senior clinicians, 65 to 21 resident physicians) Patients had a mean age of 56.8 (+12.8) years, and 24% (46/187) were aged 65 or older. 18% (33/186) were seen by a clinician other than their designated PCP during the return clinic visit. The number of medications listed in the EMR averaged 10.0 + 5.4, but did not significantly differ by age group (mean 11.6 (+0.8) for >65 years versus 9.4 (+0.5) for <65). Fifty percent (93/186) of patients had 10 or more medications. Medication lists were only slightly longer for senior clinicians than for residents (10.3 (+0.5) versus 9.3 (+0.7)). Sixty percent (111/185) of return visits reflected at least one medication change to the list during the clinic visit. At least one medication was added (36.2% (67/185)), changed (34.5% (64/185)), or deprescribed (16.2% (30/185)), respectively, Resident clinicians more often added medications than did senior clinicians (45.3% (24/64) vs 32.3% (39/121), $p = .08$), but there was no significant difference between resident physicians and senior clinicians in medication dosing changes (39.1% (25/64) vs 34.7% (42/121)), or deprescribing of a medication (14.1% (9/64) versus 17.4% (21/121)). There was no signficant difference in deprescribing for polypharmacy patients (>9 medications) versus non-polypharmacy patients (12.9% (12/93) versus 19.6% (18/93) $p = .21$).

CONCLUSIONS: In this academic-affiliated primary care clinic, the rate of medication addition was more than twice the rate of deprescribing. Senior clinicians were no more likely than resident cliniciansto to deprescribe medications.The presence of polypharmacy was not associated with a higher rate of deprescribing.

DEPRESCRIBING: A SURVEY STUDY OF PATIENT ATTITUDES AND EXPERIENCES THAT PREDICT MEDICATION DISCONTINUATION Amy Linsky[1, 3]; Steven R. Simon[1]; Kelly Stolzmann[1]; Mark Meterko[2]. [1]VA Boston Healthcare System, Boston, MA; [2]VHA Office of Analytics and Business Intelligence (OABI), Bedford, MA; [3]Boston Medical Center, Boston, MA. (Control ID #2699348)

BACKGROUND: Polypharmacy is associated with adverse medication effects. One potential solution is deprescribing, which is the intentional, proactive, rational discontinuation of a medication that is no longer indicated or whose potential harms outweigh potential benefits. We sought to characterize patient characteristics, attitudes and healthcare experiences associated with prior medication discontinuation.

METHODS: We conducted a mail survey in August-October, 2015 using the Patient Perceptions of Discontinuation (PPoD) instrument. We randomly sampled 1600 Veterans receiving primary care at Veterans Affairs medical centers nationally with ≥ 5 concurrent prescribed medications, oversampling women. The primary outcome was response to: "Have you ever stopped taking a medicine (with or without your doctor's knowledge)?" We restricted analyses to those who answered "No" or "Yes." The primary predictors of interest were eight validated attitudinal scales, all on a 1–5 scale (Beliefs about Medications Questionnaire - Overuse, Trust-provider, CollaboRATE, Medication Concerns, Provider Knowledge, Interest in Stopping Medicines, Patient Involvement in Decision Making, and Unimportance of Medicines). Other predictors included demographics, health status, and health care experiences. Multivariable logistic modeling associated patient factors with prior medication discontinuation.

RESULTS: Respondents ($n = 803$; adjusted response rate, 52%), were predominantly male (85%); non-Hispanic white (68%), age ≥ 65 years (60%), with generally poor (16%) or fair (45%) health. Participant attitudes toward medications and their providers were generally favorable. Respondents disagreed that medicines were unimportant and overused, with mean scores of 2.39 and 2.91 on the Unimportance of Medicine and the BMQ-Overuse scales, respectively. Respondents held generally positive views of providers, with mean scores of 3.75 on Provider Knowledge and 3.56 on Trust-provider. Concurrently, patients were generally interested in stopping medicines (mean 3.42). Just over 1 in 3 patients (34%) reported having stopped a medicine in the past. In a multivariable logistic regression model ($p < 0.001$, pseudo-R^2 0.31, c-statistic 0.82), factors associated with experiencing discontinuation included being told to stop a medicine or asking to stop a medicine, greater interest in deprescribing and in shared-decision making, and higher education. Factors associated with decreased discontinuation were more prescriptions, higher trust in provider, and seeing a VA clinical pharmacist.

CONCLUSIONS: This study suggests that more highly educated patients who have interest in deprescribing and in shared-decision making may be more receptive to discontinuation discussions. Future research evaluating how to incorporate this survey and its findings into clinical workflow through the design of clinical decision-support interventions may help promote safe, appropriate, and rational use of medications.

DEPRESSION AMONG HEALTHCARE WORKERS—CONTRIBUTION OF PERSONALITY, WORK CHARACTERISTICS, COPING, AND BURNOUT Wei Duan-Porter[2]; Daniel Hatch[3]; Jane Pendergast[1]; Guy Potter[1]. [1]Duke University School of Medicine, Durham, NC; [2]Minneapolis VA Health Care System, Minneapolis, MN; [3]Duke University Center for the Study of Aging and Human Development, Durham, NC. (Control ID #2705619)

BACKGROUND: Relative contributions of individual and work factors to the development of depression remain unclear. There is also debate about the relationship between depression and burnout. We sought to examine the association of individual and work characteristics with depressive symptoms over 12 months. We evaluated the contribution of demographics, personality, work characteristics, and coping to differences in depression between individuals. Then, we investigated how burnout was associated with differences in depression both between and within individuals.

METHODS: Participants were recruited from nurses and associated healthcare staff employed by a large academic health system in the Southeastern U.S. Baseline assessments included demographics, health information, work characteristics, coping, burnout, and depression. Participants then completed monthly surveys on burnout and depression. Selected participants had full baseline data, and a minimum of 3 completed follow-up assessments ($n = 281$, 89% of these had data for at least 9 of 12 months). We used random effects hierarchical linear modeling to examine differences in depression between and within individuals over time. We added categories of predictors in a step-wise fashion to successive models, beginning with only demographics, then personality, work characteristics, coping, and finally burnout.

RESULTS: Most participants were female (92%), white (82%), and nurses (90%). Demographic factors were not significantly associated with depression, but personality, work characteristics, and coping all had significant fixed effects. Personality accounted for 36% of variation between individuals, while work characteristics and coping explained an additional 5 and 8%, respectively. Burnout was significantly associated with depression, but the 2 dimensions—exhaustion and disengagement—had contrasting effects. Whereas baseline exhaustion contributed to differences in depression between individuals (coefficient 2.44, p <0.001), time-varying follow-up exhaustion scores were not associated with further changes in depression within individuals over time (coefficient 0.37, $p = 0.09$). Time-varying disengagement scores were associated with changes in depression within individuals (coefficient 0.52, $p = 0.01$), but baseline disengagement was not significantly associated with differences between individuals (coefficient −0.51, $p = 0.32$).

CONCLUSIONS: Personality, work characteristics, coping, and burnout were associated with depression among healthcare workers. Higher exhaustion was associated with more depressive symptoms when comparing individuals, and higher disengagement over time was associated with increased depressive symptoms within individuals longitudinally. Our findings suggest that interventions to promote wellbeing for healthcare workers should address both work and individual factors. Careful characterization of type and severity of existing burnout may impact the expected benefits and relevant timeframe for evaluating future interventions.

DEPRESSION AND BURNOUT AMONG MEDICAL STUDENTS DURING 4 yearS OF MEDICAL SCHOOL: A SINGLE CENTER STUDY Padmini Ranasinghe[1]; Brandyn D. Lau[2]. [1]Johns Hopkins School of Medicine, Baltimore, MD; [2]The Johns Hopkins University School of Medicine, Baltimore, MD. (Control ID #2703533)

BACKGROUND: Previous studies reported that medical students experience symptoms depression and burnout at a higher rate compared to the general population. Medical students also have a higher rates of suicidal ideation. Burnout rate is up to 50% among medical students: 53% of medical students reported experiencing high emotional exhaustion and/or depersonalization. Recent systematic review, estimated that prevalence of depression or depressive symptoms among medical students was 27.2 and that of suicidal ideation was 11.1%. Despite the deleterious consequences of these symptoms, only a small minority (up to 15.7%) of medical students ultimately seek treatment.

METHODS: In this longitudinal single center survey study, health and wellness of medical students across 4 years of medical school were evaluated using a combination of validated and adapted assessment tools. Standardized surveys were administered annually between 2009 and 2014. This study was approved by the Institutional Review Board and consent was obtained at the time each first survey was administered. Students who matriculated in 2009, 2010, or 2011 were included in this report. Each participant completed 5 surveys: one at the beginning of each year of medical school and an exit survey post-graduation. PHQ 9 was used to screen for depression and burnout was assessed based on a single question of "Can you classify your current level of burnout".

RESULTS: Three hundred sixty (360) students matriculated to the undergraduate medical education program between 2009 and 2011. 284 (78.9%) were continuously enrolled during pre-clinical and clinical years, and were eligible for inclusion. In this study 128 medical students (45.1%) completed the health and wellness survey each year. During the first year of medical school, 4.7% of respondents reported symptoms of at least minor depression. During second year 6.6% of respondents reported symptoms of at least minor depression, 24.9% in third year, and 32.7% in fourth year. The proportion of respondents who self-reported at least some symptoms of burnout was low during first year (4.2%), increased in second year (18.8%), and remained high in third year (17.7%) and very high in fourth year (31.3%).

CONCLUSIONS: Medical students' psychological health including depression and burnout are high during medical school: symptoms of at least minor depression and self-reported burnout increased each year in the school. This suggest we as generalist involved in undergraduate medical education should be aware of these subtle changes which have life long implications. We also should be mindful and available for students to become effective and compassionate student centered teaches

DEPRESSIVE SYMPTOMS PREDICT SHORT TERM MORTALITY IN THOSE WHO REPORT EXCELLENT OR VERY GOOD STATE OF HEALTH Nathalie Moise[1]; Yulia Khodneva[3]; Joshua S. Richman[3]; Karina Davison[1]; Ian M. Kronish[1]; Jonathan Shaeffer[4]; Monika M. Safford[2]. [1]Columbia University Medical Center, New York, NY; [2]Weill Cornell Medical College, New York, NY; [3]University of Alabama, Birmingham, AL; [4]University of Colorodo, Denver, CO. (Control ID #2704319)

BACKGROUND: The relationship between elevated depressive symptoms, which often relapse and remit, and mortality has been poorly elucidated given the use of single measurements of depressive symptoms, the unclear role of health status and incomplete covariate adjustment. We aimed to determine whether time varying depressive symptoms predict all-cause and cause-specific mortality in those with self-reported excellent or very good health.

METHODS: The Reasons for Geographic and Racial Differences in Stroke (REGARDS) is a national, population-based longitudinal study conducted from 2003–2007 in general continental U.S. communities. 29,491 black and

white U.S. adults aged 45 years and older randomly sampled within race-sex-geographic strata with available baseline depressive symptoms. Elevated depressive symptoms were defined as CES-D-4 ≥ 4 measured at baseline and on average 5 and 7 years later. Cox proportional hazard regression models were constructed to assess cancer, non-cardiovascular (CVD), CVD and all-cause mortality. All analyses were stratified by baseline self-reported health status.
RESULTS: Overall, 11.0% had elevated depressive symptoms; the average age was 64.9 years, 55% were female, 41% black, 54% had poor, fair or good health, and 16% died in the follow up period. Time-varying depressive symptoms were significantly associated with nonCVD (aHR = 1.29, 95% CI 1.16–1.44) and all-cause (aHR = 1.24, 95%CI 1.14–1.39), but not cancer (aHR = 1.15, 95%CI 0.96–1.38) or CVD (aHR = 1.13, 95%CI 0.98–1.32) death adjusting for age, gender, race, education, income, insurance status, region, diabetes, blood pressure, body mass index, kidney disease, hyperlipidemia, CVD, cognitive impairment, lung disease, aspirin, antidepressant, statin or antihypertensive use, smoking, physical inactivity, alcohol, medication non-adherence, C-reactive protein, physical health, and perceived stress. Depressive symptoms were particularly related to all-cause (aHR = 1.48, 95%CI 1.27–1.78), CVD (aHR = 1.37, 95%CI 0.99–1.91), nonCVD (aHR = 1.54, 95%CI 1.24–1.92) and cancer (aHR = 1.36 95% 0.97–1.91) death in those who reported excellent or very good health. Baseline analyses yielded similar results.
CONCLUSIONS: Depressive symptoms confer both a short-term risk for all-cause mortality, CVD, non-CVD death and cancer death, particularly in those with excellent or very good health. These findings may have implications for timely treatment, regardless of health status.

DERIVATION OF A CLINICAL PREDICTION MODEL TO PREDICT UNCHANGED INPATIENT ECHOCARDIOGRAMS

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BACKGROUND: Transthoracic echocardiography (TTE) is one of the most frequently ordered tests in healthcare. Repeat TTE defined as TTE done within 1 year of a prior TTE represent 24–42% of all studies. In the present study we derive a clinical prediction model to predict unchanged repeat TTE with the goal of defining a subset of studies that are potentially unnecessary.
METHODS: Single-center retrospective cohort study of all hospitalized patients who had a repeat TTE between October 1, 2013 and September 30, 2014. Patients with repeat TTEs within the past year were grouped into those with major changes on repeat TTE and those with mild or no change. Logistic regression was used to define variables that were independent predictors of major changes and a score was constructed based on the regression coefficients.
RESULTS: During the study period 601 patients had at least one inpatient TTE. Of these 601 patients, 211 (35%) had a prior TTE within the past year. Of those 211 patients, 67 (32%) had no change, 66 (31%) had minor changes and 78 (37%) had major changes. On logistic regression, 5 variables were independent predictors of major new TTE changes, including history of intervening acute myocardial infarction, intervening cardiothoracic surgery, major new EKG changes, prior valve disease, and prior chronic kidney disease. Using the β-coefficient for each of these variables we defined a clinical prediction model which we named the CAVES score. The prevalence of major TTE change for the full cohort was 35%. For the group with a CAVES score of −1 that probability was only 5.6%, for the group with a score of 0, the probability was 17.7%, and for the group with a score ≥1 the probability was 55.3%.The bootstrap corrected c-statistic for the model was 0.78 (95% CI, 0.72–0.85) indicating good discrimination.
CONCLUSIONS: We report on the derivation of a 5 variable clinical prediction model called the CAVES score to predict major changes in repeat TTEs. Overall the CAVES score had good discrimination and calibration. If further validated it may be useful to predict repeat TTEs that are unlikely to have major changes.

Table 4. Results from multivariate analysis of risk factors for changed TTE and the corresponding score assigned for each significant variable.

Covariate	Odds Ratio (95% CI)	P value	B coefficient	Score
Intervening AMI	9.3 (3.3-25.6)	.000	2.2	2
Intervening CT Surgery	3.8 (1.6-8.8)	.002	1.3	1
Valvular heart disease	3.4 (1.7-7.1)	.001	1.2	1
Major new ECG change	2.7 (1.3-5.4)	.006	1.0	1
CKD	0.4 (0.2-0.9)	.032	-0.9	-1

Abbreviations: TTE, transthoracic echocardiogram; AMI, acute myocardial infarction; CT, cardiothoracic; ECG, electrocardiogram; CKD, chronic kidney disease.

Table 5. CAVES Score Frequencies and Associated Rates of Major TTE Changes.

CAVES* Score	Number (%) N=211	Major TTE Change (%) N=78
-1†	18 (8.5)	1 (5.6)
0	79 (37.4)	14 (17.7)
1	60 (28.4)	24 (40.0)
2	33 (15.6)	20 (60.6)
3	12 (5.7)	11 (91.7)
4	8 (3.8)	7 (87.5)
5	1 (0.5)	1 (100)
Simplified CAVES Score		
-1	18 (8.5)	1 (5.6)
0	79 (37.4)	14 (17.7)
≥1	114 (54.0)	63 (55.3)

Abbreviations: TTE, transthoracic echocardiogram.

*The letters in the acronym CAVES stand for: C, Chronic kidney disease (CKD); A, Acute myocardial infarction since the prior TTE; V, Valvular heart disease on the prior TTE; E, ECG with major new changes since prior study; S, Surgery on the heart since prior TTE.
†Patients with chronic kidney disease subtract one point on the CAVES score.

DETERMINING THE APPROPRIATENESS OF MEDICATION ALERTS OVERRIDDEN AS INACCURATE WARNINGS

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BACKGROUND: Medication clinical decision support has shown progress in reducing adverse drug events and costs, and improving patient outcomes (1). However, research has also shown that many of these warnings are frequently overridden, and often inappropriately, likely because of alert fatigue and poor alert design (2). This study was performed to evaluate the alerts providers have overridden with the reason "inaccurate warning" in order to learn more about the alerts perceived to be erroneous.
METHODS: The data for this study were overrides occurring in the intensive care units (ICU) at a major academic medical center between June 15 and November 15, 2016. The overrides were analyzed by two independent reviewers using predetermined criteria for appropriateness. The three alert types analyzed were chosen based on clinical significance and frequency for ICU patients: drug-drug interactions (DDI), drug-allergy interactions (DAI), and dose alerts.
RESULTS: There were 26501 overridden alerts in the ICUs, 268 of which were documented with the reason "inaccurate warning" (1.0%). Of the 15 DDIs, all were inappropriate overrides, and all but one were for QT prolongation. Eight of the 48 DAIs (16.7%) were inappropriate overrides, as the patient had a true allergy and had not tolerated the medication before. Two of the 13 renal dose overrides (15.4%) were found to be inappropriate, whereas the 11 appropriate overrides were for correct renal replacement therapy doses or for patients without

renal insufficiency. Two of 4 weight-based dose overrides (50%) were inappropriate, as the provider should have used the patient's weight to calculate the correct dose. Five of 13 overdose overrides (38.5%) were inappropriate, whereas some of the appropriately overridden alerts had incorrect overdose thresholds (23.1%) or were alerts on correct electrolyte protocols (23.1%), meaning 46.2% of these overdose alerts should never be fired.

CONCLUSIONS: This study shows that DDIs are not appropriately overridden with the "inaccurate warning" reason, whereas some dosing and DAI alerts are. The appropriate DAI overrides indicate that there should be a better mechanism for showing only accurate alerts, such as removing documented allergies based on prior tolerance or incorrect ingredient match. The appropriate dose overrides indicate that the alerts need to better identify patient conditions, dosing mechanisms, and protocols, in addition to altering thresholds and cancelling certain electrolyte alerts. References 1. Bates DW, Teich JM, Lee J, et al. The impact of computerized physician order entry on medication error prevention. *J Am Med Inform Assoc* 1999;313–21. 2. Nanji KC, Slight SP, Seger DL, et al. Overrides of medication-related clinical decision support alerts in outpatients. *J Am Med Inform Assoc* 2014;21:487–91.

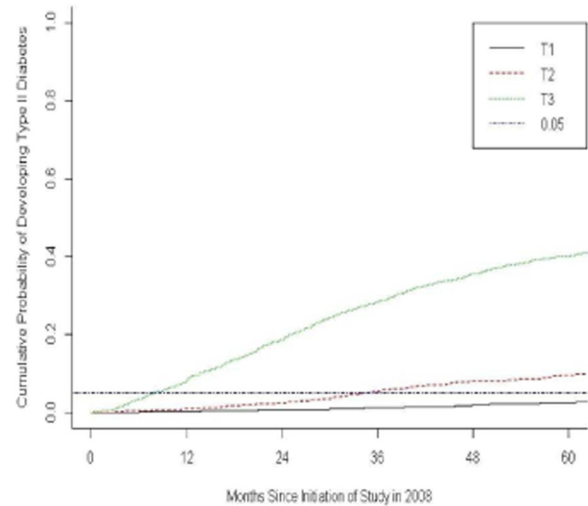
DETERMINING THE OPTIMAL SCREENING INTERVAL FOR TYPE 2 DIABETES MELLITUS USING A RISK PREDICTION MODEL Andrei Brateanu[1]; Thomas Barwacz[2]; Lei Kou[1]; Sihe Wang[1]; Anita D. Misra-Hebert[1]; Bo Hu[1]; Abhishek Deshpande[1]; Nana Kobaivanova[1]; Michael B. Rothberg[1]. [1]Cleveland Clinic, Cleveland, OH; [2]University Hospital, Cleveland, OH. (Control ID #2703815)

BACKGROUND: Progression to diabetes mellitus (DM) is variable and the screening time interval not well defined. The American Diabetes Association and US Preventive Services Task Force suggest screening every 3 years, but evidence is limited. The objective of the study was to develop a model to predict the probability of developing DM and suggest a risk-based screening interval.

METHODS: We included non-diabetic adult patients screened for DM in the Cleveland Clinic Health System if they had at least two measurements of glycated hemoglobin (HbA1c), an initial one less than 6.5% in 2008, and another between January, 2009 and December, 2013. Cox proportional hazards models were created. The primary outcome was DM defined as HbA1C greater than 6.4%. The optimal rescreening interval was chosen based on the predicted probability of developing DM.

RESULTS: Of 5084 participants, 100 (4.4%) of the 2281 patients with normal HbA1c and 772 (27.5%) of the 2803 patients with prediabetes developed DM within 5 years. Factors associated with developing DM included HbA1c (HR per 0.1 units increase 1.20; 95%CI, 1.13–1.27), family history (HR 1.31; 95%CI, 1.13–1.51), smoking (HR 1.18; 95%CI, 1.03–1.35), triglycerides (HR 1.01; 95%CI, 1.00–1.03), alanine aminotransferase (HR 1.07; 95%CI, 1.03–1.11), body mass index (HR 1.06; 95%CI, 1.01–1.11), age (HR 0.95; 95%CI, 0.91–0.99) and high-density lipoproteins (HR 0.93; 95% CI, 0.90–0.95). Five percent of patients in the highest risk tertile developed DM within 8 months, while it took 35 months for 5% of the middle tertile to develop DM. Only 2.4% percent of the patients in the lowest tertile developed DM within 5 years (figure 1).

CONCLUSIONS: A risk prediction model employing commonly available data can be used to guide screening intervals. Based on equal intervals for equal risk, patients in the highest risk category could be rescreened after 8 months, while those in the intermediate and lowest risk categories could be rescreened after 3 and 5 years respectively.



DEVELOPING A PEER SUPPORT PROGRAM TO TARGET HIGH RISK PRIMARY CARE PATIENTS Karin M. Nelson[1, 2]; Jennifer L. Williams[1]; Marie C. Lutton[1]; Julie Silverman[1, 2]; Kamala B Jain[1, 2]; Tiffanie Fennell[1, 2]; Matthew R. Augustine[1, 2]; Kristen E. Gray[1, 2]; Walter Kopf[1, 2]; Christopher Vanderwarker[1, 2]. [1]VA Puget Sound Health Care System, Seattle, WA; [2]University of Washington, Seattle, WA. (Control ID #2701160)

BACKGROUND: Cardiovascular disease (CVD) is the leading cause of mortality in the US and among Veterans, and CVD risk factors remain sub-optimally controlled. The objective of the current study is to describe a novel strategy using patient-level geographic information systems (GIS) data to identify areas of highest CVD risk and recruit Veterans with well-controlled hypertension living in these areas to become peer health coaches as part of the "Veteran peer Coaches Optimizing and Advancing Cardiac Health (Vet-Coach)" study.

METHODS: We spatially joined Veteran addresses of patients enrolled in VA Puget Sound primary care or women's clinic from VHA administrative data to the 2010 Census Tract Boundary file to obtain the census tract code. Using these data, we generated spatial distributions of hypertension prevalence by census tract within a 5-mile and 10-mile radius of our clinic. We then selected 60 census tracts (from total of $n = 398$ in King County, WA) with the highest rates of hypertension: 38–44% of patients with a diagnosis of hypertension ($n = 24$ census tracts), 45–50% ($n = 25$ census tracts), and 51–65% ($n = 11$ census tracts). To identify potential peer health coaches, we provided each primary care clinic team ($n = 41$ MDs, $n = 35$ nurses) with a list of their patients from the target areas who had a diagnosis of hypertension ($n = 964$ patients) and at least one clinic visit during the prior year. During a clinic staff meeting, we asked primary care providers and team nurses to review their list and nominate Veterans they felt might be a good peer health coach, based on the following criteria: successful use of VA services; successful management of hypertension or other chronic conditions; and experience utilizing clinic and community resources. We used data from the 2006–2010 U.S. Census Bureau American Communities Survey to characterize census tract demographics.

RESULTS: Using this method, primary care clinic teams nominated $n = 73$ Veterans living in the 60 targeted census tracts. We then sent the nominated patients an introductory letter prior to conducting follow-up calls to assess interest in becoming a Vet-Coach, which provides reimbursement based on an hourly rate. We interviewed $n = 12$ Veterans for the position and selected 5 peer coaches. Compared to other census tracts in King County, the targeted census tracts had higher rates of poverty [% of residents under 200% of federal

poverty, 32% vs. 22%, $p < 0.001$] and a higher percentage of non-white residents [49.4% vs. 33.8%, $p < 0.001$].

CONCLUSIONS: Using this area-based method, we successfully recruited patients from low-income neighborhoods with high rates of hypertension. Results of the Vet-Coach recruitment will be discussed along with lessons learned, with a specific focus on developing a peer support program targeted to high risk patients that is integrated into primary care clinic work flow.

DEVELOPING A PREDICTIVE MODEL FOR MEDICINE READMISSIONS

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BACKGROUND: 30-day preventable hospital readmissions are a measure of resource utilization and an indicator of health care quality. We compared attributes of patients who were readmitted within 30 days to those who were not in order to develop a predictive model that could inform interventions to prevent unnecessary readmissions.

METHODS: We abstracted electronic medical and billing records for patients admitted to the medicine service at Tufts Medical Center from 9/5/13 - 8/31/16. We included potential predictors of readmission included demographic characteristics, primary language, discharge unit, hospital service, number of medications, zip code (to determine distance to Tufts and as a proxy for income), discharge disposition, physical therapy evaluation, any ICU stay, number of admissions, observations and emergency department encounters in the previous 6 months, primary insurance, warfarin use, alcohol and substance abuse, diabetes, opioid use, Charlson comorbidity score, and day of discharge (weekday vs. weekend). Variables associated with readmission in bivariate analyses ($p < 0.05$) were used to create a multivariate logistic regression model with backward elimination based on a derivation cohort of discharges from 1/1/14 - 11/30/15. We validated the model using a validation cohort that included discharges 1/1/16 - 8/31/16, using the C-statistic to evaluate the models. We used beta coefficients from the derivation model to develop a scoring system to predict risk of readmission. We compared our model with the LACE predictive model.

RESULTS: The development dataset consisted 7971 admissions; mean age of the patients (SD) was 61 (18), 55% were men, 70% were white, 10% black, 13% Asian and 6% Hispanic. There were 3214 admissions in the validation cohort. In bivariate analysis, factors associated with readmission were Charlson comorbidity score, ICU use, number of medications, admissions, observations and emergency department encounters in the previous 6 months, discharge disposition, opioid use, diabetes, insurance, discharge service, and physical therapy consultation. In the multivariate analysis, 6 variables associated with unplanned readmissions included Charlson comorbidity score, any ICU stay, number of medications, prior admission/observation encounters within 6 months, discharge disposition, and hospital service. Discharges to skilled nursing and long term care facilities had the greatest odds of readmission. The C-statistic for the predictive model from the development dataset was 0.67 and 0.66 for the validation dataset, both higher than $c = 0.63$ using the LACE model.

CONCLUSIONS: We developed a model with moderate ability to predict unplanned readmissions. In our setting, variables predicting readmission were related to medical complexity, and pointed to the importance of ensuring vulnerable patients' safe transitions to skilled nursing and longterm care facilities.

DEVELOPMENT AND PRELIMINARY FINDINGS OF DIABETESSISTERSVOICES - AN ONLINE COMMUNITY TO ENGAGE WOMEN WITH DIABETES ABOUT RESEARCH AND HEALTHCARE PRIORITIES

Peijin Han[1, 5]; Wanda Nicholson[2]; Anna Norton[3]; Richard Singerman[4]; Aditi Sundaresan[2]; Wendy L. Bennett[1]. [1]Johns Hopkins School of Medicine, Baltimore, MD; [2]University of North Carolina, Chapel Hill, NC; [3]DiabetesSisters, Bolingbrook, IL; [4]TrustNetMD, San Diego, CA; [5]Johns Hopkins Bloomberg School of Public Health, Baltimore, MD. (Control ID #2705252)

BACKGROUND: Women with or at high risk of diabetes are an important clinical group with unique health concerns across the life course- from pre-conception health and pregnancy to middle age and the menopause transition. Engaging women with diabetes is critical to efforts to inform a patient-centered research agenda to improve health outcomes. Our objective was create an online community for women with any type of diabetes (type 1, type 2, gestational or pre-diabetes) to engage about research priorities to address their health care needs and improve diabetes management, use in-person and web-based strategies for recruitment to the on-line site and measure trends in engagement and re-engagement of site participants.

METHODS: In phase 1, we partnered with DiabetesSisters, a national advocacy organization for women with diabetes, and a diverse stakeholder advisory board to develop the online community, termed DiabetesSistersVoices (aka DSVoices). In phase 2, we employed several recruitment strategies, including social media (e.g. email, Twitter, Facebook), web-based newsletters and printed media to engage women with diabetes. Eligibility included women living with or at risk for diabetes who were age 18 years and older and currently living in the U.S. Participants completed an on-line consent process and survey questions about socio-demographic characteristics, self-reported health status, technology use and social support. Once enrolled, trends in participants' activities, including posting questions, sharing experiences of living with diabetes and searching for educational resources are monitored and tracked by an on-line moderator.

RESULTS: To date, 94 women have enrolled (83% type 1, 86% Caucasian, median age = 46), from 31 states in the U.S. Most learned about DSVoices from Facebook, Twitter, friends and relatives. More than 90% of participants regularly use social networking sites (mainly Facebook and Twitter) and 80% of them use every day. The most popular discussion topics are: "type 1 and lada (latent autoimmune diabetes in adults)", "type 2", "popular websites", "healthy living" and "physical activity and exercise". Priority topics for research and healthcare have focused on (1) medication management (2) eating disorders (3) meal planning (4) mental health (5) exercise.

CONCLUSIONS: This formative data describes the refinement and formal testing of an on-line community for women with diabetes to set research priorities. Additional engagement strategies to enroll minority or low-income women and those in rural areas are underway. Our efforts can contribute to the development of novel engagement methods and the identification of patient-centered priorities for research and care for women with or at risk for diabetes.

DEVELOPMENT AND VALIDATION OF AN ELECTRONIC HEALTH RECORD MODEL FOR PREDICTING 30-DAY READMISSIONS IN ACUTE MYOCARDIAL INFARCTION: THE AMI READMITS SCORE

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BACKGROUND: Readmissions after hospitalization for acute myocardial infarction (AMI) are common, but the few available risk prediction models have poor predictive ability and are not readily usable in real-time. We sought to develop and validate an AMI readmission risk prediction model from electronic health record (EHR) data available on the first day of hospitalization, and to compare model performance to the Centers for Medicare and Medicaid Services (CMS) AMI model and a validated multi-condition EHR model.

METHODS: EHR data from AMI readmissions from 6 diverse hospitals in north Texas from 2009–2010 were used to derive a model predicting all-cause non-elective 30-day readmissions to any of 75 hospitals in the region, which was then validated using five-fold cross-validation.

RESULTS: Of 826 consecutive index AMI admissions, 13% were followed by a 30-day readmission. The AMI READMITS score included seven predictors, all ascertainable within the first 24 hours of hospitalization (Table 1A). The AMI READMITS score was strongly associated with 30-day readmission in our cross-validation cohort: ≤13 points = extremely low risk (bottom quintile, mean predicted risk 3%); 14–15 points = low risk (4th quintile, predicted risk 7%); 16–17 points = moderate risk (3rd quintile, predicted risk 11%); 18–19 points = high risk (2nd quintile, predicted risk 16%); and ≥20 points = extremely high risk (top quintile, predicted risk 35%). The READMITS score had good discrimination with comparable performance to the CMS model in our cohort; it had improved discrimination, reclassification, and calibration compared to a multi-condition EHR model (Table 1B).

CONCLUSIONS: The AMI READMITS score accurately stratifies patients hospitalized with AMI into groups at varying risk of 30-day readmission. Unlike claims-based models which require data not available until after discharge, READMITS is parsimonious, easy to implement, and leverages actionable real-time data available from the EHR within the first 24 hours of hospitalization to enable early prospective identification of high-risk AMI patients for targeted readmissions reduction interventions.

Table 1A. AMI READMITS Score

Predictors within First 24 Hours of Admit	Adjusted OR (95% CI)	Points
Renal function (Cr>2 mg/dL)	2.56 (2.52-6.08)	6
Elevated BNP (BNP≥50, NT-proBNP≥125 pg/mL)	6.36 (1.65-24.47)	8
Age (per decade greater than 18 years)	1.26 (0.98-1.61)	1 per decade
Diabetes history	2.41 (1.37-4.24)	4
Not Male (i.e. female sex)	1.53 (0.92-2.57)	2
No Intervention with Timely PCI	1.31 (1.02-1.69)	1
Systolic blood pressure < 100 mmHg	2.18 (1.68-2.82)	3

Table 1B. Model Performance and Comparison of AMI READMITS Score Versus Other Models

Model	C-statistic	p-value*	NRI† (95% CI)	Average Predicted Risk % Lowest Decile	Average Predicted Risk % Highest Decile
READMITS score for AMI	0.75 (0.70-0.80)‡	[Ref]	[Reference]	2.1	41.1
EHR multi-condition model	0.70 (0.65-0.75)	0.04	-0.19 (-0.30 to -0.18)	6.6	25.7
CMS model for AMI	0.74 (0.69-0.79)	0.57	-0.01 (-0.11-0.09)	7.2	24.3

Abbreviations: AMI, acute myocardial infarction; CI, confidence interval; EHR, electronic health record; NRI, net reclassification index

* p-values shown are for each model compared to the respective reference model

† The categorical NRI compares reclassification between the highest top risk quintile and the lowest four risk quintiles

‡ Optimism-corrected C-statistic 0.73 (95% CI 0.71-0.74) for READMITS score

DEVELOPMENT OF AN ELECTRONIC SCREENING DEVICE TO IDENTIFY UNDIAGNOSED MODERATE-TO-SEVERE CHRONIC OBSTRUCTIVE PULMONARY DISEASE (COPD) IN PRIMARY CARE SETTINGS Julien J. Dedier[1]; George O'Connor[2]; Timothy Heeren[1]. [1]Boston University, Boston, MA; [2]Boston Medical Center, Boston, MA. (Control ID #2705006)

BACKGROUND: COPD is a leading cause of morbidity and mortality, and is underdiagnosed in primary care settings. Though benefits of COPD screening in asymptomatic adults with mild disease are unproven, COPD therapies reduce exacerbations and improve health status in symptomatic individuals with more severe COPD. Feasible screening approaches to identify undiagnosed cases of more severe COPD in primary care settings may reduce the clinical burden of COPD. We created a screening tool to identify patients with moderate-to-severe (mod-sev) COPD and assessed its performance in a diverse sample of adult primary care patients at a large safety-net hospital. The tool consisted of a tablet-based questionnaire linked to an electronic peak expiratory flow (PEF) meter.

METHODS: We used data from the Framingham Heart Study (FHS) 8th Offspring Exam to derive 2 multiple logistic regression models for predicting mod-sev COPD in men and women. Candidate predictor variables included demographics, smoking status, selected symptoms from the ATS-DLD-78 Respiratory Disease Survey, and PEF. We used backward selection to identify variables that independently predicted mod-sev COPD at $p < 0.2$. We then loaded questions to capture final predictors onto a tablet computer which also contained a brief video on how to use a PEF meter. The system was refined using input from user-consultants. Its performance was then validated in 188 clinic patients at Boston Medical Center (BMC) who had a clinical diagnosis of COPD or no known lung disease. Next, we prospectively assessed the system in a 'testing' cohort of primary care patients without known COPD. The system classified predicted risk of mod-sev COPD as low (0–4%), medium (5–19%) or high (≥20%). In each study cohort COPD status was established by spirometry, and we calculated the system's ability to discriminate between mod-sev and no or mild COPD (c-statistic). In the testing cohort we determined system sensitivity and specificity at 2 cut points.

RESULTS: The final model for men and for women both had 8 variables: 3 demographic, PEF, smoking status, and 3 relating to respiratory history. The table describes the 3 study cohorts and shows the system's c-statistic in each. In the 'testing' cohort, system sensitivity and specificity were 0.94 and 0.36 when a positive test was defined as a predicted risk of ≥ 5%, and 0.81 and 0.55 when set at ≥ 20%.

CONCLUSIONS: Our system to identify undiagnosed mod-sev COPD showed good discrimination, sensitivity and specificity in a diverse group of primary care patients, particularly at a positivity criterion of ≥ 20%. Screen-positive patients would then require spirometry for confirmation.

	Cohort Derivation (FHS) $N = 2{,}574$	Validation (BMC) $N = 190$	Testing (BMC) $N = 399$
Age (yrs), mean [SD]	66 [8.8]	59 [7.2]	56 [9.4]
Female (%)	55	54	58
Smoking Status (%)			
Current	7	49	29
Former	52	32	23
Race/Ethnicity (%)			
Black	0	52	53
Non-Hispanic White	100	40	28
Mod-Severe COPD (%)	17	36	26
Model C-Statistic			
Men	0.92	0.87	0.73
Women	0.91	0.83	0.67

DEVELOPMENT OF AN INTERNAL MEDICINE "BOOT CAMP" FOR MEDICAL STUDENTS David C. Chu[1]; Rachel S. Casas[1]; Laura D. Hallett[3]; Frank Schembri[4]; Ryan Chippendale[2]. [1]Boston Medical Center, Boston, MA; [2]boston university, Boston, MA; [3]University of Massachusetts, Worcester, MA; [4]Boston Medical Center, Bostn, MA. (Control ID #2689273)

BACKGROUND: Internal medicine "boot camps" are an emerging strategy to ease the challenging transition from fourth year of medical school to internship, but prioritized topics vary by institution. We aimed to determine the most important content for a boot camp curriculum though a needs assessment at the Boston University School of Medicine (BUSM).

METHODS: Fourth year medical students applying to internal medicine residency programs ($N = 47$) and first year internal medicine interns ($N = 40$) at BUSM were anonymously, electronically surveyed about managing 27 clinical scenarios, skills, and procedures. We chose these topics based upon existing medicine boot camp curricula and internal discussion. Responses were ranked on 4 point scales of importance or interest. Participants were also asked open-ended questions about their concerns for intern year and the most important topics for inclusion in a boot camp elective.

RESULTS: Survey response rates were 51% ($N = 24$) for medical students and 58% ($N = 23$) for interns. Of clinical scenarios, medical students prioritized chest pain ($N = 21$, 88%), shock ($N = 21$, 88%), and severe electrolyte disturbances ($N = 18$, 75%) as 'very important' for inclusion. Current interns ranked chest pain ($N = 19$, 83%), acute hypoxemia ($N = 15$, 65%) and altered mental status ($N = 15$, 65%) as 'very important' for inclusion. Both medical students and interns rated time management and ECG interpretation among the most important clinical skills. Medical students were 'very interested' in almost all procedures, with thoracentesis, paracentesis, and arterial blood gases ranking highest ($N = 17$ for each, 71%). Interns expressed lower interest in procedures than medical students, with only arterial blood gases ($N = 12$, 52%) receiving more than three 'very important' responses. In open-ended responses, medical students and interns were most concerned about managing acutely decompensating patients ($N = 7$ and $N = 5$ respectively) and time management ($N = 6$ and $N = 3$ respectively). Additionally, medical students stated concerns about procedural skills ($N = 3$).

CONCLUSIONS: Medical students and interns have similar priorities in acute clinical scenarios and skills for inclusion in an internal medicine boot camp. However, medical students expressed more interest and concern about learning procedures compared to interns. This needs assessment will guide development of a boot camp curriculum at BUSM, and can inform similar electives at other institutions.

DEVELOPMENT OF PREDICTIVE SCORING SYSTEM OF FALLS IN ADULT INPATIENTS USING DEGREE OF BED-RIDDEN AND COGNITIVE FUNCTION Masaki Tago[1]; Naoko E. Furukawa[1]; Yoshimasa Oda[2, 1]; Shu-ichi Yamashita[1]. [1]Saga University Hospital, Saga, Japan; [2]Yuai - Kai Foundation & Oda Hospital, Kashima, Japan. (Control ID #2690741)

BACKGROUND: Falls among elderly can degrade their quality of life and worsen prognosis. The incidence rate of falls in inpatients is higher than that of community-dwelling persons aged ≥65 years. Various factors, such as previous falls, lower-extremity weakness, age, female gender, had been reported as risk factors of falls. Some predictive formulas of falls have been developed; however, they used complicated factors, which make them hard-to-use. In the present study, we developed and validated a new formula predictive model of risk of falls of about our adult inpatients using the scales of the degree of bed-ridden and decline of cognitive function in daily living before admission. Both scales are widely used in the Japan's public certification of long-term care need.

METHODS: We retrospectively analyzed the adult patients admitted to Yuai-kai Foundation Oda Hospital, Japan, from April 2012 to January 2015. The data (including age, sex, activity of daily living, the degree of bed-ridden and decline of cognitive function in daily living before admission, past medical history, medications, presence or absence of past history of falls and the route of admission) were derived from the charts. Multivariable analysis was performed with the variables gathered on admission, which had significant difference between patients with or without falls during the hospital stay, in the univariate analysis. We developed a new predictive formula with the independent variables selected by the multivariate analysis. The model was validated.

RESULTS: There were 371 falls of all 8031 admitted adult patients during the period of present survey. The median age of all patients was 77 years (20–104), 49% were men, and the median hospital stays was 9 days (1–189). In the univariate analysis, the proportion of patients with the age older than 75, emergency admission, referral forms, the use of hypnotic medications, hospital stay longer than 9 days, visual impairment, undergoing surgical operation, undergoing rehabilitation, sequels of cerebral infarction disturbing everyday life, and history of previous falls occupied higher percentages in fallen patients. There were also significant differences in the degree of bedridden, cognitive decline, and the necessity of assistance in daily living between patients with or without falls. The new prognostic formula is shown bellow: y = (older than 75 years) × 6 + (male) × 4 + (emergency admission) × 5 + (previous fall) × 3 + (the degree of bedridde$n$ = J) × 12 + (the degree of bedridde$n$ = A) × 18 + (the degree of bed-ridde$n$ = B) × 20 + (the degree of bedridde$n$ = C) × 17 + (the degree of cognitive decline = 2) × 4 ($0 \leq y \leq 42$, be apply to each conditio$n$ = 1). The test of goodness of fit by ROC curve showed AUC of 0.789 (95%CI: 0.770 - 0.808, $p < 0.001$).

CONCLUSIONS: We developed a new and accurate predictive scoring system of falls in adult inpatients using degree of bed-ridden and cognitive function, which are much more easily gathered than those used in the previous reported models.

DIABETES AMONG WOMEN VETERANS FOUR DECADES AFTER WAR: THE HEALTHVIEWS STUDY Eric M. Schmidt[1]; Eileen M. Stock[2]; Tracey Serpi[2]; Yasmin Cypel[3]; Kathryn M. Magruder[4]; Amy M. Kilbourne[5]; Suad El Burai Felix[2]; Avron Spiro[6]; Rachel Kimerling[7]; Beth Cohen[8]; Susan M. Frayne[1]. [1]VA Palo Alto Health Care System/Stanford, Menlo Park, CA; [2]VA Perry Point, Perry Point, MD; [3]VA Central Office, Washington, DC; [4]VA Charleston, Charleston, SC; [5]VA Ann Arbor, Ann Arbor, MI; [6]VA Boston, Boston, MA; [7]VA Palo Alto, Palo Alto, CA; [8]VA San Francisco, San Francisco, CA. (Control ID #2702859)

BACKGROUND: Military service can affect health through injuries, exposures, trauma, and physical demands. Less is known about the effects of war zone service on later-life risk for chronic diseases such as diabetes, particularly in women. In a national, population-based sample of Vietnam-era women Veterans, we examined whether incidence of diabetes following wartime service was greater among those who served in Vietnam compared to those who served in a non-combat location.

METHODS: In HealthVIEWS, a large epidemiologic study of Vietnam-era (1965–1973) women Veterans, those who were alive and locatable in 2011 were invited to complete a survey and telephone interview to characterize their health status (response rate 67%); sampling was stratified based on wartime location of service: in Vietnam (VN), near Vietnam (NV), or in the U.S. (US). An extended Cox regression model tested differences, by wartime location, in time from the start of Vietnam-era wartime service to self-reported diabetes onset. A time-varying effect of Vietnam service was entered to meet model assumptions before adjusting for demographics and military service factors.

RESULTS: Of 4,503 women in the analytic cohort, 17.7% developed diabetes; for them, mean time to diabetes onset differed for VN vs NV vs US (32.9 vs 33.2

vs 31.2 years; $p < 0.01$). Following enlistment into military service, those who served in VN (vs in US) were at three-fold lower relative risk of diabetes, and this difference persisted after adjustment (HR = 0.33, $p < 0.01$ at T0). The time-varying effect of Vietnam service was also significant, indicating diabetes risk accumulated faster in the VN group (vs US); diabetes risk was essentially the same in the VN vs US groups after 30 years (HR = 0.99, p = ns). The NV (vs US) group did not have excess in diabetes risk. Older age, non-white race/ethnicity, service in the Army or Marine Corps, lower military rank, and enlisting at the start of heightened periods of combat were associated with increased risk for diabetes.
CONCLUSIONS: War zone service was associated with lower risk for diabetes early in wartime military service but faster subsequent accumulation of diabetes risk, leading the VN and US groups to have nearly identical diabetes risk by three decades after military service. This more rapid accumulation of risk after war zone service, despite superior initial health, could potentially result from factors such as weight gain or mental health conditions, which might manifest in unique ways among women. Attention to preventive medicine and healthy lifestyle during military service among women currently in the armed forces may help to avert or delay diabetes onset later in life.

DIABETIC KETOACIDOSIS RISK AFTER INITIATING AN SGLT2 (SODIUM-GLUCOSE COTRANSPORTER 2) INHIBITOR: A POPULATION-BASED COHORT STUDY Michael Fralick; Sebastian Schneeweiss; Elisabetta Patorno. Brigham and Women's Hospital, Boston, MA. (Control ID #2697981)

BACKGROUND: Recent case reports to the FDA suggest sodium-glucose cotransporter 2 (SGLT2) inhibitors might increase a patient's risk of diabetic ketoacidosis (DKA). The objective of this study was to assess and quantify this risk.
METHODS: We conducted a population-based new initiator cohort study using the Truven MarketScan database. Patients who newly initiated either an SGLT2 inhibitor or a dipeptidyl peptidase-4 (DPP4) inhibitor, a medication not associated with DKA, between April 1, 2013 and December 31st, 2014 were included. We excluded patients with type 1 diabetes, past DKA, or end-stage renal disease. The primary outcome was hospitalization for DKA within 180 days of initiating an SGLT2. We matched new initiators of SGLT2 inhibitors with new initiators of DPP4 inhibitors using 1:1 propensity score (PS) matching. The PS was calculated through a logistic regression model including covariates related to demographics, diabetes severity, comorbid conditions, and healthcare utilization. The primary time-to-event analysis used Cox proportional hazard model to examine the incidence rate and hazard ratio of DKA.
RESULTS: We identified 61,708 patients who newly initiated an SGLT2 inhibitor and 94,285 who newly initiated a DPP4 inhibitor. After PS-matching, our study included 45,789 new users of SGLT2 inhibitors and 45,789 new users of a DPP4 inhibitors. Differences in baseline demographics, comorbid conditions, diabetes severity, and healthcare utilization were well balanced amongst these two groups. Of the patients included, half were male, the average age was 60, 65% had hypertension, 9% had coronary artery disease, 57% were prescribed metformin, 19% were prescribed insulin, and most were being managed by a primary care physician. There were 58 DKA events (4.23 events per 1,000 person-years) among initiators of an SGLT2 inhibitor compared to 29 DKA events (2.01 per 1,000 person-years) among initiators of DPP4 inhibitors. The unmatched/unadjusted risk of DKA within 180 days of initiating an SGLT2 inhibitor was 1.9 times (HR 1.9, 95% CI 1.4 to 2.6) greater than the risk for those initiating a DPP4 inhibitor and the risk heightened after PS matching (HR 2.1, 95% CI 1.3 to 3.3). The risk was further heightened within 60 days of initiating an SGLT2 inhibitor (PS matched HR 3.0, 95% CI 1.6 to 5.5) and the increased risk of DKA was not specific to the elderly (age < 65, PS matched HR 2.3, 95% CI 1.4 to 3.6).
CONCLUSIONS: SGLT2 inhibitors were associated with an increased risk of DKA. Physicians should counsel their patients accordingly and consider ordering bloodwork when patients present with symptoms suggestive of DKA (e.g., nausea, vomiting, polyuria, etc.).

DIET AND EXERCISE DO WORK FOR WEIGHT LOSS: THE SUCCESS OF AN INTERDISCIPLINARY OBESITY CLINIC IN A PRIMARY CARE SETTING Abigail Lawson; Christina Fahey; Garrett Oberst; Dylan Woolum; David Rudy; Stephanie A. Rose. University of Kentucky, Lexington, KY. (Control ID #2700120)

BACKGROUND: Despite efforts, obesity continues to be a problem in the United States. Since 2011 Medicare has recognized obesity as a disease. This change has purported to remove the stigma behind obesity and has encouraged its treatment in the medical setting as opposed to commercial settings alone. The aim of our study is to assess relevant weight loss in an outpatient primary care-based weight loss program. We hypothesize that relevant weight loss, defined as loss of 5 or 10% of body weight or loss of ≥3 kg at 6 months, can be achieved in the primary care setting.
METHODS: Patients with a BMI ≥30 kg/m^2 or a BMI ≥25 with comorbidities related to obesity were enrolled in a weight loss program located at a large university-based Internal Medicine clinic. Most weight loss was achieved using diet and behavioral motivation, with a few patients also trying weight loss medications. Visits were covered by insurance similar to a primary care physician visit. Patients were seen by an Obesity Medicine-certified physician each visit and sometimes by a dietitian. Visits lasted 1 hour the first visit and ½ hour on subsequent visits. Information obtained for patients included diet history, family weight history, dietary assessment, 24-hour food recall. Visits typically occurred monthly. Demographic information, weight, waist/hip/neck circumferences, lab values, medications, and medical history were obtained on each patient. Mean weight loss, number of patients losing ≥ 5 and ≥10% of body weight, and number of patients who lost ≥3 kg at 6 months were measured. Comparisons were analyzed using t-tests that compared differences among male and female patients for continuous variable characteristics. Only those patients who consented to the study were analyzed.
RESULTS: 115 patients consented to be in the study. Patients were a mean age of 47.5 years, 76% female, and a mean BMI of 41 kg/m^2. Patients lost an average of 10lbs (SE = 1.6), with men (M) losing slightly more weight than women (F) (14.2 vs. 8.8lbs). 21.7% of patients (M = 5, F = 20) lost ≥5% of their initial body weight, 8.7% of patients (M = 2, F = 8) lost ≥10% of their initial body weight, and 56.5% of patients (M = 17, F = 48) lost at least 3 kg at 6 months of program participation. Patients lost an average of 2.9lbs after 1 month, 5.4lbs after 3 months, and 7.2lbs after 6 months. More weight lost was positively correlated with more clinic visits, with patients who attended ≥6 visits losing an average of 17.3lbs.
CONCLUSIONS: This study demonstrates that behavioral modification and dietary change can promote relevant weight loss, and that this success can be achieved in the outpatient primary care setting. Patients continued to lose weight the longer they participated in the program, unlike many programs where weight plateaued or was regained over time. Future goals include the study of medication changes, changes in disease states and labs, and methods to make this program easier for primary care physicians to deliver.

DIFFERENCES IN EMERGENCY DEPARTMENT CARE FOR PATIENTS WITH LIMITED ENGLISH PROFICIENCY lucy schulson[1]; Victor Novak[1]; Peter Smulowitz[1]; Bruce E. Landon[2]. [1]Beth Israel Deaconess Medical Center, Boston, MA; [2]Harvard Medical School, Boston, MA. (Control ID #2706552)

BACKGROUND: The United States is becoming more culturally and linguistically diverse. Research has focused on disparities in care for such patients, however little is known about how limited English proficiency (LEP) impacts care in the emergency department (ED). LEP patients may be particularly vulnerable in the ED because of its faster paced and higher acuity nature, which might lead to differences in the care received when there are language barriers.
METHODS: We used administrative data from a single academic ED to study all patients 18 years or older who presented to the ED between September 1, 2013 and September 1, 2015. We excluded patients presenting with a psychiatric or substance related complaint, who died in the ED, who were not charged for their visit, who left without being seen, or who refused treatment. Patients with > 5 ED visits in the calendar year were also excluded from analysis. The primary exposure of interest was whether the patient had identified a language other than English as their preferred language during registration. Our primary outcomes of interest were the number of diagnostic studies (laboratory studies, imaging tests, and cardiac tests) performed during the patient's initial visit, whether the patient was admitted to the hospital, and, for those discharged from the ED, the rate of 72-hour unscheduled return visits. We estimated multivariable logistic regression or Poisson or negative binomial modeling as appropriate controlling for age, sex, insurance type, triage acuity score, time of presentation, and discharge diagnosis category.
RESULTS: We studied ED visits for 54,417 EP and 5415 LEP individuals. LEP patients were older (50.3% 60 and older vs 33.2% for EP, $p < .0001$), more likely to be female (57.6% vs. 54.6%, $p < .0001$), less educated (18% vs. 0.9% with 8th grade or less, $p < .0001$), and more likely to have public insurance (29.6% vs. 11.7%, $p < .0001$). In unadjusted analysis, LEP patients were more likely to have a laboratory test (80.6% vs. 75.4%, $p < .0001$), plain x-rays (71.8% vs. 64.7% $p < .0001$), and CT scans (5.9% vs. 5.2% $p = .0417$), but less likely to undergo MRI testing (0.8% vs. 1.1% $p = .03$). LEP patients were also more likely to have an EKG (52.4% vs. 45.1% $p < .0001$) or a stress test (4.1% vs. 2.9% $p < .0001$). Finally, LEP patients were also more likely to be admitted, (38.8% vs. 34.2%, $p < .0001$) and to have an unscheduled 72-hour return visit (1.8% vs. 1.6% $p < .0001$). Preliminarily, in adjusted analyses the findings were consistent.
CONCLUSIONS: LEP patients receive more care in the emergency department than EP patients. They also are more likely to be admitted and to return to the ED within 72 hours of discharge. These disparities may be due to communication challenges, and suggest that interventions be targeted to improve the value of care they receive.

DIFFERENCES IN GOALS DURING RESIDENCY TRAINING BETWEEN THE UNITED STATES AND JAPAN: TIME TO ADDRESS GAPS BETWEEN COMPETENCIES AND TRAINEE SELF-IDENTIFIED GOALS Hirotaka Kato[3]; Alfred Burger[4]; Ken Emoto[5]; Reiko Sakama[2]; Yuki Uehara[2]; Ankur Segon[3]; Jenny J. Lin[1]. [1]Icahn School of Medicine at Mount Sinai, New York, NY; [2]Juntendo University School of Medicine, Tokyo, Japan; [3]Medical College of Wisconsin, Milwaukee, WI; [4]Mount Sinai Beth Israel, Icahn School of Medicine at Mount Sinai, New York, NY; [5]Aso Iizuka Hospital, Iizuka, Japan. (Control ID #2698472)

BACKGROUND: Medical educators worldwide aspire to transition from time based training to a competency based medical education model. The degree of alignment between competencies and residents' self-identified training goals, as well as variations in different countries have not been studied. This study sought to examine (1) how residents' goals match proposed universal competencies, (2) differences in residents' self-identified training goals between the United States (US) and Japan, and (3) prevalence of fatigue among residents.
METHODS: An online survey targeting postgraduate trainees in both the US and Japan was conducted between January and June 2016. The authors recruited two internal medicine residency programs at an urban university program and an affiliated medical center in New York City as well as one university based and four non-university based programs in Japan. The survey questions included demographics, milestones across eight competency areas proposed as universal, and eleven Iowa Fatigue Scale (IFS) questions. A 4-point scale was used (not important, a little bit important, somewhat important, very important) and responses were dichotomized into 1 (very important) and 0 (others) to compute statistical significance with Chi-Square or Fisher's exact test. Presence of fatigue and severe fatigue were defined as IFS >30 and IFS > 40, respectively. Chronbach alfa (0.79) confirmed internal consistency for IFS.
RESULTS: 165 out of 393 potential respondents (42%) completed the survey. 58% were US trainees. The proportions of "very important" in systems-based practice milestones were generally low in both countries (<70%). Significant differences were observed across all competency areas due to lower rating by postgraduate year (PGY) 1 respondents in Japan. Among the PGY 2 and 3 respondents, the statistically significant items ($p \leq .05$) included (a) Qualified handoff (US 86% versus Japan 59%), (b) Supervision for team members (80% vs. 41%), (c) Symptom relief (88% vs. 50%), (d) Evidence-based practice (94% vs. 69%), (e) Education for team members (71% vs. 48%), (f) Continuous learning (94% vs. 48%), (g) Communication with health professionals (92% vs. 71%), (h) Difficult conversations (96% vs. 74%), (i) Administrative responsibilities (36% vs. 68%), (j) Compassion and respect (100% vs. 84%), and (k) Sensitivity to diversity (91% vs. 58%). The prevalence of fatigue (42% vs. 81%), and severe fatigue (4% vs. 19%) was significantly higher in Japan ($p < .01$).
CONCLUSIONS: There were significant differences in training goals between resident physicians in the US and Japan. US trainees were more likely to see competencies as their own goals during residency compared to their Japanese counterparts. GME training should ideally be designed so that resident physicians can align their goals with milestones and competencies.

DISCHARGING THE DATA: UNDERSTANDING THE STRUCTURE OF THE HOSPITAL DISCHARGE SUMMARY IN DELIVERING PATIENT CARE Nancy T. Skehan; Bruce Barton; Sheri Keitz. University of Massachusetts Medical School, Worcester, MA. (Control ID #2700517)

BACKGROUND: Major clinical errors, increased emergency visits, and hospital readmissions can all result from poor communication between providers as patients transition from inpatient to ambulatory settings. Lapses can include medication errors, pending test results, or lack of critical information at discharge. The hospital discharge summary has been identified as a vital tool for relaying information at discharge and its content has been well defined by numerous national organizations. However, there is no standard structure for the discharge summary. We conducted a survey of residents, hospitalists and primary care providers (PCPs) in Internal Medicine, Pediatrics and Family

Medicine to determine if they identify and share a definition of an accepted structure for the discharge summary, as compared to a History and Physical (H&P). We also assessed prior discharge summary training and providers' comfort in discharge communication. The goal was to conduct a needs assessment of existing knowledge and attitudes about discharge summaries, ultimately to develop systems and educational interventions.

METHODS: A single-site cross-sectional survey of the target population was conducted at a tertiary care academic center and its community affiliates from April-May 2015. Providers were asked to identify the expected location of key clinical components in the discharge summary, as well as components of an H&P. Study data were collected and managed using REDCap electronic data capture tools. The statistical analyses generated the frequencies and percentages for each location by the specified subgroup. All analyses were conducted using SAS Version 9.3 (SAS Institute, Cary, NC).

RESULTS: 415 participants were surveyed, with 220 respondents. Respondents identified the location of the H&P elements with 80-96% concordance, compared to 42–82% in discharge summaries. In assessing knowledge, 72% of respondents felt they had not received formal training. 50% reported observing an adverse patient outcome with 77% citing difficulty in locating information as a primary cause. A subgroup analysis of hospitalists and PCPs revealed that hospitalists expect the final diagnoses at the beginning, where PCPs expect it to be at the end ($p < 0.001$).

CONCLUSIONS: Compared to the H&P, physicians do not identify a common sequence for the key components in discharge summaries. Moreover, hospitalists who generate the discharge summary do not have the same definition of its structure compared to PCPs, who receive the document. This may lead to difficulty in locating information within the document, and may contribute to medical error. These data show a need for standardized structure for the discharge summary with an accompanying educational and systems interventions to decrease the likelihood of major clinical errors.

DISPARITIES IN QUALITY OF PRIMARY CARE BY RESIDENTS AND STAFF PHYSICIANS: IS THERE A CONFLICT BETWEEN TRAINING NEEDS AND EQUITY IN CARE? Utibe R. Essien[1, 2]; Jonathan R. Abraham[1]; Alaka Ray[1]; Wei He[1]; Yuchiao Chang[2]; Daniel E. Singer[1]; Steven J. Atlas[1]. [1]Massachusetts General Hospital, Boston, MA; [2]Harvard Medical School, Boston, MA. (Control ID #2694122)

BACKGROUND: Ambulatory education for internal medicine (IM) residents is vital to training. As a majority of training is spent on the inpatient wards, concern remains about the quality of outpatient care residents provide. Prior studies compared patient outcomes of resident and staff primary care physicians (PCPs) but few examined quality of care following mandated increases in ambulatory time. We compared outcomes of patients seen by resident and staff PCPs controlling for patient characteristics and time in network.

METHODS: We compared cohorts of patients receiving care from IM residents and staff PCPs at 16 primary care clinics (PCCs) affiliated with Massachusetts General Hospital from 2005–2015. A validated algorithm was used to attribute patients to resident and staff PCPs. We assessed diabetes and CAD outcome measures, cancer screening rates and resource utilization in 2015. We report outcomes adjusted for age, gender, race, language, insurance, education, area-based median household income, clinic site, Charlson score and physician-defined complexity using generalized linear regression models. To further control for confounding between resident and staff patients including time in network, we compared outcomes from 1:1 propensity score matched subgroups.

RESULTS: Among all PCC patients, 10,538 (7.5%) were attributed to resident and 130,706 to staff PCPs. Compared to staff patients, resident patients were more likely to be male, African-American, receive Medicaid or be uninsured, live in low-income areas and have higher comorbidity scores (all $p < 0.05$). Resident patients were less likely to speak English and completed less education. Compared to staff patients, resident patients had lower chronic disease outcomes, cancer screening rates and higher rates of admission and ED visits (Table 1). The differences in all outcomes remained significant in propensity score-matched subgroups (data not shown).

CONCLUSIONS: In this single primary care network, major differences in sociodemographics and comorbidities exist among patients seen by resident and staff PCPs. After controlling for confounding using multivariable modeling and propensity matching, resident patients still had poorer chronic disease, cancer screening and resource utilization outcomes. Unmeasured confounders may partially account for the outcomes observed. Novel approaches to engage trainees in team-based practice and population health management may be needed to prevent disparities in quality of care in academic PCCs while meeting resident educational needs.

Quality of Care between Resident and Staff PCP Patients

Quality of Care and Resource Utilization Measures	Resident PCP Patients $n = 10{,}538$	Staff PCP Patients $n = 130{,}706$	Adjusted Relative Risk (95% CI)	Adjusted p-value
Coronary Artery Disease (CAD) - LDL Level <100 mg/dL	49.6%	61.8%	0.82 (0.74, 0.89)	<.0001
Diabetes - HbA1c Level < 9%	74.2%	81.1%	0.95 (0.91, 0.98)	0.0001
Breast Cancer Screening	70.4%	83.6%	0.89 (0.87, 0.92)	<.0001
Cervical Cancer Screening	69.6%	82.8%	0.92 (0.89, 0.94)	<.0001
Colorectal Cancer Screening	65.9%	77.8%	0.93 (0.90, 0.95)	<.0001
Admissions (per 100 pts)	15.5	6.5	1.75* (1.59, 1.93)	<.0001
Emergency Department (ED) Visits (per 100 pts)	25.8	11.9	1.47* (1.35, 1.60)	<.0001

*Risk Ratio

DO DIABETES GROUP VISITS IMPROVE HEALTH OUTCOMES AMONG PATIENTS IN COMMUNITY HEALTH CENTERS? Arshiya A. Baig[1]; Erin M. Staab[1]; Amanda Benitez[3]; Sarah P. Hermans[1]; Yue Gao[1]; Sandra Ham[1]; Amanda Campbell[4]; Cynthia T. Schaefer[2]; Michael T. Quinn[1]. [1]University of Chicago, Chicago, IL; [2]University of Evansville, Evansville, IN; [3]Enlace Chicago, Chicago, IL; [4]Midwest Clinicians' Network, East Lansing, MI. (Control ID #2705087)

BACKGROUND: Diabetes group visits, shared appointments in which patients receive self-management education in a group setting and have a medical visit,

are an innovative way to deliver diabetes care and have been shown to improve clinical outcomes. Community health centers (CHCs) play a vital role in providing care to patients with diabetes. No studies have systematically implemented diabetes group visits in a network of U.S. CHCs.

METHODS: We designed a group visit intervention in partnership with Midwest Clinicians' Network. We trained staff from six CHCs in five states to conduct six monthly group visits with 8–10 adult patients with uncontrolled diabetes (glycosylated hemoglobin, A1C, ≥ 8%). Primary outcome was change in A1C from baseline to 6- and 12-month follow-up. Secondary outcomes were changes in diabetes self-care (diet, exercise, foot care, blood glucose testing), diabetes-related quality of life (dissatisfaction with diabetes control, diabetes-related social worry), and diabetes distress (emotional burden, physician distress, regimen distress, interpersonal distress). Analysis of secondary clinical outcomes, including LDL, blood pressure, and weight, is in progress, and we are currently collecting data on matched control patients at each site.

RESULTS: Fifty-one patients were enrolled across the six sites (mean age 55 ± 12 years, 67% female, 38% African American, 38% white, 22% Latino, 9% American Indian/Native American). Average baseline A1C was 10.2% ± 1.7%. Patients attended an average of 3.5 ± 1.9 group sessions. Compared to baseline, A1C was significantly lower at 6 months (8.8% ± 2.3%, $p = 0.0002$) and 12 months (9.0% ± 2.0%, $p < 0.0001$). Patients improved in two self-care areas from baseline to 6 months: days per week following a healthful eating plan (3.3 ± 2.4 vs. 4.8 ± 1.4, $p = 0.023$) and testing blood sugar (4.8 ± 2.4 vs. 6.1 ± 1.2, $p = 0.001$). Dissatisfaction with diabetes control decreased significantly (2.3 ± 0.8 vs. 1.8 ± 0.6 [1 = least to 5 = most problematic], $p = 0.029$) at 6 months. Participants experienced significantly less emotional burden (2.6 ± 1.4 vs. 2.0 ± 1.4 [1 = least to 6 = most distressed], $p = 0.049$), regimen distress (3.0 ± 1.5 vs. 2.0 ± 1.2, $p = 0.014$), and overall diabetes distress (2.3 ± 1.2 vs. 1.8 ± 1.1, $p = 0.048$). There were no significant changes in foot care, exercise, physician or interpersonal distress, overall diabetes-related quality of life, or diabetes-related social worry. The intervention was well-received by patients: 93% gained confidence in their ability to manage diabetes, 93% agreed the content was relevant to their lives, and 90% said attending group visits was not a burden.

CONCLUSIONS: Among a sample of adults with uncontrolled diabetes who receive care in CHCs, diabetes group visits improved glycemic control, diabetes self-care, diabetes-related quality of life, and diabetes distress. Future research should assess the cost of group visits and facilitators and barriers to group visit implementation in CHCs.

DO HISPANIC-SERVING HOSPITALS HAVE WORSE PATIENT OUTCOMES? CASE OF ACUTE MYOCARDIAL INFARCTION INPATIENT MORTALITY

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BACKGROUND: Hospital quality is associated with patient outcomes. Examination of hospital effects on disparities in patient outcomes has been limited to black vs. white comparisons. Our objective was to extend such analyses to include ethnicity and to examine the role of hospitals' ethnic composition and other characteristics on patient outcomes. We estimated inpatient risk adjusted mortality for acute myocardial infarction (AMI) discharges by race/ethnicity and examined variations in mortality by patient and hospital characteristics at high proportion Hispanic-serving hospitals compared to other hospitals.

METHODS: We used patient level data from state inpatient discharge data (2010–11) from 14 states (AZ, CA, CO, FL, IL, MA, MD, NV, NJ, NY, OR, PA, TX, VA) that account for 85% of the US Hispanic population. We obtained hospital characteristics from the American Hospital Association and we applied the Agency for Healthcare Research and Quality's Inpatient Quality Indicators protocol to AMI discharges. Using the proportion of Hispanic patients out of all discharges at each hospital, we stratified all hospitals into deciles. The top 3 deciles served a majority of Hispanic patients (79%), but smaller proportions of white (22%), black (34%) and Asian (53%) patients. We adjusted for patient risk using Elixhauser comorbidity indicators to compare inpatient mortality differences by race/ethnicity (Hispanics, non-Hispanic blacks, Asians and non-Hispanic whites). Using logistic regression models we estimated race/ethnic differences in risk-adjusted mortality and stratified these differences across Hispanic-serving hospital deciles.

RESULTS: There were 513,639 AMI discharges (10.8% Hispanics, 9.5% blacks, 2.9% Asians and 76.8% whites). Overall inpatient mortality rate was 6.1%. Inpatient mortality was higher among Hispanics (odds ratio (OR) = 1.09, $p < 0.05$) and Asians (OR = 1.09, $p < 0.05$), but no different among blacks (OR = 0.97), compared to whites, after adjusting for age, sex and comorbidities. Across hospital deciles by Hispanic-serving proportion, the share of Hispanic patients ranged from 0.1% in the lowest decile to 46.3% in the highest, and the latter were more likely to be safety-net, for-profit, government-owned or have a low annual average AMI volume. Risk-adjusted inpatient mortality exhibited a U-shape with respect to Hispanic-serving hospital deciles with the lowest mortality in the middle, decile 5 hospitals. Relative to decile 5 hospitals, mortality was higher in the top 3 deciles: decile 8 OR = 1.21; decile 9 OR = 1.14; decile 10 OR = 1.29 (all p-values < 0.05).

CONCLUSIONS: Hispanic patients have a higher rate of AMI inpatient mortality than white patients. Hospitals that disproportionately serve Hispanic AMI patients serve a lower portion of white and other minority patients and have higher inpatient mortality compared to other hospitals. Quality improvement at these hospitals could reduce Hispanic disparities in healthcare outcomes.

DO MEDICARE'S PAY-FOR-PERFORMANCE PENALTIES HAVE A BITE? THE CUMULATIVE 2013–2016 EXPERIENCE.

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BACKGROUND: In 2013 the Centers for Medicare & Medicaid Services' (CMS) introduced pay-for-performance programs - the Hospital Readmissions Reduction Program (HRRP) and Hospital Value Based Purchasing (HVBP) program - that instituted Medicare payment penalties (and bonuses) for hospitals based on patient outcome performance measures. However, due to the small size of annual penalties, the potency of the programs to influence quality

improvement has been questioned. Little is known about how often hospitals are subject to repeated penalties, the cumulative penalty size and associated financial loss. Using data from 2013–2016 we assessed the frequency of repeated penalties, revenue loss relative to hospital financial performance indicators, and characteristics associated with higher financial loss.

METHODS: We obtained data on Medicare participating hospitals' penalty/bonus payment rates for the HRRP and HVBP programs (2013–2016) from CMS' Final Impact Rule files. We merged these data with hospital data on acute inpatient care revenues from Medicare patients and overall patients, and net income (operating profits), obtained from CMS' Healthcare Cost Report Information System (HCRIS) files (2013–2014, the program years for which data is available). We used the 2013–2014 annual average of the HCRIS financial performance indicators, adjusted for inflation, as the baseline indicator of hospital financial status. We applied the cumulative penalty (and bonus) payment rates during 2013–2016 to the baseline financial measures to obtain the expected cumulative penalties ($) as a proportion of annual net income (*income share*) and of annual overall inpatient revenues (*revenue share*). Using linear regression models we examined the associations of both income and revenue share with several hospital characteristics: Medicare share of hospital inpatient volume (*Medicare share*), safety-net status, bed size and non-profit status.

RESULTS: Our study cohort included 2,192 hospitals. During 2013–2016, 1,695 hospitals (77%) experienced a cumulative penalty from both programs combined; 72 and 41% hospitals were penalized at least 3 years under HRRP and HVBP, respectively. Among penalized hospitals, the maximum cumulative penalty rate was 9.5% (media*n* = 1.8%), and the maximum penalty amount was $18,869 per bed (media*n* = $1,961). In over half the penalized hospitals, income share exceeded 3.2%, and revenue share exceeded 0.4%. 363 hospitals (16.6%) experienced penalties exceeding 2% of income share and 1% of revenue share. Income and revenue shares were higher in hospitals with higher Medicare share of total discharge volume; hospitals with >50% Medicare share experienced higher penalties amounting to 6.5% income share and 0.6% revenue share. Safety-net status, larger bed size and non-profit status were also associated with higher financial loss.

CONCLUSIONS: Repeated penalties from HRRP and HVBP programs are common, and for many hospitals the cumulative penalties represent a sizable share of net income and revenues.

DO PRESCRIBED OPIOIDS INCREASE RISK OF COMMUNITY-ACQUIRED PNEUMONIA REQUIRING HOSPITALIZATION? E. J. Edelman[1]; Kirsha S. Gordon[2]; Janet P. Tate[1]; William Becker[2, 1]; Kendall Bryant[3]; J. R. Gaither[1, 2]; Cynthia Gibert[4]; Adam Gordon[5]; Brandon D. Marshall[6]; Maria Rodriguez-Barradas[7]; Jeffrey H. Samet[8]; Kristina Crothers[9]; Amy C. Justice[1, 2]; David A. Fiellin[1]. [1]Yale University, New Haven, CT; [2]VA Connecticut Healthcare System, West Haven, CT; [3]National Insitutes of Health (NIH), Bethesda, MD; [4]Veterans Affairs Medical Center, Washington, DC; [5]University of Pittsburgh and VA Pittsburgh Healthcare System, Pittsburgh, PA; [6]Brown University, Providence, RI; [7]Michael E. DeBakey VAMC, Houston, TX; [8]Boston University School of Medicine, Boston, MA; [9]University of Washington, Seattle, WA. (Control ID #2707005)

BACKGROUND: As opioids have respiratory and immunosuppressive properties, we aimed to determine whether prescribed opioids impact risk of community-acquired pneumonia requiring hospitalization (CAP) among patients with (HIV+) and uninfected individuals.

METHODS: We conducted a longitudinal analysis of data from 2000 to 2012 among HIV+ and uninfected controls in the Veterans Aging Cohort Study (VACS). Patients were followed upon receipt of their first outpatient medication prescription dispensed from the Veterans Affairs Healthcare System (VA). Patients were excluded if during their first year of observation they 1) died; 2) had an opioid prescription >14 days supply to capture patients who had no or only minimal opioid receipt; or 3) had evidence of severe medical illness with a VACS index score (a validated measure of mortality risk) >100. Additionally, patients were excluded if: 1) they ever received chemotherapy or immunosuppressive medications; 2) had an initial opioid prescription with an average daily morphine equivalent dose exceeding 100 mg. Using outpatient VA pharmacy data, the exposure of interest, opioid receipt, was categorized as a time-varying 4-level variable based on receipt in the current and prior 30-day intervals as: 1) none, indicating no opioid receipt in the prior 60 day interval; 2) previous only, indicating opioid receipt only in the immediate prior 30 day interval; 3) current only, indicating opioid receipt in the current 30 day interval only, or 4) both, indicating opioid receipt in the prior and current 30 day interval. The outcome, CAP, was defined based on ICD-9 codes 480–487 and receipt of antimicrobials by the third day of hospitalization. Baseline covariates included demographics (age, gender, race/ethnicity), comorbidities (HIV, HCV), smoking status and VACS index score. We created time-varying Cox proportional hazards models to assess the association between opioid receipt and incident CAP.

RESULTS: Among our analytic sample ($n = 56,630$), patients were followed for a mean of 8.1 years. The mean age was 49 years, 98% were men, 39% white; 48% black; 9% Hispanic; 4% other and 34% were HIV+. Eleven percent of the sample had an incident CAP during the follow-up period. In adjusted analyses, compared to none, those with opioid receipt in the previous interval only [adjusted hazard ratio (aHR) [95% confidence interval] = 1.51 [1.31, 1.74]), current interval only (aHR [95% CI] = 4.35 [3.99, 4.73]), and both intervals (aHR [95% CI] = 1.82 [1.66, 2.01]) were more likely to have incident CAP.

CONCLUSIONS: Opioid receipt is independently associated with an increased risk of pneumonia, with greatest risk when initiating treatment. These data should inform discussions regarding benefit and harms associated with prescribed opioids. Among those for whom prescribed opioids are deemed necessary, efforts to address modifiable risk factors for pneumonia should be prioritized.

DO PRIMARY CARE PATIENTS PRESENTING WITH RECTAL BLEEDING RECEIVE RECOMMENDED COLONOSCOPIES? Sanja Percac-Lima[1, 2]; Lydia E. Pace[1, 3]; Kevin H. Nguyen[4]; Charis N. Crofton[5]; Katharine A. Normandin[5]; Sara Singer[1, 4]; Meredith Rosenthal[4]; Alyna T. Chien[1, 5]. [1]Harvard Medical School, Boston, MA; [2]Massachusetts General Hospital, Boston, MA; [3]Division of Women's Health, Brigham and Women's Hospital, Boston, MA; [4]Department of Health Policy and Management, Harvard T. H. Chan School of Public Health, Boston, MA; [5]Division of General Pediatrics, Department of Medicine, Boston Children's Hospital, Boston, MA. (Control ID #2699120)

BACKGROUND: Missed and delayed cancer diagnoses are a major ongoing concern in primary care. Rectal bleeding can be the first symptom of colorectal cancer and clinical guidelines recommend colonoscopies for most patients with rectal bleeding. This study examined how often patients presenting to primary care with rectal bleeding receive recommended colonoscopies and how colonoscopy rates differ based on patient characteristics and utilization patterns.

METHODS: We conducted a cross-sectional study of 258 patients aged 40–80 who received primary care at 15 practices across 5 academic medical centers affiliated with Harvard Medical School between 2012 and 2016. In this period, practices were involved in learning collaboratives aimed at establishing team-based care and improving preventive cancer screening. We used ICD-9 codes indicative of rectal bleeding to randomly select 20 patients per practice across the 4 study years, oversampling for Medicaid-insured and non-Medicaid patients in a 1:1 manner. We followed CRICO (Controlled Risk Insurance Company) guidelines to determine if a colonoscopy was recommended. Three research assistants used a 2,620-item tool to abstract patient data across 4 electronic health record systems and dually abstracted 10% of charts (the Kappa = 0.95); primary care physicians adjudicated disagreements. We used multivariate logistic regression to examine the degree to which receiving recommended colonoscopies was associated with patient age, sex, non-White race/ethnicity, insurance type, number of chronic conditions, primary care no show rates, and number of primary care and subspecialist visits unrelated to rectal bleeding.

RESULTS: Of the 258 patients with rectal bleeding, 45% (115) were female, average age was 55 (SD 10) years, 60% (155) were non-White (e.g. Hispanic, Black, Other), and 49% (126) had Medicaid. CRICO guidelines indicated that 91% (234) of patients presenting with rectal bleeding should have received a colonoscopy; 55% (131 of 234) did within 1 year of presentation. The average time to colonoscopy was 76 (SD 81) days. Age, sex, insurance type, number of chronic conditions, primary care no show rates and number of subspecialist visits unrelated to rectal bleeding were not significantly associated with colonoscopy receipt. In multivariable analyses, non-White patients were more likely to receive a colonoscopy than White patients (OR = 2.05, CI [1.15,3.65] $p = 0.02$), and the number of primary care visits unrelated to rectal bleeding was negatively associated with the odds of receiving a colonoscopy (OR = 0.80, CI [0.66,0.97] $p = 0.03$).

CONCLUSIONS: Care for primary care patients presenting with rectal bleeding is sub-optimal. Prioritization of issues unrelated to rectal bleeding may explain some of these deficiencies. However, in contrast to previous studies in the same setting, non-White patients were more likely to receive recommended care.

DOES BEHAVIORAL HEALTH INTEGRATION IMPROVE PRIMARY CARE PROVIDERS' PERCEPTIONS OF HEALTHCARE SYSTEM FUNCTIONING AND THEIR OWN KNOWLEDGE?

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BACKGROUND: Behavioral health integration (BHI) is an increasingly employed strategy for improving patient outcomes, reducing costs, and improving patient experience. The impact of these programs on primary care providers' (PCPs') experience caring patients with mental health and substance use disorders, in particular PCPs' perceptions of behavioral health (BH)-primary care (PC) system functioning and knowledge, are poorly understood. We aimed to examine the impact of BHI on PCPs' perceptions of behavioral health BH-PC system functioning and knowledge.

METHODS: We implemented BHI based on evidence-based models consisting of seven elements: (1) Screening for mental health and substance use disorders, (2) Training of PC teams, (3) Integration of BH providers into PC teams, (4) Roll-out of unlicensed mental health care managers and establishment of a BH registry, (5) Psychiatry consult service, (6) Site-based BHI meetings, and (7) Site self assessments. The intervention was rolled out in early integration sites during 2 years and late integration sites during the subsequent 2 years. In this observational pre-post study, we administered an anonymous online survey annually to PCPs; 381 PCPs at 11 primary care clinics participated. We examined changes in perceptions with chi-square tests and fisher's exact tests. We also conducted multivariable logistic regression analyses controlling for provider and site level characteristics.

RESULTS: The proportion of PCPs with high BH-PC systems functioning scores quadrupled from 14 to 55% (p <0.0001) and high knowledge scores increased from 63 to 85% ($p < 0.001$). Larger increases were demonstrated in early integration sites during the first 2 years and in late integration sites during the latter 2 years of the survey. Adjusting for participant and site level characteristics did not change these outcomes.

CONCLUSIONS: BHI improves PCP perceptions of BH-PC system functioning and knowledge. BHI is a strategy for improving PCP experience caring for patients with mental health and substance use disorders.

DOES BEIJING'S DIAGNOSIS-RELATED GROUP PAYMENT REFORM PILOT IMPROVE QUALITY OF ACUTE MYOCARDIAL INFARCTION CARE?

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BACKGROUND: In China, quality of acute myocardial infarction (AMI) management has previously been found to be poor with uneven guideline implementation. Previous studies have supported the use of DRG payment systems to help drive improvements in quality of care. In 2012, China's first pilot diagnosis-related group (DRG) payment system was implemented in Beijing. This study aims to explore whether this DRG payment pilot has improved quality of AMI management.

METHODS: Discharge and claims data from the Beijing Employee Basic Health Insurance Scheme were obtained from 14 tertiary care hospitals from January 2010 to September 2012. In October 2011, 108 DRGs for specific conditions/procedures were piloted in 6 hospitals while fee-for-service (FFS) payment was continued in controls. Four AMI DRGs included: percutaneous coronary intervention (PCI) procedure with stent that is complicated or uncomplicated and the higher risk coronary artery bypass grafting (CABG) surgery with and without cardiac catheterization. Regression was performed with a differences-in-differences design to assess whether DRG pilot implementation improved quality of care measures.

RESULTS: AMI DRG cases at pilot hospitals included 1,221 (88.9%) complicated PCI with stent, 69 (5.0%) uncomplicated PCI with stent, and 84 (6.1%) CABG surgeries. Of eligible DRG cases at pilot hospitals post-reform, 397 (28.9%) were ultimately paid through FFS including 69.1% of CABG surgeries. DRG payment led to a significant 72.2% reduction in in-hospital mortality though a 7.1% reduction in prescription of optimal AMI medications at arrival. DRG-eligible cases ultimately paid through FFS had a 24.1% increase in expenditures per admission, out-of-pocket (OOP) payment, and 15.4% increase in length of stay compared to cases paid through DRG. For higher quality uncomplicated PCI with stent cases, there were significant

reductions in expenditures (19.7%) and OOP payments (29.5%). For FFS medically managed and PCI only cases, there was an 8.9% reduction in OOP payments and a 5.4% increase in in-hospital mortality.

CONCLUSIONS: DRG payment for cardiac procedures stimulated significant reductions in in-hospital mortality while reducing costs for high quality uncomplicated PCI with stent cases showing potential for DRG payment to improve quality of AMI in Chinese hospitals. Outcomes in terms of in-hospital mortality, however, were worse likely due to access to expensive but potentially life-saving procedures only if payment was guaranteed. Furthermore, more expensive and medically risky cases were shifted towards FFS payment, which is a major gap. Given that the majority of PCI cases had procedural complications as well as poor-adherence to medication guidelines, there is an urgent overall need to improve overall quality of AMI care and create incentives to stimulate adherence to evidence-based practice.

DOES CARDIOVASCULAR DISEASE RISK IN POSTMENOPAUSAL SOUTH ASIAN WOMEN CATCH UP TO MEN Diana Thiara[2]; Feng Lin[3]; Namratha R. Kandula[1]; Alka M. Kanaya[3]. [1]Northwestern University, Chicago, IL; [2]University of California at San Francisco, San Francisco, CA; [3]University of California, San Francisco, San Francisco, CA. (Control ID #2703172)

BACKGROUND: South Asians (SA) bare a greater burden of cardiovascular disease (CVD) and have the highest rate of mortality from ischemic heart disease than other ethnic populations in the US. While studies have identified some modifiable risk factors associated with cardiovascular disease in SA populations, no study has examined whether there is sex difference in subclinical atherosclerosis among postmenopausal women and similarly aged men.

METHODS: We conducted a cross-sectional analysis including postmenopausal women and men age 50–84 years old without known cardiovascular disease from the Mediators of Atherosclerosis in South Asians Living in America (MASALA) study. Post-menopausal status was ascertained by self-report, and women with oophorectomy were excluded. High resolution ultrasonography was done to measure common carotid intima media thickness (CCA) and internal carotid intima thickness (ICA), and cardiac CT scan was performed to quantify coronary artery calcium (CAC). Regression models were used to examine the relationship between sex and ICA, CCA, and CAC, separately. Using multivariate analyses, we serially adjusted for traditional CVD risk factors (age, hypertension, diabetes, LDL, BMI, waist circumference, smoking, alcohol use, education, statin use, and family history of heart attack), behavioral factors (exercise and total caloric intake), psychosocial factors (depression, anxiety, burden and traditional cultural beliefs).

RESULTS: Of 576 SA (44% women), men had a mean age of 62 and women 59 years ($p < 0.001$). Men had significantly higher diabetes prevalence (34% vs 24%, $p = 0.005$), alcohol use (47% vs 16%, $p < 0.001$) and smoking (current or former: 31% vs 3%, $p < 0.001$), and were more likely to have higher levels of education than women (89% vs 82%, $p = 0.02$). Men also had higher rates of hypertension (55% vs 44%, $p = 0.01$) and larger waist circumferences (95.6 cm vs 90.0 cm, $p < 0.001$). Women had higher LDL than men (115 vs 104 mg/dl, $p < 0.001$) and higher depressive symptoms (CES-D score, 8.4 vs 7.2, $p = 0.05$). In unadjusted analyses, men had higher mean CCA (0.96 mm vs 0.88 mm, $p < 0.001$) and ICA (1.37 mm vs 1.21 mm, $p < 0.001$) and were more likely to have any prevalent CAC (70% vs. 33%) and higher extent of CAC compared to women. Multivariate adjustment for traditional CVD risk factors attenuated the association between sex and CCA and ICA completely, however the differences in CAC between sexes persisted. Men had a higher prevalence of any CAC (OR 4.67 (95% confidence interval, 2.63-8.28)) and extent of CAC (β 1.7, $p < 0.001$) in adjusted analyses.

CONCLUSIONS: While older postmenopausal women have similar prevalence of carotid intima media thickness compared to men, the prevalence and extent of CAC remains higher in men. These findings suggest that South Asian women, like women in other race/ethnic groups, may not benefit from aggressive statin therapy for primary prevention of coronary heart disease.

DOES DEPRESSION AFFECT GLYCEMIC CONTROL AND DELIVERY OF GUIDELINE-RECOMMENDED CARE IN PATIENTS WITH HEART FAILURE AND DIABETES Margaret Zupa; Kaleab Abebe; Yan Huang; Amy Anderson; Bea Herbeck Belnap; Bruce L. Rollman. University of Pittsburgh, Pittsburgh, PA. (Control ID #2703184)

BACKGROUND: Heart failure (HF) and type 2 diabetes mellitus (T2DM) are common, often comorbid chronic medical conditions which demand adherence with complex treatment regimens. While clinical practice guidelines can assist clinicians in providing evidence-based care, co-morbid depression may impair effective management of HF and T2DM and thereby increase afflicted individuals' risk of morbidity and mortality. However, little is known about the impact of depression in patients with both conditions. We therefore explored the effect of depression on glycemic and blood pressure control and delivery of guideline-recommended HF and T2DM care among patients enrolled in the NHLBI-funded Hopeful Heart Trial presently examining the impact of treating depression in HF patients.

METHODS: We screened patients hospitalized with systolic HF (ejection fraction (EF) $\leq 45\%$) and NYHA class II-IV symptoms for depression with the Patient Health Questionnaire (PHQ-2), and telephoned 2 weeks after discharge to administer the PHQ-9. We classified patients as depressed if they screened positive on PHQ-2 and scored ≥ 10 on the follow-up PHQ-9, and recruited a randomly sampled cohort of non-depressed subjects who screened negative on PHQ-2 and scored <5 on follow-up PHQ-9 as a control group. We collected sociodemographic information from patient self-report and abstracted the hospital discharge summary for medical diagnoses, medication use, cardiac ejection fraction, blood pressure, and HbA1c. We used student's t-test or chi-square test, when appropriate, to compare depressed and non-depressed HF patients with T2DM.

RESULTS: From 3/2014 to 11/2016, we enrolled 545 HF patients including 260 (48%) with T2DM. Depressed ($N = 211$) and non-depressed ($N = 49$) subjects were similar by mean age (65 years), gender (58% male), EF (28%), and marital status (45% married). Seventy-six percent of depressed patients were white compared with 55% of non-depressed; 23% of the depressed group was African American compared with 41% of non-depressed ($p = 0.01$ for racial distribution). Critically, baseline glycemic control as measured by mean HbA1c (8.2% vs 7.7% $p = 0.16$), systolic (126 vs 123 mmHg $p = 0.25$) and diastolic (71 vs 70 mmHg $p = 0.53$) blood pressure, and rates of HF and T2DM guideline-adherent prescription of ACE/ARB (63 and 69% $p = 0.40$) and statins (80 and 73% $p = 0.35$) were similar between depressed and non-depressed patients.

CONCLUSIONS: At baseline, comorbid depression was not related to glycemic or blood pressure control or delivery of guideline-adherent care to

patients with HF and T2DM. Further research is needed to identify practices that improve adherence with guideline-based care for medically complex patients with HF and T2DM and elucidate the long-term impact of depression on patients with these conditions.

DOES NURSE CARE MANAGEMENT OF PATIENTS AT HIGH RISK FOR ALCOHOL USE DISORDERS IMPROVE DRINKING OUTCOMES? RESULTS OF THE CHOOSING HEALTHIER DRINKING OPTIONS IN PRIMARY CARE (CHOICE) TRIAL

Katharine Bradley[1]; Jennifer F. Bobb[1]; Evette Ludman[1]; Laura Chavez[5]; Andrew J. Saxon[3]; Joe O. Merrill[6]; Emily Williams[4]; Eric Hawkins[3]; Ryan Caldeiro[1]; Gwen Lapham[1]; Julie E. Richards[1]; Amy K. Lee[1]; Daniel Kivlahan[2]. [1]Group Health Research Institute, Seattle, WA; [2]VA Puget Sound, Seattle, WA; [3]VA Puget Sound Health Care System, Seattle, WA; [4]Health Services Research and Development (HSR&D) Seattle Center of Innovation for Veteran-Centered and Value-Driven Care, Seattle, WA; [5]Ohio State University, Columbus, OH; [6]University of Washington, Seattle, WA. (Control ID #2706223)

BACKGROUND: Importance: Alcohol use disorders (AUD) are common and under-recognized, and most patients never receive treatment. Experts recommend that AUDs be managed as chronic conditions in primary care, but the effectiveness of AUD care management unknown. Objective: To test whether a year-long care management intervention by registered nurses (RNs), compared to usual care, improved drinking outcomes at 12 months among patients at high risk for AUDs.

METHODS: Design: Randomized, controlled, encouragement trial. Setting: Three primary care clinics in one Veterans Affairs (VA) Health Care System Participants: VA outpatients who reported heavy drinking twice weekly or once weekly if previous AUD treatment, and consented to participate in a trial in which they might be offered additional alcohol-related care. Intervention: Proactive outreach and engagement by an RN who offered 12 months of repeated brief counseling using motivational interviewing (with or without biomarker monitoring), shared decision-making about treatment options, and support accessing preferred care including AUD medications.

RESULTS: Main Outcomes and Measures: Percent heavy drinking days (%HDD) on a 28-day timeline follow-back (TLFB), and percent of patients with “good drinking outcomes” (GDOs), assessed by blinded telephone interviewers, at 12 months. GDO is defined as drinking below recommended limits (TLFB) without alcohol-related symptoms (past 3 months) on the Short Inventory of Problems. Results: Among 304 participants (91% male, mean age 51.4 years), 73% met criteria for DSM-IV AUDs. Most (91%) intervention patients engaged in care with study RNs: 6% 1 visit, 33% 2–5, 20% 6–9, and 32% $\geq$ 10 visits. Intervention patients were more likely to receive alcohol-related care (42% vs 26%; $p = 0.005$), reflecting increased use of AUD medications (32% vs 8.4%; $p < 0.0001$), but no differences in specialty alcohol treatment or mutual help. There were no significant differences main outcomes at 12 months. Among usual care and intervention patients, respectively, %HDD were 35 and 39% (p 0.44), and percent with GDOs were 20 and 15% ($p = 0.32$), respectively. Findings at 3 months were similar.

CONCLUSIONS: Conclusions and Relevance: The CHOICE intervention for AUDs engaged patients in alcohol-related care and increased use of AUD medications, but did not improve drinking outcomes at 12 months.

DOES PHYSICIAN GENDER EFFECT ORDERING PRACTICE

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BACKGROUND: Breast cancer cases represent 14.6% of all new cancer diagnosis in the United States. However, medical societies disagree when, and how often, we should be screening. The United States Preventative Service Task Force recommends starting at 50 years of age and screening biennially, while others recommend starting at 40 years of age, or screening annually. This has created an environment where physicians must decide which guideline is best for their patients. We sought to find out what factors influence this decision, specifically if the gender of the ordering physician was associated with different screening practices in women aged 40–49.

METHODS: We examined every office visit for female patients age 40–49 with an internal medicine (IM), family medicine (FM) or gynecology (Gyn) provider in our health system between July 1, 2015 to May 30, 2016. Patients with a history of breast cancer or other malignant neoplasm were excluded. The association between physician gender and mammogram ordering rates was assessed via chi-squared testing. Other factors, such as comparison between specialties, were assessed via multivariable binary logistic regression.

RESULTS: In female patients aged 40–49, female physicians are more likely to order mammograms than male physicians overall. This disparity between genders was largest in internal medicine. Gynecology physicians order mammograms at a higher rate than internal medicine or family medicine physicians. Women aged 45–49 were more likely to receive a mammogram order than women aged 40–44. Also, black patients were less likely to receive a mammogram order compared to white patients.

CONCLUSIONS: Physician ordering practices do appear to vary by gender, however, this pattern is also influenced by specialty. The decision also seems to be effected by the age and/or race of the patient. The results of this study support the need for more research in factors contributing to preventive healthcare disparities.

DOES STIGMATIZING LANGUAGE IN PATIENT CHARTS NEGATIVELY IMPACT PHYSICIAN ATTITUDES AND CLINICAL DECISION MAKING? AN EXPERIMENTAL STUDY

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BACKGROUND: Clinician bias is a known contributor to health disparities. Research on implicit bias has primarily focused on individuals, rather than the transferability of such bias to others. Language used to describe patients may reflect physician bias, and also influence opinions of patients’ subsequent physicians. Few studies have evaluated written physician notes as a source of implicit bias. This study’s objective was to assess whether stigmatizing language written in a patient chart is associated with a subsequent clinician’s bias towards the patient and clinical management.

METHODS: Medical records from 82 inpatient and ED records were abstracted for stigmatizing language and used to create a single, hypothetical clinical case. Medical students and residents (internal medicine and emergency

medicine) were then asked to complete an online survey which randomized them to 1 of 2 physician chart notes, one with the stigmatizing language and one without. The notes presented medically-identical information about the same hypothetical patient, a 28 y/o man with sickle cell disease in a vaso-occlusive crisis. For example, the stigmatizing note described that Mr. R was hanging out with friends outside McDonald's and that Mr. R reported some "stressful situations" in his life. The neutral note stated that Mr. R spent yesterday afternoon with friends and reported recent stress. We assessed attitudes towards the hypothetical patient using the previously-validated Positive Attitudes towards Sickle Cell Patients Scale (range 5–35) and pain management decisions (residents only) using two multiple-choice questions (composite range 1–7 representing intensity of pain treatment). We used t-tests and Wilcoxon rank-sum tests to calculate differences in attitudes and treatment based on study arm assignment.

RESULTS: Respondents included 233 medical students and 180 residents (overall response rate 58%). About half (55%) identified as male. About half (54%) identified as white, 27% as Asian, 14% as Hispanic/Latino, and 10% as African-American. There were no differences between study arms in gender, race/ethnicity or year of training. Medical students and residents who reviewed the stigmatizing-language note had more negative attitudes towards the patient (20.6 stigmatizing vs. 25.6 neutral, $p < 0.001$). Further, residents exposed to the stigmatizing vs. neutral language note made less aggressive pain management decisions (5.56 stigmatizing vs. 6.22 neutral, $p = 0.003$).

CONCLUSIONS: Stigmatizing language written by one provider in a patient's medical record can negatively impact subsequent providers' attitudes towards the patient and influences clinical decision-making. Future work should explore which dimensions of stigmatizing language are most harmful. Attention to the language used in medical records may promote patient-centered care and reduce healthcare disparities for stigmatized populations.

DOES WISDOM PROTECT AGAINST DEPERSONALIZATON AMONG MEDICAL STUDENTS?

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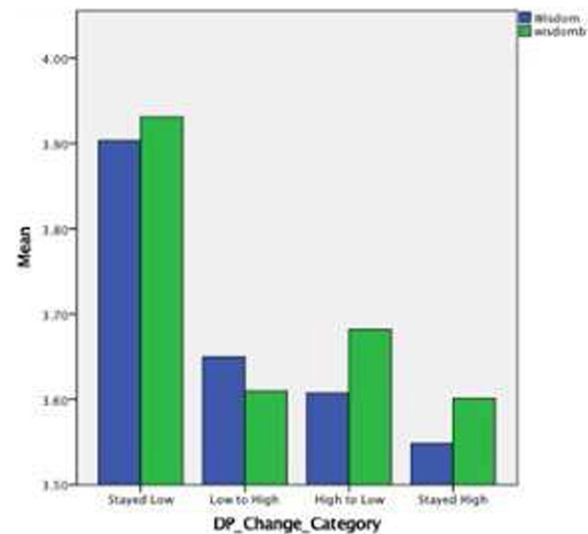
BACKGROUND: Burnout among medical students is an important issue, especially the development of depersonalization which has been associated with loss of empathy and unprofessional behavior. Wisdom has also received recent attention. Branch suggests "wisdom is what we should be striving for in our development as clinicians". Ardelt describes wisdom as: understanding deeper meanings, knowing limits of knowledge, tolerating ambiguity, engaging in reflection, having compassion and being other-centered. In cross-sectional analyses, we found that medical students high in wisdom had lower burnout scores. The purpose of this study was to evaluate whether students who score higher in wisdom are less likely to develop depersonalization over time.

METHODS: All students at one medical school were sent annual online surveys during the 2014–5 and 2015–6 years that included Ardelt's 3-Dimensional Wisdom Scale (3D-WS) and the Maslach Burnout Inventory. Scores of 10 or greater for depersonalization (DP) were considered high. ANOVA was used to compare mean scores on the 3D-WS by high and low DP status.

RESULTS: The survey was sent twice to 473 students. 143 (30%) had paired data from the 3D-WS and MBI for both years. The mean age was 25. 52% were female. Students were classified as those who never had high DP ($n = 76$), had low DP in the first year of the study but became high in the second ($n = 20$), had high DP in the first year but became low in the second ($n = 18$), or had high DP both years (n-29). Students who ever met criteria for high DP had similar mean wisdom scores (3.6), which did not vary significantly by year but which were significantly lower than those who never had high DP (3.9, $p < .001$).

CONCLUSIONS: Students who never met criteria for high depersonalization had significantly higher wisdom scores than the scores of those who ever had high depersonalization. This suggests that having high wisdom as measured by the 3D-WS might be protective with regard to developing depersonalization in medical school.



Association between wisdom scores and high and low DP. The first set of columns had low DP both years, the second went from low to high, the third from high to low, and the fourth were high both years.

DON'T CLICK IT, REDUCE THE STICK IT: A QUALITY IMPROVEMENT INITIATIVE TO REDUCE DAILY INPATIENT LABORATORY DRAWS

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BACKGROUND: It is accepted that diagnostic testing is over-used in stable hospitalized medicine patients, including the use of daily labs such as complete blood counts and electrolyte monitoring. The Society for Hospital Medicine recommends eliminating this process in stable patients without new symptoms. This project focused on assessing patient understanding and preferences regarding daily labs. It also desired to obtain baseline daily laboratory data and devise a model to reduce unnecessary phlebotomy to improve patient satisfaction and reduce unnecessary testing.

METHODS: This initiative had two parts. Part one identified patient understanding and preference regarding daily labs via a four question survey. Part two quantified the baseline lab ordering habits before and after educational intervention which included presentations to housestaff and attendings. The rates of lab draws were compared using a t-test.

RESULTS: Part one identified patient preferences and attitudes regarding daily inpatient lab draws. 79 inpatients completed a four question survey focusing on expected and desired frequency of daily lab draws. 21% of

respondants felt doctors ordered too many labs and only 45% of respondants expected daily labs. Part two measured the number of daily lab draws on an inpatient housestaff medicine service. A total of 2839 patient-days were analyzed on 7 medicine teams over the course of two months. At baseline, 75.7% of patients had CBCs, 78.9% had BMPs, and between 23 and 46% had Ca, Mg, and PO4. After intervention, 76.3% of patients had CBCs, 76.9% had BMPs, and between 23 and 49% had Ca, Mg, and PO4. There was no statistically significant difference between these groups.

CONCLUSIONS: This inpatient quality improvement initiative aimed to understand patient perspectives on daily labs and measure change associated with educational intervention on daily lab rates. Part one provided meaningful data regarding patient preferences and showed that patients do not necessarily expect “daily labs” as part of the hospital experience and do not equate it with optimal care. While other institutions have implemented similar projects with reductions in daily lab rates, we saw no significant difference after intervention due to many factors. On the individual level, junior housestaff are often responsible for order entry and may be uncomfortable without labs due to diagnostic uncertainty. Other factors include expectations from senior team members. Ineffective signout to covering team members may also create issue, as a patient without labs ordered may be perceived as an error. Interventions at other institutions have showed that a multi-disciplinary approach is needed to reduce daily labs. These include provider and nursing education as well as cultural shifts. Interventions to limit the number of days ordered on CPOE may be helpful, though it is met with pushback from generalists and specialists alike. At this institution, the project continues with additional interventions being implemented.

EARLY IMPACTS OF THE ACA ON OUT-OF-POCKET AND INSURANCE PREMIUM SPENDING Anna Goldman[2]; Stephanie Woolhandler[1]; David Himmelstein[1]; David Bor[2]; Danny McCormick[2]. [1]CUNY School of Public Health, New York, NY; [2]Harvard Medical School/ Cambridge Health Alliance, Cambridge, MA. (Control ID #2700865)

BACKGROUND: The Patient Protection and Affordable Care Act (ACA) has reduced the number of Americans who report being unable to afford care, but critics have cited exchange plans’ high premiums and deductibles. We examined changes in out-of-pocket (OOP) and household premium spending following implementation of the ACA’s coverage expansions on January 1, 2014.

METHODS: We analyzed data from the Medical Expenditure Panel Survey (MEPS) on non-elderly adults’ (age 18–64) OOP spending and premium contributions (for families that paid any private insurance premiums) prior to (2008–2013) and after the implementation of the ACA (2014), the most recent year of available data. We examined spending by persons in four groups based on family income: Poor (0–138% of the federal poverty level (FPL) - the eligibility threshold for Medicaid in most states); Lower income (139–250% of FPL - eligible for subsidized premiums and reduced cost-sharing on ACA exchanges); Middle income (251–400% of the FPL - eligible only for premium subsidies); and Higher income (>400% of FPL). We used linear regression models to estimate pre- to post-ACA changes in mean annual OOP spending and premium contributions, controlling for secular trends in the pre-ACA period. We used logistic regression to determine whether implementation of the ACA was associated with a reduction in the odds of health spending exceeding commonly used thresholds of affordability: Household OOP spending exceeding 10% of income (5% was also examined for the poor and near-poor); and family premium spending exceeding 9.5% of family income (the threshold defined by the ACA). Analyses employed weights to generate national estimates, and spending figures were adjusted to 2014 dollars using the consumer price index.

RESULTS: The 2008–2014 MEPS included 137,833 non-elderly adults. ACA implementation was associated with a significant $97.68 (SE, 38.75, $p = 0.01$) decrease in OOP spending for the lower income group, but not for others. We found no post-ACA change in the odds of household OOP spending exceeding >10% of family income for any income group; however, using the 5% threshold, the odds declined for lower income families (OR 0.81 [95% CI, 0.66–0.98]; $p = 0.03$). Mean premium contributions did not change post-ACA for any income group, although the odds of premium costs exceeding 9.5% of family income fell for the poor (OR 0.72 [95% CI 0.52–0.98]; $p = 0.04$). The rate of high-burden premium spending (>9.5% of family income) was 12 times higher in the poor income group compared to the wealthiest in the pre-ACA period (64.8% vs. 5.3%) and 11 times higher in the post-ACA period (58.7% vs. 5.2%).

CONCLUSIONS: In the first year after the law was implemented, the health spending burden on most families was unaffected by the ACA, and remained quite high. This has likely contributed to mixed political support for the law. Reforms that minimize OOP and premium spending among non-wealthy households might enjoy a more positive reception from the American public.

ECHOES OF BURNOUT IN INTERNAL MEDICINE RESIDENT NARRATIVE ESSAYS Emily Gordon. Rutgers New Jersey Medical School, Newark, NJ. (Control ID #2705234)

BACKGROUND: Burnout is a prevalent problem faced by general internists. It starts in medical school, continues through residency, and is a commonly cited cause for drop out among attending physicians. Narrative medicine is a practice that addresses the need to share experiences and challenges by way of telling stories. Introducing residents to narrative medicine could be a framework to identify and mitigate burnout, as well as cultivate resilience among trainees.

METHODS: From 2014–2015, all New Jersey Medical School Internal Medicine residents participated in a narrative medicine workshop. The workshop began with a sample reading of a narrative medicine piece by the course leader. The residents were then asked to submit a brief narrative essay on a memorable patient experience. Informed consent was requested from all participants to analyze their de-identified writing samples for common themes. Each sample was examined by the principal investigator for signs of burnout, as defined by the American Academy of Family Physicians Position Paper on Physician Burnout. We then calculated the frequency that such sentiments were expressed within and across writing samples.

RESULTS: Forty-three residents were asked to participate, and 39 consented to inclusion of their essays in this analysis. Of those, 13 (33%) contained statements concerning for burnout. Some examples were: “I realize from watching patients die that I have not enjoyed my life enough.” “I wake up crying. I’m exhausted and angry. A friend implores me to take the day off but I’m fearful of how I will be perceived at work.” “…hardened, impersonal, emotionless, well-oiled machines. This is the way a good doctor is supposed to be.”

CONCLUSIONS: Narrative medicine can be a powerful tool for identifying signs of burnout among Internal Medicine residents. In addition, sharing of

patient stories in groups can help trainees to reflect the commonality of challenging patient experiences, which might mitigate feelings of burnout. As one resident stated in her essay: “These reflections remind us of how often we do form strong, meaningful connections with our patients.”

EFFECT OF A SOCIAL INCENTIVE-BASED GAMIFICATION INTERVENTION USING WEARABLE DEVICES AND SMARTPHONES ON PHYSICAL ACTIVITY: THE BE FIT RANDOMIZED CLINICAL TRIAL

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BACKGROUND: Social networks have been demonstrated to influence individual health behaviors, but interventions that leverage social incentives within these networks to change health behaviors have not been well examined. The objective of this study was to test the effectiveness of a gamification intervention that used insights from behavioral economics to enhance social incentives to increase physical activity in the community.

METHODS: The Behavioral Economics Framingham Incentive Trial (BE FIT) was a randomized clinical trial that recruited 206 adults comprising 97 groups of two or three family members in the Framingham Heart Study and occurred between December 2015 and August 2016. Participants used a wearable device or smartphone application to establish a baseline step count and selected a step goal increase for a 12-week primary intervention period and a 12-week follow-up period. Participants in both the control and intervention arms received daily feedback on their performance for 24 weeks. During the first 12 weeks, participants in the intervention arm played a game (including points, levels, and lifelines) with their family members that was designed using insights from behavioral economics to enhance social incentives such as peer support, accountability, and collaboration. The primary outcome was mean proportion of participant-days the step goal was achieved during the primary intervention period. Secondary outcomes included mean proportion of participant-days the step goal was achieved during the follow-up period and mean daily steps during the intervention and follow-up periods.

RESULTS: During the 12-week intervention period, participants in the intervention arm achieved physical activity goals on a significantly greater proportion of participant-days (Mean, 0.53 vs. 0.32; adjusted difference, 0.27 [95% CI, 0.20–0.33]; $P < .001$) and had signficantly greater increase in daily steps compared to baseline (Mean, 1661 vs. 636; adjusted difference, 953 [95% CI, 505–1401]; $P < .001$). During the 12-week follow-up period, participants in the intervention arm achieved physical activity goals on a significantly greater proportion of participant-days (Mean: 0.44 vs. 0.33, adjusted difference: 0.12 [95% CI, 0.05–0.19]; $P < .001$) and had a significantly greater increase in daily steps compared to baseline (Mean, 1385 vs. 798; adjusted difference, 494 [95% CI, 170–818]; $P < .01$).

CONCLUSIONS: Among groups of family members in the community, a social incentive-based gamification intervention was effective at increasing physical activity during the 12-week intervention. After the intervention completed, differences were smaller but sustained through the 12-week follow-up period. To our knowledge, this is one of the first clinical trials to demonstrate how gamification and social incentives can be used to change health behaviors in the community.

EFFECT OF DIRECT-TO-CONSUMER ADVERTISING (DTCA) ON STATIN USE IN THE UNITED STATES

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BACKGROUND: The value of direct-to-consumer advertising (DTCA) of prescription drugs is widely debated, as is the effect of DTCA on prescription sales and health care utilization. We examined the association between DTCA intensity for statin medications and prescription sales and cholesterol-related health care utilization.

METHODS: We conducted an ecological study for 75 designated market areas (DMAs) from 2005 to 2009 in the United States using linked data regarding: (1) televised DTCA volume for rosuvastatin (Crestor™) and atorvastatin (Lipitor™) derived from Nielsen television ratings; (2) non-DTCA marketing and promotion derived from IMS Health Integrated Promotion Services; (3) retail, mail order and long-term care prescription drug sales derived from IMS Health Xponent; (4) prescription drug and ambulatory care health care utilization derived from Truven MarketScan; and (5) contextual factors such as health care density and socioeconomic status derived from the Area Resource File. We derived information for each month at each DMA and used multi-level negative binomial regression to account for nesting of individuals within DMAs.Main outcomes and measures were: (1) Volume of total, new and refilled prescription sales for the advertised statins; (2) number of statin prescriptions dispensed to commercially insured individuals; and (3) high cholesterol-related outpatient visits among the commercially insured.

RESULTS: The average intensity of rosuvastatin and atorvastatin ad exposures per household varied substantially across DMAs. After adjustment for socioeconomic, demographic and clinical characteristics, each 100-unit increase in advertisement viewership was associated with a 2.22% (95% confidence interval [CI] 0.30 to 4.19%) increase in rosuvastatin and atorvastatin sales. Similar patterns were observed between DTCA and statin dispensing among the commercially insured. DTCA was associated with increases in high cholesterol-related outpatient visits among adults 18–45 years of age (3.15% increase in visits per 100-unit increase in viewership, 95% CI: 0.98 to 5.37%) but not among those 46–65 years of age (0.51%, 95% CI: −1.49 to 2.55%).

CONCLUSIONS: DTCA for statins is associated with increases in statin utilization and hyperlipidemia-related outpatient visits, especially for young adults.

EFFECT OF HEALTH PLAN FINANCIAL INCENTIVE OFFERING ON EMPLOYEES WITH PREDIABETES

Anita D. Misra-Hebert; Bo Hu; Phuc H. Le; Michael B. Rothberg. Cleveland Clinic, Cleveland, OH. (Control ID #2705493)

BACKGROUND: Prediabetes, defined as a glycosylated hemoglobin(HbA1c) level between 5.7–6.4% or a fasting glucose level between 100–125 mg/dl, may be improved or reversed with lifestyle interventions including diet, exercise, and weight loss or may progress to diabetes.

Worksite wellness programs that offer financial incentives for participation in wellness activities or disease management may be effective in improving the health of employees with prediabetes at a population level. We studied the effect of offered employee health plan financial incentives on outcomes for employees with prediabetes.

METHODS: We conducted a retrospective cohort study using electronic medical record data. Exposures included fixed health plan financial incentives offered starting in 2009 through 2010, and then a premium discount starting in 2011 tied to program participation and achievement of goals. A total of 1115 employees identified with prediabetes from 2008–12 were matched per year, based upon when prediabetes was diagnosed, to 5705 non-employee patients with commercial insurance using propensity matching with baseline HbA1c, age, race(African American, White, Other), gender, and body mass index (<=25, 25.1–29.9, 30–35, and >35) included as covariates. We created longitudinal linear mixed models using the data for all employees and non-employees from the time that prediabetes was diagnosed to assess yearly changes in HbA1c, weight, and low density lipoprotein cholesterol (LDL).

RESULTS: Pooled analyses from 2010–12 beginning with the second year of the incentive program showed that the yearly change in HbA1c was greater for employees than for matched non-employees (−0.10% vs. −0.07%, respectively; p for difference in change = 0.002)). Pooled analyses for weight change and LDL cholesterol from 2010–12 showed that employees lost more weight than matched non-employees (−2.35 lbs vs. −0.02 lbs, respectively; p for difference in change = <0.001) and decreased LDL more than matched non-employees (−3.76 vs. −1.25, respectively; p for difference in change = 0.04).

CONCLUSIONS: A worksite wellness program offering employee health plan financial incentives for participation in wellness activities or disease management was associated with small improvements in HbA1c, weight, and LDL in employees with prediabetes at a population level. Longitudinal benefits may be greater than we observed over 3 years.

EFFECT OF NORMS ON LABORATORY AND IMAGING TESTING (ENLITEN): RANDOMIZED CONTROLLED TRIAL Kira L. Ryskina[1, 1]; Constance J. Dine[1, 1]; Yevgeniy Gitelman[1]; Damien Leri[1]; Mitesh Patel[2, 1]; Gregory Kurtzman[1]; Lisa Y. Lin[1]; Andrew Epstein[1, 1]. [1]University of Pennsylvania, Philadelphia, PA; [2]University of Pennsylvania, New York, NY. (Control ID #2697527)

BACKGROUND: Normative feedback is an increasingly popular strategy to modify physician behavior that uses performance report cards. Little is known about the effect of normative feedback on the practice of cost-effective care by physicians-in-training (residents). Our objective was to test the effect of such feedback on the ordering of laboratory tests by internal medicine residents.

METHODS: This was a single-blinded randomized controlled trial (clinicaltrials.gov #NCT02330289). Between January and June 2016, 198 resident-blocks on six general medicine teams at the Hospital of the University of Pennsylvania were cluster randomized with equal allocation to two arms: (1) those emailed a summary of their routine lab ordering (e.g. complete blood count, metabolic panel, liver function, and common coagulation tests) vs. the service average, link to a continuously updated personalized dashboard containing patient-level details, and snapshot of the dashboard; and (2) those who did not receive the intervention. The email, timed to arrive in the middle of each resident's 2-week service to allow for baseline and follow-up periods, was followed by a reminder email. Our primary outcome was the count of routine lab orders placed by a resident per patient-day. Secondary outcomes included counts of imaging tests and non-routine lab orders. Outcomes were analyzed using an intent-to-treat approach. Weekend days were excluded. We modeled the count of orders per doctor-patient-day during the 2nd week of each resident's service-block (post-intervention) as a function of trial arm and the resident's order count in the 1st week (pre-intervention). The outcome was modeled using negative binomial models with adjustment for clustering within teams.

RESULTS: 114 unique residents participated (63 PGY1s and 51 higher-level residents), representing 833 resident-days. The mean count of labs per doctor-patient-day in the baseline period was 1.30 (SD 1.77) for the intervention group and 1.41 (SD 2.12) for controls ($p = 0.27$). We did not observe a statistically significant difference in routine lab ordering between residents who received normative feedback vs. those who did not; except for day 3 after the intervention, when orders were lower in the intervention arm by 0.44 labs per doctor-patient-day compared to controls (95% CI: 0.02, 0.85, $p = 0.04$). After stratifying the intervention cohort into residents who opened the summary email (74%) and those who did not (26%), we found that the change in ordering was concentrated among those residents who assessed the email. We did not observe a spillover effect to non-targeted orders.

CONCLUSIONS: A personalized dashboard reporting lab orders did not change targeted behavior among internal medicine residents, although there was a small decrease in orders among residents who accessed the information. Efforts to increase the physicians' uptake of normative feedback during training may improve the effectiveness of normative feedback interventions to optimize physician behaviors.

EFFECTIVENESS OF A PEER NAVIGATION INTERVENTION TO MAINTAIN VIRAL SUPPRESSION AMONG HIV+ MEN AND TRANSGENDER WOMEN RELEASED FROM A LARGE MUNICIPAL JAIL: RESULTS OF A RANDOMIZED CONTROLLED TRIAL William E. Cunningham[1, 1]; Terry Nakazono[1]; Mark Malek[1, 2]; Steve Shoptaw[1, 1]; Robert Weiss[1]; Susan Ettner[1, 1]; Nina Harawa[1, 1]. [1]University of California, Los Angeles, Los Angeles, CA; [2]Los Angeles County Sheriff's Department, Los Angeles, CA. (Control ID #2702734)

BACKGROUND: There are 1.2 million people living with HIV (PLH) in the US with 56,000 new infections annually. HIV diagnosis, linkage to and retention in care, and adherence to antiretroviral therapy (ART) are steps in the HIV care continuum (HCC) that enable consistent viral suppression (VS), extend longevity and prevent further transmission. Criminal justice-involved populations (CJI) are important to engage in the HCC as about one in seven PLH pass through correctional facilities each year. While incarcerated, PLH receive ART and achieve VS more consistently than after release, yet no published interventions have shown sustained VS post-release. To address this gap, we conducted a randomized controlled trial of a peer navigation (PN) intervention.

METHODS: From December 2012 through June 2016 we enrolled and followed PLH being released from Los Angeles County (LAC) jail. Eligible participants were: 1. Age 18+ years; 2. Men or transgender women with documented HIV diagnoses; 3. English- or bilingual Spanish-speaking; and 4. LAC residents. At baseline, we interviewed, measured viral load (VL), and randomized PLH 1:1 to the 12-session PN intervention or usual care (UC) control. We trained lay peer navigators (PNs) to act as role models who could

"walk PLH through" HCC steps. PNs assessed barriers, unmet basic needs and facilitators, and counseled on goal setting and problem solving during the first session held in jail. Post release, PNs continued counseling while they accompanied PLH to two HIV care visits, then facilitated communication with providers during the visits. The primary outcome was VS at 12 months. We used repeated measures logistic random intercept analysis to model VS outcomes over time.

RESULTS: Intervention ($n = 180$) and control ($n = 176$) arms were comparable; the sample was mostly black (42%) and Latino (31%), of low socioeconomic status, and uninsured (56%). Half (51%) had detectable VL at baseline. Study retention was high: 89% at 3 months, 80% at 6 months, and 70% at 12 months and did not differ by arm. Main findings are shown in Table 1: the adjusted probability of VS was 19% greater in the PN arm than the control arm ($p < 0.01$) at 12 months.

CONCLUSIONS: Although VS did not increase significantly from baseline to follow-up, the PN intervention was successful at preventing the declines in VS typically seen after release from incarceration. The intervention maintained VS over 12 months compared to the declines observed in the controls. While our PN intervention is likely to help PLH maintain VS after release from other large municipal jails, future research should examine ways to strengthen the intervention so that VS levels are increased above baseline levels.

Table 1. LINK LA: Adjusted probabilities (95%CI) of undetectable HIV viral load (VL)

Study Arm	Baseline	3 Months	12 Months
PN Intervention ($n = 180$)	0.49 (0.39, 0.59)	0.53 (0.42, 0.63)	0.49 (0.37, 0.61)
UC Controls ($n = 176$)	0.52 (0.42, 0.62)	0.37 (0.27, 0.47)*	0.30 (0.21, 0.42)**

*$p <= .05$; **$p <= 0.01$

EFFECTIVENESS OF INTERVENTIONS TO IMPROVE THE TRANSITION FROM PEDIATRIC TO ADULT-ORIENTED CARE: A SYSTEMATIC REVIEW OF SYSTEMATIC REVIEWS

Laura Hart; Sonya Patel-Nguyen; Daniel Jonas. University of North Carolina Chapel Hill, Chapel Hill, NC. (Control ID #2705475)

BACKGROUND: Because studies have shown worsening of outcomes during the transition from pediatric to adult-oriented care, increasing emphasis has been placed on improving this transition for adolescents and young adults with chronic illness. Steps in the transition process for internists include ensuring a smooth transfer to adult-care and maintaining access to care for young adults after transfer. Multiple interventions to improve transition have been studied, and systematic reviews evaluating those interventions have been conducted, though these often focused on a particular disease or a particular set of outcomes. Summarizing the available systematic reviews will serve as one means to understand the transition intervention literature more broadly. Thus, we sought to assess the effectiveness of interventions designed to improve the transition from pediatric to adult-oriented care by performing a systematic review to identify and describe published systematic reviews on the topic.

METHODS: We searched PubMed, Cochrane, PsycInfo, and CINAHL to identify relevant systematic reviews. Two authors reviewed all unique abstracts resulting from our searches, and using pre-specified inclusion and exclusion criteria, determined which articles did not meet study criteria. The remaining abstracts underwent full text review by two authors, resulting in the final set of articles for inclusion in the review. We summarized the included articles qualitatively and evaluated their quality using AMSTAR (A MeaSurement Tool to Assess systematic Reviews) criteria.

RESULTS: The searches resulted in 347 unique abstracts. Of those, 9 systematic reviews were found to meet all inclusion criteria. The included systematic reviews found 48 unique studies assessing interventions to improve transitional care. Only 2 of the 48 studies were RCTs. Most studies used a pre-post design or a historical control group for comparison. Studies used a variety of outcomes, including patient satisfaction with the process, clinic attendance, and disease-specific parameters, like HbA1C. None of the reviews found studies addressing transition in the primary care setting, and only 6 addressed interventions in adult-oriented settings, while the rest were set in pediatric clinics ($n = 12$) or combined pediatric and adult settings ($n = 30$). The included systematic reviews had scores of 4–8 using AMSTAR criteria, suggesting fair to good quality.

CONCLUSIONS: We found that very few RCTs have been conducted to address the effectiveness of interventions to improve transition from pediatric to adult-oriented care. Importantly, we found no studies to address transition in primary care settings and most studies in this area were conducted in pediatric or combined settings. RCTs or other comparative studies are needed to determine best practices for transition. More studies are needed assessing transition interventions in adult-oriented care settings. Studies addressing transition in primary care settings are also needed.

EFFECTIVENESS OF OPIOID THERAPY VERSUS NON-OPIOID MEDICATION THERAPY FOR CHRONIC BACK AND OSTEOARTHRITIS PAIN OVER 12 MONTHS: A PRAGMATIC RANDOMIZED TRIAL

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BACKGROUND: Chronic back pain and osteoarthritis (OA) pain are among the most prevalent and disabling conditions in primary care. Although these conditions are often treated with opioids, no randomized trials have evaluated effectiveness of long-term opioid therapy. The objective of the Strategies for Prescribing Analgesics Comparative Effectiveness (SPACE) trial was to compare benefits and harms of opioid therapy versus non-opioid medication therapy over 12 months.

METHODS: SPACE is a 12-month single-masked pragmatic randomized trial. Eligible patients were seen in VA primary care for moderate-severe chronic back pain or hip/knee OA pain despite analgesic use. Participants were randomized to 1 of 2 active treatment arms—opioid therapy or non-opioid medication therapy—using a computer to conceal allocation. Multiple FDA-approved drugs were included in each arm. Within each arm, medications were adjusted to target pain and functional goals. Masked assessors collected outcomes at 3, 6, 9, and 12 months. Primary and secondary pain outcomes were pain-related function (Brief Pain Inventory Interference; BPI-I) and pain intensity (BPI Severity; BPI-S), respectively. The primary harm outcome was an adverse symptom count. Individual pain response was 30% improvement from 0 to 12 months. Analysis was intent-to-treat. Primary comparisons of means used mixed models controlling for baseline values. Response rate comparisons used chi-squares.

RESULTS: Of 240 randomized participants, 97.5% ($n = 117$ in each arm) completed 12-month outcomes. Mean age was 57.8 years (range 21–80), 87.9% were male, 85.5% were white, and primary pain location was back in 65 and knee/hip in 35%. At baseline, mean BPI-I and BPI-S scores were 5.4 (SD 1.8) and 5.4 (1.5) in the opioid arm and 5.6 (2.0) and 5.4 (1.2) in the non-opioid arm. Over 12 months, pain-related function improved in both arms; mean 12-month BPI-I scores did not differ (3.4 opioids vs. 3.2 non-opioids; $p = 0.584$). The proportion with pain-related function response was 59.0% for opioids and 60.1% for non-opioids ($p = 0.789$). Pain intensity improved more in the non-opioid arm, with 0.47 points (95% CI: 0.909, 0.035) greater reduction in mean BPI-S score over 12 months; mean 12-month BPI-S was 4.0 opioids vs. 3.5 non-opioids ($p = 0.034$). The proportion with pain intensity response was 41.0% for opioids and 53.9% for non-opioids ($p = 0.049$). The adverse symptom count did not differ between arms at 12 months (mean 6.9 opioids vs. 6.7 non-opioids, $p = 0.682$).
CONCLUSIONS: In this pragmatic trial designed to be maximally applicable to primary care treatment decision-making, long-term pain outcome data showed no significant advantage of opioid therapy compared with non-opioid medication therapy. In the context of prior studies that have documented higher rates of serious harms among patients receiving opioid therapy, our findings support the recent CDC recommendation that non-opioid therapies are preferred over opioids for chronic pain.

EFFECTS OF DISCONTINUING LONG-TERM OPIOID THERAPY IN PATIENTS WITH CHRONIC PAIN Jawad M. Husain[1, 2]; Marc Larochelle[1, 2]; Julia Keosaian[1, 3]; Olivia Gamble[1, 3]; Ziming Xuan[1, 3]; Karen E. Lasser[1, 2]; Jane M. Liebschutz[1, 2]. [1]Boston Medical Center, Boston, MA; [2]Boston University School of Medicine, Boston, MA; [3]Boston University School of Public Health, Boston, MA. (Control ID #2700245)

BACKGROUND: Opioid prescribing guidelines for chronic pain recommend discontinuing opioid therapy if the risk-benefit ratio becomes unfavorable. However, reasons for discontinuing opioids and effects of discontinuation are largely unknown. Providers express concern for losing patients to follow-up, resulting in untreated pain or addiction and opioid-seeking from alternate sources.
METHODS: The Transforming Opioid Prescribing in Primary Care (TOPCARE) study is a cluster-randomized controlled trial to improve opioid prescribing among patients on chronic opioid therapy for non-cancer pain. We analyzed data from an urban safety-net hospital primary care practice participating in the trial. Primary care providers (PCPs) randomized to the intervention were supported by a nurse care manger, electronic registry, academic detailing, and electronic tools; control PCPs received electronic tools only. We conducted a retrospective chart review of patients in both study arms whose PCPs discontinued opioids by the final 60 days of the 12 month intervention period, as noted in the electronic health record (EHR). Key outcomes from the EHR audit include: reason for discontinuation; ≥1 PCP visit and ≥1 pain-related emergency department (ED) visit within 6 months after discontinuation. We dichotomized discontinuation reasons as misuse/aberrant monitoring or other, which included pain resolved, inadequate analgesia, and adverse effects. We used chi-square tests to compare the frequency and reason for discontinuation between intervention and control patients. We used unadjusted logistic regression to determine if study arm or reason for discontinuation was associated with PCP follow-up or pain-related ED visits.
RESULTS: Intervention patients discontinued opioids more frequently (60/331 [18%]) compared with control patients (28/233 [12%]; $p = 0.049$). Misuse/aberrant monitoring was the most common reason for discontinuation, and was more frequent among intervention (41/60 [68%]) vs. control patients (13/28 [46%]; $p = 0.049$). Similar proportions of patients discontinued due to other reasons in both trial arms. In the 6 months following opioid discontinuation, 70% of the patients returned for ≥1 PCP visit and 17% had a pain-related ED visit. Intervention patients were less likely to have PCP follow-up after discontinuation (odds ratio [OR] 0.3; 95% CI 0.1–0.9), and more likely to have pain-related ED visits (OR 8.2; 95% CI 1.0–66.0) than control patients. Discontinuation due to misuse/aberrant monitoring was not associated with PCP follow-up (OR 0.8; 95% CI 0.3–2.0) or pain-related ED visits (OR 1.9; 95% CI 0.6–6.6).
CONCLUSIONS: The TOPCARE intervention led to higher rates of opioid discontinuation attributable to misuse or aberrant monitoring. However, intervention patients discontinued from opioids were less likely to return for follow-up and more likely to seek care in the ED for pain. Future research should evaluate strategies to manage pain and keep patients engaged in care after opioid discontinuation.

EFFECTS OF HEALTH LITERACY, PATIENT ACTIVATION, AND COGNITION ON HEALTH OUTCOMES OF OLDER ADULTS Marina Arvanitis; Rachel O'Conor; Julia Yoshino Benavente; Laura M. Curtis; Michael S. Wolf. Northwestern University, Chicago, IL. (Control ID #2707612)

BACKGROUND: Limited health literacy (HL) has been repeatedly linked to poor health outcomes, yet interventions to address HL-associated disparities have been variable or ineffective. To address this, some have proposed expanding HL to include factors such as patient activation. We aimed to assess the degree to which patient activation and cognition may explain associations between HL and common intermediate health outcomes in older adults.
METHODS: We analyzed baseline data from Health Literacy and Cognition in Older Adults (LitCog): a prospective study of 900 adults, ages 55–74 from participating health centers in Chicago. During structured interviews, participants completed assessments of HL (Test of Functional HL in Adults (TOFHLA), Newest Vital Sign (NVS), Rapid Estimate of Adult Literacy (REALM)), patient activation (Patient Activation Measure (PAM)), and cognition (fluid cognitive abilities). We assessed participants' diabetes (DM) control by Hemoglobin A1c (HbA1c), blood pressure (BP) control by average systolic and diastolic pressures, and renal function by estimated glomerular filtration rate (eGFR) measurements from the medical record. We used bivariate statistics to describe participant characteristics, HL, activation, and cognition, and assess the relationships between these factors and health outcomes. We used a series of logistic regression models to examine the effects of patient activation and cognition, both individually and together, on the relationship between HL and each health outcome.
RESULTS: Nine hundred participants completed baseline interviews; their mean age was 63, 63% were female, and 71% were high school or college graduates. HL was limited in 32% by TOFHLA, 54% by NVS, and 28% by REALM. Most (84%) were highly activated per PAM, which did not vary by HL. Of participants with DM ($n = 166$), 35% had poor DM control (HbA1c >7%). Of all participants with available data, 6% had poor BP control (>140/>90), and 27% had renal dysfunction (eGFR <60). Limited HL by NVS and TOFHLA was significantly

associated with all poor health outcomes. Using the TOFHLA, we found that the associations between limited HL, poor DM control, poor BP control, and renal dysfunction were largely explained by cognition, which attenuated the odds of poor DM control by 54% (OR 2.8 (95% CI 1.4,5.5) to 1.3 (0.3,3.3)), poor BP control by 24%, and poor renal function by 19%. The inclusion of patient activation did not affect the associations between HL and health outcomes, nor the attenuation of these associations by cognition. We completed the same analyses for HL by NVS and REALM, with similar findings.
CONCLUSIONS: Despite its growing links to health outcomes, patient activation does not appear to influence the associations between limited HL and poor health outcomes in older adults, which are largely explained by cognition. Interventions aimed at reducing HL-associated disparities in the elderly should focus on reducing the cognitive burdens placed on patients by the health care system.

EFFECTS OF THE AFFORDABLE CARE ACT'S MEDICAID EXPANSION ON ACCESS TO CARE BY RACE AND ETHNICITY

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BACKGROUND: Racial disparities in access to care have been well documented. The Affordable Care Act has the potential to mitigate these disparities with Medicaid expansion having the greatest prospect due to disproportionately high levels of poverty in minority populations. The expansion has been shown to increase access, but few have focused on disparities and none have focused on comparisons between changes by state expansion status. Our analysis tests the hypotheses that (1) access has improved for all groups regardless of race, ethnicity or expansion status and that (2) greater improvements occurred among minorities and in expansion states.
METHODS: We pooled cross-sectional data from the 2011–2015 Behavioral Risk Factor Surveillance System. Our sample includes adults ages 18–64 identifying as either white, black, or Hispanic of any race, further stratifying the Hispanic population by questionnaire language to capture heterogeneity. The expansion group ($n = 668{,}064$) included 24 states and the District of Columbia and the non-expansion group ($n = 615{,}863$) included 21 states; states expanding in 2014 or 2015 were excluded. Respondents interviewed in 2011–2013 and 2014–2015 were coded as pre- and post-implementation, respectively. Outcome variables were change in proportion of respondents having health insurance, a personal physician, not delaying care in the past year, and high-need respondents (reporting fair/poor health or a chronic condition) having a routine check-up in the past year. Difference-in-difference analyses were unadjusted to measure changes in observed disparities.
RESULTS: Access to care increased significantly for nearly all subgroups, regardless of race or expansion status, but were generally larger in minority groups. Expansion was associated with significantly greater increases in proportion of respondents insured in the white (+1.1%, $p < 0.001$), black (+0.9%, $p < 0.001$), and English-preferring Hispanic (+2.5%, $p < 0.001$) populations. Conversely, the change for insured Spanish-preferring Hispanics was significantly lower in expansion states (−2.1%, $p = 0.047$). Expansion was also associated with significantly greater increases in having a personal physician in the white (+0.7%, $p = 0.049$), black (+2.5%, $p = 0.005$), and English-preferring Hispanic populations (+3.3%, $p = 0.009$). Increases in respondents without cost-related care delays were only higher in expansion states for white respondents (+0.5%, $p < 0.001$). Increases in high need respondents with a check-up were also higher in expansion states but only significantly so for white respondents (+1.8%, $p < 0.001$). All other differences between states by status were not significant.
CONCLUSIONS: As a whole, the Affordable Care Act has improved access to care among all racial and ethnic groups with greater improvements in minority populations. Improvements in access associated with expansion were larger for some populations suggesting that expanding Medicaid can be an important step for improving access overall and moving towards equity.

EFFICACY AND SAFETY OF CANAGLIFLOZIN IN PATIENTS WITH TYPE 2 DIABETES BASED ON HISTORY OF CARDIOVASCULAR DISEASE OR CARDIOVASCULAR RISK FACTORS

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BACKGROUND: Treatment of patients with type 2 diabetes mellitus (T2DM) and a history of cardiovascular (CV) disease or CV risk factors may present clinical challenges due to the presence of comorbid conditions and use of concomitant medications. Canagliflozin (CANA), a sodium glucose co-transporter 2 (SGLT2) inhibitor, has been shown to improve glycemic control, body weight, and blood pressure (BP) with a favorable tolerability profile in a broad range of patients with T2DM. This post hoc analysis assessed the efficacy and safety of CANA in patients with T2DM based on CV disease history/risk factors.
METHODS: These analyses were based on pooled data from four 26-week, placebo (PBO)-controlled, Phase 3 studies of CANA 100 and 300 mg in patients with T2DM ($N = 2313$; mean A1C, 8.0%; body weight, 89 kg; systolic BP [SBP], 128 mmHg). Changes from baseline in A1C, body weight, and SBP at Week 26 were assessed in subgroups of patients based on history of CV disease (Y/N), history of hypertension (Y/N), baseline statin use (Y/N), and number of CV risk factors (0/1 vs ≥2). Safety was based on adverse event (AE) reports.
RESULTS: CANA 100 and 300 mg lowered A1C, body weight, and SBP versus PBO in patients across subgroups. At Week 26, A1C reductions with CANA 100 and 300 mg relative to PBO were generally similar in patients with history of CV disease (−0.95 and −1.07%) versus no CV disease (−0.71 and −0.90%), history of hypertension (−0.72 and −0.89%) versus no hypertension (−0.73 and −0.95%), baseline statin use (−0.77 and −0.99%) versus no statin use (−0.69 and −0.85%), and ≥2 CV risk factors (−0.74 and −1.02%) versus 0/1 CV risk factor (−0.72 and −0.87%). Similar body weight and SBP reductions were also seen with CANA versus PBO across subgroups. Incidence of AEs, AEs leading to discontinuation, and serious AEs was similar across subgroups.
CONCLUSIONS: CANA was efficacious and generally well tolerated in patients with T2DM regardless of CV disease history/risk factors.

EFFICACY OF MULTI-LINGUAL MOBILE APPLICATIONS TO PROMOTE PATIENT-PROVIDER COMMUNICATION AMONG ASIAN AMERICANS

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BACKGROUND: Asian Americans (AA) are the fastest growing racial group in the U.S. and are high users of technology; few studies have evaluated the impact of mobile technology on health outcomes.

METHODS: Using patient-centered methods, we developed 2 mobile applications (app) for the iPad in English, Cantonese, Mandarin, and Vietnamese. One app addressed hepatitis B and C (HEP), the other addressed healthy Nutrition, Physical Activity and weight (NPA). Primary care providers (PCP) and their patients were randomized to either HEP or NPA. Eligible patients were AA age 18 and older who spoke one of the 4 languages, had not had HEP B screening as per USPSTF recommendations, and who received primary care at UCSF or ZSFG. Patients used the app prior to a PCP visit. The app included questions leading to audio-visual messages delivered by doctors to address the patient's response. A printout summarizing the patient's concerns and recommendations was generated for the provider. Data were collected via survey prior to the use of the app and immediately after the visit. General linear models adjusted for provider clusters were used to compare the 2 arms on participants' perceived helpfulness of the intervention, self-report of patient-provider discussions of health topics during the visit, and provider's recommendations of HEP screening tests.

RESULTS: The sample included 362 AA (41% ZSFG and 59% UCSF) with a mean age of 58.4 years (range: 18–93), 63% females, 59% married, 33% with high school or less education, and 39% currently employed. The majority (81%) were born outside of the U.S. including 33% from China, 24% from the Philippines and 7% from Vietnam; 39% were limited English proficient. A majority (76%) had heard of HEP B; 53% had heard of HEP C. 220 participants (of 60 PCPs) were assigned to HEP and 142 (of 48 PCPs), to NPA. A majority (85%) completed the entire video and 55% reported giving the printout to their provider at the visit. Participants in both groups liked the app they used (81%), perceived it as "somewhat" or "very" helpful (80.5%), and thought it helped them to talk with their PCP about their health (85.5%). Compared to NPA, higher proportions of participants in the HEP group reported having had a discussion with their PCP about HEP B (73% vs. 21%, $p < 0.001$) or HEP C (66% vs. 17%, $p < 0.001$). Compared to HEP, NPA participants were more likely to report a PCP discussion on nutrition (56% vs. 34%, $p < 0.001$), physical activity (60% vs. 42%, $p < 0.01$), and weight (56% vs. 31%, $p < 0.002$). HEP participants were more likely than the NPA participants to report that their provider recommended testing for HEP B (57% vs 17%, $p < 0.001$) or HEP C (42% vs. 13%, $p < 0.001$).

CONCLUSIONS: Patient-centered multi-lingual mobile applications for health promotion were well received by AA in two healthcare settings and led to more patient-provider discussion. Further research is needed to assess the impact of the mobile applications on behavior and health outcomes.

EFFICACY VERSUS EFFECTIVENESS OF DIABETIC MEDICATIONS Anish Vani; Keith Goldfeld; Michael Cantor. NYU School of Medicine, New York, NY. (Control ID #2672008)

BACKGROUND: Diabetic medications are approved by the Food and Drug Administration (FDA) based on efficacy in controlled clinical settings. Real world effectiveness may often vary from the results of clinical trials. We attempted to quantify the "efficacy versus effectiveness" gap at our institution.

METHODS: We performed a retrospective analysis of all patients prescribed oral diabetic medications at New York University Langone Medical Center, a large urban tertiary care center, using data extracted from our electronic health record from October 2009 to September 2014. We limited the dataset to include newly diagnosed diabetic patients who were started on monotherapy or a combination pill. We excluded patients who were prescribed insulin or multiple diabetic agents. We used two-tailed Welch's t-tests to compare the initial Hemoglobin A1c (HbA1c), final HbA1c, and total HbA1c reduction to clinical trial data used for FDA approval, with statistical significance defined as $p < 0.05$.

RESULTS: Among the 566 of the 2452 patients who met our inclusion criteria, the mean age was 62.9 +/− 12.2 years, the majority of whom were male (51.1%), white (61.1%), non-Hispanic (80.4%), and prescribed metformin monotherapy (70.3%). The mean treatment time for each drug class ranged from 32–39 weeks. The mean initial HbA1c for all groups was 8.95%, the mean final HbA1c was 7.44%, and the mean HbA1c reduction was 0.51%. For almost all drug classes, the initial HbA1c was lower than the initial HbA1c from efficacy trials. For most drug classes, effectiveness was about half of the expected value from efficacy trials. Most patients achieved their goal HbA1c levels [Table].

CONCLUSIONS: In our study population, real world effectiveness did not reflect measures of efficacy from controlled clinical settings. The results highlight the need for clinicians to realize that a medication may not perform as well as it does in a controlled setting and they may need to increase the intensity of treatment more quickly than expected. Also, replicating the results of clinical trials in an actual clinical setting is challenging, both from the perspective of data availability and clinical practice patterns.

Medication	Population	Initial HbA1c (%) 95% CI	p	Final HbA1c (%) 95% CI	p	Change HbA1c (%) 95% CI	p
Metformin	NYU (n=398)	7.9 (7.7-8.1)	0.01	7.4 (7.3-7.5)	0.01	0.5 (0.4-0.7)	<0.01
	FDA (n=141)	8.4 (8.2-8.6)		7.0 (6.8-7.2)		1.4 (1.1-1.7)	
Glimepiride	NYU (n=66)	8.2 (7.8-8.6)	<0.01	7.8 (7.4-8.1)	0.01	0.4 (0.0-0.8)	<0.01
	FDA (n=106)	9.3 (9.0-9.6)		7.1 (6.8-7.4)		2.2 (1.9-2.5)	
Glipizide	NYU (n=22)	8.2 (7.3-9.0)	0.02	7.7 (7.3-8.0)	0.16	0.5 (-0.2-1.3)	<0.01
	FDA (n=168)	9.2 (8.9-9.5)		7.4 (7.2-7.5)		1.8 (1.5-2.1)	
Pioglitazone	NYU (n=10)	7.7 (7.1-8.3)	<0.01	7.8 (7.2-8.4)	<0.01	-0.1 (-0.5-0.2)	0.05
	FDA (n=85)	10.2 (10.0-10.4)		9.9 (9.7-10.1)		0.3 (0.2-0.4)	
Sitagliptin	NYU (n=15)	8.7 (7.7-9.6)	0.20	7.8 (7.0-8.5)	0.40	0.9 (0.2-1.7)	0.44
	FDA (n=229)	8.0 (7.8-8.2)		7.4 (7.2-7.6)		0.6 (0.4-0.8)	
Metformin-Sitagliptin	NYU (n=22)	7.9 (7.3-8.5)	0.01	7.3 (6.9-7.7)	0.10	0.6 (0.0-1.2)	<0.01
	FDA (n=178)	8.8 (8.6-9.0)		6.9 (6.8-7.1)		1.9 (1.7-2.1)	
Metformin-Saxagliptin	NYU (n=33)	7.7 (7.3-8.0)	<0.01	7.1 (6.8-7.4)	0.22	0.6 (0.2-1.0)	<0.01
	FDA (n=306)	9.4 (9.3-9.5)		6.9 (6.8-7.0)		2.5 (2.4-2.6)	

NYU versus FDA Clinical Trial HbA1c Levels

EHR-BASED MEDICATION SUPPORT AND NURSE-LED MEDICATION THERAPY MANAGEMENT: THE NORTHWESTERN AND ACCESS COMMUNITY HEALTH NETWORK MEDICATION EDUCATION STUDY (NAMES) RANDOMIZED CONTROLLED TRIAL Stephen Persell[2]; Danielle Lazar[3]; Elisha Friesema[4]; Kunal N. Karmali[2]; Ji Young Lee[1, 2]; Alfred Rademaker[1]; Michael S. Wolf[1, 2]. [1]Northwestern University, Chicago, IL; [2]Northwestern University, Evanston, IL; [3]Access Community Health Network, Chicago, IL; [4]University of Minnesota, Minneapolis, MN. (Control ID #2701908)

BACKGROUND: Nurse-led medication management in primary care may improve medication use. Electronic health record (EHR) tools may offer low-cost approaches to support medication management.

METHODS: We performed a three-arm 12-clinic-level cluster-randomized trail in a Chicago area network of federally qualified community health centers that compared: usual care, EHR-based medication management tools alone (printed medication lists to prompt review at each visit and automated plain-language information after the visit), and EHR tools plus nurse-led medication management support (one-on-one counseling about medication regimens to clarify discrepancies and identify medication-taking concerns plus follow-up telephone calls after new prescriptions to perform medication review). We recruited patients from randomized clinics who were ≥18 years of age with ≥3 prescribed medications and suboptimal blood pressure (≥130/80 mm Hg if diabetes or ≥135/85 mm Hg diastolic if not). Outcomes at 1 year included systolic blood pressure (primary outcome, using a standard protocol), blood pressure control (<140/90 mm Hg), basic understanding of medication indications, reconciliation between patient-report and the medical record, and self-reported 4-day adherence. Analyses of study arm effects used generalized linear models accounting for subjects' baseline outcome values (which sometimes differed by study arm) and clinic-level random effects.

RESULTS: 920 participants enrolled; 796 completed 1-year follow up. Of subjects completing follow up, mean age was 53 years, 69% were women, 87% were African American, 67% had high school education or less and 47% had limited health literacy. Subjects used a mean of 5.4 medications and 25% used 7 or more. At 1 year, systolic blood pressure was higher with EHR-tools only (+3.3 mm Hg [95% CI 0.2 to 6.5]) vs usual care and lowest in the EHR + nurse arm (−5.5 mm Hg [−3.1 to −7.8]) vs EHR-only, (−2.1 mm Hg [−5.4 to +1.1]) vs usual care. Compared to usual care, blood pressure control at 1 year was better in the EHR + nurse arm (odds ratio [OR] 1.21 [1.01-1.45]) but worse in the EHR-only arm (0.68 [0.58-0.78]). Understanding of indications was not changed with either intervention compared to usual care. Medication reconciliation substantially improved with both interventions, OR (95% CI) compared to usual care for antihypertensives, chronic disease medications, and all medications with EHR-tools only: 1.7 (1.2-2.4), 2.3 (1.3-4.2), and 4.6 (1.7-13), respectively and for EHR tools + nurse: 1.9 (1.4-2.7), 2.1 (1.2-3.5), 4.9 (1.6-15), but did not significantly differ between active intervention groups. Medication adherence was worse than usual care in the EHR-tools only arm for all chronic disease medications, OR 0.83 (0.71-0.98).

CONCLUSIONS: Both interventions improved medication reconciliation. Only nurse-led medication management plus EHR tools improved hypertension control. EHR tools only may have had unintended effects on blood pressure control.

ELECTRONIC LEARNING IN GRADUATE MEDICAL EDUCATION: A NATIONAL SURVEY OF RESIDENCY PROGRAM DIRECTORS Christopher M. Wittich[2]; Anoop Agrawal[1]; David A. Cook[2]; Andrew J. Halvorsen[2]; Jayawant N. Mandrekar[4]; Saima Chaudhry[3]; Denise Dupras[2]; Amy Oxentenko[2]; Thomas J. Beckman[2]. [1]Baylor College of Medicine, Houston, TX; [2]Mayo Clinic College of Medicine, Rochester, MN; [3]Memorial Healthcare System, Hollywood, FL; [4]Mayo Clinic, Rochester, MN. (Control ID #2706097)

BACKGROUND: E-learning - the use of computers, mobile devices, and internet to learn - is a prevalent instructional approach. However, little is known about the role of e-learning in residency education. Our goal was to determine utilization of e-learning by United States (U.S.) internal medicine residency programs, program director (PD) perceptions of e-learning, and associations between residency program characteristics and e-learning utilization.

METHODS: This was a national survey performed in collaboration with the Association of Program Directors in Internal Medicine of 368 internal medicine residency programs (92.9% of the 396 U.S. programs) in 2016. Program directors were asked about utilization, resources for implementation, and perceptions of e-learning. To assess representativeness of the programs sampled, characteristics of survey responders were compared with survey non-responders for 5 publicly-available variables using the Fisher exact test or Welch t-test, as appropriate. Associations between PD characteristics and PD perceptions of e-learning scores were assessed using a multiple analysis of variance (ANOVA) model. Multiple logistic regression was used to generate odds ratios (ORs) and test associations between program characteristics and the regular use of synchronous and asynchronous e-learning. For the continuous predictors of ACGME-approved positions, ABIM 3-year rolling pass rate, percentage of positions filled by international medical graduates, number of hospital beds, and mean PD perception of e-learning score, the adequacy of bivariate models assuming linearity of the log odds was checked using Hosmer-Lemeshow goodness-of-fit tests.

RESULTS: A total of 214 (58.2%) PDs completed the e-learning survey and 85 (39.7%) reported that they utilize synchronous e-learning at least sometimes, somewhat often, or very often. More programs (153, 71.5%) reported that they utilize asynchronous e-learning at least sometimes, somewhat often, or very often. Most programs ($N = 168$, 79%) did not have a budget to integrate e-learning into their educational curricula. Mean (SD) scores for the PD perceptions of e-learning ranged from 3.01 (0.94) to 3.86 (0.72) on a 5-point scale; the overall mean (SD) score was 3.45 (0.54). There was a higher odds of synchronous e-learning in programs that had a budget for implementation (OR, 3.0 [95% CI, 1.04–8.7]; $p = 0.04$).

CONCLUSIONS: U.S. residency programs could be better resourced to integrate e-learning technologies. Asynchronous e-learning was used more than synchronous, which may be a result of busy resident schedules and duty hour restrictions. Programs use locally and externally-developed e-learning resources with roughly similar frequency. PD perceptions of e-learning, while above the scale median, are only modest. Future work should determine why PDs are hesitant to integrate e-learning despite evidence of its effectiveness.

ELECTRONIC MEDICAL RECORD DOCUMENTATION HAS POOR AGREEMENT WITH PATIENT SURVEYS FOR RECEIPT OF INPATIENT TOBACCO CESSATION CARE. Ethan Kuperman[2, 3]; Jennifer Chapin[4]; David A. Katz[1]. [1]University of Iowa, Iowa City, IA; [2]University of Iowa Carver College of Medicine, Iowa City, IA; [3]Iowa City VA Medical Center, Iowa City, IA; [4]Iowa VA Medical Center, Iowa City, IA. (Control ID #2702062)

BACKGROUND: Joint Commission (TJC) created a set of ORYX quality measures to assess inpatient tobacco treatment, as care provided during and after admission may increase long term cessation. The objective of this study was to quantify the agreement between documented tobacco treatment in the electronic medical record (EMR) and patient-reported receipt of ORYX-concordant care in Veterans Administration (VA) inpatients.

METHODS: We retrospectively reviewed the EMR of daily smokers admitted to a general medical inpatient unit at 2 VA medical centers and were previously enrolled in a guideline implementation trial. Patients hospitalized for <

72 hours, significant cognitive impairment, or with terminal illness were excluded. Three measures were evaluated using TJC audit criteria: 1) TOB-1: Screened for tobacco use within 24 hours of admission. 2) TOB-2: Offered intensive cessation counseling AND pharmacotherapy during admission. 3) TOB-3: Offered cessation counseling AND pharmacotherapy at discharge. We compared the EMR audit data with the corresponding patient responses from a survey administered within 72 hours of discharge during the trial. Chart reviewers were blinded to survey data. Agreement between EMR audits and patient surveys was calculated using Cohen's κ.

RESULTS: Results: The analysis sample included 138 patients (mean age = 59, 97% male). Overall 7-day point-prevalence abstinence at 6-month follow-up was 26%. Over 90% of patients met TOB-1 for both EMR audit and patient survey, but κ was <0.01. No patient met TOB-2 on EMR review and only 25% passed by patient survey. For TOB-3, 14.6% passed on EMR audit and 13.0% passed on patient survey (κ = 0.25).

CONCLUSIONS: Conclusions: Performance on TJC tobacco cessation measures from the EMR did not correlate with patient-reported tobacco treatment. Changes in documentation templates and increasing staff awareness may improve correlation between metric performance and care delivery.

ELEVATED HBA1C IN UNITED STATES VETERANS AND RISK OF INCIDENT DIABETES AND ALL-CAUSE MORTALITY

Jordan Davis[5]; Mengling Liu[5, 1]; Farrokh Alemi[3]; Scott Sherman[1, 4]; Sundar Natarajan[1, 4]; Ashley Jensen[2]; Sanja Avramovic[3]; Esther Levy[5]; Richard B. Hayes[5, 1]; Mark D. Schwartz[1, 4]. [1]NYU School of Medicine, New York, NY; [2]University of Calgary, Calgary, AB, Canada; [3]George Mason University, Fairfax, VA; [4]Department of Veterans Affairs New York Harbor, New York, NY; [5]New York University, New York, NY. (Control ID #2704151)

BACKGROUND: United States Veterans are at excess risk for Type 2 diabetes and early mortality. Our objective is to determine the impact of prediabetes and related risk factors on the occurrence of diabetes and mortality in this at-risk population.

METHODS: At the primary care practices of the VA New York Harbor (VA NYHHS) during 2004–2014, we identified 15,173 diabetes-free Veterans, among those who received 2 or more hemoglobin A1c tests (HbA1c). Among these participants, we identified 14,361 veterans with HbA1c values below the diabetic range (i.e., <6.5% HbA1c) and characterized these individuals with respect to selected risk factors. We followed these individuals through 2014 for incident diabetes and all-cause mortality. Cox proportional hazard regression was used to relate HbA1c levels, age, sex, race/ethnicity, anthropometric measures, and comorbid cardiovascular conditions (ischemic heart disease, cerebral vascular accident, congestive heart failure and peripheral vascular disease) to incident diabetes and all-cause mortality (Hazard Ratio [HR] and 95% confidence intervals).

RESULTS: Among 8,145 Veterans with prediabetes (HbA1c 5.7–6.4%), 1,170 (14.4%) developed diabetes and 1,139 (14%) died during the course of follow-up. Compared to 5,292 normoglycemic Veterans (HbA1c: 5.0–5.6%), 4,207 prediabetics in the moderate risk group (HbA1c 5.7–5.9%) had a greater than 2-fold increased risk of incident diabetes (HR 2.46 [2.08–2.92]), and those 3,938 in the prediabetic high risk group (HbA1c 6.0–6.4%) had a greater than 5-fold risk (HR 5.70 [4.88–6.65]). Furthermore, all-cause mortality was increased in 924 participants with low glycemia (HbA1c <5.0%: HR 1.40 [1.17–1.68]) and among those 812 in the diabetes risk range (HbA1c ≥6.5%: HR 1.44 [1.22–1.71]) compared with the normoglycemic group. Excess all-cause mortality was not observed among the prediabetic group, compared to the normoglycemic group.

CONCLUSIONS: Among Veterans, prospective risk of transition to Type 2 diabetes ranged from 2.5-fold to 5.7-fold among prediabetics, depending on HbA1c level. Patients with HbA1c < 5.0 and those in the diabetic range had increased risks of all-cause mortality, while prediabetics showed no excess mortality. The higher risk population (HbA1c 6.0–6.4%) is an important group to target with diabetes prevention efforts.

ELUCIDATING MEDICAL TRAINEES' BARRIERS TO INCIDENT REPORTING

Jose R. Valery[2]; Fernando Stancampiano[1]. [1]Mayo Clinic, Jacksonville, FL; [2]Mayo Clinic Florida, Ponte Vedra, FL. (Control ID #2703654)

BACKGROUND: Incident reporting is an important tool used by hospitals to improve patient care by systemically eliminating errors. Although medical trainees are at the forefront of healthcare delivery their incident reporting is very low. The Department of Health and Human Services released a report noting that 86% of events are unreported [1]. As low as 6.2% of medical trainees complete an incident report [2]. The ACGME has recognized the importance of including patient safety in medical education and launched the Clinical Learning Environment Review (CLER) Program in 2012 to stimulate such initiatives. Elucidating reasons for medical trainees' reporting habits is essential in developing a successful educational intervention. In this study, we aim to refine existing knowledge on resident attitudes and behaviors pertaining to incident reporting. We hypothesize that non-technical aspects of incident reporting, such as concern about negative consequences or lack of faith in the effectiveness of the system, are significant in addition to technical barriers such as knowing how to report and having enough time to do so.

METHODS: Medical trainees' attitudes and behaviors regarding incident reporting were evaluated through an anonymous and voluntary REDCap survey distributed via email to 207 medical and surgical trainees at the Mayo Clinic in Jacksonville, FL, in June of 2016. The trainees had between 11 and 83 months of clinical experience.

RESULTS: 24.6% (51/207) of trainees responded to the survey after 3 distributions. 17.6% (9/51) of respondents were interns and 68.9% (35/51) were male. 25.4% (13/51) had previously filed a report and 49% (25/51) reported not knowing how to file a report. Fear of personal and colleague repercussions from filing a report were significant with 35.2% (18/51) and 39.2% (20/51) respectively. Only 7.8% (4/51) thought filing a report would not contribute to patient safety. 37% (19/51) indicated that time was a significant barrier to reporting.

CONCLUSIONS: Our study suggests that technical aspects of incident reporting are significant and seem to be consistent with recently published data. However, the significance of non-technical aspects as barriers was found to be higher in our trainee population than previously reported [3]. Further research is needed to confirm the relative significance of barriers to incident reporting among medical trainees. When compared with published studies, our results suggest a significant heterogeneity in known barriers across institutions. As the generalizability of results may be limited, each institution may benefit from a similar survey to elucidate specific barriers prior to developing an educational intervention.

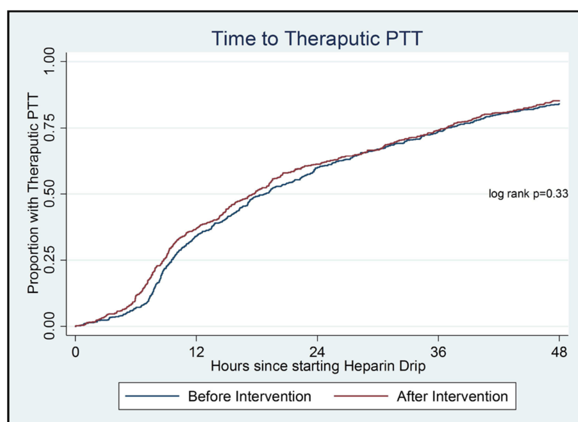
EMBEDDED DECISION SUPPORT DOES NOT LEAD TO RECOMMENDED HEPARIN DOSING Sarah W. Baron; William Southern. Montefiore, Bronx, NY. (Control ID #2704934)

BACKGROUND: Anticoagulation with heparin decreases recurrent thromboembolic events, but delays to therapeutic levels are associated with worse outcomes. In previous research using paper charting, a weight-based Heparin Nomogram improved time to therapeutic anticoagulation among hospitalized patients. However, it is unclear if the Heparin Nomogram remains effective in computerized patient order entry (CPOE) systems. We examined the effect of incorporating the Heparin Nomogram in a CPOE system on anticoagulation-related process measures among adult inpatients.

METHODS: We conducted a retrospective pre/post analysis of a validated decision-support tool, the Heparin Nomogram, by embedding it into the CPOE system of a large, academic, multi-hospital system in the Bronx, NY. Following implementation, all access to intravenous heparin orders displayed titration guidelines, weight and partial thromboplastin time (PTT) measurements. The primary outcome was time to therapeutic anticoagulation, defined as hours until PTT measurement between 46 and 70 s. Secondary outcomes were appropriateness of initial drip and initial bolus doses. All orders of intravenous heparin were examined for timing and dosing of drips and boluses, as well as PTT measurements. Time to therapeutic PTT was plotted using the Kaplan-Meier method. Differences between pre and post groups were tested using a log rank test. Percentages of each group receiving appropriate dosing were examined. Differences between groups were tested with chi-squared tests. Orders were analyzed three months prior to and three months following implementation.

RESULTS: A total of 1728 unique initial heparin orders were examined. Time to therapeutic PTT did not differ significantly between groups (Figure, $p = 0.33$). There were no significant differences in percent of patients receiving the appropriate initial drip dose (27% vs. 29%, $p = 0.50$), or bolus dose (7% vs. 8%, $p = 0.50$).

CONCLUSIONS: Embedding a Heparin Nomogram into the Computerized Patient Order Entry system did not significantly change time to therapeutic anticoagulation or initial heparin dosing. It remains unclear how best to use CPOE systems to support providers in dosing intravenous heparin for optimal anticoagulation among inpatients.



EMERGENCY PHYSICIAN OPIOID PRESCRIBING PATTERNS AND RISK OF LONG-TERM USE Michael L. Barnett[2]; Andrew Olenski[1]; Anupam B. Jena[1]. [1]Harvard Medical School, Boston, MA; [2]Harvard T.H. Chan School of Public Health, Boston, MA. (Control ID #2705830)

BACKGROUND: Rising rates of opioid prescribing and opioid-related overdose deaths have increasingly affected the elderly Medicare population, among whom hospitalization rates for opioid overdoses grew five-fold from 1993–2012. Growing opioid overuse may be partly driven by physician prescribing. However, the extent to which individual physicians vary in opioid prescribing and the implications of that variation for patients' long-term opioid use and adverse outcomes are unknown.

METHODS: We performed a retrospective analysis of Medicare beneficiaries with an index emergency department (ED) visit during 2008–2011 without opioid prescriptions in the 6 months prior. To address selection bias, we relied on the fact that patients are unlikely to choose their ED physician once they have chosen a facility. Assigning patients to emergency physicians within a hospital, we categorized physicians as high- or low-intensity opioid prescribers based on their relative quartiles of prescribing rates within the same hospital. We compared rates of long-term opioid use, defined as 6 months of days supplied, in the 12 months subsequent to an ED visit among patients treated by high- vs. low-intensity prescribers, adjusting for patient characteristics. We also assessed rates of hospital encounters (ED visits or admissions) for opioid-related complications in older adults such as falls/fractures.

RESULTS: Our sample contained 215,678 and 161,951 patients treated by low- and high-intensity prescribers, respectively. Patient characteristics, including ED diagnoses, were similar across both groups. Opioid prescribing rates varied widely within hospital between high and low-intensity prescribers (24.1% vs. 7.3%). Overall, long-term opioid use at 12 months was significantly higher among patients treated by high vs. low-intensity prescribers, 1.51% vs. 1.16% (unadjusted OR 1.31, 95% CI 1.24–1.39). After adjustment, this difference changed minimally (adjusted OR 1.30, 95% CI 1.23–1.37). Rates of hospital encounters for falls/fracture were significantly higher in the 12 months subsequent to an index ED visit for patients treated by high- vs. low-intensity opioid prescribers (4.56% vs. 4.28%; adjusted OR 1.07, 95% CI 1.03–1.11).

CONCLUSIONS: We found over three-fold variation in emergency physician opioid prescribing rates within the same hospital associated with increased rates of long-term opioid use and hospitalizations for falls/fractures among patients treated by high-intensity opioid prescribers. We reduced selection bias by taking advantage of quasi-randomization of patients to ED physicians within the same facility, supported by the minimal change in our results with adjustment. These results suggest that an increased likelihood of receiving an opioid for even one encounter could drive significant future long-term opioid use and potentially increased adverse outcomes among the elderly.

END-OF-VISIT PRACTICES TO ENSURE OUTPATIENT SAFETY: RESIDENT PHYSICIANS' PERFORMANCE IN USP CASES WITH OUTPATIENT SAFETY CHALLENGES Colleen Gillespie[1]; Lisa Altshuler[1]; Kathleen Hanley[1, 2]; Adina Kalet[1, 1]; Amanda Watsula-Morley[1, 1]; Heather Dumorne[1, 1]; Sondra Zabar[1, 1]. [1]NYU School of Medicine, New York, NY; [2]Gouverneur Healthcare Services, New York, NY. (Control ID #2705472)

BACKGROUND: Safe, high quality outpatient care often depends on the degree to which patients understand their situation and how to follow through

on physician recommendations. However, we do not know enough about how often physicians focus on ensuring that their patients have achieved these understandings by the end of the visit and whether such end-of-visit practices are associated with physicians' communication, patient education and activating skills.

METHODS: Two Unannounced Standardized Patient cases (highly trained actors who present as real patients) were delivered to 71 internal medicine residents in two clinics: one required the physician to identify a patient's depression and engage him in follow-up care, and the other required the physician to recognize a patient's failure to use her asthma medicine correctly and educate her in using it properly. End-of-visit practices were: reviewing the plan; asking if further questions; giving information about follow-up care and further contact; and helping the patient navigate the system in order to follow through on next steps. Each was assessed by the SP as not done, partly done, or well done. SPs also rated physicians' communication skills, patient activating skills, and case-specific education skills. Summary scores were calculated as % of items well done.

RESULTS: Close to three-quarters of the physicians reviewed the plan with the patient and invited further questions in the depression case and slightly more than half did so in the asthma case (56 and 60%). Patients were given complete information about follow-up care and how to navigate the system in just under half of depression visits (49 and 47%) and just over half of asthma visits (58 and 58%). On average, residents were rated as performing 61% of these 8 items well (SD 28%) across both cases. Primary care residents performed significantly better than categorical internal medicine residents (67% vs 47%, $p = .004$). There were no differences by physician gender. End of visit scores were significantly positively correlated with both general and case-specific clinical skills, and after controlling for the variance contributed by the program ($R^2 = 12\%$, $p = .004$), case-specific education scores explained 10% of the variance in end of visit score ($p = .005$), patient activating skills 10% of the variance ($p = .002$) and communication skills 13% of the variance ($p = .001$). With all variables in the model, only the general communication domain of patient education and counseling was independently associated with end of visit scores (Std Beta = .35, $p = .015$).

CONCLUSIONS: Had these patients been real patients, in one-quarter to one-half of the visits, the patient would have left not fully understanding the plan or how to follow-through on care. Resident physicians with more effective communication and patient activating skills tended to provide safer end-of-visit care, suggesting that these may reflect an outpatient safety orientation or skillset.

ENGAGEMENT IN AN INTERNET SUPPORT GROUP FOR MOOD AND ANXIETY DISORDERS IS ASSOCIATED WITH IMPROVED PSYCHIATRIC OUTCOMES Emily M. Rosenberger; Bea Herbeck Belnap; Kaleab Abebe; Scott D. Rothenberger; Bruce L. Rollman. University of Pittsburgh, Pittsburgh, PA. (Control ID #2687850)

BACKGROUND: Internet support groups (ISGs) are emerging as popular forums in which individuals with similar health conditions exchange resources and offer support by posting on online discussion boards, yet little is known about the role of engagement with an ISG on health outcomes. The Online Treatment for Mood and Anxiety Disorders Trial (OT Trial) evaluated the effect of computerized cognitive behavioral therapy (CCBT) plus access to a moderated ISG on clinical outcomes in primary care patients with mood and anxiety disorders delivered via a collaborative care model. Here, we examine whether differing levels of engagement in the OT Trial's ISG impacted mental health related quality of life (HRQoL) and psychiatric outcomes.

METHODS: The OT Trial randomized 704 patients referred by their PCPs from 26 primary care practices in southwestern Pennsylvania with PHQ-9 and/or GAD-7 scores ≥10 to receive either: CCBT + ISG access, CCBT, or usual care in a 3:3:1 randomization ratio. We classified engagement among the 302 CCBT + ISG arm patients according to the 1% Rule (van Mierlo, 2014), a model that describes participation in online forums. We then assigned patients to engagement groups based on number of posts made on the ISG during the 6-month intervention phase of the study. We used descriptive statistics to compare outcomes across engagement groups on the MOS SF-12 and PROMIS Anxiety and Mood short forms at 12 months after randomization.

RESULTS: CCBT + ISG patients had a mean age of 43 years, and 71% had both depression and anxiety as measured by the PRIME-MD. 75% logged in to the ISG at least once; of these, 63% made at least one post. Among patients who posted, the mean number of posts per patient was 10.5. Our sample had a broader distribution of posts than predicted by the 1% Rule: Superusers (top 1%; $n = 3$) made 40% of posts (mean ± SD, 210 ± 118), Top Contributors ($n = 30$) made 38% of posts (mean,17 ± 13), Sparse Contributors ($n = 110$) made 22% of posts (mean, 3 ± 2), and Observers ($n = 85$) logged in but never posted. At 12 months, all engagement groups showed improvements in HRQoL and depression and anxiety symptoms relative to baseline assessments. Top Contributors reported the largest improvements in HRQoL (mean $\Delta \pm$ SD, 16 ± 10) and anxiety symptoms (mean Δ, −12 ± 11), whereas Superusers reported the smallest improvement in HRQoL (mean Δ, 6 ± 8).

CONCLUSIONS: Differential engagement in a moderated ISG for mood and anxiety disorders is associated with varying levels of improvement in HRQoL and depression and anxiety symptoms. At 12 months of follow-up, Superusers, who were the most engaged with our ISG, reported the lowest levels of benefit, while Top Contributors, who engaged often but less than Superusers, reported the greatest benefit. While the motivations for very high levels of ISG engagement are still unclear, more work is needed to understand the minimum level and type of engagement necessary to yield benefits from participating in an ISG for mental health disorders. Reference: van Mierlo T, JMIR 2014;16(2)

ENGAGING AFRICAN AMERICAN VETERANS WITH HEALTHCARE ACCESS CHALLENGES IN A COMMUNITY-PARTNERED CARE COORDINATION INITIATIVE: A QUALITATIVE NEEDS ASSESSMENT Adriana Izquierdo[5, 6]; Michael Ong[4, 6]; Felica U. Jones[7]; Loretta Jones[2]; David Ganz[3, 6]; Lisa V. Rubenstein[1]. [1]GLA VA, North Hills, CA; [2]Healthy African American Families, Los Angeles, CA; [3]RAND Corporation, Santa Monica, CA; [4]UCLA, Los Angeles, CA; [5]University of California Los Angeles, Los Angeles, CA; [6]VA Greater Los Angeles Healthcare System, Los Angeles, CA; [7]Healthy African American Families II, Los Angeles, CA. (Control ID #2683713)

BACKGROUND: Little has been written about engaging potentially eligible members of a health care system who are not accessing the care to which they are entitled. Knowing more about the experiences of African American Veterans who regularly experience healthcare access challenges may be an important step towards equitable, coordinated Veterans Health Administration (VA) care.

METHODS: We partnered with a community organization to recruit and engage Veterans from South Los Angeles in three exploratory engagement

workshops to understand better the experiences of African American Veterans at risk of experiencing poor care coordination. Veterans were asked to describe their VA and community care experiences. Field notes taken during the workshops were analyzed by community and academic partners using grounded theory methodology to identify emergent themes.

RESULTS: 23 Veterans participated in one or more engagement workshops. Their trust in VA was generally low. Negative themes included: functional barriers to accessing VA healthcare services; insensitive VA healthcare environment; lack of trust in the VA healthcare system; and Veteran status as disadvantageous for accessing non-VA community services. Positive themes included: Veterans have knowledge to share and want to help other Veterans; and connecting to VA services can result in positive experiences.

CONCLUSIONS: Veterans living in underserved areas who have had difficulty accessing VA care have unique perspectives on VA services. Partnering with trusted local community organizations to engage Veterans in their home communities is a promising strategy to inform efforts to improve care access and coordination for vulnerable Veterans.

EVALUATING GLYCEMIC CONTROL IN LOW-INCOME PATIENTS WITH TYPE 2 DIABETES Rosette J. Chakkalakal[3]; Richard O. White[1]; Jonathan Schildcrout[3]; Brooklyn Stanley[3]; Ken Wallston[4]; Russell L. Rothman[2]. [1]Mayo Clinic, Jacksonville, FL; [2]Vanderbilt, Nashville, TN; [3]Vanderbilt University, Nashville, TN; [4]Vanderbilt University, Pisgah Forest, NC. (Control ID #2707610)

BACKGROUND: Long-term maintenance of glycemic control is difficult to achieve for patients with type 2 diabetes (T2DM). Few studies have described predictors of deterioration in glycemic control among low-income patients with T2DM. Here we (1) assess change in hemoglobin A1C (HbA1C) after a period of sustained glycemic control among low-income patients with T2DM and (2) identify predictors of deterioration in glycemic control in this population.

METHODS: We conducted an exploratory subgroup analysis of data from the Partnering to Improve Diabetes Education (PRIDE) study, a cluster randomized controlled trial testing a program designed to address limited health literacy and numeracy and promote effective health communication in caring for patients with T2DM at state Department of Health clinics in middle Tennessee. English and Spanish-speaking patients with T2DM were eligible for the study if their most recent hemoglobin A1C (HbA1C) was greater than 7.5%. Participants were scheduled for routine T2DM follow-up visits every 3 months for 2 years. This subgroup analysis was restricted to PRIDE participants who, at any point during the study, were found to (1) improve their HbA1C by at least 0.7% between 2 consecutive study visits, (2) sustain this improvement for at least 2 consecutive study visits (defined as the monitoring period), and (3) attend at least 2 of their next 3 scheduled study visits (defined as the follow-up period). We fit a linear regression model (base model) to assess the a priori association of change in HbA1C during the follow-up period with (1) change in HbA1C from baseline to the monitoring period and (2) mean HbA1C during the monitoring period. We then tested the association of change in HbA1C during the follow-up period with the following characteristics by including them, in turn, as independent variables in the base model: gender, body mass index, income, race, ethnicity, English proficiency, health literacy, numeracy, medications, years diagnosed with T2DM, depressive symptoms, food security, perceived diabetes self-management, and receipt of care at a control or intervention site.

RESULTS: One hundred PRIDE participants met the inclusion criteria. The base model indicated that HbA1C of low-income patients with T2DM increases after a period of sustained glycemic control ($b_0 = 0.38$, SE = 0.14) but there was a significant inverse association between mean HbA1C during the monitoring period and change in HbA1C during the follow-up period (b = −0.32, SE 0.10, $p = 0.002$). The only other variables significantly associated with change in HbA1C during the follow-up period were English proficiency (b = 0.72, 95% CI 0.06-1.37, for patients who did not speak English very well) and treatment group (b = −0.74, 95% CI −1.29- -0.19, for patients receiving care at intervention sites).

CONCLUSIONS: Efforts to promote effective communication could play a key role in preventing deterioration in glycemic control among low-income patients with T2DM.

EVALUATING QUALITY OF DIABETIC CARE IN PATIENTS WITH SEVERE MENTAL ILLNESS (SMI) IN AN ACADEMIC PRIMARY CARE CLINIC Smita Y. Bakhai[1]; Rujuta Katkar[1]; Neal Shah[1]; Gregory D. Gudleski[2]. [1]SUNY at BUffalo, Williamsville, NY; [2]SUNY at Buffalo, Buffalo, NY. (Control ID #2690472)

BACKGROUND: Higher prevalence of type 2 Diabetes Mellitus and cardiovascular risk factors has been reported in patients with serious mental illness. SMI patients get suboptimal diabetes care when compared to non-SMI patients, resulting into higher morbidity and mortality. The primary objective of this study was to test the hypothesis that SMI patients get suboptimal diabetes care as compare to non- SMI patients in an academic Primary Care Clinic.

METHODS: Utilizing electronic medical records, we conducted a retrospective cohort study of 183 SMI and 185 non -SMI patients between June 1, 2013 and May 31, 2015 in a hospital based primary care clinic, consisted of 40 residents. SMI was defined as schizophrenia or bipolar disorder diagnosed by psychiatrist. Inclusion criteria included patients between age 18–75 years and diabetes patients who were managed by a primary care provider at the ECMC Primary Care Clinic for a minimum one year with at least two visits and two HbA1c levels drawn during the study period. Diabetes patients managed by endocrinologist were excluded. Variables of interest included; 1) National Committee for Quality Assurance (NCQA) diabetes recognition program (DRP) 2015 based outcome measures included HbA1c, Blood pressure, LDL, eye and foot exam, nephrology assessment and smoking status 2) Pharmacological therapy; ACE/ARB, oral anti-hyperglycemic agents and insulin 3) Health care utilization measures ;clinic visits attended and continuity of care with the same primary care provider 4) vaccinations included pneumonia, influenza and hepatitis B.

RESULTS: Results were analyzed using univariate (chi-square) and multivariate (logistic regression) models. Patients who were on insulin therapy were less likely to achieve HbA1c < 7 without any significant difference between SMI and non-SMI groups (12.5% vs 11.8%). However SMI patients who were not on insulin were more likely than non-SMI patients to achieve HbA1C < 7 (75.3% vs 63.2%, OR = 3.26, 95% CI: 2.05–5.19, $p < .001$). No significant between group difference was observed in remaining NCQA parameters of Nephropathy assessment ($p = .519$), Blood pressure ($p = .934$), Foot Exam ($p = .079$), Smoking Cessation treatment offered ($p = .107$) except for eye Exam (OR = 1.90, 95% CI: 1.08–3.34; $p = .027$). Pneumovax administration was significantly higher in SMI group (OR = 3.02, 95% CI: 1.58–5.56; $p = .001$) There was no significant difference in above parameters after adjusting for Antipsychotics use. There was no significant difference between the groups for number of clinic visits or continuity of primary care provided.

CONCLUSIONS: Improved control of diabetes and cardiovascular risk factors in SMI patients was found in our primary care clinic when compared with non SMI patients. Further studies assessing patients by living in a supervised group home facility status and measuring individualized HbA1c target as dynamic variable are needed for understanding these outcomes.

EVALUATING RISK OF MAJOR BLEEDING AND THROMBOEMBOLIC EVENTS FOR RIVAROXABAN VERSUS WARFARIN IN A REAL WORLD SETTING Giavanna Russo-Alvarez[2]; Kathryn A. Martinez[2]; Megan Valente[2]; James Bena[2]; Bo Hu[2]; Jennifer Luxenburg[2]; Andrei Brateanu[1]; Michael B. Rothberg[2]. [1]CCF, Cleveland, OH; [2]Cleveland Clinic, Cleveland, OH. (Control ID #2701591)

BACKGROUND: Randomized trials demonstrate the non-inferiority of rivaroxaban compared to warfarin for the prevention of stroke and venous thromboembolism (VTE) in atrial fibrillation (AF) and for the treatment of VTE and pulmonary embolism (PE). Yet doubts regarding validity of some original trial findings have surfaced. Studies examining the effectiveness and safety of these drugs in clinical practice are therefore critical. The objective of this study was to assess the relative effectiveness and safety of rivaroxaban versus warfarin in a large integrated health system.
METHODS: We conducted a retrospective cohort study in the Cleveland Clinic Health System (CCHS). Eligible individuals, identified via the electronic health record (EHR), included patients 18 years or older who initiated warfarin or rivaroxaban for treatment of VTE or non-valvular AF between January 2012 and March 2014. The primary measure of effectiveness was thromboembolic events, defined as DVT, PE, atrial thrombus, or ischemic stroke. The primary measure of safety was incidence of major bleeding events, defined as any clinically overt sign of hemorrhage that required an intervention to stop or treat bleeding and that led to hospitalization or increased level of care. Outcomes were first ascertained via the EHR and then confirmed through medical record review by two clinical pharmacists. Appropriateness of anticoagulant dosing was evaluated for each event that occurred while on therapy. Rivaroxaban and warfarin patients were propensity matched 1:1 based on demographic and health history measures from the EHR. Drug groups were then compared using Cox proportional hazards models. To evaluate whether the effectiveness and safety of the drugs varied by time in therapeutic range (TTR), the aforementioned analysis was then stratified at the median TTR of the warfarin patients.
RESULTS: The cohort consisted of 531 propensity-matched pairs. Mean age was 68.9 years (SD: 14.4), and 42% had private insurance. Eighty-two percent of patients were treated for AF and the mean $CHADS_2$ score was 1.94. Median TTR for warfarin patients was 51%. There were no significant differences in patient characteristics or indication for anticoagulation between the rivaroxaban and warfarin groups. Compared to warfarin, rivaroxaban was associated with significantly greater risk of thromboembolic events (HR:4.16, $p = 0.034$), but there was no significant difference in bleeding risk. Compared to warfarin patients with >51% TTR, rivaroxaban was associated with more major bleeding events ($p = 0.017$).
CONCLUSIONS: In clinical practice, warfarin was associated with fewer thromboembolic events and did not increase bleeding risk compared to rivaroxaban. While the risk of thromboembolic events was similar, rivaroxaban was associated with more major bleeding than warfarin among patients with a high TTR. For patients who are able to maintain a high TTR, warfarin appears safer than rivaroxaban and no less effective.

EVALUATING THE AGREEMENT BETWEEN SELF-REPORTED AND DOCUMENTED ANALGESIC USE IN OLDER VETERANS WITH OSTEOARTHRITIS Alexander Domanski[2, 3]; Matthew J. Bair[1, 5]; Ruth Balk[4]; Cynthia Brandt[6]; Abraham A. Brody[3]; Rachel Dismore[5]; Vera Gaetano[6]; Melissa Garrido[3]; Dorian Gittleman[3]; Robert Kerns[6]; Erin E. Krebs[4]; Erin Linden[4]; R. S. Morrison[3]; Diana Natividad[5]; Joan Penrod[3]; Anthony Rinaldi[6]; Lee Stefanis[3]; Daniel Sun[3]; Ula Hwang[3, 2]. [1]Center for Health Information and Communication, Indianapolis, IN; [2]Icahn School of Medicine at Mount Sinai, New York, NY; [3]James J. Peters VAMC, New York, NY; [4]Minneapolis VAMC, Minneapolis, MN; [5]Richard L. Roudebush VAMC, Indianapolis, IN; [6]VA Connecticut Health System, West Haven, CT. (Control ID #2673143)

BACKGROUND: Studies using prescription claims data demonstrate higher rates of adverse events with opioids compared to NSAIDs for treating pain in older adults. The validity of these results, however, relies on reimbursement data as an indicator of analgesic exposure, despite evidence of the contrary. We compared health record documented prescriptions versus self-reported analgesic use in older veterans to evaluate administrative data as a proxy for analgesic exposure.
METHODS: This was a cross-sectional study of the first 14 months of data (3/2015-5/2016) collected in an ongoing prospective telephone survey of veterans from 4 VA hospitals ≥50 years of age with ≥2 inpatient or outpatient diagnoses of knee or hip arthritis. Subjects were analgesic-free (based on prescription records) for ≥180 days prior to starting a new analgesic (opioid, NSAID, other [e.g. acetaminophen]) or control (filling a non-analgesic prescription) and surveyed ≤30 days of prescription filling. Comparisons were calculated between self-reported analgesic lists (ref.) and health record analgesic prescriptions filled using k coefficients, sensitivity, and specificity for analgesic classes. This study received CIRB approval.
RESULTS: 595 subjects were recruited. Mean age was 66y (±8.9y), 93% were male. Agreement between self-reported analgesics versus health record analgesic prescriptions over 30 days was fair (k = 0.26). This varied by drug class: opioids (k = 0.56), NSAIDs (k = 0.41), other (k = 0.37). Sensitivity was higher for opioids (0.71) than NSAIDs (0.57) or other (0.39), while specificity across drug classes was similar (0.89, 0.84, 0.93 respectively).
CONCLUSIONS: Discordance exists between health record versus self-reported analgesic use in older veterans. Caution should be exercised when interpreting pharmacoepidemiological safety studies that use administrative health record data to measure analgesic exposure.

EVALUATING THE EFFECTIVENESS OF A HEALTHY FOOD SHOPPING TOUR IN LOW-INCOME AFRICAN-AMERICAN NEIGHBORHOODS IN CHICAGO Ashley K. Haddad; Adam H. Lewis; Nyahne Q. Bergeron; Daniel J. Rowell; Kathryn E. Gunter; Yolanda O'Neal; Sandra Ham; Marshall Chin; Monica E. Peek. University of Chicago, Chicago, IL. (Control ID #2705597)

BACKGROUND: Diet-related chronic diseases cause significant morbidity and mortality, and are disproportionately prevalent amongst African-Americans. Disparities in diet-related chronic diseases are complex, with multiple contributors including individual preferences, social relationships, and the built environment. Nutrition education has the potential to address these disparities if tailored to an individual's specific behavioral, social, and environmental context.

METHODS: We evaluated the effectiveness of a 1-hour, in-store, group nutrition education tour (led by dieticians and diabetes educators) in 4 low-income, predominantly African-American neighborhoods in Chicago. We used a mixed-method approach to evaluation. We qualitatively analyzed 2 focus groups ($n = 25$) using a framework approach. Sessions were transcribed verbatim and analyzed using ATLAS.ti software. We also quantitatively analyzed pre/post food knowledge surveys ($n = 104$) using chi-squared, t-tests, and longitudinal regression modeling, and analyzed food purchase receipts ($n = 99$) using Wilcoxon ranked sign tests. We are obtaining grocery store control data to compare food purchases made by non-tour participants.
RESULTS: A majority of surveyed participants were female (80%) and African-American (95%).The mean age was 58.4 years, and 36% of participants ($n = 37$) attended more than one tour. Focus group participants noted barriers to healthy eating including the influence of family ("It's difficult for me when I go to my sister's house…she's an old-fashioned cook") and an unhealthy food environment ("sugar is in everything!"). Motivators for tour participation included knowledge gained ("It's not about $10… it's about the information that we get and how we can use it to better ourselves"), support from other participants ("The important thing about this tour is that all of us are in the same boat"), and the interactive learning environment ("Me, I'm a literal person so…being in the store and actually seeing the product you understand more"). Participants demonstrated improved knowledge after a single tour (6.1 vs 5.8 of 10 questions correct, $p = 0.18$); for those who participated in multiple tours, knowledge improvements were statistically significant (6.5 vs 5.5 correct questions, $p < 0.001$). Additionally, the number of tours that a participant attended was a significant predictor of knowledge gained ($\beta = 0.03$, $p < 0.001$). After the tour, 34% of participant food purchases were fruits or vegetables (vs. 19% nationally) with no difference between one-time and repeat participants (36% vs 28%, $p = 0.24$).
CONCLUSIONS: Our findings suggest that in-store group nutrition education tours in low-income, minority neighborhoods can improve participant knowledge regarding healthy eating and potentially increase the consumption of fruits and vegetables, compared to national averages. Additionally, it is important to consider behavioral, social, and environmental context when designing interventions to overcome barriers to healthy eating.

EVALUATING THE EFFECTIVENESS OF LUNG CANCER SCREENING IN PATIENTS WITH COPD Minal Kale; Bart Ferket; Juan Wisnivesky. Mount Sinai School of Medicine, New York, NY. (Control ID #2707373)

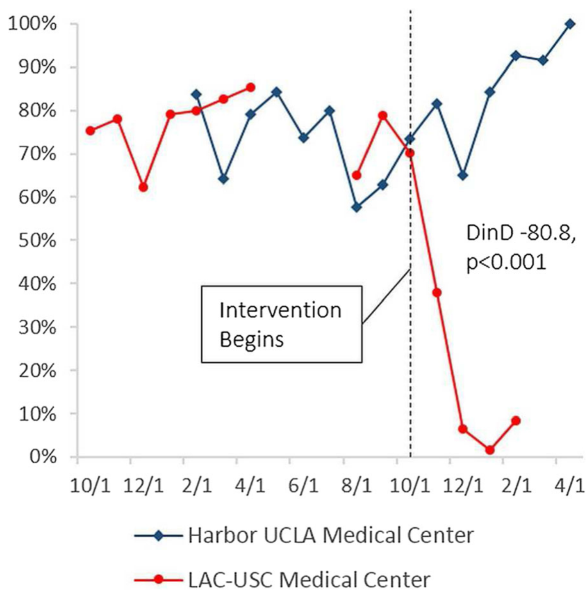
BACKGROUND: Chronic obstructive pulmonary disease (COPD) is a highly prevalent disease that shares a common risk factor, tobacco exposure, with lung cancer. Moreover, studies show that COPD is an independent risk factor for lung cancer and that lung cancer is a major cause of death in COPD patients. Thus, patients with COPD are important candidates for lung cancer screening. However, results from the National Lung Screening Trial (NLST) are difficult to generalize to this population due to differences in lung cancer risk, increased likelihood of complications from diagnostic work-up, and potential ineligibility of receiving full resection due to limited lung function. Thus, there is a need to assess the benefits and harms of lung cancer screening in this population.
METHODS: We created an individual level state transition model using decision analysis software that simulated the experience of individuals with all stages of COPD, undergoing lung cancer screening either with annual chest radiograph (CXR) or low dose computed tomography (LDCT) for 3 cycles with a 10-year time horizon. We estimated model parameters using a combination of published data and analysis of NLST data. The screening cohort was composed of data from the NLST cohort and consisted of individuals with spirometry findings consistent with COPD based on the American Thoracic Society and European Respiratory Society Task Force. Parameters regarding prevalence of cancer, screening performance (sensitivity and specificity) and diagnostic work-up derived from the NLST. Overall survival for individuals with lung cancer was estimated based on Surveillance, Epidemiology, and End Results data. Background mortality was based on United States 2011 life tables accounting for sex and stage of COPD. Model outcomes included difference in life expectancy with CXR vs. LDCT screening, overall survival, and complication rate.
RESULTS: We found that that lung cancer screening with LDCT in individuals with COPD leads to a mean increase in life expectancy within a 10-year time horizon of 0.65 months. We found a reduction in overall mortality at 10 years by 1% (29% vs 28%). We also found a lower rate of non-fatal complications; 172 in 4655 individuals screened with LDCT compared to 178 in those screened with CXR.
CONCLUSIONS: Our microsimulation model suggests that LDCT screening leads to a lengthening of life expectancy and reduction in overall mortality in individuals with COPD. We also found that LDCT screening was associated with non-fatal complications in individuals with COPD. Future simulation modeling is needed to characterize the effect of screening on lung cancer mortality, the benefit of screening across different stages of COPD, and the optimal screening criteria.

EVALUATION OF A CHOOSING WISELY™ INTERVENTION TO REDUCE LOW VALUE PREOPERATIVE CARE FOR PATIENTS UNDERGOING CATARACT SURGERY AT A SAFETY NET HEALTH SYSTEM John N. Mafi[1, 2]; Patricia Godoy-Travieso[3]; Eric Wei[3]; Jesse Berry[3]; Rudy Amaya[3]; Brandon Wong[4]; Carmen A. Carillo[5]; Laura Sarff[3]; Lauren P. Daskivich[6]; Sitaram Vangala[7]; Emmett Keeler[2]; Cheryl Damberg[2]; Catherine Sarkisian[5, 7]. [1]David Geffen School of Medicine at UCLA, Los Angeles, CA; [2]RAND Corporation, Santa Monica, CA; [3]LAC + USC Medical Center, Los Angeles, CA; [4]LAC + USC, Los Angeles, CA; [5]University of California, Los Angeles, Los Angeles, CA; [6]Harbor-UCLA Medical Center, Los Angeles, CA; [7]UCLA and Greater Los Angeles VA, Los Angeles, CA. (Control ID #2699282)

BACKGROUND: Because pre-op testing for cataract surgery provides virtually no patient benefit, we evaluated an initiative to eliminate it.
METHODS: *Design*: pre-post quasi-experiment comparing pre-op cataract surgery care at LAC + USC Medical Center (intervention site) vs. Harbor-UCLA (control site). *Data*: administrative data to identify pts undergoing cataract surgery between 10/15/14-4/15/16. *Intervention*: a quality officer at LAC + USC 1) reviewed cataract surgery pts' charts, 2) presented data on overuse to anesthesia/ophthalmology chairs—gaining their support for the initiative, 3) recruited a resident champion and 4) empowered nurses to stop scheduling pre-op visits. On 9/30/15, the team emailed pre-op guidelines to physicians/trainees/staff, calling to eliminate routine pre-op testing for cataract surgery by 10/13/15. *Outcomes*: pre-op visits, labs, EKGs, and wait-time between cataract diagnosis and surgery. *Analysis*: difference-in-differences (DinD) comparing utilization between sites using logistic regression adjusting for pt characteristics.
RESULTS: We identified 1,009 intervention and 959 control pts undergoing cataract surgery during the study period. Baseline mean age/sex (61 yrs/53%

female) was similar between both groups. The proportion of pre-op visits, labs, and EKGs declined more for intervention than control pts; *intervention pts*: 77, 91, and 74% before the intervention vs. 20, 39 and 27% after the intervention respectively; *control pts*: 62, 40, and 66% before vs. 86, 72, and 86% after the intervention respectively (DinD −81%, $p < 0.001$, −83%, $p < 0.001$, −67%, $p < 0.001$ respectively). Median surgical wait-time declined more for intervention pts (245 days before vs. 64 days after the intervention) than for control pts (27 days before vs. 22 days after the intervention), DinD −176, $p < 0.001$.

CONCLUSIONS: This intervention substantially reduced low value pre-op care and surgical wait-times among pts undergoing cataract surgery.



Pre-Op Visits at LAC + USC (intervention) vs. Harbor-UCLA (control), 10/15/14-4/15/16

EVALUATION OF A COACHING BY TELEPHONE INTERVENTION FOR VETERANS AND CARE TEAM ENGAGEMENT (ACTIVATE)

Eugene Oddone[2, 3]; Laura Damschroder[1]; Jennifer Gierisch[2]; Maren Olsen[2]; Linda L. Sanders[2]; Angie Fagerlin[4]; Carrie L. May[2]; Jordan Sparks[1]; Felicia A. McCant[2]. [1]Ann Arbor VA Center for Clinical Management Research, Ann Arbor, MI; [2]Durham VA Medical Center, Durham, NC; [3]Duke Medicine, Durham, NC; [4]Salt Lake City VA Medical Center, Salt Lake City, UT. (Control ID #2702001)

BACKGROUND: A large proportion of deaths and many illnesses can be attributed to three modifiable risk factors: tobacco use, overweight/obesity, and physical inactivity. Health risk assessments (HRAs) help individuals define their risk. HRA's are widely available online, but have not been consistently employed in healthcare systems to as a tool to activate patients' participation in behaviorally-focused prevention programs. Health coaching is an emerging method for promoting behavior change that relies on theories of human development, social psychology, and adult learning. There is growing evidence that coaching can improve health outcomes by aligning patient preferences, values, and patient-determined goals with behavior change strategies. This study was designed to determine if a brief telephone coaching intervention, when coupled with results from an HRA, could activate patients to address their modifiable risk by enrolling in a prevention program.

METHODS: We conducted a 3 site randomized controlled trial among veterans ($n = 417$) enrolled in primary care. To be eligible, veterans must have had at least one modifiable risk factor: BMI >30, less than 150 min of physical activity per week, and/or current smoker. All veterans completed the Veteran Affairs Health System's web-based HRA. Controls ($n = 209$) were encouraged to share HRA results with their primary care provider. Intervention participants ($n = 208$) received two telephone calls from a trained health coach: one week, and four weeks after completing the HRA. Coaches worked with veterans to collaboratively set a specific and actionable goal about enrolling in, and attending a structured prevention program designed to reduce their modifiable risk. The co-primary outcomes were enrollment in a prevention program by 6 months, and change in behavioral activation as measured by Patient Activation Measure (PAM). Logistic regression was used to estimate the treatment difference in enrollment. General Linear Models with unstructured covariance and parameters of time and group × time interaction were used to estimate the treatment group difference in the PAM.

RESULTS: Most veterans were male (85%), white (50%), or African American (40%) with a mean age of 56. Veterans were eligible because their BMI was > 30 (80%), were physically inactive (50%), or current smokers (39%). 58% had more than one eligibility criteria. From baseline to 6 months, intervention participants reported higher rates of enrollment in a prevention program (51% vs 29%, $P < 0.0001$) and greater mean increase in PAM (4.8 vs 2.4, $p = 0.03$) compared to controls.

CONCLUSIONS: Brief health coaching, informed by HRA results, improves patient activation and can help facilitate veterans' enrollment in effective prevention programs to address health behaviors and health risk.

EVALUATION OF A COMMUNITY-BASED SAFE FIREARM AND AMMUNITION STORAGE INTERVENTION

Joseph A. Simonetti[2, 4]; Ali Rowhani-Rahbar[3, 5]; Cassie King[1]; Elizabeth Bennett[1]; Frederick P. Rivara[5, 3]. [1]Seattle Children's Hospital, Seattle, WA; [2]University of Colorado School of Medicine, Denver, CO; [3]University of Washington School of Public Health, Seattle, WA; [4]Denver VA Medical Center, Denver, CO; [5]University of Washington, Seattle, WA. (Control ID #2702749)

BACKGROUND: Firearms injured nearly 115,000 Americans in 2014. Safe firearm storage practices, such as storing them locked and unloaded, are associated with a lower risk of unintentional and self-inflicted firearm injury and death among household members. However, few community interventions have been developed to promote such practices and a large proportion of U.S. firearms remain unsafely stored. The aim of this study was to assess the effectiveness of a community-based firearm safety intervention.

METHODS: We performed a before-after evaluation of two firearm safety events in Washington State in 2015. Events were held at sporting goods' stores that included firearm retail and were promoted through social and traditional media. Participants received a brief safety message, their choice of a free firearm safety device (firearm trigger lock or lockbox), demonstration on using both devices, and demonstrated their ability to lock and unlock a mock firearm using each device. We included all participants 18 years or older who spoke English or Spanish, completed baseline and follow-up telephone surveys, and signed legal release forms to participate. We used McNemar's test for matched pairs to assess whether changes in four study outcomes from baseline to

follow-up were statistically significant, including whether all household firearms were stored locked, all were unloaded, all ammunition was locked, and a composite measure assessing whether all firearms were locked and unloaded and all ammunition was stored locked. We performed a subgroup analysis of households with children less than 18 years of age.

RESULTS: Of 415 participants, 404 completed baseline surveys, 313 consented to the follow-up, and 206 (65.8%) completed follow-up surveys and were included. Sixty-one percent were male, 23.3% were Veterans or active military, and 53.4% had children less than 18 years in their household. Eighty-seven percent preferred the firearm lockbox rather than the trigger lock. At baseline, 63.7% stored all household firearms locked, 62.7% stored all firearms unloaded, 54.6% stored all ammunition locked, and 32.9% reported storing all firearms locked and unloaded and all ammunition locked. At follow-up, a significantly greater proportion reported storing all firearms locked (+13.7% [95%CI: 5.6-21.9]) and unloaded (+8.5% [95%CI: 2.3-14.7]) and a non-significantly greater proportion reported storing all ammunition locked (+6.3 [95%CI: −1.2-13.7]). A significantly greater proportion reported practicing all three safe firearm and ammunition storage practices (+12.6% [95%CI: 4.5-20.6]). Findings were unchanged among households in which children were present.

CONCLUSIONS: This community-based intervention that included distribution of a free, participant-selected locking device was effective in increasing safe firearm storage practices. Differences in participant preferences for devices suggest that a "one size fits all" approach may be inadequate in affecting population-level storage practices.

EVALUATION OF AN ALGORITHM TO CLASSIFY EMERGENCY DEPARTMENT UTILIZATION IN THE CONTEXT OF PATIENTS WITH ESTABLISHED PRIMARY CARE

Sharon Rikin; Emilia Hermann; Jessica R. Singer. New York Presbyterian Hospital - Columbia University Medical Center, New York, NY. (Control ID #2704841)

BACKGROUND: Identifying factors associated with emergency department (ED) utilization for patients with established primary care may reveal problems within the primary care system or patient barriers to accessing timely care. The NYU ED Algorithm has been used by health service researchers to distinguish between four categories of ED visits: non-emergent, emergent but primary care treatable (PCT), emergent requiring ED care but primary care preventable, and emergent requiring ED care that are not primary care preventable. This study sought to validate the NYU ED algorithm from the perspective of primary care physicians in order to improve health care utilization of patients with established primary care.

METHODS: This nested, case–control study took place at an academic medical center in Manhattan, NY. We identified ED visits made by primary care patients during two 7-day study windows. Two reviewers independently classified each visit as PCT or non-PCT following an adapted NYU ED Algorithm. Visits were categorized based on the patient's initial complaint, vital signs, medical history, treatment/tests provided, and final diagnosis. Frequency of ED and primary care visits and chronic health conditions including psychiatric illness were also collected. Cohen's kappa was used to evaluate inter-rater agreement. Multivariable logistic regression was used to evaluate associations between characteristics and odds of PCT visit.

RESULTS: Among the 92 ED visits identified, 48.91% were PCT. Inter-rater agreement for acuity of complaint was high (Cohen's kappa 0.68, 95% CI (0.45, 0.90)), moderate for PCT vs. non-PCT determination (Cohen's kappa 0.52, 95% CI (0.36, 0.68)), and fair for determination if medical complaint was potentially preventable (Cohen's kappa 0.35, 95% CI (0.06, 0.64)). The average number of primary care and ED visits in the previous 12 months was 4.27 (SD 2.98) and 4.21 (SD 4.57), respectively. There was no difference in the number of primary care or ED visits between those with PCT vs. non-PCT visits (OR 0.92, 95% CI (0.79, 1.09) and OR 1.02, 95% CI (0.90, 1.17)). Patients with PCT visits were more likely to have <2 vs. ≥ 2 chronic conditions (OR 5.19, 95% CI (0.89, 30.39).

CONCLUSIONS: There was only a moderate level of inter-rater agreement in determination of PCT vs. non-PCT visits, likely because our adaptation of the algorithm relies on provider evaluation of the clinical scenario as compared to the original algorithm which utilizes ICD coding to determine appropriate level of care. Frequency of healthcare utilization did not differ between patients with PCT vs. non-PCT visits. Those with fewer chronic conditions were more likely to have PCT visits while those with more chronic conditions were more likely to have non-PCT visits. This study highlights the need for primary care physician and patient perspectives in future programs designed to evaluate health care utilization in order to adequately address barriers to obtaining prompt, non-emergent medical care.

EVALUATION OF AN INTERDISCIPLINARY COMMUNICATION TOOL CALLED TEMPO (TEAM ENGAGEMENT TO MONITOR PATIENT OUTCOME).

Alok Arora[1]; Idrees Mohiuddin[2]; Larissa Verda[3]. [1]Weiss Memorial Hospital, CHI, IL; [2]Weiss Memorial Hospital, Park Ridge, IL; [3]Weiss Memorial Hospital, Chicago, IL. (Control ID #2705058)

BACKGROUND: Weiss Memorial Hospital is in a healthcare provider shortage area and 40% of our patients are from long term acute care hospital (LTACH) and skilled nursing facility (SNF) with multiple co-morbidities and high readmission rates, such background demands synchronized medical care to ensure safe and timely discharges. TEMPO board rounds were introduced in our hospital in November 2015 as an enhanced visual tool to coordinate and promote interdisciplinary communication. TEMPO involves a large white board on medical floors which is manually populated with data retrieved from various medical information systems and includes patient's 'geometric mean length of stay' (GMLOS), discharge disposition and an anticipated discharge date which drives the TEMPO discussion. Morning TEMPO rounds includes a medical resident, named nurse, social worker and a case manager. Patient status relative to discharge date is indicated by '*red*, *yellow and green*' triangles and act as a cue to identify 'barriers to discharge' and address key patient specific needs. Early recommendations from physical and occupational therapy help with rehabilitation and placement planning for 'fall risk/stroke' patients.

METHODS: We performed an anonymous survey for the efficacy of the TEMPO rounds process. Random cohort of t participants were selected which included 10 case managers/social workers, 14 RNs and 28 medical residents ($N = 52$). Respondent commented on time management (*consumption*/*saving*), communication (*improved*/*worsened*), patients care (*improved*/*worsened*) and discharge planning (*facilitates*/*complicates*).

RESULTS: The visibility of the information during TEMPO rounds was widely appreciated as compared to the old style 'sit around the table' collaborative case rounds. Most respondents reported a high level of satisfaction with TEMPO rounds. 76% ($N = 40$) reported improvement in *delivery* of optimal patient care due to TEMPO rounds. 75% ($n = 39$) of respondents expressed satisfaction with *time savings* associated due to improved interdisciplinary communication and early

identification of discharge barriers. A better formulated *discharge strategy* following TEMPO was reported by 70% ($N=36$) respondents; but 40% ($N=21$) also thought that the TEMPO process did not lead to an actual reduction in the GMLOS. We think the large LTACH/SNF demographics we cater to can explain this variance.

CONCLUSIONS: TEMPO delivers an effective discharge strategy by promoting communication and participation between various stake holders. An interdisciplinary TEMPO board has empowered our staff to bring in changes and has improved health care delivery at our hospital by addressing barriers to a safe discharge.

Impact of TEMPO on patient safety and outcomes

Specific attention to readmissions	Early identification of frail and deconditioned for early placement
Improved compliance of CAUTI and CLABSI toolkits	Increased adherence with care bundles.
Switching IV to PO antibiotics and stopping IV fluids early	Higher flu and pneumococcal vaccination rates
Keeping track of Medicare days	Contact precautions compliance
Improving 'core measure' compliance	Identifying 'falls risk' patients

EVALUATION OF BURNOUT AMONG RESIDENTS IN AN ACADEMIC PRIMARY CARE CLINIC SETTING Caroline Falker[3, 1]; Frank D. Buono[3]; Faith Harrington[1]; Rebecca Kosowicz[2, 1]; Sumit Kumar[2, 1]; Rachel Laff[1]; Yungah Lee[2, 1]; Kenneth Morford[4, 1]; Destiny M. Printz[3]; Jonathan Stock[2, 1]; Rebecca Brienza[1, 2]. [1]VA Connecticut Healthcare System, West Haven, CT; [2]Yale New Haven Hospital, Newington, CT; [3]Yale School of Medicine, New Haven, CT; [4]Yale University School of Medicine, New Haven, CT. (Control ID #2706022)

BACKGROUND: Physician burnout is a work-related syndrome involving emotional exhaustion, depersonalization, and a sense of reduced personal accomplishment. Burnout is prevalent among healthcare providers, especially in primary care settings. Studies show that the prevalence of burnout is near or exceeding 50% in physicians. Medical residents are especially vulnerable to burnout. However, there are few studies focusing on the evolution of burnout among residents over time. Additionally, most studies of resident burnout focus on inpatient settings rather than outpatient primary care settings. Identifying the presence of burnout and designing residency curriculum to minimize those factors would benefit overall health and wellbeing of resident trainees, and potentially improve quality of patient care.

METHODS: We utilized the Tedium Measure-21, which is a validated questionnaire to assess burnout. TM-21 comprises of total 21 questions that assess three domains: physical, emotional and mental exhaustion. Each question is weighted with a scale from 1 (never) to 7 (always). The Tedium mean score is calculated for each survey to measure critical stress (mean score between 3 and 4) or burnout (mean score greater than 5). TM-21 was administered to Internal Medicine residents (PGY1-PGY3) and Nurse Practitioner residents over the course of the academic year 2016–2017 at the end of each ambulatory block. Each group of residents completed the TM-21 once every three months for a total of four survey submissions throughout one academic year.

RESULTS: We collected a total of 63 TM-21 surveys from Internal Medicine and Nurse Practitioner (NP) residents over the first two (out of four) data collection periods. Surveys were completed by 24 (38%) PGY-1 residents, 21 (33%) PGY-2 residents, 13 (21%) PGY-3 residents, and 5 (8%) NP residents. Of the total surveyed, 52 residents (82.5%) met criteria for critical stress, 10 residents (15.9%) met criteria for burnout and 1 resident (1.6%) met criteria for neither. Higher rates of burnout were observed in PGY-2 residents as compared to other training levels although preliminary results have not reached significance. Higher rates of critical stress were noted in PGY1 residents.

CONCLUSIONS: We found that a significant proportion of Internal Medicine and Nurse Practitioner residents meet criteria for burnout according to the validated TM-21 survey. Critical stress and burnout varied across different training levels and this may reflect a need for more targeted interventions. Furthermore, studying rates of critical stress and burnout overtime can provide valuable information regarding burnout prevention. Further characterizing burnout into the three subdomains (physical, mental, emotional) may help provide clues to identify factors associated with burnout. We acknowledge that the Maslach Burnout Inventory is accepted as a gold standard for burnout, but we used TM-21 because it has been shown to better assess burnout in healthcare providers with test-retest reliability

EVALUATION OF HOUSE STAFF BURNOUT AND WORK ENVIRONMENT: HOW CAN WE HELP? Mitchell A. Izower; Johanna Martinez; Andrew Yacht. Northwell Health, Manhasset, NY. (Control ID #2702835)

BACKGROUND: Burnout is a long term stress reaction that adversely affects house staff psychological health, patient care and satisfaction, and increases self-perceived errors. The ACGME has increasingly focused on burnout management and mitigation, but specific methods to decrease burnout are needed. We sought to evaluate and delineate sources of, and means to improve, house staff burnout.

METHODS: A cross-sectional study of Northwell Health house staff was performed. 1652 house staff received a ten-item Mini-Z survey regarding stress, burnout, and work conditions, as well as 2 open-ended questions on work life and wellbeing. A formal content analysis was performed for open-ended question responses.

RESULTS: Among 1652 house staff surveyed, 611 responses were received (37%). High stress was present in 52%, with 24% reporting burnout. 47% reported a very busy or chaotic workplace. 32% felt they did not have satisfactory control of their work. 33% felt they did not have sufficient time for documentation. 11% described too much home EMR time. Responses to "What suggestions do you have that would improve your well-being?" were classified by suggestion type. Requested activities included more physical activity (59%) and social events (21%). Services included improved nutrition (29%) and an on-campus gym (25%). Support/work-life changes included decreased work hours (46%). Work flow/dynamic suggestions included EMR improvements (28%), more clinical support staff (23%), and better team dynamics (17%). Training/education suggestions included more educational time (35%). Responses to "If you could change one thing to improve your work life, what would it be?" were classified by suggestion type. Requested work flow/dynamic changes included EMR improvements (44%) and more efficient workflow (19%). Program changes included reduced work hours (34%) and schedule improvements (20%). Services included improved nutrition (27%). Personal wellness suggestions included more exercise (34%) and sleep (19%).

CONCLUSIONS: Given the deleterious effects of burnout on house staff and patient care, programs should seek to reduce house staff burnout. The Mini-Z survey is an efficient method to determine burnout and burnout sources, and house staff feedback should be solicited to address burnout. In our sample,

nearly one-quarter of house staff were experiencing burnout, and over half felt highly stressed. Almost half reported a very busy or chaotic workplace, while one-third felt they did not have satisfactory control of their work or sufficient time for documentation. House staff felt their wellbeing and work life would improve with changes to their amount of physical activity and exercise, nutrition, social activities, educational time, scheduling and work hours, clinical support staff availability, team dynamics, workflow, and EMR functionality. Programs should optimize these factors to decrease house staff burnout.

EXPERIENCES OF LESBIAN, GAY, BISEXUAL, TRANSGENDER AND QUEER (LGBTQ) PEOPLE OF COLOR IN SHARED DECISION-MAKING WITH HEALTHCARE PROVIDERS ABOUT INTIMATE PARTNER VIOLENCE Fanny Y. Lopez[1]; Kathryn E. Gunter[1]; Scott Cook[1]; Justin Jia[1]; Arshiya A. Baig[2, 1]. [1]The University of Chicago, Chicago, IL; [2]University of Chicago, Chicago, IL. (Control ID #2704939)

BACKGROUND: High-quality Shared Decision-Making (SDM) has been positively associated with patient satisfaction, quality of care, and health outcomes. However, SDM has been infrequently studied among minority populations, especially LGBTQ people of color (POC). Successful SDM is especially important for survivors of intimate partner violence (IPV) where sharing information, deliberating options and making decisions collaboratively between patients and providers can result in outcomes ranging from life-saving to catastrophic. However, no research studies have investigated how IPV survivors who are LGBTQ POC engage in SDM with providers. We aim to describe LGBTQ POC's SDM experiences with providers (i.e. physicians, nurses, counselors) to address IPV and provide recommendations to improve SDM with this patient population.

METHODS: From December 2015 to December 2016, we conducted one-on-one, semi-structured interviews with LGBTQ POC, 18 years of age or older, who reported past history of IPV with same-sex, transgender or genderqueer partners. We explored participants' definitions of IPV, experiences discussing IPV and decision-making with providers, and their preferences regarding tools to improve communication and SDM about IPV. Data extracted from audio recordings were transcribed verbatim. To ensure internal consistency, multiple reviewers developed a codebook through an iterative process. We used a modified template approach for data analysis to identify barriers and facilitators that LGBTQ POC experience when discussing IPV and making decisions with providers.

RESULTS: We conducted 36 interviews and coded 24 transcripts. From preliminary analysis, we found that 12 of the 24 participants discussed IPV with healthcare providers. Those who did not discuss IPV cited barriers, including lack of time and trust, as well as concerns about provider's assumptions about IPV based on the patient's race/ethnicity, sexual orientation and/or gender identity. Those who discussed IPV cited facilitators, such as providers' LGBTQ identity, as well as sensitivity and understanding of LGBTQ POC's life stories and experiences of IPV within same-sex, transgender and genderqueer relationships. Participants recommended that providers become culturally competent in LGBTQ and racial/ethnic minority health, ask about IPV in a sensitive way, and address the unique needs of LGBTQ POC to improve IPV SDM.

CONCLUSIONS: The majority of study participants are open to providers asking about IPV and providing culturally tailored resources. Participants recommended that providers use tools, such as face-to-face conversation, written materials, phone and web-based communication, and support groups to facilitate SDM about IPV. Future research should design and evaluate tools that improve SDM with LGBTQ POC experiencing IPV.

EXPERIENCES OF NEIGHBORHOOD CRIME, ADVERSE PSYCHOLOGICAL RESPONSES, AND CHRONIC DISEASE STATUS IN A HIGH-RISK, URBAN POPULATION Elizabeth L. Tung; Monica E. Peek. University of Chicago, Chicago, IL. (Control ID #2705101)

BACKGROUND: Neighborhood crime can have deleterious health effects that lead to or worsen chronic conditions, such as obesity and hypertension. Prior studies have predominantly attributed these health effects to adverse psychological responses to crime, such as negative perceptions about neighborhood safety and chronic stress. However, few studies have examined both the direct experience of crime and adverse psychological responses, in order to corroborate theoretical pathways to downstream health consequences. The purpose of this study is to examine the relationships between experiences of neighborhood crime, adverse psychological responses, and obesity and hypertension status in a high-risk, urban population.

METHODS: An address-based probability sample of 267 participants (ages ≥ 35 years) was conducted to query residents on the South Side of Chicago about neighborhood crime. During hour-long, in-person interviews, participants were asked about their prior experience of neighborhood crime (theft or property damage), psychological responses to crime (perceived neighborhood safety and stress due to crime), demographics, and health status. Objective biological measures (height, weight, and blood pressure) were obtained at the time of interview. Multivariable logistic regression models were used to assess obesity and hypertension status as a function of neighborhood crime and psychological response measures, adjusting for demographic characteristics, self-reported health status, and interaction effects for perceived safety and stress.

RESULTS: Overall, 431 eligible residents were invited to participate and 267 (62%) completed the survey. People were primarily non-Hispanic black (68.9%) or Hispanic (19.3%), female (62.9%), and between the ages of 35–70 (86.5%). More than half (54.9%) were obese and almost half (49%) had hypertension. Prior experience of neighborhood crime was associated with higher adjusted odds of perceived neighborhood safety concerns (Adjusted odds ratio [AOR] = 2.3; 95% CI, 1.3–4.0; $P = 0.003$) and stress due to crime (AOR = 2.9; 95% CI, 1.6–5.2; $P = 0.001$). However, perceived neighborhood safety and stress due to crime were not associated with obesity or hypertension status. Any prior experience of neighborhood crime was independently associated with 87% higher adjusted odds of obesity (95% CI, 1.07–3.26; $P < 0.05$) and 74% higher adjusted odds of hypertension (95% CI, 0.96–3.17; $P = 0.07$).

CONCLUSIONS: Psychological measures, such as perceived neighborhood safety or stress due to crime, may be insufficient to fully examine the relationship between neighborhood crime and chronic conditions in a high-risk, urban population. Alternative pathways, such as community-level processes (e.g., breakdown of social ties may lead to inadequate social support for self-management activities) should be explicitly examined for a more robust understanding of the intersection between neighborhood crime and chronic disease.

FACILITATING HIGH VALUE CARE THROUGH THE ACCURATE DIAGNOSIS OF SKIN DISEASE: A SYSTEMATIC REVIEW Syril Keena T. Que[5]; Sara-Megumi L. Naylor[1, 2]; Robert Dellavalle[3, 4]. [1]Division of Primary Care at the VA Greater Los Angeles Healthcare System, Los Angeles, CA; [2]David Geffen School of Medicine at UCLA, Los Angeles, CA; [3]Denver VA Medical Center, Denver, CO; [4]University of Colorado, Denver, Denver, CO; [5]Brigham and Women's Hospital, Boston, MA. (Control ID #2705634)

BACKGROUND: Primary care physicians (PCPs) are frequently the frontline providers of care for skin disease. Dermatologic complaints make up 6-22% of PCP visits, with only a third of these patients referred to dermatologists for further work-up or management. Accurate diagnosis and optimized care coordination between PCPs and dermatologists is a high priority as it influences subsequent management decisions, including prescriptions, biopsies, referrals, and patient outcomes. It is unclear if current education on dermatologic conditions is sufficient for PCPs to accurately diagnose common skin conditions. In this systematic review, we assess the diagnostic accuracy of PCPs and dermatologists for adult skin conditions encountered in the outpatient setting. To our knowledge, this is the first systematic review that examines diagnostic accuracy for a broad spectrum of dermatologic conditions, including neoplastic, infectious, and inflammatory skin conditions.

METHODS: A systematic review of observational studies and randomized controlled trials was conducted using PubMed and EMBASE from database inception to August 2016. Bibliographies of retrieved studies were further analyzed. Two independent reviewers identified studies and abstracted data. Studies were assessed using *a priori* inclusion and exclusion criteria. Our aim is to compare the diagnostic accuracy of PCPs and dermatologists. Primary outcome measures are sensitivity and specificity.

RESULTS: A total of 25 studies were included, with data from more than 1,953 PCPs, 866 dermatologists, and 12,446 lesions. Only three (12%) studies reported both sensitivity and specificity. Dermatologists showed higher accuracy when compared to PCPs in diagnosing all skin conditions, which reached statistical significance for basal cell carcinoma, seborrheic keratosis and psoriasis. Pooled weighted sensitivity for basal cell carcinoma was 0.46 (95% CI 0.36, 0.55) for PCPs and 0.92 (95% CI 0.84, 1.00) for dermatologists. For seborrheic keratosis it was 0.23 (95% CI 0, 0.48) and 0.79 (95% CI 0.60, 0.98), respectively. For psoriasis it was 0.56 (95% CI 0.43, 0.68) and 0.97 (95% CI 0.94, 1.00), respectively. PCPs exhibited high sensitivity for certain inflammatory and infectious skin conditions including acne— 0.88 (95% CI 0.7, 0.99) and verruca vulgaris— 0.79 (95% CI 0.67, 0.91).

CONCLUSIONS: Dermatologists showed higher diagnostic accuracy when compared to PCPs. Educational initiatives for current and future PCPs should focus on common diagnoses with gaps in diagnostic accuracy, which are highlighted in this systematic review. Meanwhile, increased involvement of PCPs in the management of conditions like acne and verruca allows for improved access to care and reduced health care utilization. Increased collaboration between providers and improvements in diagnostic accuracy can ultimately decrease the number of unnecessary or inappropriate prescriptions, biopsies, referrals, and other indicators of low value care.

FACILITATORS AND BARRIERS OF INTERDISCIPLINARY TEAM FUNCTION IN PRIMARY CARE: SIX YEAR POST-PCMH IMPLEMENTATION Linda Kim[1]; Karleen Giannitrapani[2]; Alexis K. Huynh[1]; Danielle Rose[1]; Alison B. Hamilton[1]; Susan E. Stockdale[1]; Lisa V. Rubenstein[1]. [1]VA Greater Los Angeles Healthcare System, Los Angeles, CA; [2]VA Palo Alto Healthcare System, Palo Alto, CA. (Control ID #2706118)

BACKGROUND: Findings from earlier implementation studies provide some understanding on how elements of the Patient Centered Medical Home (PCMH) model of care delivery affect primary care providers (PCPs), nurses, and administrative staff; however, more work is needed to understand what factors promote or hinder PCP and staff performance and team function. In this study we aim to describe provider mentioned facilitators and barriers to team function, six years post-PCMH implementation, as the initial step in a longitudinal study evaluating changes in team function over time.

METHODS: Data were collected through semi-structured interviews of 36 frontline staff (PCPs, RNs, LVNs, and administrative staff) in 6 VA primary care practices, as part of a larger PCMH implementation study. To ensure we captured a range of perspectives we employed a quota sampling approach to randomly select key informants from each teamlet member role. All sites had implemented Patient Aligned Care Teams (PACT), the VA's version of PCMH, four to six years prior to the interviews. Data were analyzed using a content analysis method of constant comparison to capture provider identified facilitators and barriers to team function.

RESULTS: Factors that facilitated team function include: 1) increased familiarity with team members' roles: "*we still come across some kinks here and there, but…We know what's expected of each of us to make the teamlet*;" 2) participatory decision making: "*And if there's something, we all kind of brainstorm together what should we do. It's a team effort*;" 3) effective communication: "*We have just talked amongst ourselves… if something comes up that we need to talk about… there's never a problem really with our teamlet*;" and 4) having various communication methods available within teams to facilitate coordination of care and between teams to share strategies regarding change processes. Barriers include: 1) staffing shortages/coverage: "*So I think that's one of the issues with PACT that we have here. It may have to do with staffing or just the way coverages need to be coordinate*;" and 2) poor conflict resolution skills: "*… the only time that she would talk to me is if there's a problem and then she will tell me how to fix the problem*;" and 3) systems/processes that hinder workflow: "*You have to cut and paste the note… and then… to an addendum… It seems like a lot of extra work.*"

CONCLUSIONS: Six years after PCMH implementation, there were several elements that helped to promote team function and enhance communication within and between teams; however we also provide insight into areas that need further improvement. Findings from this study can help inform future efforts evaluating changes in team function over time, which can then be used to guide development of evidence-based improvement strategies aimed at optimizing team function.

FACTORS ASSOCIATED WITH BASELINE HYPERTENSION CONTROL IN HEART HEALTH NOW Samuel Cykert[1]; Kamal Henderson[2]; Jacqueline Halladay[2]. [1]University of North Carolina, Chapel Hill, NC; [2]University of North Carolina School of Medicine, Chapel Hill, NC. (Control ID #2706870)

BACKGROUND: Heart Health Now (HHN) is the North Carolina Cooperative for Evidence NOW (EN). EN is an AHRQ funded initiative designed to measure the impact of practice facilitation on the implementation of patient centered evidence in small primary care practices. The current focus of HHN and EN is cardiovascular risk reduction for the adult population cared for by participating practices. This report addresses baseline hypertension control in the first 96 practices reporting and factors associated with higher percentages of control.

METHODS: Practice sites qualified for HHN if the provider staff did not exceed 10 full time equivalents and used an electronic health record (EHR). Note that 90% of primary care practices in NC utilize EHRs. Independent practices and practices that are distant from their affiliated organization were

prioritized for enrollment. Data for HHN measures were extracted from electronic health records (EHRs). Given that these practices used 18 different EHR vendors, once data were extracted, they needed to be normalized using continuity care documents from the various vendors then processed into uniform data sets and dashboards. At baseline, clinicians in each practice completed a practice member survey that included a series of questions on the practice's adaptive reserve (ARS). The primary outcome for this analysis is the proportion of patients with controlled hypertension defined as systolic blood pressure (BP) < 140 mmHg and diastolic BP < 90 mmHg. To identify factors that were associated with practices with higher percentages of patients with BP control, we performed linear regression. Independent variables incorporated in the model included practice ownership/affiliation, daily patient visits per provider, number of clinicians per site, payer mix, PCMH recognition status, the use of practice data discussions, and ARS scores.

RESULTS: EHR baseline data from 96 practices of an eventual 246 have been obtained (practice start dates were randomized). An average of 5.3 providers practiced per site. 65% of practices were clinician owned, 4% hospital owned, and 31% were federally qualified or rural health centers. The average payer mix was Medicare 25%, Medicaid 16%, dual 9%, uninsured 12%, commercial insurance 31%, "other" 6%. 65% of practices were PCMH recognized. The average proportion of patients diagnosed with hypertension who met the definition of control per practice site was 59.5% (SD +/− .17). Regression analysis yielded an adjusted R-squared of 0.36. Factors that were significantly associated with higher percentages of BP control were PCMH recognition ($p = 0.04$) and higher ARS scores ($p = 0.04$).

CONCLUSIONS: Given the correlation between adaptive reserve scores and baseline BP control, a close examination of the effect of practice facilitation on adaptive reserve will likely add to the theoretical understanding of how practice facilitation can influence practice performance. Neither payer mix nor practice affiliation was associated with BP control.

FACTORS ASSOCIATED WITH BOWEL RESECTION IN ACUTE MESENTERIC ISCHEMIA David Mossad[2]; Drew Triplett[1]; Ronald J. Markert[1]; Sangeeta Agrawal[1]. [1]Wright State University, Dayton, OH; [2]Wright State University Boonshoft School of Medicine, Dayton, OH. (Control ID #2705755)

BACKGROUND: Acute mesenteric ischemia (AMI) is a serious and urgent condition. Morbidity and mortality in these presenting patients are significant, with intestinal resection at times being a major necessary intervention. The purpose of this study was to evaluate patient demographics, comorbidity burden, and hospital characteristics in patients with AMI undergoing bowel resection.

METHODS: We used ICD-9 diagnosis codes from the 2001–2010 National Hospital Discharge Survey to identify cases of AMI. ICD-9 procedure codes were then used to identify patients who underwent bowel resection. Comparisons on demographics, comorbidities, hospital length of stay (LOS), and selected health system characteristics were made between those who underwent bowel resection and those who did not. SPSS was used for chi-square and t test analysis at alpha = 0.05.

RESULTS: Among 3,441 cases of AMI, 1,393 underwent bowel resection and 2,048 did not. The resection group was similar in age (64.4 vs 65.7 years, $p = 0.11$) but had a longer LOS (18.0 vs 7.9 days, $p < 0.001$). Males were more likely to undergo resection (43.1% of males vs 38.9% of females, $p = 0.015$). No differences were seen in resection rate based on race ($p = 0.55$). Patients with hypertension (25.5% vs 44.8%, $p < 0.001$), coronary artery disease (CAD) (28.5% vs 41.6%, $p < 0.001$), and diabetes (30.3% vs 41.5%, $p < 0.001$) had lower resection rates. Patients who suffered acute kidney injury (AKI) (51.4% vs 38.6%, $p < 0.001$), and sepsis (61.3% vs 38.9%, $p < 0.001$) during their hospitalization were more likely to undergo resection. Those undergoing surgery were more often being discharged to a short term (37.9%) or long term (58.6%) care facility compared to going directly home (32.4%) ($p < 0.001$). Patients needing resection had a higher mortality rate (23.0% vs 20.4%) but this did not reach statistical significance ($p = 0.067$). Patients in the Northeast (35.5%) were less likely to undergo resection compared to the Midwest (42.9%), South (41.7%), and West (41.6%) ($p = 0.007$). Neither hospital size ($p = 0.36$) nor ownership ($p = 0.29$) were associated with resection. Principal source of payment was not associated with resection ($p = 0.21$). Emergent admissions (42.2%) were more likely to undergo resection compared to urgent (35.8%) and elective (37.4%) admissions ($p = 0.013$).

CONCLUSIONS: Bowel resection is often a necessary step in the management of AMI. This study shows that factors such as gender, LOS, regional distribution, and type of admission were associated with undergoing resection. Comorbidities potentially prohibiting safe intervention such as CAD, diabetes, and hypertension were linked to lower resection rates. Indicators of disease severity, including sepsis and AKI, pointed to a greater likelihood of resection. Those undergoing resection also appeared to have worse functional outcomes as they were less likely to be discharged home.

FACTORS ASSOCIATED WITH WELL PERSON EXAMINATIONS AMONG ADOLESCENTS AND ADULTS WITH DOWN SYNDROME

Kristin M. Jensen[1, 2]; Elizabeth J. Campagna[2]; Elizabeth Juarez-Colunga[2, 2]; Desmond K. Runyan[2]; Allan V. Prochazka[1]. [1]University of Colorado School of Medicine, Aurora, CO; [2]University of Colorado, Aurora, CO. (Control ID #2705371)

BACKGROUND: Persons with Down syndrome (DS) now live well into adulthood and are at risk for comorbidities both congenital and acquired that necessitate regular follow-up across their lifespan. Yet, little is known about their preventive healthcare patterns as they age. In this retrospective study, we evaluate factors that are associated with routine well-person care in adolescents and adults with DS.

METHODS: Using Medicaid claims data (2006–2010) in California (CA), Colorado (CO), Michigan (MI), and Pennsylvania (PA), we defined our cohort as DS patients ≥12yo, enrolled in Medicaid for ≥45/60mo without concurrent Medicare ($n = 629$) for a total of 3951 patients. DS cases were identified by ICD-9 = 758.0 for non-obstetric claims. Well-person examinations were identified by billing codes. The odds of receiving a well examination were modeled using logistic regression controlling for patient demographics, comorbidities, and health care utilization. The model retained all covariates regardless of significance.

RESULTS: Our cohort was 53% male, with 20% adolescent (12–17yo), 31% transition age (18–25yo), and 49% adult (≥26yo). Only 37% of the cohort received at least one well examination during this 5 year study (18% had 1 well examination, 19% had ≥2). Factors predictive of well examination included younger age (Odds Ratio [95% Confidence Limits]: 12–17yo vs ≥26yo = 1.6[1.3–2.0]; 18–25yo vs ≥26yo = 1.5[1.2–1.7]), female gender (1.7[1.4–1.9]), rural residence (1.5[1.2–1.8]), involvement in neurologic (1.5[1.2–1.8]), genitourinary (1.3[1.1–1.5]), or dermatologic organ systems (1.3[1.1–1.5]), mental health diagnoses (1.3[1.1–1.5]), the lack of respiratory (1.2[1.0–

1.4]) or hematologic disorders (1.2[1.0–1.5]), and residence outside of CA (MI 4.0[2.5–6.6]; CO 3.2[2.5–4.2]; PA 4.2[3.1–5.7]). Subgroup analysis excluding CA data showed increased rates of well person examination to 64% (19% had 1 well examination, 44% had ≥2). Predictors of well examinations in the non-CA subgroup included age <26 years, female gender, at least one sick encounter, involvement in neurologic or dermatologic organ systems, and lack of hematologic disorders. Neither emergency department nor inpatient encounters were predictive of receiving well examinations, nor were the presence of comorbidities commonly-associated with DS: congenital heart disease, hypothyroidism, or obstructive sleep apnea.

CONCLUSIONS: The majority of adolescents and adults with DS do not receive well examinations routinely. Although the factors of age and gender correspond to national trends in preventive healthcare, the DS population is inherently more medically complex with risks of acquired comorbidities throughout their lives and thus requires regular follow-up. Our findings represent a significant opportunity to improve delivery of primary care to persons with DS to actively screen for and identify comorbidities with known associations in DS.

FACTORS INFLUENCING PATIENT DECISIONS TO SELF-TITRATE MEDICATIONS FOR DIABETIC PERIPHERAL NEUROPATHY TREATMENT

Somalee Banerjee[2, 3]; Lin Ma[1]; Alyce S. Adams[1]. [1]Kaiser Permanente, Oakland, CA; [2]Kaiser Permanente Oakland, San Francisco, CA; [3]University of California, Berkeley, Berkeley, CA. (Control ID #2705361)

BACKGROUND: Treating diabetic peripheral neuropathy (DPN), one of the most common complications of diabetes, has been challenging due to limited effectiveness of medications, and the need to titrate to balance symptom relief and side effects to prevent medication non-compliance. This study assesses patient self-titration of DPN medications within a larger randomized trial, the Diabetes Telephone Study (DTS), to improve treatment outcomes through automated monitoring of symptoms and treatment side effects.

METHODS: Self-reported data were collected from patients in the intervention arm of DTS between September 2014 and July 2016 and integrated with demographic and clinical data from the electronic health record. The primary outcome was patient initiated titration, as reported via 3 interactive voice response calls over 8 months. Chi square tests were used to examine associations between each of the titration outcomes and patient demographics, drug coverage benefits and clinical characteristics. We used multiple logistic regression models to identify independent predictors of patient titration.

RESULTS: Of the 605 patients studied, 195 or 32% of these patients reporting self-titration during the 8 months following treatment start. Self-titration was associated with gabapentin or nortriptyline use, higher baseline pain interference and being an English speaker, but age, sex, race, chronic pain diagnoses, diabetes severity and other related complications were not. After controlling for baseline demographic and clinical features, factors associated with higher odds for self-titration included: higher baseline pain interference scores (OR: 1.02; 95% CI: 1.00, 1.04); age between 65 and 74 as compared to those older than 75 (OR: 1.62; 95%CI: 1.02, 2.58), speaking English (vs. Spanish) (OR: 5.08; 95%CI: 1.41, 18.30) and more months of full drug coverage benefits (OR: 1.79; 95%CI: 1.01, 3.18). Compared to those taking gabapentin, patients taking nortriptyline (OR: 0.58; 95%CI: 0.38, 0.89) had lower odds of self-titration.

CONCLUSIONS: In summary, self-titration of DPN pain medications in this population was associated with the type of medication prescribed and higher baseline pain levels. Importantly, patients with more continuous drug coverage had nearly twice the odds of self-titration, underscoring the importance of medication cost to patient decision-making. Also, while being an English (vs. Spanish) speaker dramatically increased one's odds of self-titration, the estimates lacked precision due to the small number of Spanish speaking patients in this sample. Further exploration using data from clinical settings is needed to confirm these findings and explore potential barriers to optimal pharmacologic treatment for Spanish-speaking patients.

FACTORS PROMOTING RECOVERY FROM BURNOUT AMONG INTERNAL MEDICINE RESIDENTS: A QUALITATIVE STUDY

Nauzley C. Abedini; Shobha W. Stack; Jessie L. Goodman; Kenneth P. Steinberg. University of Washington, Seattle, WA. (Control ID #2673813)

BACKGROUND: Burnout has been well documented among physicians at all career stages, yet little is known about how physicians recover from and avoid recurrent burnout. Residents are particularly vulnerable, and burnout rates for internal medicine residents are among the highest for all specialties. Using qualitative methods, we sought to identify factors promoting recovery from and avoidance of recurrent burnout among residents in the University of Washington Internal Medicine Residency Program.

METHODS: Between June and August 2016, 25 in-depth semi-structured, 60-min interviews were conducted with a convenience sampling of PGY2, PGY3, and recent graduates of the University of Washington Internal Medicine Residency Program who both experienced and recovered from burnout during residency. Residents were deemed ineligible for participation if they were currently experiencing burnout, as determined by a validated single-item burnout measure. Interviews were audio-recorded and transcribed verbatim. Three investigators independently performed coding in an iterative fashion consistent with Grounded Theory. Investigators compared open and axial codes and reached a consensus regarding major themes.

RESULTS: Participating residents identified factors that put them at risk for burnout, including: uncertainty in their professional role and expectations; lack of connection with patients and co-workers; lack of awareness of burnout syndrome; personal challenges outside of work; workplace challenges; and physical exhaustion. Participants cited multiple factors that contributed to their recovery and avoidance of recurrent burnout, namely (1) professional identity formation through guided reflection, role models, future career planning, setting boundaries, and/or improving medical knowledge; (2) connection with patients, co-workers, family and friends; (3) awareness of burnout and feeling validation of their experience from others; (4) time away from clinical responsibilities; and (5) resolution of personal challenges. The majority of participants reported deriving meaning in medicine from relationships with patients and co-workers, and that burnout was often linked to a loss of that meaning.

CONCLUSIONS: Residents utilize a number of different strategies to recover from burnout. Thus, interventions to alleviate burnout might reflect these strategies. We hypothesize that efforts should be made to (1) raise awareness of burnout and create opportunities for dialogue to validate resident experiences; (2) improve systems and circumstances that lead to fatigue and work compression, and promote self-care; (3) facilitate professional identity formation through reflection and mentorship; and (4) foster connection and relationships with patients and colleagues. In particular, helping residents identify where they derive meaning in medicine and supporting them in building that meaning into their work may be protective against burnout.

FAILURES IN REPEAT DIABETES SCREENING IN PATIENTS WITH PREDIABETES IN AN URBAN SAFETY-NET HEALTH CARE SYSTEM Brooks Brodrick; Hua Lin; Ethan Halm; Michael E. Bowen. Univ of TX Southwestern Med Ctr, Dallas, TX. (Control ID #2706186)

BACKGROUND: National diabetes screening guidelines recommend repeat screening every 12 months for those with prediabetes and every 36 months for those with normal screening results. However, little is known about frequency and timing of repeat diabetes screening in real world clinical practice.

METHODS: We conducted a retrospective cohort study in a large, integrated safety-net healthcare system using electronic medical record (EMR) data from 2010 to 2014. Eligible patients were age 18–65, non-pregnant, and had an index, outpatient visit and a resulted gold standard diabetes screening test (fasting glucose or hemoglobin A1C) between January 2010 and June 2013. Eligible patients had ≥1 additional office visit before December 2014. Patients with diabetes were excluded using ICD-9 codes and test results consistent with diabetes. We describe the frequency of rescreening and examine characteristics associated with rescreening in patients with initial test results in the normal and prediabetes range. We used Cox proportional hazards regression to describe the time to repeat diabetes testing in normal vs. prediabetes patients. Multivariate models adjusted for age, sex, race, BMI, hypertension, hyperlipidemia, and family history.

RESULTS: A total of 18,323 patients met inclusion criteria. On average, patients were 48 years old and had a BMI of 31.7. Overall, 62% were female, 83% were non-white, 53% had a family history of diabetes, and 57% had hypertension. Only 37% of patients completed repeat screening (mean time to follow-up time was 398 days). Rescreening was more common among those that were older, female, had a higher BMI, prediabetes, hypertension, and hyperlipidemia ($p < 0.01$). Those with prediabetes on their initial screening ($N = 6585$) were more likely to be rescreened compared with those with normoglycemia (HR = 1.33) in multivariate analysis. However, at 12 months, only 25% of those with prediabetes had been rescreened, and by 18 and 36 months, repeat screening improved to only 34 and 41% respectively. Those with high-risk prediabetes (A1C ≥ 6% or FBG ≥ 110 mg/dL) were more likely be rescreened than those with low risk prediabetes at 12 months (34% vs 18%), 18 months (42% vs. 28%), and 36 months (49% vs. 36%) ($p < 0.01$ for all). Among those who were rescreened, 17% transitioned from normal to prediabetes, 3% transitioned from normal to diabetes, and 9% transitioned from prediabetes to diabetes.

CONCLUSIONS: Although patients with prediabetes are more likely to be rescreened than those with normoglycemia, only slightly more than one third of patients with prediabetes completed repeat diabetes screening at 18 months. Even among those with high risk pre-diabetes, no more than half were rescreened within 3 years. Better, more systematic, population health approaches to promote timely rescreening in patients with prediabetes are needed.

FEASIBILITY AND ACCEPTABILITY OF A GROUP MEDICAL VISIT INTERVENTION TO IMPROVE HCV TREATMENT UPTAKE AMONG PERSONS WHO INJECT DRUGS (PWID) IN A PRIMARY CARE SETTING Brianna L. Norton[4]; Mary Gover[4]; Cara McMurry[3]; Joseph Deluca[4]; Chinazo Cunningham[2]; Alain H. Litwin[1]. [1]Albert Einstein College of Medicine, Bronx, NY; [2]Albert Einstein College of Medicine & Montefiore Medical Center, Bronx, NY; [3]Montefiore, Brooklyn, NY; [4]Montefiore Medical Center, Bronx, NY. (Control ID #2707549)

BACKGROUND: Throughout the US, the majority of people infected with HCV (hepatitis C virus) are persons who inject drugs (PWID), yet very few have ever initiated treatment. We set out to investigate the feasibility and acceptability of implementing a primary care based HCV Group Evaluation and Treatment Uptake (HCV GET-UP) intervention to improve HCV treatment uptake among PWID.

METHODS: Patients were recruited from a primary care clinic in the Bronx, NY. Participants were considered potentially eligible if they had a positive HCV antibody in the electronic health record. Patients were then called for study screening, and if eligible, asked to attend a baseline visit where patients signed written consent, were asked baseline demographic information, and provided urine for drug toxicology screening. The study intervention consisted of 4-weekly group medical visits with a physician where HCV-related medical evaluation/work-up, education, support, and skill building were provided. All visits were billed to insurance as a 1-hour group medical visit. At the end of the intervention, patients were offered an expedited appointment within 2 weeks for onsite HCV treatment at the primary care clinic. We assessed feasibility via recruitment and retention rates, and acceptability via brief post-group visit surveys with 5-point Likert scale (not helpful-very helpful).

RESULTS: Among 40 patients determined to be preliminarily eligible (HCV Ab+) for the study, phone contact was made with 27 (67.5%). Of the 27 patients reached, 13 (48.1%) persons agreed to be screened, and 7 were ultimately enrolled. Among the seven participants, 71.4% were male, all were either African American or Latino/Hispanic, with a median age of 54.5 (41.0-63.0). The majority were on public insurance (85.8%), over half received food stamps (57.1%), and one person was homeless (14.3%). Nearly all were on opioid agonist treatment (85.7%), and three (42.9%) were actively using drugs at baseline. Six participants made it to at least one group visit (participant range 4–6 at each group). Acceptability was high among participants; all components were found to be very helpful (median Likert scores for medical evaluation: 5, education: 4.8 (4–5), skill building: 5, group activity (support): 5. Of the 6 participants who attended at least one visit, 5 attended their follow-up appointment for HCV treatment and 4 have initiated treatment.

CONCLUSIONS: These findings indicate that a primary care based HCV Group Evaluation and Treatment Uptake (HCV GET-UP) intervention for PWID is both feasible and acceptable. We will now commence a randomized control trial to test this intervention for improving HCV treatment uptake and cure among PWID in primary care. This intervention has potential to improve individual health outcomes, while reducing the prevalence of HCV in a community with continued transmission.

FEMALES IN ACADEMIA WITH THE FEMALE MENTORS HAVE A DECREASED LIKELIHOOD OF PROMOTION: RESULTS FROM A NETWORK ANALYSIS OF ACADEMIC GENERALISTS Krisda H. Chaiyachati[1]; Joshua M. Liao[1]; Gary E. Weissman[1]; Rebecca Hubbard[2]; Anna U. Morgan[1]; Anna Buehler[3]; Judy A. Shea[1]; Katrina Armstrong[4]. [1]The Perelman School of Medicine at the University of Pennsylvania, Philadelphia, PA; [2]University of Pennsylvania, Philadelphia, PA; [3]UC San Diego Medical School, San Diego, CA; [4]Massachussetts General Hospital, Boston, MA. (Control ID #2706314)

BACKGROUND: While mentorship is critical for academic careers, the association between academic promotion and mentorship attributes is poorly

understood. Moreover, we hypothesized that mentor attributes may affect the known gender disparities in promotion. We used network analysis methods to explore the relationship between mentorship and promotion among academic generalists trained in internal medicine, pediatrics, and family medicine.

METHODS: Through online searches and contacting programs, we identified graduates of generalist-oriented fellowships (e.g., general medicine, RWJ Clinical Scholars Program) between 2002–2007. We manually extracted PubMed publication data and electronically surveyed graduates to obtain information about grants, academic rank, and their top 10 most influential career mentors at the 5-year mark post-fellowship. With respondent mentees and nominated mentors represented as vertices, and mentor relationships as edges, we constructed a generalist community graph and generated 2 network measures: percent of common gender dyads (i.e., gender concordant mentee-mentor pairs) and mentor centrality (i.e., how connected a mentor is to other network mentees). Using multivariable logistic regression adjusted for respondent and training institution characteristics, we evaluated the impact of common gender dyads, mentor centrality, and the interaction between the two on promotion to associate professor or higher, 5 years post-fellowship. We also calculated "gender assortativity" for the community graph, a composite measure of mentee preference for the same gender mentors [range: −1 (pref. for opposite-gender) to 1 (pref. for same-gender)].

RESULTS: In total, 162 graduates representing 19 institutions completed our survey (51% response rate). Among the 136 who remained in academia 5 years post-fellowship, the majority were female (65%) and white (67%). At the 5-year mark, respondents reported a median of 3 mentors (IQR 3–5) and 10 peer reviewed publications (IQR 4–18). Thirty-nine percent reported < $500 K in grants and 13% achieved associate professor or higher. In multivariable analysis, neither gender nor percent of common gender dyads independently predicted promotion. However, the association between common gender dyad and promotion differed for men and women respondents with an odds ratio (OR) of 8.61 for men and 0.06 for women (interaction term p-value = 0.03). Other significant associations with promotion included mentor centrality, publications, and grant dollars. The assortativity of the mentorship graph was 0.11 ($p < 0.001$).

CONCLUSIONS: We identified facets of mentorship that may affect early career promotion. While more work is needed, we found the relationship between promotion and common gender dyads varied by gender—female mentees are less likely to be promoted with more female mentorship compared to males mentees with more male mentorship. Educators should consider mentorship disparities to help generalists, irrespective of gender, achieve academic promotion.

FINANCIAL IMPLICATIONS OF NON-VISIT-BASED PRIMARY CARE UNDER CAPITATED PAYMENT: A MODELING STUDY

Sanjay Basu[3]; Russell Phillips[1]; Zirui Song[2]; Asaf Bitton[1]; Bruce E. Landon[1]. [1]Harvard Medical School, Boston, MA; [2]Massachusetts General Hospital, Boston, MA; [3]Stanford University, Stanford, CA. (Control ID #2701995)

BACKGROUND: Capitated payments may provide incentives for primary care practices to shift towards new care models. Our objective was to simulate whether shifting toward team- and non-visit-based care is financially sustainable for internal medicine primary care practices under traditional fee-for-service (FFS), capitated payment, or a mix of the two.

METHODS: We utilized a microsimulation model of utilization, cost and revenue under different care models at U.S. primary care practices, which sampled from data in the Medical Group Management Association national Cost and Revenue survey ($N = 969$ primary care practices, 2014). We externally validated the model by ensuring it was within 5% absolute error from utilization, revenue, and cost estimates (by age, sex, race/ethnicity, primary ICD-9 diagnostic code, and insurance type) among participants in the National Ambulatory Medical Care Survey (NAMCS, 2014, $N = 31{,}229$ patients) and an independent national survey of $N = 2{,}518$ practices. In the model, simulated practice revenues and costs were computed across a range of FFS and capitated payments, with the capitated proportion of payment varied from 0% (traditional FFS) to 100% (fully capitated). Revenues and costs were compared before and after substitution of low-complexity physician visits (those for low-risk diagnoses without any laboratory testing, medication prescriptions, or imaging) with team- and non-visit-based services (nurse visits, nurse/physician telephone/email visits, and care coordination with a medical assistant).

RESULTS: Substitution of low-complexity visits with team- and non-visit-based services produced financial losses for simulated practices under FFS payment, reducing net revenues from $78,288 per full-time physician per year (95% CI: $12,517, $98,552) to $35,890 (95% CI: −$42,846, $91,283). Substitution produced financial gains for simulated practices under capitated payment if >68% of annual payment was capitated. At 100% capitation, net revenues increased to $205,418 (95% CI: $140,206, $222,780) per full-time physician, due to growth in panel size. When practices received a bonus of 0.6% of total expenditures, substitution of low-complexity produced financial gains for simulated practices if >58% of annual payments were capitated.

CONCLUSIONS: A shift to capitated payment may create an incentive for practices to increase non-visit-based primary care delivery, but a high share of capitation may be required to make such a shift financially attractive.

FINANCIAL INCENTIVES FOR SMOKING ABSTINENCE IN HOMELESS SMOKERS: A RANDOMIZED CONTROLLED TRIAL

Travis P. Baggett[4, 3]; Yuchiao Chang[4, 1]; Awesta Yaqubi[2]; Claire McGlave[2]; Stephen Higgins[5]; Nancy A. Rigotti[2, 1]. [1]Harvard Medical School, Boston, MA; [2]Massachusetts General Hospital, Boston, MA; [3]Boston Health Care for the Homeless Program, Boston, MA; [4]Division of General Internal Medicine, Massachusetts General Hospital, Boston, MA; [5]Vermont Center on Behavior and Health, University of Vermont, Burlington, VT. (Control ID #2707557)

BACKGROUND: Three-quarters of homeless adults smoke cigarettes, contributing to 3- to 5-fold higher rates of tobacco-attributable mortality compared with the general population. Homeless smokers want to quit smoking, but the proportion who are able to do so is one-fifth the national average and studies of conventional treatment approaches have yielded modest results. Financial incentives for smoking abstinence have shown promise in non-experimental studies of homeless smokers, but randomized trial data are lacking in this population. We conducted a pilot randomized controlled trial of financial incentives for smoking abstinence among homeless smokers in Boston, MA.

METHODS: All study procedures occurred between October 2015 and June 2016 at Boston Health Care for the Homeless Program. Eligibility criteria included age ≥18 years, current smoking (≥5 cigarettes/day, ≥100 cigarettes lifetime), current homelessness, and desire to quit smoking in the next month. Individuals were not excluded for current drug or alcohol use. Participants randomized to the financial incentives arm ($N = 25$) could earn escalating monetary rewards ($15-$35) for carbon monoxide (CO)-defined smoking abstinence (<8 parts per million [ppm]), assessed 14 times over 8 weeks.

Control arm participants ($N = 25$) were given $10 at each assessment visit, regardless of their exhaled CO levels. All study payments were made onto reloadable debit cards issued to each participant at enrollment. Participants in both arms were offered nicotine patches and weekly behavioral counseling. The primary outcome was a repeated measure of point-in-time smoking abstinence (CO <8 ppm) across the 14 study visits. The secondary outcome was point-in-time abstinence at 8 weeks. Exploratory smoking outcomes were self-reported past 1-day and 7-day abstinence from 1) any cigarette and 2) any puff of a cigarette. Other outcomes included quit attempts, nicotine patch use, counseling attendance, and changes in alcohol and drug use severity scores.

RESULTS: Compared with control arm participants, financial incentive arm participants had greater point-in-time abstinence overall (OR 7.28, 95% CI 2.89, 18.3) and at the end of treatment (48.0% vs. 8%, $p = 0.004$). Similar effects were seen for past 1-day abstinence, but the rates of past 7-day puff abstinence were negligible (0-4%) in both arms. Incentive arm participants made significantly more past-month quit attempts at 4 weeks ($p = 0.03$). Nicotine patch use ($p = 0.80$) and counseling attendance ($p = 0.43$) did not differ significantly between groups. There were no significant changes in alcohol or drug use severity scores in either group.

CONCLUSIONS: Among homeless smokers, financial incentives increased brief smoking abstinence and quit attempts without worsening substance use. This approach is promising but requires modification to achieve more sustained smoking abstinence in this vulnerable population.

FINANCIAL INCENTIVES OF HIGH-DEDUCTIBLE PLAN MEMBERS AND CLINICIAN-BASED PREDICTORS OF LOW-VALUE BACK IMAGING

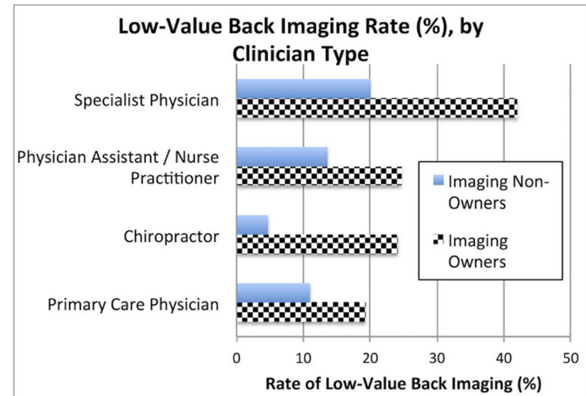
Arthur Hong; Dennis Ross-Degnan; Fang Zhang; James F. Wharam. Harvard Medical School and Harvard Pilgrim Healthcare, Boston, MA. (Control ID #2701134)

BACKGROUND: Physicians and policy-makers often cite patient demand as a driver of unnecessary medical care, while other analysts point to unexplained variations in clinician practice. Consumer-driven health plans (CDHPs) are touted to reduce patient demand, are increasingly prevalent, and are prominent among proposals to replace the Affordable Care Act. We examined whether patient financial incentives outweigh clinician characteristics as predictors of one of the most common low-value services: low-value back pain imaging.

METHODS: Using commercial insurance claims from 2010–2014, we used multivariate logistic regression to model the likelihood of imaging for acute uncomplicated back pain, in adults aged 18–64. We used claims algorithms from the literature to define imaging (X-ray, CT scan, or MRI) after a back pain visit, excluding patients with red flag symptoms such as cancer or neurologic deficit. Patient predictors were patient demographics, CDHP enrollment (high-deductible plan with health savings account), and whether a patient had zero out-of-pocket cost for the defining clinician visit and thus likely faced no cost sharing for potential imaging. Clinician predictors were clinician type (primary care, specialist, chiropractor, physician assistant/nurse practitioner), imaging equipment ownership, and if a clinician's prior patient received imaging. Ownership was established from claims details using validated methods. We used marginal effects to estimate adjusted imaging rates by clinician type and ownership.

RESULTS: Our sample had 1,017,440 visits seen by 103,041 clinicians. CDHP members had 0.91 [95% CI: 0.89, 0.92] lower odds of low-value image, and patients with no cost sharing for a potential image had 1.26 [95% CI: 1.23, 1.29] higher odds. If a clinician owned imaging equipment, low-value image odds were 1.97 higher [95% CI: 1.94, 2.00], and marginally adjusted rates of image were higher for all types of clinician owners (figure). If a clinician's prior patient received imaging, odds of image were 2.57 higher [95% CI: 2.54, 2.60].

CONCLUSIONS: Clinician factors appeared to be stronger predictors of low-value back imaging than patient financial incentives. Policymakers should be aware of the limitations of increasing patient cost sharing to reduce unnecessary care.



FIREARM STORAGE PRACTICES, RISK PERCEPTIONS, AND PLANNED SUICIDE PREVENTION ACTIONS AMONG U.S. VETERANS WITH AND WITHOUT SELF-HARM RISK FACTORS

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BACKGROUND: Veterans accounted for 18% of all U.S. adult suicides in 2014, two-thirds of which involved firearms. Despite the disproportionate use of firearms in veteran suicides and the well-established link between firearm access and suicide risk, little is known about Veterans' firearm storage practices or their beliefs about the relationship between firearm access and suicide risk.

METHODS: Data come from a nationally representative, Web-based survey designed by the investigators and conducted in April 2015 by the survey firm Growth for Knowledge. Respondents were drawn from a group of approximately 55000 U.S. adults selected (on an ongoing basis) with an equal probability of selection. Primary outcomes were the proportion of veteran firearm owners who: 1) stored any household firearm loaded and unlocked, 2) *agreed* or *strongly agreed* that a household firearm increases suicide risk, and 3) reported they would limit firearm access were a household member to become suicidal. We categorized respondents based on the presence of any self-harm risk factor (yes/no), including chronic pain, mood or anxiety disorder, schizoaffective disorder or schizophrenia, and alcohol intake in excess of recommended gender-specific limits. We examined how outcomes varied based on risk for self-harm. We applied weights to account for oversampling and nonresponse and describe findings using weighted proportions and 95% confidence intervals (CI).

RESULTS: Of 7318 panel members invited to participate, 3949 (54.6%) completed the survey and 580 met inclusion criteria. The mean age of Veteran firearm owners was 62.8 years; 94.6% (CI 92.0,96.4) were male and

33.4% (CI 28.8,38.4) had at least one self-harm risk factor. Thirty-four percent (CI 28.8,38.7) of Veteran firearm owners reported storing at least one firearm loaded/unlocked and 6.2% (CI 4.5,8.6) *agreed* or *strongly agreed* that firearms increase household suicide risk. Findings did not differ substantially by self-harm risk factor status. A greater proportion of firearm owners with (than without) self-harm risk factors indicated they would limit firearm access if a household member were suicidal [89.3% (CI 82.2,93.8) vs. 78.6% (CI 72.3,83.8)]. Of those who would take steps to limit firearm access, 24.6% (CI 20.2,29.6) would store firearms away from home and 21.5% (CI 17.6,26.0) would lock all household firearms. Of the 36.4% (CI 31.5,41.6) of firearm owners who indicated they would not need to take action with regard to their firearms because all guns were already inaccessible, 22.1% (CI 16.0,29.7) reported at least one firearm was stored loaded/unlocked.

CONCLUSIONS: One in three U.S. Veteran firearm owners store a firearm in their home loaded and unlocked, only one in twenty believe that a household firearm increases suicide risk, and one in four consider a loaded and unlocked firearm to be inaccessible to suicidal household members. Affecting risk perceptions may be a critical aspect of interventions addressing lethal means safety among U.S. Veterans.

FOOD INSECURITY IN VETERANS RECRUITED FOR A PILOT WEIGHT MANAGEMENT STUDY FOR VETERANS IN PRIMARY CARE: AN EXPLORATORY ANALYSIS Clare M. Viglione[4, 1]; Nadera Rahman[4, 1]; Omar Sanon[4, 1]; Amzad Chowdhury[4, 1]; Yixin Fang[3]; Scott Sherman[4, 2]; Adina Kalet[1]; Joanna Dognin[4]; Melanie Jay[4, 1]. [1]NYU Langone Medical Center, New York, NY; [2]NYU School of Medicine, New York, NY; [3]New Jersey Institute of Technology, Newark, NJ; [4]VA New York Harbor Healthcare System, New York, NY. (Control ID #2704919)

BACKGROUND: Food insecurity (FI) occurs when individuals or households have limited or uncertain access to adequate food. People with FI may find it particularly difficult to eat a balanced diet and manage weight. Individuals who report FI are 1.4 times more likely to have obesity. U.S. Veterans have a greater prevalence of FI compared with the general population (24% vs. 19%). As part of a pilot randomized controlled trial to test the impact of an obesity intervention for Veterans, we explored the prevalence of FI in our sample and assessed the impact of FI on weight outcomes.

METHODS: Veterans with a Body Mass Index of greater than or equal to 30 or between 25 and 29.99 with at least one comorbidity were recruited by phone for a pilot study. Participants randomized to the intervention received a technology-assisted health coaching session and follow-up coaching calls; control participants received a VA "healthy living messages" pamphlet. At baseline and 3 months, participants had weight measurements and completed surveys. To measure FI, we used a 6-item Household Food Security Scale (FI = 2 or more affirmative responses). We assessed the impact of FI on variables independent of arm assignment in participants who returned for a 3-month measurement visit (Wilcoxon rank sum tests and Fisher's Exact Test). We also analyzed the role of FI as a moderator between arm and study variables using ANOVA.

RESULTS: Out of 31 Veterans who enrolled in the study (Mean age = 53.48, 63% male, mean BMI = 31.72), 10 demonstrated FI at baseline and 25 participants completed 3 month measurements. Independent of the intervention, those with FI ($n = 10$) lost .01 kg of weight and those without FI ($n = 15$) lost 1.69 kg at 3-months but the difference was not significant ($p = 0.2$). Similarly, 0/10 Veterans with FI achieved 2.5% weight loss, compared to 4/15 of those without FI ($p = 0.12$). Those with FI in the control group gained weight when compared to those without FI (1.04 kg, SD = 1.41 vs. −1.75, SD = 3.96) and those with FI in the intervention lost the same amount of weight as those without FI (−1.59 kg, SD = 0.83, vs. -1.59, SD = 2.27; $p = 0.24$ for the interaction (not significant)).

CONCLUSIONS: FI in Veterans enrolled in a weight management study is high. Participants with FI in the control arm may have gained weight when compared to non-FI participants, while intervention arm participants with FI lost similar amounts of weight to those without FI. This suggests that the intervention may reduce the negative impact of FI. While this pilot study was not powered to show a significant difference, we have amended health coaching protocols to better address FI in our intervention (e.g. screening for FI and linking participants with Supplemental Nutrition Assistance Program (SNAP) benefits and similar resources) hoping to maximize its effectiveness.

FORECASTING CHANGE IN HEMOGLOBIN A1C LEVELS OVER 60 WEEKS IN TYPE 2 DIABETICS Douglas Gunzler[1]; Shari Bolen[3]; Neal V. Dawson[2]. [1]Case Western Reserve University, Cleveland, OH; [2]MetroHealth Medical Center, Cleveland, OH; [3]MetroHealth/Case Western Reserve University, Cleveland, OH. (Control ID #2702117)

BACKGROUND: One size fits all treatment strategies targeting individuals with Type 2 Diabetes (DM2) may fail to show objective population results in management of DM2 symptoms. Methods were developed to help clinicians classify a DM2 patient population into risk level subgroups based on EHR-available clinical and economic risk factors used to forecast expected change in Hemoglobin A1c (HbA1c) levels over the short term. Understanding risk factor levels of change in HbA1c over time may help clinicians tailor treatment strategies for individual DM2 patients.

METHODS: We analyzed retrospective cohort data over 60 weeks in 2011 from an EHR data base of DM2 patients from a large safety net hospital. We included all subjects with at least three clinic appointments ($N = 3758$). A linear mixed effects modeling approach was used to evaluate the relationship between changes in HbA1c level at follow-up appointments and risk factors at baseline including HbA1c, sex, age, comorbidities (via Charlson), body mass index, education (in years), insulin usage, socioeconomic position (SEP), health insurance type, depression diagnosis and DM2 complications. A predicted slope was calculated for each individual to measure expected trajectory change in HbA1c level. Individuals were classified into quintiles based on these slopes to examine risk level spectral effects that might explain HbA1c level trajectory change over time for different subgroups.

RESULTS: Before accounting for risk factors, on average, over the 60 weeks there was no significant change in HbA1c over time ($p = 0.770$). However, after accounting for risk factors, and classifying subjects into quintiles, different subgroups of individuals were forecasted for positive (>0) and negative (<0) trajectory slope change in HbA1c level (see Figure). The five quintiles significantly differed from each other ($p < 0.05$) in baseline HbA1c, age, comorbidities, SEP, sex, depression diagnosis, insulin usage, and health insurance type. The first quintile was characterized by the highest average baseline HbA1c (mean = 9.67, SD = 2.30), a low SEP (mean = −0.14, SD = 1.87), and the highest number of insulin users (Yes = 555, No = 116), while the fifth

quintile had the lowest average baseline HbA1c (mean = 6.75, SD = 1.32), a high SEP (mean = 0.08, SD = 1.72), and the lowest number of insulin users (Yes = 94, No = 577).

CONCLUSIONS: Treatment of DM2 patients should include specifically tailoring care based on individual clinical risk factor levels. On average, this DM2 population, did not show any significant change in HbA1c level over 60 weeks. However, particular subgroups of patients were forecasted to positive or negative changes in HbA1c levels over this time period. Recognizing the risk factor levels of patients in these different quintiles and tailoring care accordingly may help patients better stabilize their HbA1c levels over the short term.

FRAILTY AND THE IMPACT OF PRIMARY CARE ON OUTCOMES AMONG PATIENTS WITH CHRONIC RENAL INSUFFICIENCY Jodi B. Segal[1, 2]; Hsien-Yen Chang[2]; Ravi Varadhan[1]; Raquel Greer[1]. [1]Johns Hopkins University School of Medicine, Baltimore, MD; [2]Johns Hopkins University Bloomberg School of Public Health, Baltimore, MD. (Control ID #2704924)

BACKGROUND: Fried and colleagues described a frailty phenotype. This phenotype is manifest with 3 or more of the following: low grip strength, low energy, slowed waking speed, low physical activity, or unintentional weight loss. Frailty has been associated with disability and hospitalization among older individuals. In these analyses, we aimed to assess whether frailty impacts death and ESRD development among individuals with CKD and whether it alters the impact of primary care on these outcomes.

METHODS: We quantified the association between primary care utilization and ESRD incidence or death among older US adults with chronic kidney disease (CKD) in 2005–2006 using Medicare claims. We previously developed the Claims Based Frailty Index (CFI) which allows frailty to be detected with claims data alone. We generated the CFI for each individual using diagnosis codes from their claims data from the preceding 6 months. We used Cox proportional hazard models and competing risk models to estimate hazard ratios (HRs) for ESRD and mortality including our measure of frailty in the models and in stratified analyses, and tested the impact of a PCP visit on these outcomes.

RESULTS: Among 106,765 individuals, 4,264 patients developed ESRD and 45,059 died over four years. Most (79%) had at least one primary care visit in 2006. The presence of frailty was an independent predictor of the outcomes of death [HR 1.14 (95% CI 1.15–1.25)] and ESRD [HR 1.50 (95% CI 1.48–1.58)], after extensive adjustment for comorbid conditions. Compared to patients with no PCP visits, patients with at least one visit had a lower risk of death [HR 0.73 (95%CI 0.72–0.75)] overall and in age stratified models. The benefits of a PCP visit on averting mortality were equivalent among frail and non-frail individuals, HR 0.74 (95% CI. 0.71–0.78) and HR 0.74 (95% CI 0.72–0.77), respectively. In the competing risk model, a PCP visit did not significantly reduce ESRD incidence [HR 0.93(95% CI 0.87–1.0)]; PCP involvement benefited neither frail nor non-frail individuals.

CONCLUSIONS: Frailty is an independent predictor of death and ESRD among older individuals with CKD. PCP involvement in the care of frail and non-frail individuals with CKD lessens the risk of death, non-differentially, but not the risk of ESRD. The impact of primary care is likely through modification of comorbid conditions associated with death. We found that frailty status did not alter the impact of primary care on outcomes among patients with chronic renal insufficiency.

FROM ACUTE TO CHRONIC: OPIOID RECEIPT FOLLOWING INCIDENT USE COMPARED ACROSS SURGICAL, MEDICAL AND OUTPATIENT SETTINGS Hilary Mosher[2, 3]; Brooke Hofmeyer[3]; Brian C. Lund[1]. [1]Center for Comprehensive Access & Delivery Research and Evaluation, Iowa City, IA; [2]University of Iowa Hospitals and Clinics, Iowa City, IA; [3]Iowa City VA Medical Center, Iowa City, IA. (Control ID #2689998)

BACKGROUND: Opioid analgesics may be initiated following surgical and medical hospitalization or in ambulatory settings. Rates of subsequent long-term opioid therapy (LTOT) have not been directly compared. We present rates of LTOT following incident opioid exposure at surgical discharge, medical discharge and outpatient visits, and identify factors associated with LTOT following surgical and medical discharge.

METHODS: This observational study using Veterans Administration (VA) Corporate Data Warehouse (CDW) data included all patients receiving an outpatient opioid prescription from a VHA provider in FY2011, preceded by 365 days with no outpatient opioids. The first 30 days of exposure after incident opioid prescription were considered independently of the outcome, LTOT, which is a period of continuous opioid supply beginning within 90 days of initial prescription and lasting 90 days. If a continuous opioid episode began within the first 30 days, the episode start date was re-set to day 31 (i.e., opioid supply must extend through days 31–121 to be considered long-term). We repeated the analysis excluding all patients with an initial 30-day supply, which may signal planned (intentional) LTOT. We performed bivariate and multivariate analyses to identify factors associated with LTOT following surgical and medical discharges.

RESULTS: Following incident prescription, 2.9% of discharged surgical patients, 10.2% of discharged medical patients, and 14.9% of outpatients received LTOT. Where only initial <30 days prescription were considered (N = 278,771), rates were 2.3%, 7.1%, and 5.1%, respectively. The adjusted odds ratio for LTOT was 0.32 (95% CI 0.29–0.36) for surgical vs medical patients, and 0.33 (95% CI 0.30–0.36) for surgical vs ambulatory patients. In surgical and medical patients, substance abuse, age 50–64 years, ≥90 days of prior non-opioid analgesic use, and concurrent antidepressant or muscle relaxant use were associated with LTOT. In surgical patients, initial dose of ≥12.5 mg/day of morphine equivalents, and initial days' supply of >14 were significant; in medical patients, initial dose ≥25 mg/day of morphine equivalents and initial days' supply of >7 were associated with LTOT. Number of opioid prescription fills within the initial 30 day exposure period was strongly associated with the outcome in both groups; 22.6% of discharged medical patients who received 2 fills, 33.6% who received 3 fills and 44.2% of patients with ≥ 4 fills had subsequent LTOT.

CONCLUSIONS: Rates of long-term opioid receipt following new opioid prescription are lower following surgical discharge than medical discharge or outpatient visit. Characteristics of opioid prescribing within the initial 30 days, including initial dose, days prescribed, and most prominently repeat prescriptions, are strongly associated with LTOT and may offer opportunities for early recognition or intervention if long-term opioid therapy is unintended or undesirable.

FROM PRACTICE EMPLOYEE TO (CO-)OWNER: YOUNG PRIMARY CARE PHYSICIANS PREDICT THEIR FUTURE CAREERS. A CROSS-SECTIONAL SURVEY

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BACKGROUND: In Switzerland, the mean age of Primary Care Physicians (PHP) is 55, and PHPs over 65 make up 15% of the workforce of the about 6000 PHPs. Switzerland already is short about 2000 PHPs. As many will retire over the next years, the shortage will increase to 4000, and the country will need young doctors to fill their positions. In a previous study, we found that 41% of future PHPs wanted to be employees rather than practice owners. As a result, some journalists declared that young PHPs were not brave enough to venture out on their own. We set out to determine what kind of employment young PHP wanted, if their preferences would differ depending on ownership of practices, and to determine the working conditions and factors most important in their choice of practice.
METHODS: This is a cross-sectional study using an online survey. As Switzerland has no national register of PHP residents, we administered the survey to members of the Swiss Young PHP Association. All 456 members were medical students (3rd year on), residents, or PHP within five years after residency. We excluded 13 (2.9%) members with no valid email address. Participants' characteristics, their preferred type of practice and working conditions were collected using closed and open-questions. We asked participants to rate the attractiveness of fictional job ads that differed in ownership (PHP-owned/not-PHP-owned). To compared the attractiveness of job adds we calculated means and 95% confidence intervals (CI) for their ratings. To identify factors most important with their choice, we used logistic regression models adjusting for age, sex, language, civil status, desired workload and other covariates after a hierarchical stepwise elimination and calculated odds ratios (OR) and 95% CI.
RESULTS: We received 270 (61%) replies. Most respondents were female (71%) and aged in mean 32.9 (SD 4.7) years. Most wanted to work in the suburbs or countryside and intended to work part-time: mean desired workload was 78% for men and 66% for women. Positive working climate was a major factor in choosing a practice. A large majority rated job ads higher when they were from PHP-owned practice (89%, 95%CI 84–92%). Those wishing to work full-time and to be employed long-term were less in favour of a PHP-owned practice (OR 0.13, 95%CI 0.02–0.95 and OR 0.20, 95%CI 0.04–0.95, respectively). Most participants projected a career arc from employment to (co-)ownership of a practice within five years; only 7–9% preferred to remain employees.
CONCLUSIONS: Future PHPs in Switzerland want to work part-time in small, PHP-owned group practices. Stakeholders who claim that young doctors prefer employment to owning a practice are telling only part of the truth. Young PHPs intend to spend a relatively short time as employees and most of their career as owners or co-owners. This initial desire for employment must be acknowledged and met, but it should also be understood as a career stage, rather than a permanent condition.

FRONT-END VS. BACK-END CLINICAL DOCUMENT DICTATION PREFERENCES AMONG PHYSICIANS AT A LARGE, INTEGRATED HEALTHCARE SYSTEM Leigh Kowalski[2]; Foster Goss[3]; Adam B. Landman[2, 4]; Shiri Assis-Hassid[4, 2]; Marie Meteer[6]; Suzanne Blackley[5]; David W. Bates[1, 4]; Li Zhou[2, 4]. [1]Brigham and Women, Boston, MA; [2]Brigham and Women's Hospital, Wellesley, MA; [3]University of Colorado, Aurora, CO; [4]Harvard Medical School, Boston, MA; [5]Partners HealthCare System, Boston, MA; [6]Brandeis University, Waltham, MA. (Control ID #2703821)

BACKGROUND: Speech recognition (SR), the automated transcription of spoken language, has the potential to improve productivity (e.g., turnaround time) and reduce costs associated with clinical documentation. SR can assist physicians with dictation through two modes: 1) *Front-end*: Physicians dictate directly into the electronic health record (EHR) using SR software (e.g., Dragon®); and 2) *Back-end*: Physicians dictate via phone or recording device and their voice is transcribed by SR software, followed by professional transcriptionist review. However, documentation quality, productivity and physician satisfaction with SR systems have not been widely studied; we therefore conducted a physician survey to gather their feedback and understand their needs.
METHODS: A questionnaire with 71 questions was created using REDCap and given to 810 physicians in the Brigham and Women's Physician Organization who were registered to use a dictation system (front-end or back-end). Multiple choice questions assessed native language, percentage of time spent editing clinical documentation, and satisfaction with the system. Free-text questions asked about common errors observed with dictation systems. This study was approved by Partners IRB.
RESULTS: 153 (19%) physicians completed our survey, of which, 89 (58.2%) currently use front-end dictation systems, 27 (17.6%) use back-end, 23 (15.0%) use both, and 14 (9.1%) use other methods or none. Front-end users tend to be younger (<45 year old; 45.6% vs. 28.0% for back-end). Both front-end and back-end users are mostly White (79.0 and 74.0%, respectively) and native English speakers (92.1 and 94.0%). Results showed significant differences in perceived percent of documentation time spent editing between the two groups. For front-end users, half spent 10–25% of documentation time editing and 9% spent >50% of time. For back-end users, the major (60%) spent only 0-10% of time editing. Back-end users also reported fewer errors created by the dictation system than front-end users (85.2% vs. 69.7% reported fewer than 10 errors per document). A variety of errors were reported, including "word recognition", "medication dosages", and "misspelled names." Users expressed concerns about accuracy and efficiency of the dictation systems. In general, compared to front-end users, back-end users are more satisfied with the systems they have been using.
CONCLUSIONS: Overall, the results suggest that physicians prioritize convenience and efficiency of dictation system, and the quality of note produced. Thus, documentation method and dictation system choice may depend on physician specialty and workflow. SR systems have the potential to prevent physician burnout by easing the burden of clinical documentation. Future assessment is needed to further investigate the best way to incorporate SR with clinical documentation in the EHR to ensure both accuracy and efficiency of documentation, as well as satisfaction of physicians.

FUTURE PLANNING AND LONG-TERM CARE FOR PEOPLE WITH INTELLECTUAL DISABILITIES Sophia Jan[3, 4]; Natalie Stollon[1]; Angela Liang[2]; Sujatha Changolkar[3]; Symme W. Trachtenberg[4]. [1]University of Washington, Seattle, WA; [2]Princeton University, Princeton, NJ; [3]University of Pennsylvania, Philadelphia, PA; [4]Children's Hospital of Philadelphia, Philadelphia, PA. (Control ID #2707524)

BACKGROUND: The number of adults with intellectual disabilities (ID) is growing, with most living with aging parental caregivers in family homes. Yet publicly-funded long-term care (LTC) supports, which enable adults with ID to continue living in family homes or other community settings, are limited. Few families complete future plans for when aging parental caregivers are no longer able to provide care, leading to crisis, emotional trauma, dilemmas for other family members, and/or costly and unwanted institutional placement. Drivers of LTC planning behavior and emergent placements are largely unknown.

METHODS: We conducted semi-structured qualitative interviews with parents and adult siblings of adults with ID, who also completed demographic and other surveys on adaptive functioning and problem behavior of the adult with ID, caregiving burden and caregiver general health. Parents and adult siblings were recruited from community listservs, a free-standing children's hospital, a large academic medical center, the social services agency of a large city. Interviews were recorded, transcribed, and analyzed using modifed grounded theory.

RESULTS: Participants included 16 parents and 10 adult siblings. Of these, 5 were parent-sibling dyads. Caregivers were primarily female, Caucasian race, with a mean age of 60 years for parents and 29 years for siblings. Most caregivers were of high income and education. Dependent adults with ID had a mean age of 28.5 (range 18 to 41) years, with some enrolled in Medicaid LTC waivers. All scored low on proxy measures of adaptive functioning and many had problematic behaviors. Future planning domains identified include housing arrangements and housing maintenance, legal and financial management, transportation, medical management, oversight of direct caregiving staff to manage instrumental and basic activities of daily living. Many caregivers lacked concrete plans in one or more domains. Drivers of future planning were caregiver access to information, "systems literacy", trust and acceptance of external supports, perceived urgency of future planning, and capacity to let go/accept caregiving responsibilities. Mediators were caregiving needs of dependent ID adult, family structure and supports, and non-family/paid supports. These changed with time and experiences with prior crisis. Few caregivers discussed their plans with other family caregivers, and none discussed with the dependent adult. Contrasts between parents and sibling caregivers included perceived urgency towards future planning, ideal vision for caregiving arrangements, and expectations for future caregivers.

CONCLUSIONS: This study identifies primary drivers of future planning or non-planning behavior, and intervention targets to improve family caregiving planning of dependent adults with ID, and potentially prevent institutional placement. Our findings can be used to help medical and educational professionals, and supports coordinators to better understand and assist caregivers with future planning.

GATEKEEPING AND PATTERNS OF OUTPATIENT SPECIALTY CARE IN THE POST-HEALTH REFORM ERA Michael L. Barnett[3, 1]; Bruce E. Landon[2]. [1]Brigham and Women, Boston, MA; [2]Harvard Medical School, Boston, MA; [3]Harvard T. H. Chan School of Public Health, Boston, MA. (Control ID #2705764)

BACKGROUND: As US health care spending increases, insurers are focusing attention on decreasing unnecessary specialist care using one of two approaches. Patient-facing strategies rely upon high deductibles and narrow networks to limit specialist use whereas provider-facing strategies use primary care physicians (PCP) as 'gatekeepers' to approve and coordinate referrals. Little recent research has assessed whether the provider-facing strategy of gatekeeping used in contemporary health maintenance organizations (HMO) is associated with lower utilization of specialty care.

METHODS: We used the Massachusetts all-payer claims database to identify all individuals aged 21–64 with any HMO or preferred provider organization (PPO) insurance coverage with the same private insurance carrier continuously from 2010–2013. The key exposure of interest was whether a patient had HMO vs. PPO insurance. We assessed rates of primary care visits, new specialists visits and spending, and also whether new specialist referrals were within the same health system as patients' PCPs. We assigned patients' PCPs annually through the plurality of claims billed and defined new specialist visits using 'new visit' billing codes. We estimated multivariable regression models for each outcome (linear, Poisson or logistic), adjusting for all available patient characteristics and insurance carrier fixed effects. Sensitivity analyses included repeating all analyses using propensity score weighting for each individuals' likelihood of having HMO coverage.

RESULTS: In 2010–2013, 533,112 and 316,930 individuals had continuous coverage with HMO or PPO insurance, respectively. Compared to PPO patients, HMO patients were slightly younger and had lower comorbidity scores ($p < 0.001$), but had similar rates of PCP visits (adjusted difference 0.03 annual visits, $p < 0.001$). HMO patients had 12% fewer annual new specialist visits per member vs. PPO (0.36 vs. 0.43, adjusted difference 0.05, 95% CI 0.046-0.051), and these visits were more likely to be with a specialist in the same health system as the patient's PCP (44.9% vs. 40.7%, adjusted difference 2.5%, $p < 0.001$). HMO patients were also less likely to have specialists in ≥2 health systems (21.7% vs. 24.3%, adjusted difference 2.2%, $p < 0.001$). Mean annual spending on new specialist visits per member was lower in HMO vs. PPO patients (unadjusted $59.02 vs. $73.40), translating to 12% lower spending after adjustment (adjusted difference $8.86, $p < 0.001$).Adjusted analyses were unchanged using propensity score weighting.

CONCLUSIONS: Having HMO insurance was associated with lower use of new specialist visits vs. PPO insurance. In addition, specialist use within HMOs was more likely to be in the PCP's health system and less likely to be spread across multiple health systems. Our analyses suggest that HMO gatekeeping may meaningfully reduce specialist utilization, though the impact of this change on overall spending and clinical outcomes is unknown.

GENDER DIFFERENCES IN CLINICIAN SATISFACTION, STRESS AND BURNOUT. RESULTS FROM THE HEALTHY WORK PLACE STUDY. Elizabeth Goelz[5, 4]; Sara Poplau[2, 3]; Roger Brown[1]; Jule Muegge[3]; Mark Linzer[2, 3]. [1]University of Wisconsin, Madison, WI; [2]Hennepin County Medical Center, Minneapolis, MN; [3]Minneapolis Medical Research Foundation, Minneapolis, MN; [4]University of Minnesota, Minneapolis, MN; [5]Hennepin County Medical Center, MInneapolis, MN. (Control ID #2705540)

BACKGROUND: Gender differences in clinician work-life have been previously described with increased burnout, time pressure and work pace seen in women physicians. The current study sought to assess whether these differences have persisted and determine current predictors of stress and satisfaction among women and men primary care clinicians.

METHODS: The Healthy Workplace Study (HWP), a randomized trial of 34 clinics and 165 primary care clinicians (143 physicians and 22 Nurse Practitioners (NPs) and Physician Assistants (PAs)) assessed the impact of work-life interventions. Multiple linear regressions modeled satisfaction, stress and burnout by time pressure, work control, work pace, and organizational culture including trust, values alignment, ability to go part-time, and emphasis on work-life balance. Burnout rates in HWP were compared with rates in the 422 of physicians in the MEMO (Minimizing Error Maximizing Outcome) study of primary care work conditions and clinician outcomes (Linzer M, et al. *Ann Intern Med*. 2009; 151:28–36).

RESULTS: There were 90 female and 75 male HWP clinicians with complete data available for analysis. Although no significant differences were seen in burnout between HWP females and males (41.5% in females vs 32.3% in males,

$p = 0.24$), both males and females reported burnout at levels greater than in MEMO. Males showed a greater increase in burnout rates (35.8% → 41.5% (increase 5.7%, $p = 0.42$) for females, versus 19.1% → 32.3% for males (increase 13.2%, $p = 0.01$)). Female HWP clinicians were more likely to work part-time (38.5% vs 9% for males, $p < .01$). Females in HWP reported more psychosocially complex patients (47% vs 32% in males, $p < 0.01$), more time pressure for new patient visits (52% more time needed vs 24%, $p < 0.01$), less control over workload (2.19 on 1–4 scale vs 2.51, $p < 0.01$), and less values alignment with leaders (2.15 on 1–4 scale vs 2.52, $p < 0.01$). While stress and satisfaction of HWP clinicians did not differ by gender, predictors of these antecedents of burnout showed gender differences. (See table of beta coefficients: for one point rise in predictors, betas represent change in stress or satisfaction.)

CONCLUSIONS: Burnout in primary care is increasing in both female and male clinicians but at a greater pace in males. Part-time practice may be slowing the rate of rise in females. Addressing gender-associated stressors may be effective in combating burnout and improving job satisfaction.

Stress and satisfaction predictors for male and female clinicians in HWP

Predictor	Female Stress	Male Stress	Female Satisfaction	Male Satisfaction
Work control	−0.31*	NS	NS	NS
Chaos (work pace)	0.45***	0.39***	−0.27*	−0.31**
Trust in organization	−0.30**	NS	NS	0.53***
Workplace emphasis on work-life balance	NS	−0.42**	NS	0.23*
Ability to go part time	NS	NS	NS	0.54*
Values alignment	NS	−0.36*	0.30*	NS

*$p < 0.05$ **$p < 0.01$ ***$p < 0.001$

NS = not significant

GENDER MATTERS: INTERNAL MEDICINE RESIDENT PERCEPTIONS OF GENDER IN MEDICAL TRAINING Evan K. Moser-Bleil; Mumtaz Mustapha; Briar Duffy; Sophia Gladding; Qi Wang; Elizabeth A. Rogers. University of Minnesota, Minneapolis, MN. (Control ID #2704843)

BACKGROUND: Gender differences are documented throughout academic medicine, including in compensation, promotion, and leadership. Less is known about whether gender influences medical training.

METHODS: Residents in an academic internal medicine program (categorical medicine, medicine-pediatrics (med-peds), and medicine-dermatology (med-derm)) were electronically surveyed regarding perceptions of gender differences in medical training. The survey was informed by a literature review and an informal focus group with face validity and interpretability tested among three physicians. It utilized Likert scale and open-ended questions. Data was analyzed using Excel and SAS. Quantitative data was analyzed using descriptive statistics, the Mann–Whitney-Wilcoxon test, and the Wilcoxon signed rank sum test for comparisons. Formal content analysis was used for qualitative data.

RESULTS: Seventy residents completed the survey (50% response rate). Forty-seven percent were female; 60% medicine, 3% med-derm, and 37% med-peds; and 39% PGY1, 24% PGY2, 24% PGY3, and 13% PGY4. Overall, respondents felt that male residents were treated more positively than female residents in their communication with ancillary staff, consultants, supervising physicians, and supervisees; in their opportunities for leadership; and in how teams responded to their leadership style (all ps < 0.001). Consistent with this, females reported being treated more negatively than their male colleagues in communication with ancillary staff ($p < 0.0001$), supervising physicians ($p = 0.001$), consultants ($p = 0.002$), and supervisees ($p = 0.01$). Females also reported fewer leadership opportunities ($p = 0.01$) and a more negative response toward their leadership style ($p = 0.002$). Males were significantly more likely to report their gender positively affected their work experiences ($p = 0.0001$). Open-ended responses illustrated these differences. Common themes included more difficult communication for females with ancillary staff ("when I say something to the nurses, things get done, but…my female counterparts have to almost convince them" (male)), differences in leadership style ("men who are firm, direct, kind, and empathetic…are viewed more favorably than women exhibiting the same behaviors" (female)), and inequity in leadership opportunities ("in order to get the same leadership opportunities as my male colleagues I…have to show that I can already do the said skill while they just have to show…the confidence to try it out" (female)).

CONCLUSIONS: Resident physicians in an internal medicine program perceived gender differences in communication, leadership styles, and leadership opportunities. While results may be subject to social desirability bias, themes from open-ended questions reinforce quantitative results. Curriculum designed to recognize and mitigate gender bias in medical education may begin to address gender differences early in physicians' careers.

GERIATRIC TRAUMA CONSULTATION: TARGETING THE RIGHT POPULATION Meera Sheffrin[1]; Astrid Block[2]; Ankur Bharija[1]. [1]Stanford University School of Medicine, Palo Alto, CA; [2]Stanford Healthcare, Stanford, CA. (Control ID #2704037)

BACKGROUND: Geriatric consultation has been shown to improve outcomes for elderly trauma patients. However, geriatric consults are resource intensive, and it is unknown which patients would benefit most from this intervention. We examined the acceptability and feasibility of targeting geriatric consults to older adults admitted to the trauma service who were 1) admitted after a fall from standing, or 2) deemed to be high risk from a geriatric screen focusing on geriatric syndromes.

METHODS: Partnering with the Trauma service, we identified two populations of older trauma patients to target for routine geriatric consultation. In our institution, older adults with fall from standing who sustain injuries are admitted to the Trauma service. We selected this fall population as the Trauma service deemed them to be vulnerable. Additionally, we developed a 10 question geriatric screen for older adults to be done at the time of the tertiary survey that included questions on geriatric syndromes (ie baseline cognitive and functional impairment, polypharmacy, delirium). We implemented routine geriatric consults for all patients age 65+ with fall from standing and those who screened positive on the geriatric screen (1+ positive answers). We assessed the acceptability and feasibility of routine geriatric consults on these two populations through tracking the frequency of consults, extent of recommendations that were followed (all or some vs. none), and Trauma service satisfaction with geriatric consultation.

RESULTS: From Nov 1 to Dec 31 2016, geriatrics consults were requested on a total of 40 elderly trauma patients. Mean age was 83 years (range 65–101), and 60% (24/40) were female. Overall, 39 patients were seen after a fall from standing. Only 3% (1/39) of fall patients were found not to have any geriatric

syndromes. Only 1 patient was assessed using the geriatric screen due to difficulty using the screen in the electronic health record. Trauma service reported satisfaction with geriatric consults for older patients with falls, clear criteria for consultation, and patient satisfaction. Trauma service reported willingness but had difficulty using the geriatric screen. Some or all of the geriatrics recommendations were followed in all (100%) of patients.

CONCLUSIONS: Routine geriatric consults for trauma patients age 65+ admitted with fall from standing were well received, and identified a population that had geriatric syndromes. A geriatric screen for older trauma patients may target additional patients, but details in implementation impeded its use. Using the criteria of older adults with "fall from standing" may help to target geriatric consultation to high risk elderly trauma patients who could benefit most from this intervention.

GETTING BY WITH A LITTLE HELP FROM MY FRIENDS: THE IMPACT OF SOCIAL SUPPORT ON DEPRESSION, QUALITY OF LIFE, AND GUIDELINE-RECOMMENDED MEDICATION USE IN PATIENTS WITH HEART FAILURE. Emily Guhl; Anam A. Waheed; Kaleab Abebe; Yan Huang; Amy Anderson; Bea Herbeck Belnap; Bruce L. Rollman. University of Pittsburgh Medical Center, Pittsburgh, PA. (Control ID #2703768)

BACKGROUND: Higher levels of social support are associated with better health outcomes. Yet, it is unclear whether this relationship is confounded by disease burden, adherence with guideline-recommended care, or other factors. We examined this question among patients enrolled in the NIH-funded Hopeful Heart Trial presently examining the impact of treating depression in patients with systolic heart failure (HF).

METHODS: We screened patients with systolic HF and NYHA class II-IV symptoms for depression with the Patient Health Questionnaire (PHQ-2) at 8 Pittsburgh-area hospitals, prior to discharge home, and telephoned them two weeks later to administer the PHQ-9. Protocol-eligible patients had both: (1) a positive PHQ-2 depression screen and scored ≥ 10 on the PHQ-9 ("depressed"); or (2) a negative PHQ-2 depression screen and scored <5 on the follow-up PHQ-9 ("non-depressed"). We administered the ENRICHD Social Support Instrument (ESSI) to assess perceived social support, and classified participants who scored in the top quartile as having a "top levels" of social support, and used student's t-test or chi-square test, when appropriate, to compare this group to the combined other quartiles on a variety of sociodemographic and clinical characteristics we collected at baseline by patient self-report (age, race, gender, NYHA classification) and chart review (medical diagnoses, medication use, cardiac ejection fraction), or during the two-week call (mental and physical health-related quality of life (HRQoL): SF-12 MCS and PCS, respectively; mood: PHQ-9).

RESULTS: From 3/14-11/16 we enrolled 545 patients with systolic HF, including 178 assigned to our top level of social support (ESSI ≥32). Compared with patients at lower levels of social support, those who scored at the top level were more likely to be white (79% vs. 69%, $p = 0.02$), married (60% vs. 34%, $p < 0.001$), reporting fewer mood symptoms (PHQ-9, mean score: 9.7 vs. 12.6, $p < 0.001$), reporting higher levels of mental HRQoL (SF-12 MCS, mean score: 48.3 vs. 41.8, $p < 0.001$), and using a statin (73% vs. 63%, $p = 0.02$); however, the two groups were similar by age (mean: 63.6 years), gender (44% female), physical HRQOL (SF-12 PCS, mean: 31.3), medical comorbidity (50% DM, 83% HTN), EF (27.6%), NYHA class (II 40%, III 51%, IV 9%), use of ACE/ARB (59%), and beta-blockers (86%).

CONCLUSIONS: Despite similar HF disease severity and medical burden, high perceived levels of social support are associated with fewer mood symptoms and higher levels of mental HRQoL that may, in turn, translate to differences in clinical outcomes. Upon opening our Trial's study blind in 2018, future analyses will evaluate the impact of social support on clinical outcomes and use of guideline-recommended therapy.

GETTING TO PATIENT CENTERED PRIMARY CARE: THE ROLE OF CLINIC ENVIRONMENT, PROVIDER BURNOUT, AND PATIENT-PROVIDER COMMUNICATION Susan E. Stockdale[2]; Danielle Rose[4]; Jill E. Darling[4]; Lisa S. Meredith[3]; Christian D. Helfrich[6]; Timothy Dresselhaus[4]; Philip Roos[5]; Lisa V. Rubenstein[1]. [1]GLA VA, North Hills, CA; [2]Greater Los Angeles VA Healthcare System, Sepulveda, CA; [3]RAND Corporation, Santa Monica, CA; [4]VA GLA Healthcare System, Sepulveda, CA; [5]VA Loma Linda Healthcare System, Loma Linda, CA; [6]VA Puget Sound Healthcare System, Seattle, WA. (Control ID #2694414)

BACKGROUND: Patient Centered Medical Home (PCMH) models of primary care aim to improve patient experience, but may not achieve desired results due to dynamic relationships among factors at the clinic, provider, and patient levels. No studies have assessed the roles of factors at multiple levels on patient experience. We examined the roles of provider-evaluated clinic environment, provider burnout, and patient-rated provider communication on patients' self-reported satisfaction with their primary care providers (PCPs) in the early phase of the Veterans Health Administration (VHA)'s PCMH model.

METHODS: We matched cross-sectional self-administered surveys of a) VHA PCPs ($n = 129$) and b) patients of these providers ($n = 3298$). Surveys were conducted in 21 clinics in one administrative region in 2011–12. We assessed the clinic environment based on provider survey scales assessing leadership openness to new ideas (Organizational Readiness to Change Assessment); the ability of teams in the clinic to handle conflict and work together (Organizational Readiness to Change Assessment); and the clinic's implementation of PCMH principles (adapted from a previous instrument). We measured provider burnout using a provider survey scale for emotional exhaustion (Maslach burnout inventory). We assessed patient-provider communication and patient satisfaction with their provider based on VHA's routinely administered Survey of Healthcare Experiences of Patients. We analyzed matched patient-provider pairs using hierarchical linear regression to account for nested data structure and controlled for PCP and patient characteristics.

RESULTS: In multivariable models, poor clinic environment (low readiness to change and poor team communication) was associated with higher PCP burnout, but burnout did not explain the relationship between clinic environmental factors and patient satisfaction. Poor team communication was associated with lower patient satisfaction, and patient-rated communication explained 56% of this effect. Environments with poor team communication and low patient ratings of provider communication predicted very low patient satisfaction levels (22%).

CONCLUSIONS: PCPs are likely to suffer burnout in a leadership environment unsupportive of change and a primary care team environment characterized by conflict and poor communication. A poor provider-perceived team communication environment appears to contribute to patients' perceptions of poor communication with their providers, and the combination of these two factors may produce lower patient satisfaction. For improved patient satisfaction in the PCMH, clinic-level interventions to support good team and patient-provider communication may be necessary.

GOALS OF CARE DISCUSSIONS: DO ADVANCED CANCER PATIENTS HAVE THEM AND WHAT DIFFERENCE DO THEY MAKE? Nina A. Bickell[2]; Kerin Adelson[4]; Jason Gonsky[5]; Sofya Pintova[1]; Benjamin Levy[3]; Jenny J. Lin[1]; Rebeca Franco[2]; Natalia Egorova[1]; Cardinale B. Smith[1]. [1]Icahn School of Medicine at Mount Sinai, New York, NY; [2]Mount Sinai School of Medicine, New York, NY; [3]Mount Sinai Beth Israel, New York, NY; [4]Yale Smillow Cancer Center, New Haven, CT; [5]Kings County Hospital Center, Brooklyn, NY. (Control ID #2700215)

BACKGROUND: Advanced cancer patients often have a poor understanding of the incurability of their cancers and this is associated with higher rates of aggressive treatment near end of life. Goals of Care (GoC) discussions typically include information about the cancer, its treatment, side effects, prognosis and elicit patients' values in the setting of their cancer diagnosis. Little is known about the best ways to enhance patient understanding, clarify values and move GoC discussions earlier in the disease process when patients would have time to act on their values. We report the effect of communication skills coaching on GoC discussions and the impact on patients' knowledge of what to expect & clarity of values during the disease trajectory. Utilization data to follow.
METHODS: At academic, community, municipal and rural hospitals, we recruited & randomized solid tumor oncologists & their newly diagnosed advanced cancer patients with <2 year prognosis to participate in a RCT testing communication skills training using a coaching model. Patients consent after advanced cancer diagnosis and are surveyed after their 3 month post-imaging visit. We define GoC discussions as patients reporting their doctor talked about the likely outcome of their illness and clarified things most important to them given their illness. Outcome variables assess the impact of the discussion on patients' knowledge, and getting clearer about their values.
RESULTS: We enrolled 22/25 (88%) oncologists and 175/256 (70%) patients. To date, 96 patients completed their post-imaging visit survey. On average, doctors are 44 yrs old (32–66) and in practice 14.5 yrs (5–40). Patients' mean age is 62 (20–95), 40% females, 58% white, 24% Latino & 22% black. Overall, 66% of patients reported their treatment's goal was to cure their cancer; 14% reported cure to be unlikely. Patients felt more knowledgeable about what to expect (79% vs 21%; $p = 0.02$) when their doctors discussed treatments, side effects & quality of life. When patients were asked about important things in life given their cancer diagnosis, they report being a bit clearer about their values (65% vs 35%; $p = 0.16$). Compared to controls, intervention patients felt more knowledgeable about what to expect (78% v 63%; $p = 0.17$) but did not feel clearer about their values (60% v 54%; $p = 0.59$). Multivariate modeling found that poor health literacy (OR = 0.2; 95%CI: 0.07–0.82), having a GoC discussion (OR = 10.2; 1.7–63.1) and being in the intervention group (OR = 8.8; 1.4–55.2) significantly affected knowledge about what to expect (model c = 0.88; $p < 0.01$). However, discussing what's important to patients did not help patients feel clearer about their values (OR = 2.7; 0.6–12.2; model c = 0.82; $p < 0.05$).
CONCLUSIONS: Using a coaching model to teach oncologists communication skills may improve patients' understanding of what to expect with their cancer but does not appear to impact their clarity of values.

GRIT AS PREDICTOR OF BURNOUT IN INTERNAL MEDICINE RESIDENTS Andrei Brateanu[1]; Susan Combs[1]; Jennifer Ramsey[1]; James Thomascik[2]; Amy S. Nowacki[2]; Colleen Colbert[2]. [1]CCF, Cleveland, OH; [2]Cleveland Clinic, Cleveland, OH. (Control ID #2704540)

BACKGROUND: Residency is a highly competitive environment requiring trainees to have both physical and emotional resilience. Residents' career dedication and determination might influence the incidence of professional burnout. The association between grit, defined as the perseverance and passion for long-term goals and professional burnout is not known. The objective of this study was to evaluate grit as an independent predictor of burnout.
METHODS: *Design* A total of 168 postgraduate year (PGY) 1–3 residents from the Internal Medicine residency program at the Cleveland Clinic were surveyed during weekly academic noon conferences from April to June 2016, to measure grit and burnout. The following residents' characteristics were collected: age, gender, marital and family status, medical school attended (United States versus international medical graduate (IMG), Post Graduate Year (PGY) level, last In-Training Examination (ITE) score, and interest in pursuing a sub-specialty. *Participants* All residents were invited to participate in the study, and a total of 139 residents completed the questionnaires. *Measurement tools* A 10-item questionnaire, with 8 items related to grit and 2 items related to burnout were used to measure the constructs of interest. Grit was measured using the Short Grit Scale, with scores ranging from 1 (not at all gritty) to 5 (very gritty). Burnout was measured using the modified Maslach Burnout Inventory (one question for emotional exhaustion, and another for depersonalization). *Statistical Analysis* Descriptive statistics were used to characterize the study cohort, using chi-square or Fisher's exact tests and t -test for categorical and continuous variables, respectively. The relationship between burnout and GRIT scores were investigated with two-sample independent t tests and multivariable logistic regression models.
RESULTS: Emotional exhaustion and depersonalization were identified in 64%, and 43% of the residents, respectively. Emotional exhaustion was higher for residents with family members living with them (81% vs. 58%, $p = 0.01$), PGY1 and PGY2 compared to PGY3 residents (68 and 73% vs. 48%, $p = 0.04$), and residents scoring above the 50th percentile in the last ITE ($Q_3 = 71$ and $Q_4 = 65\%$ vs. $Q_2 = 40\%$, $p = 0.01$). Grit scores were higher for residents not reporting emotional exhaustion (mean score 3.86 vs. 3.59, $p = 0.004$). With every 1 unit increase in grit score, residents were 36% less likely (OR 0.36; 95% CI 0.15–0.84) to experience emotional exhaustion, after adjustments for demographics, ITE scores, type of medical school, PGY level, and interest to pursue a sub-specialty.
CONCLUSIONS: In a single academic center, residents' professional grit was an independent predictor of burnout with higher level of grit being associated with less burnout. Measuring grit can identify residents at risk for burnout, and emotional exhaustion in particular. These findings need to be replicated in other residency programs.

GUIDELINE ADHERENCE OF VA PRIMARY CARE FOR ABNORMAL UTERINE BLEEDING Kristina M. Cordasco[1, 2]; LaShawnta S. Jackson[1]; Melissa Farmer[1]; Ellen F. Yee[3]; Donna L. Washington[1, 2]. [1]VA Greater Los Angeles Healthcare System, Los Angeles, CA; [2]UCLA, Los Angeles, CA; [3]New Mexico VA Healthcare System, Albuquerque, NM. (Control ID #2703314)

BACKGROUND: Abnormal Uterine Bleeding (AUB) is common among female primary care (PC) patients. Several evidence-based guidelines for AUB care apply to the PC setting. We assessed the extent to which VA PC patients with AUB are receiving guideline-adherent care.
METHODS: We identified women who presented to PCPs with AUB across 4 VA healthcare systems from 6/01/13 to 9/30/15. We first identified all women

who had one or more encounters in this timeframe with an ICD-9 code indicating AUB or CPT code for endometrial biopsy (EMB). We then reviewed all PC notes for these women to identify distinct episodes of AUB initiated during the timeframe. An episode was distinct if there was no mention of active AUB in the prior 6 months. We excluded episodes in which the patient did not present in-person to a VA PC setting, was previously identified as being pregnant, or had a recent gynecologic procedure. For each episode, we performed a structured chart abstraction for data relevant to 14 previously-developed indicators of guideline-adherent AUB care by PCPs, and then determined if the documented care was guideline-adherent for applicable indicators.

RESULTS: Our sample included 304 women with 316 episodes of AUB, across 83 PCPs, 49 (59%) of whom were VA Designated Women's Healthcare Provider (DWHPs). DWHPs provided care for 262 (83%) of the 316 episodes. Episodes had a mean of 5.4 (range 3–8) applicable indicators. Across indicators, 58% of the documented care was guideline-adherent. Adherence was 100% for two indicators regarding the PCP assessing the patient's hemodynamic stability and, when needed, transferring care to the emergency department. There was very high adherence with indicators for documenting menopausal status (98%); obtaining a trans-vaginal ultrasound or referring to gynecology for bleeding in post-menopausal women (89%); and documenting the bleeding pattern (87%). Providers had lower adherence with guidelines regarding performing an EMB or making a timely gynecology referral after ultrasound visualized a thickened endometrium in a pre-menopausal woman (67%); or, on the day of presentation, performing a pelvic examination (66%) or documenting assessment of whether there was active bleeding (55%). Less than half the time, providers obtained thyroid testing in premenopausal women (47%); performed an EMB or made a timely referral to a gynecologist in women aged <40 years with elevated endometrial cancer risk (40%); assessed for pregnancy (32%); assessed for cervical motion, uterine or adnexal tenderness in patients with intrauterine devices (30%); or assessed for elevated endometrial cancer risk in premenopausal women (6%).

CONCLUSIONS: VA PCPs have high guideline-adherence with triaging potential emergent episodes of AUB, and caring for post-menopausal women with AUB. However, their documentation of care for pre-menopausal women reveals less guideline-adherence. Quality improvement and educational initiatives need to continue targeting improved PCP care for younger women Veterans.

HEALTH INSURANCE DESIGN FEATURES AND DECISION-MAKING IN VULNERABLE POPULATIONS Melissa Gosdin; Susan Perez; Jessie Pintor; Patrick S. Romano. UC Davis, Sacramento, CA. (Control ID #2709067)

BACKGROUND: Health insurance marketplaces were created under the Affordable Care Act to offer subsidized, high-quality options to households below 400% of the Federal poverty level (FPL). Our objective was to explore how those insured through Covered California, California's marketplace, apply concepts of value in insurance design when making healthcare purchasing decisions, compared with economically similar persons with employer-sponsored insurance (ESI).

METHODS: We conducted 12 two-hour focus groups of 6–12 consumers ($N = 117$) in three geographically distinct regions in Northern California. The structured moderator guide was developed to elicit perceptions of healthcare value and reactions to three different plan design features (e.g., narrow networks, reference pricing, value based design). Focus groups were audiorecorded, transcribed verbatim and hand-coded by multiple researchers. Transcripts were analyzed using a grounded theory approach identifying codes, categories and themes emerging from the data. Participants were eligible for participation if they spoke English or Spanish (two groups were held in Spanish), were 30–60 years of age, were insured through an employer or Covered California, and were low- or middle-income. Groups were stratified based on type of health care coverage (ESI vs Covered California) and income level (138–250% versus 250–400% of FPL).

RESULTS: When selecting a health plan or providers, these vulnerable individuals desire choice even when some of the options are undesirable. Regarding cost-sharing and benefit design factors such as narrow networks, reference pricing and value based design, their primary concern is to have access to high quality care. Knowledge of options contextualizes tradeoffs for the consumer, such as keeping a highly trusted provider and paying significantly more. For participants with limited income, choice is described as empowering even if some options are economically unrealistic. There were disparities between ESI and Covered California participants in how they make sense of their plan options. While participants in both groups expressed distrust in their health plans, those with ESI have a network of work colleagues and human resource professionals to turn to for assistance in the decision making process. However, those enrolled in the marketplace reported not having trusted resources.

CONCLUSIONS: While both ESI and exchange participants expressed distrust in their health plans, those with ESI turn to their social networks to assist in the decision making process. However, those enrolled in covered California report not having trusted resources to help them negotiate the process of selecting a plan and using their benefits. Trust appears to play a significant role in healthcare related decisions for these vulnerable individuals. Health insurance exchanges may choose to take a grass roots approach to supporting consumers with their healthcare decisions as insurance benefit design becomes more complex and out-of-pocket costs rise.

HEALTH INSURANCE REFORM DIFFERENTIALLY AFFECTED BLOOD PRESSURE OUTCOMES AND DISPARITIES Nancy R. Kressin[2]; Norma Terrin[3]; Alejandro Moreno-Koehler[3]; Amresh D. Hanchate[1]; Amy LeClair[3]; Jillian Suzukida[3]; Karen M. Freund[4]. [1]Boston University School of Medicine, Boston, MA; [2]Dept of Veterans Affairs and Boston University, West Roxbury, MA; [3]Tufts Medical Center, Boston, MA; [4]Tufts University School of Medicine, Boston, MA. (Control ID #2705422)

BACKGROUND: Racial/ethnic disparities in chronic disease outcomes are well documented and linked to health insurance coverage. Insurance instability (switches or gaps in insurance coverage) may contribute to disparities. Focusing on the outcome of uncontrolled blood pressure (UBP), we examined whether insurance reform was associated with 1) overall race differences in UBP, 2) diminished racial disparities in UBP, and 3) whether insurance instability was associated with better outcomes or fewer disparities.

METHODS: Using clinical outcomes data from 2 urban hospitals with diverse patients (N patients = 47,594; 34% Non-Hispanic white (NHW), 4% Hispanic, 56% African American (AA), 58% female, mean age: 49), spanning the period of Massachusetts health insurance reform (2005–2013), we identified patients aged 21–64 diagnosed with hypertension and examined patterns of UBP over time, by group. We categorized insurance stability at the *person-6-month-interval* level as always privately insured, having insurance switches but always insured, losing

insurance coverage, always publicly insured, or always uninsured. We plotted trajectories of BP control over time by race/ethnicity and tested for race × time interaction. We estimated the relation between insurance stability and BP control, and variations by race. We examined the subset of patients whose pre-reform insurance was characterized, with always privately insured as the reference (least affected by reform), compared with any switches or losses, and assessed whether reform differentially affected them. Logistic regression models adjusted for age, race/ethnicity, time, sex, comorbidities, area-level education and income, location of care and insurance status, with UBP as the outcome.

RESULTS: Absolute values for UBP were consistently different by race/ethnicity over time ($p < 0.0001$), with more UBP for AAs, followed by Hispanics, NHWs and Asians. However, slopes did not significantly differ by race/ethnicity over time (p-value for interaction between race and time = 0.251). Insurance stability was significantly associated with better BP outcomes ($p < 0.001$). For every switch in insurance, there was a 4% increased odds of having UBP. Those always publically insured had the best BP control. There was no significant interaction between pre-reform insurance group and time (p-value = 0.322).

CONCLUSIONS: Racial disparities in BP outcomes existed before, during and after insurance reform. Insurance instability was differentially associated with outcomes and varied by race. Patients with consistent public insurance had the best outcomes for all racial groups. The most vulnerable pre-reform insurance groups were not differentially affected by insurance reform. We conclude that consistency in insurance coverage is associated with better BP control, but BP outcomes are affected by more factors than insurance coverage.

HEALTH SYSTEMS THAT PUBLISH PHYSICIAN-LEVEL PATIENT EXPERIENCE DATA Tara Lagu[2]; Caroline Norton[3]; Lindsey Russo[3]; Aruna Priya[2]; Peter K. Lindenauer[1]. [1]Baystate Medical Center, Springfield, MA; [2]Baystate Medical Center, Florence, MA; [3]University of Massachusetts, Amherst, MA. (Control ID #2702220)

BACKGROUND: A majority of patients have stated that online reviews are an important tool for choosing a physician. However, commercial physician-rating websites have few reviews. Recently, some hospitals and health systems have begun to report, on clinician biographical webpages, data drawn from systematically-collected patient experience surveys. We aimed to identify health systems reporting clinician-level patient survey data and to describe the characteristics of these reports.

METHODS: We examined the websites of all hospitals listed on the Center for Medicare and Medicaid Services' *Hospital Compare*. We included websites active between June 1, 2016 and June 30, 2016 that had at least one clinician with star ratings or narrative comments on his or her biographical webpage. We identified websites characteristics (e.g., search criteria; presence of patient narratives). In a subset of 14 included health systems for which we had lists of clinicians, we randomly selected 10 clinicians. We then extracted the number of star ratings and narrative comments for each clinician.

RESULTS: From 4800 hospitals on Hospital Compare, we identified 162 hospitals (3.4%) representing a total of 42 health systems from 26 states. Of these, all published star ratings ($n = 42$, 100%) and most published narrative reviews ($n = 33$, 79%). The majority ($n = 27$, 64%) stated on their main page that they removed narratives deemed inappropriate or offensive. Most allowed users to search for physicians by name ($n = 39$, 93%), specialty ($n = 41$, 98%), and location ($n = 31$, 74%). Of 140 clinicians from 14 health systems, a majority had reviews (star ratings, $n = 122$, 87%; narrative reviews, $n = 114$, 81%), with a median of 110 star ratings and 25 narratives. The median (IQR) rating was 4.8 (4.7 - 4.9) out of 5 stars. Of the 140 physicians, none had a score below 4.2.

CONCLUSIONS: In the first study to examine the phenomenon of health systems posting systematic survey results on physician biographical webpages, we found that clinicians had a large number of median reviews and most had star ratings that were near perfect. The narrow range of scores may make it difficult for patients to use star ratings to differentiate between physicians. Still, systematic collection of experience data from known patients addresses some of the limitations of unsolicited online physician reviews (response bias, unrepresentative sample), and patients could use the large number of narratives on these sites to glean information about the experience of care with individual physicians. There is a move by policy makers to include patient narratives on public-reporting websites, such as *Physician Compare*. Until that occurs, the lack of online narrative reviews in other places may mean that health system websites, such as those described here, will emerge as the main location in which patients read narratives about physicians.

HEALTH, INTIMACY, HIV-RELATED ANXIETY AND STIGMA: PERSPECTIVES OF WOMEN PRESCRIBED HIV PRE-EXPOSURE PROPHYLAXIS AT AN URBAN, COMMUNITY-BASED SEXUAL HEALTH CLINIC Connie Park; Minia N. Rios Gutierrez; Oni J. Blackstock. Montefiore Medical Center/AECOM, New York, NY. (Control ID #2703235)

BACKGROUND: Pre-exposure prophylaxis (PrEP) is an innovative HIV prevention strategy that involves taking a pill a day to stay HIV-negative. Despite being the only HIV prevention method that can be both used *and* controlled by women, PrEP remains vastly underutilized among women. As such, among women prescribed PrEP, little is known about their experiences with and perspectives on this new HIV prevention tool.

METHODS: The study took place at a community-based comprehensive sexual health clinic that offers PrEP care. The clinic is a part of the largest health care system in the Bronx, NY, a region with a high HIV prevalence. We recruited cisgender women who have sex with men and who had received at least one prescription for daily oral PrEP. We conducted individual semi-structured interviews that asked women about their reasons for wanting to initiate PrEP as well as what benefits and challenges they had encountered taking PrEP. Interviews were audiotaped and professionally transcribed. We used grounded theory and the constant comparative method to identify emergent themes.

RESULTS: Among our sample ($n = 10$), median age was 40 years (range: 35–49); most women were either Latina or non-Latina Black. Women learned about PrEP from a friend or partner or were referred by the health care system's HIV testing and counseling program. Most women were in a known sero-discordant partnership (i.e., had a known HIV-positive partner), while few reported having multiple partners with unknown HIV status. In general, women felt that PrEP allowed them to protect themselves and to "stay healthy", both for themselves and for their loved ones (usually their children). Specifically, for women in a known sero-discordant partnership, PrEP enabled women to maintain these relationships while remaining HIV-negative. With regards to their sex lives, PrEP allowed some women to feel more connected to their partners ("closer" "more intimacy") because the women felt that with PrEP they could forgo condoms. In contrast, for others, PrEP provided "an extra layer of protection" when used with condoms and helped to decrease anxiety related to contracting HIV. Despite these benefits, many women

perceived and/or experienced stigma related to taking PrEP. As a result, most did not disclose their PrEP use to others (besides their partners) for fear that they would be assumed to be HIV-positive or promiscuous, or be judged for being in a relationship with an HIV-positive partner.

CONCLUSIONS: While reasons for wanting to initiate PrEP and perspectives on PrEP centered on maintaining health, improved intimacy, and lessening HIV-related anxiety, PrEP-related stigma figured prominently into women's experiences. Future research should ascertain what role, if any, stigma may play in PrEP uptake among women including potential effects on adherence or continued use of PrEP. Such understanding may help to inform the development of interventions to promote PrEP use among women.

HEALTHCARE FRAGMENTATION AND VARIATION BY PAYER

Lisa M. Kern[1, 1]; Joanna K. Seirup[1]; Rachel Jawahar[1]; Yesenia Miranda[1]; Susan S. Stuard[2]. [1]Weill Cornell Medical College, New York, NY; [2]Lake Fleet Consulting, Irvington, NY. (Control ID #2705394)

BACKGROUND: American healthcare is often described as "fragmented," yet the extent of fragmentation is rarely quantified. Most previous studies have measured fragmentation in the Medicare population, but this may not be generalizable to Medicaid or commercially insured populations. Our objective was to compare the extent of fragmented ambulatory care across commercially insured, Medicare, and Medicaid populations.

METHODS: We conducted a cross-sectional study in the Hudson Valley, a 7-county region in New York State, using claims data from 2010 from 5 commercial payers, Medicare, and Medicaid. We included adult patients ($N = 252{,}879$) who were continuously insured through the participating payers, were attributed to a primary care physician in the region, and had ≥4 ambulatory visits in the study year. We defined ambulatory visits using a modified definition from the National Committee for Quality Assurance, which excludes emergency department visits. For each patient, we calculated a fragmentation score from the patient's pattern of ambulatory visits using the Bice-Boxerman Index, which captures both the dispersion of care across multiple providers and the relative share of visits by each provider. We reversed the direction of the Index, so that higher scores reflected more fragmented care. We separately calculated for each patient the proportion of visits with the most frequently seen provider. We conducted comparisons across payer groups using t-tests and chi-squared tests. To explore the potential roles of other variables, we conducted sensitivity analyses stratified by the number of chronic conditions and the number of ambulatory visits.

RESULTS: Patients with Medicaid insurance had significantly more fragmented ambulatory care (mean fragmentation score 0.84) than patients with either commercial insurance (0.73) or Medicare (0.74) ($p < 0.0001$). This finding was due, in part, to the fact that Medicaid patients had the lowest mean proportion of ambulatory visits with the most frequently seen provider (36% of visits), compared to commercially insured patients (48% of visits) and Medicare patients (45% of visits) ($p < 0.0001$). Differences in fragmentation scores by payer persisted when we stratified by the number of chronic conditions and when we stratified by both the number of chronic conditions and the number of ambulatory visits.

CONCLUSIONS: Patients with Medicaid have more fragmented ambulatory care than patients with either commercial insurance or Medicare. Because we included only those with continuous insurance coverage, this finding is distinct from the separate problem of churning (temporary losses of insurance coverage). High rates of fragmentation across all payers suggest that patterns of ambulatory care may not be optimized. This finding is important, because all payers are currently seeking new strategies for improving value in healthcare, and fragmentation may represent a novel target for improvement.

HEALTHCARE SERVICES AND AMBULATORY RESOURCES UTILIZED BY VETERANS WITH CHRONIC NONCANCER PAIN

Joanne Bernstein[3]; Erica M. Wozniak[2]; Cynthia Kay[1, 3]. [1]Zablocki VA Medical Center, Milwaukee, WI; [2]Medical College of Wisconsin, Milwaukee, WI; [3]Medical College of Wisconsin, Whitefish Bay, WI. (Control ID #2689982)

BACKGROUND: Chronic pain is prevalent in the Veterans population with the estimated rate twice that of the civilian population. Prior studies have shown an association between chronic pain and increased healthcare utilization. However, many of these studies focused on traditional services, such as emergency room (ER) visits, hospitalization, and prescriptions. Little is known about resources not billed, such as telephone calls and nurse visits. These resources are integral parts of ambulatory medicine, especially primary care. The objectives of this study are to describe Veterans Affairs (VA) healthcare utilization by patients based on chronic pain, pain agreement status, and type and amount of opioids prescribed. We also examine potential independent predictors of healthcare utilization in a multiple regression context.

METHODS: Retrospective chart review of primary care patients of a Midwest VA medical center on long-term opioids for chronic noncancer pain with or without a pain agreement between April 1, 2014 and April 1, 2015 ($N = 617$). Age-matched patients without pain served as controls ($N = 565$). Healthcare utilization was compared by univariate statistics based on the presence of chronic pain, pain agreement status, opioid dose and schedule. Logistic regression was used to assess predictors of healthcare utilization, with hospitalizations and nurse triage calls as binary outcomes and emergency room (ER) visits, office visits, and nurse visits/telephone calls/secure messages as ordinal outcomes.

RESULTS: Patients with chronic pain utilized more healthcare services compared to patients without pain (all $p < 0.001$, except for hospitalization $p = 0.003$). Patients on schedule II controlled medications were likely to have more messages and nurse visits compared to those on schedule III or IV ($p < 0.001$). There were not significant differences in any utilization measure based on morphine equivalent dose or pain agreement status. Model-based results show that, controlling for relevant demographic and clinical characteristics, chronic pain patients were more likely to have an ER visit than non-pain control patients (adjusted common OR, 1.9; 95% CI 1.4–2.4). Patients with chronic pain also had more nurse triage encounters (adjusted common OR 1.4; 95% CI 1.0–1.9), and telephone calls, messages or nurse visits (adjusted common OR, 1.6; 95% CI 1.2–2.0) compared to patients without chronic noncancer pain.

CONCLUSIONS: Past studies have shown that the VA's Patient Aligned Care Team (PACT), which is equivalent to the Patient Centered Medical Home, decreases utilization of ER visits and hospitalizations. However, those studies did not take chronic pain into account. Our results show that patients with chronic noncancer pain still utilized more healthcare services compared to those without chronic pain, even with a PACT. Future research is needed to find ways to effectively reduce healthcare utilization among patients with chronic pain, without sacrificing the quality of care.

HEATH PRIORITIES FOLLOWING MYOCARDIAL INFARCTION: RESULTS FROM A NATIONAL SURVEY Megan Obi[1]; Nathalie Moise[2]; Carmela Alcantara[2]; Anusorn Thanataveerat[2]; Ian M. Kronish[2]. [1]Case Western Reserve University, Cleveland, OH; [2]Columbia University Medical Center, New York, NY. (Control ID #2706492)

BACKGROUND: Recurrent myocardial infarctions (MIs) are prevalent in the U.S. and are associated with increased morbidity and mortality. Prior research has failed to incorporate the individual perspectives and concerns of MI survivors. A better understanding of symptom and health priorities may inform the development of interventions to offset the risk of poor outcomes in this population.

METHODS: YouGov, a nonpartisan research firm, administered an online nationally representative opt- in survey in English and Spanish to 1500 US adults who indicated they had previously been given an MI diagnosis by a health professional. Sampling targets and sampling weights were set based on gender, age, and race distribution of MI according to the 2010 National Health Interview Survey. Participants were asked to identify their single-most bothersome symptom and health concern related to their attack from a list generated from formative focus groups. Sampling weights were used to calculate weighted percentages for categorical variables.

RESULTS: Of 1500 participants, 18.2% reported at least 2 prior MIs. The average age was 64.7 years; 61.0% were male, 9.6% non-Hispanic black (NHB), 4.3% Hispanic and 612 (40.8%) had a self-reported history of depression and/or current elevated depressive symptoms (Patient Health Questionnaire-8 ≥ 10). Participants predominantly identified comorbid medical conditions (e.g., cholesterol, diabetes) (73.0%) and behavioral risk factors (e.g., smoking) (67.5%), as their single most important health concern as opposed to quality of life (QOL) (25.6%) or heart-related concerns (35.8%). In adjusted analysis, ever/current depressed (vs. non-depressed) participants were less likely to identify comorbid medical conditions (67.2% vs. 76.4%, $p < 0.0001$) and behavioral risk factors (61.5% vs 71.6%, $p < 0.0001$) as health concerns, and were more likely to identify quality of life (QOL) (34.3% vs 19.7%, $p < 0.001$) and heart concerns (44.0% vs 30.3%, $p < 0.001$) as their single most important health concern. Overall, 64% of participants endorsed a non-cardiac symptom as their single most bothersome symptom as compared to 35.9% who endorsed a cardiac-related symptom. Reduced energy (55.3%) and shortness of breath (42.3%) were the two most common symptoms reported while reduced energy and trouble sleeping (23.8%) were the two most common non-cardiac symptoms.

CONCLUSIONS: We found that MI survivors tended to report greater non-cardiac symptoms, and were more likely to be concerned about behavioral and medical risk factors. Certain sub-populations, such as those with depressive symptoms may have different health priorities and concerns, namely related to QoL and recurrent cardiac events, suggesting a need for patient-centered interventions that address not just cardiac, but also non-cardiac symptoms and health concerns. Tailoring treatment strategies to address chronic disease management may subsequently help promote better adherence and patient satisfaction.

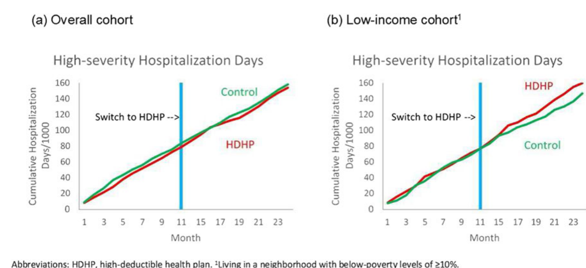
HIGH DEDUCTIBLE INSURANCE AND HIGH-ACUITY OUTCOMES IN DIABETES James F. Wharam[3]; Fang Zhang[4]; Emma Eggleston[5]; Christine Lu[6]; Stephen B. Soumerai[1]; Dennis Ross-Degnan[2]. [1]Harvard Medical School, Boston, MA; [2]Harvard Medical School and Harvard Pilgrim Health Care Institute, Boston, MA; [3]Harvard Medical School and Harvard Pilgrim Healthcare, Boston, MA; [4]Harvard Pilgrim Health care Institute, Boston, MA; [5]West Virginia University, Morgantown, WV; [6]Harvard Medical School and HPHCI, Boston, MA. (Control ID #2702896)

BACKGROUND: High deductible health plans (HDHP) have recently become the predominant private health insurance arrangement in the US and the centerpiece of proposals to replace the Affordable Care Act. However, effects on high-acuity outcomes among chronically ill patients and vulnerable subgroups are unknown.

METHODS: We studied Optum data derived from a large US health insurer. We used a controlled interrupted time series design to examine employer-mandated HDHP transitions, minimizing selection bias. The intervention group comprised 26,674 HDHP members with diabetes age 12–64 included between 2003–2012. HDHP members were enrolled for 1 year in a low deductible (≤$500) plan followed by 1 year in a HDHP (≥$1000) and propensity score matched 1:1 to diabetes patients with low deductibles. Low income HDHP members ($n = 9641$) were a subgroup of interest. Measures included emergency department (ED) visits, hospitalizations, and total healthcare expenditures. Measure of adverse outcomes were high severity ED visit expenditures and high severity hospitalization days. We estimated pre-to-post changes among HDHP members versus controls using adjusted segmented regression on monthly cumulative measures.

RESULTS: HDHP members experienced small pre-to-post reductions in ED visits (−3.1% [−3.9,-2.3]), hospitalizations (−4.2% [−5.5,-2.8]), and total healthcare expenditures (−3.6% [−4.3,-3.0]) relative to controls, and no changes in measures of adverse outcomes. However, low income HDHP members experienced relative increases in high severity ED visit expenditures (8.1% [3.0,13.2]) and high severity hospitalization days (26.1% [19.7,32.5]) at follow-up compared to baseline.

CONCLUSIONS: Low income diabetes patients who were switched to HDHPs experienced substantial increases in adverse high-acuity outcomes. Results could inform tailored health insurance designs that improve health outcomes among vulnerable HDHP members with diabetes.



HIGH UTILIZERS OF CONDITION HELP: DEMOGRAPHIC AND MEDICAL CHARACTERISTICS OF PATIENTS WHO REPEATEDLY ACTIVATE RAPID RESPONSE TEAMS Elizabeth Eden[1]; Allison DeKosky[2]; Ling-Wan Chen[3]; Laurie Rack[1]; Gregory M. Bump[2]. [1]University of Pittsburgh Medical Center, Pittsburgh, PA; [2]University of Pittsburgh School of Medicine, Pittsburgh, PA; [3]University of Pittsburgh, Pittsburgh, PA. (Control ID #2705951)

BACKGROUND: Patient activated rapid response teams have been increasingly implemented to improve patient safety and enhance patient engagement. The University of Pittsburgh Medical Center (UPMC) implemented a patient

and family initiated rapid response system called Condition Help. Condition Help triggers a patient care liaison or administrator on duty along with a charge nurse to convene at the patient's bedside to address concerns. A previously conducted analysis of 3.5 years of UPMC data revealed that nearly half of Condition Help events were activated by a small subgroup of patients, yet fewer than 6% of these events were categorized as safety concerns by the authors. Most of these calls were attributed to unsatisfactory pain control or other medical management issues. We sought to further describe demographic and medical characteristics of those patients who frequently activate Condition Help, given the high utilization of resources required to address their concerns. It is critical to understand more about these patients, for potentially earlier identification and alternative interventions to better meet their needs.

METHODS: Of the 240 patients who activated Condition Help at UPMC Presbyterian from January 2012 through July 2015, 43 patients called more than once, accounting for 46% of events (170 of 367). Charts were reviewed for these 43 patients to collect basic demographic information including age, gender, race, marital status, employment status, and category of insurance. Documentation of substance use, comorbid psychiatric disease and primary medical diagnosis leading to inpatient admission were recorded.

RESULTS: Most patients were female (72%), Caucasian (70%) and single (72%) with a mean age of 39 years (SD 12.8). On average members of this group were admitted 5.67 times per year (SD 5.4). 79% were unemployed or on disability and 21% were employed or retired. 58% had Medicaid or Medical Assistance, 32% had Medicare, and 10% had commercial insurance. One patient was homeless. Most patients used chronic opiates (77%), 16% used marijuana, and 12% used other illicit substances including heroin or cocaine. Primary medical reason for admission was related to gastrointestinal complaints in 51%; of these 18% had inflammatory bowel disease and 18% had acute or chronic pancreatitis. 5% had sickle cell disease. Comorbid psychiatric illness was identified for 82% of patients. 88% were discharged to home and the remainder were placed at either skilled nursing facilities or transferred to inpatient psychiatry.

CONCLUSIONS: Patients who repeatedly activate Condition Help demonstrate high medical resource utilization. Prevalence of unemployment and qualification for Medicaid and Medical Assistance indicate that they have limited income and resources. We also show that most of these patients have chronic pain and comorbid psychiatric conditions. These data suggest that this group may benefit from early interventions targeting pain management and psychiatric care.

HIGH-DEDUCTIBLE INSURANCE AND MACROVASCULAR DISEASE IN DIABETES James F. Wharam[1]; Christine Lu[1]; Fang Zhang[1]; Matthew Callahan[1]; Stephen B. Soumerai[1]; Dennis Ross-Degnan[1]; Joseph Newhouse[2]. [1]Harvard Medical School and HPHCI, Boston, MA; [2]Harvard Medical School, Boston, MA. (Control ID #2702885)

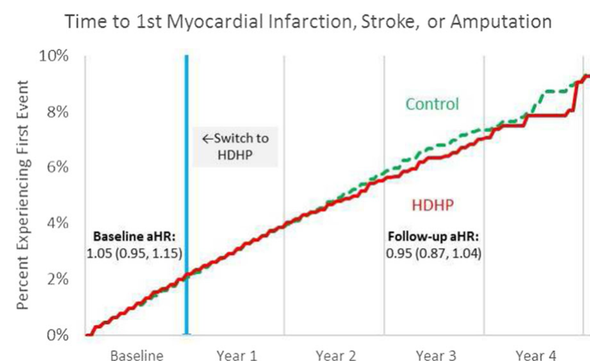
BACKGROUND: High deductible health plans (HDHP) are the centerpiece of proposals to replace the Affordable Care Act, but longer-term impacts on chronically ill populations are unknown. We sought to determine effects of HDHPs on macrovascular disease diagnostic testing, treatment, and adverse events among diabetes patients.

METHODS: We studied Optum data derived from a large US health insurer. We used a controlled segmented survival design to examine employer mandated HDHP transitions, minimizing selection effects. The intervention group comprised 50,749 HDHP members with diabetes age 12–64 included between 2003–2012. HDHP members were enrolled for 1 year in a low deductible (≤$500) plan then up to 4 years in a HDHP (≥$1000) and propensity score matched 1:1 to diabetes patients with low deductibles. Measures were assessed within and aggregated across coronary heart disease, cerebrovascular disease, and peripheral artery disease states and included macrovascular disease major diagnostic testing; major procedure-based treatment; and major adverse events (MI, stroke, and lower extremity amputation). To calculate baseline and follow up period adjusted hazard ratios (aHRs), we used Cox proportional hazards segmented survival adjusted for baseline population differences and changing demographics over time.

RESULTS: HDHP members experienced follow up delays in receiving major diagnostic tests (aHR: 0.92 [0.89, 0.95]) but time to major treatment was not statistically different (0.92 [0.84, 1.02]). We detected no change in timing of MI (0.94 [0.76, 1.16]), stroke (0.95 [0.81, 1.10]), or lower extremity amputation (0.89 [0.68, 1.17]). The aggregated aHR for these 3 outcomes was 0.95 [0.87, 1.04]).

CONCLUSIONS: Among diabetes patients, HDHP enrollment was associated with a delay in diagnostic testing but no acceleration in major macrovascular complications. Subsequent research should assess similar outcomes among vulnerable HDHP populations with diabetes such as low-income members.

Time to first myocardial infarction, stroke, or lower extremity amputation among diabetes patients transitioning to HDHPs and matched control diabetes patients remaining in low-deductible plans.



HIGH-RISK PATIENTS IN VHA: WHERE DO THEY GET THEIR PRIMARY CARE? Evelyn T. Chang[4]; Rebecca I. Piegari[5]; Donna M. Zulman[4]; Karin M. Nelson[5, 2]; Ann-Marie Rosland[3]; Stephan D. Fihn[5, 2]; Lisa V. Rubenstein[1, 4]. [1]GLA VA, North Hills, CA; [2]University of Washington, Seattle, WA; [3]VA Ann Arbor, Ann Arbor, MI; [4]VA- Greater Los Angeles, Los Angeles, CA; [5]Department of Veterans Affairs, Seattle, WA. (Control ID #2699677)

BACKGROUND: Healthcare systems are increasingly accountable for the populations that they manage, spurring interest in identifying and developing programs for patients who are at high risk for hospitalization. Veterans Health Administration (VHA) has implemented patient-centered medical homes throughout general primary care and has supported similar models, often with smaller panel sizes and additional resources, tailored to specific special populations, such as women, homeless, HIV, and home-bound. Potential strategies to improve outcomes for high-risk patients are to either provide greater support for intensive management within primary care or to create more or larger special population primary care programs. Our objectives are to provide a foundation for planning by describing where the top 5% sickest patients in VHA, in terms of their risk for hospitalization, receive their primary care.

METHODS: Cross-sectional study of patients enrolled in VHA general or special population primary care nationally ($n = 4,309,192$) using the VHA Corporate Data Warehouse. We defined high-risk patients as those with a Care Assessment Need score (VHA-specific risk prediction model for 90-day hospitalization) ≥ 95th percentile during April 1, 2015 - September 30, 1015 ($n = 351,012$).
RESULTS: Most (88%) high-risk patients were managed in general primary care (GPC), even when they had a characteristic that, in combination with their high risk, might make them eligible for specialized primary care (SPC). Proportions of target groups of high-risk patients receiving SPC varied between geriatrics SPC (6% of high-risk patients >70 years old) and homelessness SPC (5% of high-risk homeless) compared to HIV SPC (51% of high-risk patients with HIV) and SPC for women (68% of high-risk women). Only 3% of high-risk patients overall were managed in home-based SPC. SPC programs, however, had higher proportions of high-risk patients; 41% of home-based SPCs, 8% of geriatrics SPC, 28% of infectious disease SPC, and 28% of homelessness SPC were high-risk, compared to 8% high-risk in GPC. Overall, few high-risk patients utilized disease management telehealth services (8% over previous two months), housing services (4%), intensive mental health care management (1%) or palliative/hospice care (1%).
CONCLUSIONS: The vast majority of high-risk Veterans are managed in general primary care without a special population focus or additional intensive primary care resources. Patients in special population primary care are more likely, however, than those in general primary care to be at high risk for hospitalizations. Effective system-level planning for improving outcomes among high-risk Veterans will likely need to focus on supporting intensive management within general primary care, as well as on maximizing the impact of care delivered within special population primary care programs.

HIGH-RISK PRESCRIPTION OPIOID USE AMONG PEOPLE LIVING WITH HIV Chelsea Canan[1]; Geetanjali Chander[2]; G. Caleb Alexander[1]; Anne Monroe[2]; Kelly Gebo[2]; Richard D. Moore[2]; Allison Agwu[2]; Bryan Lau[1]. [1]Johns Hopkins Bloomberg School of Public Health, Baltimore, MD; [2]Johns Hopkins University, Baltimore, MD. (Control ID #2702360)

BACKGROUND: Despite an epidemic of opioid-related injuries and deaths in the United States, relatively little is known regarding how prevalent high-risk prescription opioid use is among people living with HIV (PLWH).
METHODS: We analyzed clinical and demographic data from the HIV Research Network (HIVRN), a longitudinal multi-site cohort, and opioid prescription claims from Medicaid for non-cancer patients seeking HIV treatment at four urban sites between 2006–2010. We examined 4 measures of high-risk opioid use: 1) high daily dosage (≥100 morphine mg equivalents for 30 consecutive days), 2) early refills (refilling ≥3 days early), 3) overlapping prescriptions (≥2 distinct drugs from the same Drug Enforcement Agency classification on the same day), 4) multiple opioid prescribers (≥3 prescribers in 90 days).
RESULTS: Of 4,553 eligible PLWH, 3,122 (68.6%) received at least one opioid prescription and were included in the analysis. The sample was 63% male and 60% African American. Forty percent were 35–44 years of age and 40% were 45–65. Thirty-four percent of patients' HIV risk factor was injection drug use (IDU). Forty-six percent of patients had a depression diagnosis and 38% received a diagnosis for chronic pain. High-risk opioid use occurred among 45% of patients (high dosage: 317 (10%); early refills: 1,121 (36%); overlapping prescriptions: 772 (25%); multiple providers: 938 (30%)). 199 (6%) patients met criteria for all four outcomes while 440 (14%), 359 (12%) and 398 (13%) met criteria for one, two and three outcomes, respectively. The most commonly co-occurring outcomes were early refills and multiple providers. Among patients with multiple outcomes, early refills most often occurred first. In multivariable Cox regression models, patients with IDU as an HIV risk factor and patients with a diagnosis of chronic pain demonstrated a significantly increased hazard for each of the four outcomes. Males were more likely than females to refill prescriptions early. Older age was associated with early refills. See Table for further details.
CONCLUSIONS: High-risk opioid use is common among PLWH, and is significantly associated with IDU and chronic pain diagnoses. The incidence rate is highest with early refills, which may serve as a metric to identify patients at risk for opioid use disorders.

Summary of high-risk opioid utilization

	High daily dosage	Early refills	Overlapping prescriptions	Multiple providers
N (%) with outcome	317 (10.2)	1,121 (35.9)	772 (24.7)	938 (30.0)
Incidence rate per 100 PY	5.9	31.4	10.1	23.3
Median years to first occurrence	Undefined	2.57	Undefined	3.38
Multivariable Cox regression model, Hazard Ratio (95% CI)				
Age 18-34	Ref	Ref	Ref	Ref
Age 35-44	**1.89 (1.20-2.98)**	**1.68 (1.35-2.09)**	**1.36 (1.06-1.74)**	**1.25 (1.00-1.56)**
Age 45-65	**1.86 (1.17-2.95)**	**1.73 (1.39-2.17)**	**1.42 (1.10-1.83)**	1.14 (0.91-1.43)
Male sex	0.92 (0.72-1.18)	**1.24 (1.08-1.42)**	0.87 (0.74-1.01)	1.12 (0.97-1.30)
IDU as HIV risk factor	**1.45 (1.13-1.86)**	**1.37 (1.20-1.57)**	**1.45 (1.23-1.71)**	**1.31 (1.13-1.52)**
Depression diagnosis	1.02 (0.80-1.31)	1.05 (0.92-1.20)	1.01 (0.86-1.18)	0.98 (0.85-1.13)
Chronic pain diagnosis	**1.71 (1.34-2.18)**	**1.34 (1.18-1.54)**	**1.72 (1.47-2.02)**	**1.35 (1.17-1.56)**

Models adjusted for study site, race/ethnicity, baseline CD4 cell count and baseline log HIV RNA; bolded values indicate significance

HIGH-VALUE CARE CULTURE AND RESIDENT TRAINING IN SAFETY-NET MEDICAL CENTERS Reshma Gupta[2]; Neil Steers[3]; Christopher Moriates[1]; Soma Wali[4]; Clarence H. Braddock[3]; Michael Ong[3]. [1]UT Southwestern Medical Center, San Francisco, CA; [2]University of California, Los Angeles, Los Angeles, CA; [3]University of California Los Angeles, Los Angeles, CA; [4]Olive View-UCLA Medical Center, Los Angeles, CA. (Control ID #2706188)

BACKGROUND: The goal of residency training is to prepare future physicians to meet society's healthcare needs, including striving for the triple aim. Differences in how health systems function and their available resources to promote high-value care could affect trainees' exposure to a high-value care culture and environment. We assessed the relationship between high-value care culture reported by internal medicine residents and the type of medical center in which they train (i.e. university, community, or safety-net). We also assessed

whether high-value care culture correlates with institutional value-based care delivery across diverse delivery systems.

METHODS: Five-hundred seventeen internal medicine residents at 12 university, community, and safety-net based GME programs across California completed a previously validated cross-sectional survey assessing their perceptions of high-value care culture (HVCCS™) within their training program. We used multi-level linear regression to assess the relation between type of medical center and HVCCS scores, adjusting for age, gender, track in training, number of months training in safety-net centers, and medical center bed size. We also calculated the correlation between mean institutional HVCCS and Centers of Medicare and Medicaid Service's Value-based Purchasing (VBP) scores using Spearman rank coefficients.

RESULTS: Of the 517 residents, 306 (59.2%), 83 (16.1%), and 128 (24.8%) trained in university, community, and safety-net based GME programs respectively. Across the 12 sites, the mean HVCCS score was 51.2 (SD 11.8) on a 0–100 scale, with a significantly lower mean among safety-net based training programs 47.9 (SD 10.9). Residents reported lower mean HVCCS scores if they were from safety-net based training programs (β –4.4, 95% Confidence Interval (CI) −8.2– −0.6) or were male (β −2., 95% CI −4.7− −0.60). Mean institutional HVCCS scores among the university and community sites positively correlated with VBP scores (Spearman r = 0.71, $p < 0.05$); safety net sites had a negative correlation between HVCCS and VBP scores (Spearman r = −1.00).

CONCLUSIONS: Safety-net medical centers have a vital role in GME training and serving community needs. However, trainees based in these environments report less exposure to aspects of a high-value care culture. This finding and the different correlation between HVCCS and VBP scores among safety-net sites may be due to different definitions of value, the closed financial structure of safety-net centers, and needed improvements in the training environment for high-value care. Tactics for fostering a high-value care culture include faculty and resident training, increasing access to data, and improving open communication about value.

HIV PREVENTION IN PRIMARY CARE SETTINGS: FACILITATORS AND BARRIERS ASSOCIATED WITH PRESCRIBING HIV PRE-EXPOSURE PROPHYLAXIS (PREP) IN THE UNITED STATES

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BACKGROUND: PrEP with antiretrovirals is a highly effective novel HIV prevention tool that primary care providers (PCPs) can implement, but little is known about factors associated with PrEP prescribing by PCPs. We assessed attitudes and other characteristics associated with PrEP prescribing by PCPs to inform primary care interventions to prevent HIV.

METHODS: We conducted an online survey of providers (MD, DO, NP, or PA) affiliated with a primary care practice-based research network from 8/2015 to 2/2016. We assessed provider and practice characteristics, attitudes about PrEP, and PrEP prescribing history. We categorized respondents into 3 mutually exclusive prescribing groups: 1) have already prescribed PrEP ("prescribers"); 2) likely to prescribe PrEP in the next 6 months ("likely prescribers"), and 3) have not prescribed PrEP and not likely to ("non-prescribers"). We used multivariable multinomial logistic regression to identify attitudinal and other factors associated with prescribing category. We used multiple imputation to account for missing data, and constructed final models with all factors significant ($p < 0.05$) in bivariate analysis.

RESULTS: Respondents ($N = 448$) came from 41 states and Puerto Rico, 67% were female, 13% identified as non-heterosexual, and 46% practiced for <10 years. They practiced in diverse settings: 73% urban, 50% in community health centers, 31% in academic settings, 37% in practices with no onsite HIV care, and 39% in practices with onsite HIV care. Most (87%) had heard of PrEP, but only 27% were identified as prescribers, while 31% were identified as likely prescribers, and 42% as non-prescribers. Prescribers (compared to likely prescribers) recognized facilitators to prescribing PrEP more often and were less deterred by barriers (Table). Prescribers also tended to have greater PrEP knowledge, prescribe antiretrovirals, identify as non-heterosexual, have been in practice fewer years, practice in urban areas, and have more MSM patients. Compared to non-prescribers, likely prescribers endorsed fewer negative PrEP attitudes (Table), tended to prescribe antiretrovirals, and had more MSM patients.

CONCLUSIONS: PrEP prescribing in primary care settings is not common, despite PCPs reporting intentions to prescribe. Our findings highlight the importance of provider education about PrEP, HIV, and LGBTQ health, and suggest that addressing barriers to prescribing may increase PrEP adoption in primary care.

Table. Factors Associated with PrEP Prescribing

	Prescribers vs. Likely Prescribers (ref)		Likely Prescribers vs. Non-Prescribers (ref)	
	RRR (95% CI)	P	RRR (95% CI)	P
Facilitator				
It's my job to screen patients and prescribe PrEP	2.47 (1.58-3.85)	<0.001	ns	
Barriers				
PrEP is not effective enough	0.54 (0.35-0.84)	0.007	ns	
I do not have time to engage in the prevention counseling that would be required	ns		0.63 (0.47-0.85)	0.002
Patients on PrEP may engage in riskier behaviors	ns		0.66 (0.49-0.90)	0.007
My patients will not be able to adhere to a PrEP regime	0.48 (0.30-76)	0.002	0.56 (0.38-0.82)	0.003
Other methods to prevent HIV are better than PrEP	0.63 (0.40-0.99)	0.043	0.59 (0.40-0.88)	0.009
Provider and Practice Characteristics				
Self-rated PrEP knowledge	2.95 (2.16-4.04)	<0.001	ns	
Currently prescribe antiretrovirals	6.55 (3.13-13.73)	<0.001	4.23 (2.22-8.05)	<0.001
Practice in urban area	23.67 (8.79-63.78)	<0.001	ns	
Non-heterosexual identity	14.64 (5.91-36.27)	<0.001	ns	
<10 years in practice	4.19 (2.21-7.94)	<0.001	ns	
Have >5% MSM patients	7.73 (3.95-15.11)	<0.001	3.24 (1.15-3.60)	<0.001

HOME BASED PRIMARY CARE IMPROVES PATIENT OUTCOMES IN FRAIL, MEDICALLY COMPLEX ELDERS

Christine Patterson[3]; Bruce Kinosian[2]; Peter Boling[3]; Daniel M. Gilden[5]; George Taler[1]; IAH Learning Collaborative[4]. [1]Georgetown University School of Medicine, Washington, DC; [2]University of Pennsylvania, Philadelphia, PA; [3]Virginia Commonwealth University, Richmond, VA; [4]American Academy of Home Care Medicine, Chicago, IL; [5]JEN Associates, Cambridge, MA. (Control ID #2698375)

BACKGROUND: The Independence at Home (IAH) demonstration has shown that home-based primary care (hbpc) practices improve care and reduce overall costs for patients with multiple chronic conditions. While cost savings and summary quality measures have been reported for the demonstration, hospitalization and readmission rates have not. This study compared hospitalization and readmissions collected by one IAH demonstration site (Mid Atlantic Consortium [MAC]), to rates for an IAH-qualified (IAH-Q) population in the MAC counties (Philadelphia, Richmond, and the District of Columbia) and then generalized the findings to the full IAH demonstration

using the NPI-linked 5% Medicare files. We expected that MAC and IAH demo enrollees' utilization would decline at a greater rate than local IAH-Q patients who did not receive hbpc, consistent with the reported cost savings.

METHODS: Data were collected by MAC practices from 2012–2016, from internal tracking and reporting, among all IAH-eligible practice patients. We used NPI- linked 2011–14 5% Medicare files to identify IAH-Q enrollees in the 15 IAH demo practices (through their NPIs), and for comparison the local IAH-Q non-hbpc beneficiaries. IAH-Q patients were determined by hosp. and post-acute care in the 12 months prior to eligibility, 2+ chronic conditions, and 2+ ADL dependencies operationalized by a JEN frailty index >6. IAH-Q controls matched the age, disease, and utilization trajectory profiles of IAH-Q enrollees in the demonstration practices. Benchmark rates were created for each practice county, and aggregated to produce MAC and national benchmarks. Benchmarks were compared to the hospital, 30d readmit, and ACSC hosp pooled rates for the IAH-Q enrollees. Long term institutionalization (LTI) was recorded for the MAC practices, but were unable to be measured with precision for the 5% demo sample. Rates are per 100 beneficiary months (or hosp. for readmissions). Benchmark rates were pooled over the 3 years.

RESULTS: There were 617 IAH-Q enrollees in demo practices (4.9% of the 12,500 demo participants), and 8,712 IAH-Q non-hbpc beneficiaries in the demo practice counties. IAH-Q enrollee rate ratios were 0.77 (95% CI .74–.81) for hosp,0.73 (CI .69–.79) for 30d readmits and. 0.56 (CI .52–.60) for ACSC hosp from control rates of 12.4 (hosp.), 21.4 (30d) and 9.2 (ACSC). Rate ratios for MAC were 0.71 (CI .62–.80; hosp.), 0.80 (CI .72–.88; 30d readmit), and 0.56 (CI .48–.64; ACSC). By Year 3 MAC rate ratios had declined to 0.54 (CI .44–.63; hosp.), 0.64 (CI .55–.73; 30d), 0.42 (CI .38–.46; ACSC), and 0.47 (CI .32–.62; LTI) against pooled benchmarks of 13.25 [hosp.]. 23.5 [30d readmits], 9.7 [ACSC] and 17.1 [LTI].

CONCLUSIONS: Hbpc, operating through IAH's aligned incentives reduces hospitalizations and readmissions, while producing cost savings. Detailed analysis of one site confirmed the sample analysis of all demonstration sites, with additional reductions in later demonstration years.

HOSPITAL MORTALITY TRENDS DURING THE ACADEMIC YEAR ON MEDICINE SERVICES IN A COMMUNITY HOSPITAL: A RETROSPECTIVE ANALYSIS

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BACKGROUND: In the first 3 months of the Internal Medicine Residency Program's academic year, newly recruited first-year residents and newly matriculated second-year residents have the potential to negatively impact hospital-based patient care, due in part to lack of experience. We hypothesized an association between resident experience and hospital mortality rates.

METHODS: A single-center retrospective cohort study spanning two academic years (July 2013-June 2015) was conducted at St. Elizabeth Medical Center. Hospitalized adults who expired on medicine services (excluding cardiology) were identified in the departmental Death Review database. Using monthly hospital discharge volume by service, monthly mortality rates were calculated and grouped by quarters in accordance with the start and conclusion of the academic year. After excluding decedents with comfort-care-only (CMO) status on admission, mortality rates in the first 24 hours were also computed, as proxy for preventable deaths. The study was approved by the IRB.

RESULTS: Over 24 months, there were 265 deaths. 51.3% were men and mean (± SEM) age was 73 ± 1 years. 55.8% died in the ICU and 43.4% on medical floors.Leading causes of death were sepsis (23.8%) and cancer (18.1%). 69.8% were full code, 26.4% DNR, and 3.4% CMO on admission. 70.9% were CMO, 18.8% DNR and 9.8% full code at time of death. 20.4% died in the first 24 hours. There was a significant increase in hospital mortality during the 3rd quarter of the academic year ($P = 0.01$), representing the winter season, which persisted after excluding decedents with CMO status on admission. While mortality in the first 24 hours appeared higher in 2nd quarter, this did not reach statistical significance. ($P = 0.19$). Most common causes of death were sepsis (33.9%, 30.5%) in the 1st and 2nd quarter, cancer (23.3%) in the 3rd quarter, and pneumonia (20.4%) in the 4th quarter.

CONCLUSIONS: In this retrospective analysis, we did not identify an association between resident experience and mortality rates on medicine services. However, we observed a trend of increased mortality during the 3rd quarter of the academic year corresponding with the winter season, which is consistent with a national phenomenon.

HOSPITAL-LEVEL CARE AT HOME FOR ACUTELY ILL ADULTS: A PILOT RANDOMIZED CONTROLLED TRIAL

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BACKGROUND: Hospitals are the standard of care for management of acute illness, but hospital care can be unsafe, uncomfortable, and expensive. Providing substitutive hospital-level care in a patient's home potentially reduces cost while improving quality and safety, although evidence from randomized controlled trials is lacking.

METHODS: We piloted a randomized controlled trial of acute hospital-level care at home versus usual care at an academic medical center. Patients who presented to the emergency department with any infection, heart failure exacerbation, or COPD/asthma exacerbation were eligible to enroll and be randomized only after an admission decision was made. Patients were excluded if they lived over 5 miles away or were medically unstable by several disease-specific risk scores. Patients randomized to home received at least 1 daily physician visit, 2 daily nurse visits, 24/7 video and text contact with clinicians, continuous vital signs monitoring, medications by any route, and portable diagnostics. Additional services were tailored to each patient as needed, such as physical therapy, social work, and food delivery. Our primary outcome was direct cost of the acute care episode. We calculated cost by totaling non-physician labor, supplies, medications, labs, radiology, and transport. We secondarily studied utilization (eg, labs, consultations) during the care episode, 30-day post-discharge cost and utilization, and quality and safety (eg, adverse events, sleep, physical activity [objective data via vital signs monitor]). We compared groups with Mann–Whitney and Fisher exact tests. We present cost data as percent change from control.

RESULTS: Nine patients (2 female, 4 white) randomized to home had a median age of 65 (IQR, 28) years; 11 patients (8 female, 5 white) randomized to control had a median age of 60 (IQR, 29) years. Median direct cost of the acute care episode for home patients was 52% (IQR, 28%; $p = 0.05$) lower than for control patients. Median length of stay was 3.0 days in both groups ($p = 0.8$). During the care episode, home patients had fewer lab orders (median per admission: 6 vs 19;

$p < 0.01$) and less often received consultations (0% vs 27%; $p = 0.04$). At 30-days post-discharge, median direct cost for home patients was 67% (IQR, 77%; $p < 0.01$) lower, with trends toward less use of home care services (22% vs 55%; $p = 0.20$) and fewer readmissions (11% vs 36%; $p = 0.32$). No safety events occurred in home patients; 1 control patient had hypokalemia. Home patients were more active (median min of activity per day, 209 vs 78; $p < 0.01$), with a trend toward more sleep (median hours per day, 5.4 vs 4.1; $p = 0.3$).

CONCLUSIONS: In this randomized controlled pilot of patients admitted with acute illness, the use of substitutive home hospitalization compared to usual care in the hospital reduced cost and utilization and improved patient activity. Preliminary results suggest quality and safety were maintained or improved, with more definitive results awaiting a larger trial.

HOW DO PROVIDERS RESPOND TO PATIENT DISCLOSURES OF MEDICATION NON-ADHERENCE? A MIXED METHODS ANALYSIS OF PATIENT-PROVIDER DIALOGUE IN HIV CARE

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BACKGROUND: Antiretroviral therapy (ART) adherence among people with HIV/AIDS is critical to ensure viral suppression and to prevent further viral transmission. Effective behavior change counseling techniques such as motivational interviewing have been suggested as useful for conversations about non-adherence, but little is known about which communication strategies are associated with future behavior change. This study aimed to characterize HIV provider responses to disclosures of ART non-adherence and evaluate whether response-type was associated with future adherence.

METHODS: We analyzed audio-recorded, transcribed encounters from 4 US cities between 31 providers and 43 patients who disclosed in the encounter that they had been non-adherent. We conducted a content analysis to characterize types of provider responses to these disclosures, grouping them into three broader categories (positive, neutral, and negative) according to their emotional valence. We evaluated whether provider response types were associated with subsequent viral load, which we obtained from medical records 6 months after the initial encounter, using logistic regression models controlling for baseline viral load.

RESULTS: Most ($n = 34$) patients identified as black, 5 white and 3 Hispanic/Latino. The mean patient age was 44 years; 23 were male. Most providers identified as white ($n = 21$) and just over half ($n = 17$) were male. The average dialogue about adherence was 654 words (range 0–3228). Positive responses by physicians included encouragement ($n = 10$ dialogues), praise ($n = 12$), partnering/support ($n = 9$), and empathy ($n = 5$). Negative responses included admonishment ($n = 14$ dialogues), disengagement ($n = 15$), threats ($n = 8$), and confrontation ($n = 5$). Neutral responses included information-gathering ($n = 35$ dialogues), education ($n = 26$), convincing with reward-focused ($n = 11$) or consequence-focused ($n = 16$) reasoning, emphasis on importance of adherence ($n = 14$), and expressions of concern or hope ($n = 17$). Responses that we categorized as negative were associated with an *increased* odds of having an undetectable viral load at follow-up (OR 3.98, 95% CI 1.20–13.23) whereas positive and neutral responses had no association with subsequent viral load (OR 0.80, 95% CI 0.32–1.98 positive; OR 0.55, 95% CI 0.27–1.14 neutral). There was no association between subsequent viral load and whether the provider used a reward or consequence-focused orientation to convince the patient, or the amount of dialogue about adherence.

CONCLUSIONS: Despite studies suggesting that confrontational and threatening dialogue is counterproductive, our study suggests that in this context, the opposite might be true. If these results are reproducible, this raises serious moral and communication challenges about how providers should respond to patient non-adherence.

HPV VACCINATION IN CORRECTIONAL CARE: KNOWLEDGE, ATTITUDES, BARRIERS, AND RATES OF VACCINATION AMONG FEMALE INMATES

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BACKGROUND: Women in prison are nearly 5 times more likely to develop cervical cancer than women in the general population. The Human Papillomavirus (HPV) has been implicated as an important risk factor for cervical cancer, and incarcerated women have high rates of HPV infection due to risky sexual behaviors and lack of healthcare access in the community. Few studies have examined HPV vaccine knowledge and attitudes among female inmates. This study aimed to assess attitudes toward, knowledge of, and barriers to HPV vaccination among incarcerated women, in addition to assessing self-reported HPV vaccination rates and willingness to receive the vaccine while in prison.

METHODS: English-speaking female inmates aged 18–26 at a Colorado prison were randomly selected to meet individually with an investigator, who then administered the structured survey in person. The 10-min survey was developed using a Health Belief Model framework and existing studies about HPV vaccine attitudes and acceptability which were adapted for the prison environment. Verbal consent was obtained from all participants. We conducted descriptive analyses.

RESULTS: Of 142 eligible women in prison, 38 (27%) completed the survey. The average participant age was 24 (CI 23.3-24.4). Seventy-nine percent ($n = 30$) of women had heard of HPV, and 58% (22) had heard of the HPV vaccine. Thirty-seven percent (14) reported receiving at least one HPV dose prior to incarceration. Regarding knowledge, 11% (4), 34% (13), and 50% (19) believed that HPV can cause oral cancer, genital warts, and cervical cancer, respectively. The majority of women (63%, 24) believed that they have the same cervical cancer risk as women who have never been incarcerated. Most participants (71%, 27) were willing to receive the vaccine while in prison, but cited concerns about lack of care in the event of an adverse reaction (29%, 11) and uncertainty about how to obtain more information about the vaccine (58%, 22).

CONCLUSIONS: Incarcerated women were aware of both HPV and the vaccine, but had knowledge gaps regarding both. Additionally, most participants were unaware of their potentially increased cervical cancer risk compared to the general population. Many women did not receive the vaccine prior to incarceration, but the majority reported a willingness to get it while in prison. This is important because women may age out of the vaccine by the time they are released. Also, while many female inmates have likely been exposed to HPV prior to arrest, the vaccine may still prevent future infection by strains that they have not been exposed to. Colorado women's prisons do not currently offer HPV vaccination, and though a larger sample size is needed to confirm the findings of this study, age-appropriate female inmates should be offered HPV education and vaccination. Such initiatives may reduce the cervical cancer burden in the correctional population and protect women even after they leave prison.

IDEAS FOR PROMOTING PATIENT-CENTERED CARE IN INPATIENT SETTINGS

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BACKGROUND: While patient-centered care (PCC) has been well described in outpatient settings, inpatient PCC has had less focus. Inpatient providers may focus more on the diagnosis than the person in the face of acute biomedical concerns. Nonetheless, in the inpatient setting a patient-centered approach is important for taking into account individuals' needs, illness experience, hospital care, and discharge planning. The objective of this study was to identify key inpatient PCC practices.

METHODS: We conducted two, day long ethnographic observations and qualitative interviews with patients ($n = 19$) and inpatient providers ($n = 26$) on medical/surgical units at two US Department of Veterans Affairs medical centers. Three investigators coded fieldnotes of observations and interviews to identify and categorize practices in relation to the a priori categories of PCC based on Hudon's conceptual framework. We then categorized practices according to congruence with these PCC principles.

RESULTS: We identified practices 4 practices aligned with PCC principles: 1) Attending to patients' disease and illness experience - providers communicated with patients about their current experience, before attending to routine clinical tasks. 2) Establishing a common ground - providers helped patients understand their care, orienting them to clinical tasks. 3) Bringing biopsychosocial perspectives - providers learned about patients as individuals and incorporated personal histories into care. 4) Establishing a therapeutic alliance - providers treated patients with respect, establishing relationships even with those with limited communication capacity. We identified 3 practices that contrasted with PCC principles: 1) Failure to share power and responsibility - providers elevated rules and procedure over patients' preferences, needs or concerns. 2) Failure to establish a common ground for practices - providers did not communicate about procedures thus delaying attention to patients' immediate needs and 3) Whole person - providers failed to ascertain patient's life context to understand the origins of illness and plan for appropriate discharge. We developed a rubric for providing inpatient PCC: IDEAS - Inquire about patients' well-being and daily life; Describe purpose of procedures; Engage in small talk to humanize interactions; Ask permission for all interactions; and Stay flexible about processes where possible.

CONCLUSIONS: As healthcare systems move towards providing more PCC it is critical to understand how these principles apply to inpatient care. Our study provides exemplars of provider care practices that are aligned with PCC principles, in contrast to those that focus on the disease or institutional procedures. IDEAS can be used to teach PCC principles or as the basis for an observational tool to evaluate PCC in inpatient settings.

IDENTIFYING A SHARED MENTAL MODEL FOR "NEW" FACULTY COMPETENCIES TO BETTER ALIGN EDUCATION WITH HEALTH CARE TRANSFORMATION

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BACKGROUND: Health care transformation in US Academic Health Centers (AHC) involves new models of care delivery aimed at achieving the Quadruple Aim, which requires engagement of faculty who are prepared to practice, educate, and lead in these emerging areas. Despite a growing mandate and potential benefits to the mission of AHCs, corresponding professional development efforts have been slow to emerge, in part due to lack of a comprehensive competency framework that moves beyond patient safety and quality improvement. We interviewed 23 health system leaders to develop a potential competency framework for faculty development programs in Health Systems Science with the ultimate goal of improving health outcomes.

METHODS: In 2016, we interviewed health systems leaders who were actively involved in health care delivery, either at the clinical or administrative levels, and in leadership positions within the health system. We performed digitally-recorded, one-on-one interviews with each participant to explore perceptions regarding necessary competencies in evolving health systems and current challenges in health care. Interview transcripts were analyzed using constant comparative and thematic analysis. Competencies and curricular concepts were coded into subcategories and subtopics. Lead investigators reviewed drafts of the categorization scheme and themes related to gaps in faculty knowledge and skills, collapsed and combined domains and subcategories, and resolved disagreements via discussion.

RESULTS: Analysis identified four themes related to needs in faculty development: (1) Foundational competencies, which included systems thinking, change agency/management, teaming, and leadership. (2) Core functional competencies and curricular domains for conceptual learning, including patient-centered care (e.g. patient experience), health care processes (e.g. collaboration), policy and payment (e.g. reform), clinical informatics (e.g. decision support), population and public health (e.g. community-based resources), value-based care (e.g. cost), and health system improvement (e.g. measurement). (3) Paradigm shifts in how academic faculty approach and conceptualize health care, categorized into four areas: delivery, transformation, provider characteristics and skills, and education. (4) Faculty awareness of challenges to providing quality care and innovating in AHCs.

CONCLUSIONS: This broad competency framework for faculty development programs expands existing curricula by including a comprehensive scope of Health Systems Science content and skills. The need for faculty to know and be skilled in foundational competencies has significant implications for education and supports the premise that knowledge acquisition alone is insufficient. AHCs can use these results to better align faculty education with the real-time needs of their health systems. Future work will need to investigate optimal prioritization and methods for teaching.

IDENTIFYING BEHAVIORAL HEALTH COMPETENCIES FOR INTERNAL MEDICINE RESIDENTS: QUALITATIVE INTERVIEWS WITH RESIDENTS, FACULTY AND BEHAVIORAL HEALTH CLINICIANS AT A CLINIC WITH INTEGRATED BEHAVIORAL HEALTH

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BACKGROUND: Primary care providers frequently provide behavioral health (BH) services as part of patients' comprehensive care; these BH services include care for mental health and substance abuse, as well as assistance with behavioral risk factor reduction. Compared with other specialties involved with

primary care, internal medicine residencies lack formal expectations regarding what components of BH care should be incorporated in the course of residents' training. To determine appropriate BH competencies for internal medicine residents, we conducted focus groups with residents, faculty and behavioral health clinicians (BHCs) at our academic primary care clinic.

METHODS: Between June and August 2016, residents with continuity practice at the clinic were invited to participate in focus groups. Additional separate focus groups were conducted with attending physicians and BHCs who are integrated into the clinic's care. In all, 25 residents, 2 advanced practice providers, 6 attendings and 4 BHCs participated. The focus group leader asked open-ended questions regarding the following: residents' successes and challenges managing BH issues; specific learning competencies that participants see as necessary to manage these BH conditions; and what methods would facilitate learning BH competencies. Focus groups were recorded and transcribed. Two researchers coded, using editing analysis to develop a list of common categories and sub-categories.

RESULTS: Proposed competencies were grouped into three main categories. The first category Interpersonal Skills Training had three sub-categories: Visit Management, Counseling Skills, and Shared Decision-making. For Interpersonal Skills Training, residents repeatedly requested experiential learning with a skilled preceptor in the setting of patient care. The second two categories were Social Determinants of Health (SDH), and Mental Health Management (MHM); for each of these categories, residents repeatedly expressed a desire to learn specific resources for patients with problems related to SDH and/or MHM. Many residents wished that there were a better resource guide available to help them address these needs.

CONCLUSIONS: Many internal medicine residents can identify important gaps in their knowledge of BH. Curricula to address these gaps should focus on interpersonal skills relating to BH. Residencies may enhance residents' BH learning about social determinants of health and mental health management by facilitating co-management with IBHCs in residents' clinical care.

IDENTIFYING BURNOUT AND RELATED DEMOGRAPHIC, PROGRAM, AND TEAM FACTORS: A HOSPITALIST SURVEY ACROSS 4 HOSPITALS

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BACKGROUND: Reducing physician burnout remains an important goal in preserving an engaged and satisfied workforce for a resilient healthcare system. The objective of this study was to characterize hospitalist burnout, its prevalence, factors associated with burnout, and potentially modifiable targets for further study and intervention.

METHODS: As part of a statewide hospitalist survey on workload, safety and quality of patient care, physician burnout, and the impact of healthcare reform, we surveyed 4 hospitalist programs within a large academic hospital system. This survey obtained demographic information (race, gender, marital status, age, years in practice), workload measurements (patient encounters, workhours per day/shift, frequency of self-reported "unsafe workload"), program structure (scheduling, program type, percent clinical time), and team structure (geographical localization of patients, housestaff/advanced practitioner assistance, and systems for workload fluctuation). Using norms for healthcare workers, burnout was defined using the Maslach Burnout Inventory as a dichotomous variable (burnout present/absent). The depersonalization, emotional exhaustion, and personal achievement categories of burnout were individually assessed. Controlling for site, we used logistic regression to determine the association between each of these factors to burnout.

RESULTS: Of the 128 hospitalists across 4 sites, 96 responded (75% response rate; range: 63–90%). The majority of hospitalists were male (54.2%), Asian (46.9%) or Caucasian (35.5%), married/in a domestic partnership (78.1%), with a mean age of 40 years old (SD 5.9) and median 6 years in practice [IQR: 4, 10]. Providers saw a median of 13 patients per day/shift [10, 17.5], worked a median of 11 hrs per day/shift [10, 12], and 21 (23%) reported workload exceeded a safe level at least once a month. Most hospitalists were on a variable scheduling pattern (56.3%), worked primarily in an academic teaching hospital (53.1%), and had median 80% clinical time [55, 99]. Patients were primarily seen in multiple, different sections of a hospital (57%) with no housestaff or advanced practitioner assistance (51%), with a system in place to manage increased patient volumes (58.6%). On the Maslach Burnout Inventory, 31 (36.5%) experienced emotional exhaustion, 36 (42.4%) experienced depersonalization, and 45 (52.9%) had low personal achievement, with only 17 (20%) experiencing all three. Comparing individuals meeting all 3 criteria to those who did not meet any, only being in a community hospital ($p = 0.049$) and reporting an unsafe workload at least once a month ($p = 0.002$) were significantly associated with burnout.

CONCLUSIONS: Rather than traditional factors such as scheduling and clinician experience, our study suggests that organizational structure and culture may be an important driver for burnout. Further research is needed in assessing and determining specific mitigation strategies for these organizational factors.

IDENTIFYING MESSAGES TO PROMOTE VALUE AND EDUCATION (IMPROVE) OF GENERIC ORAL CONTRACEPTIVE PRESCRIBING

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BACKGROUND: In the United States, oral contraceptive pills (OCPs) are the most frequently used contraceptive method in women of reproductive age. Prescribing generic OCPs over brand-name OCPs is an important strategy to improve the value of care and reduce healthcare expenditures. In 2013, 22% of OCP prescribed were brand-name, of which 98% had an available generic alternative. The study aims were to understand the barriers to and facilitators of generic OCP prescribing and identify potential solutions to increase generic

OCP prescribing among key prescribers: primary care physicians and nurse practitioners.

METHODS: To elicit provider perceptions of generic OCP prescribing, focus group scripts based on the 4D model of appreciative inquiry (Discovery, Dream, Design, Destiny was developed, pilot-tested, and revised. Discovery and Dream questions inquired about providers' understanding of FDA bioequivalence standards and their experience prescribing OCPs compared to other drug classes. The Design and Destiny sections explored how to improve and promote generic prescribing. Two 60-min focus groups occurred, one at the American College of Physicians Internal Medicine meeting and one at the American Association of Nurse Practitioners National Conference. Transcripts were analyzed qualitatively via ATLAS.ti software using a constant comparative method with no a priori hypothesis to generate emerging and reoccurring themes.

RESULTS: A total of 12 PCPs and 12 NPs participated (76% female, 62% non-Hispanic White, 14% Black or African-American). Participants identified 25 subthemes affecting generic prescribing under four major themes- health system, workflow, provider, and patient factors (Table 1). Overall, providers' knowledge of FDA bioequivalence standards was low. Moreover, negative attitudes and accessibility of information about generic options were frequently cited as barriers, commenting that "generics are not going to be efficacious." Participants also identified 13 solutions to increase generic prescribing that aligned with the four identified themes, including IT system defaults and simpler naming schema, noting "There are so many different names…there's no current compendium of what the names are, what's in them, or what the dosage is."

CONCLUSIONS: This study suggests that generic OCPs are underutilized due to barriers related to health system, workflow, provider, and patient factors. Interventions addressing these factors could be used to promote generic OCP prescribing.

Table 1: Barriers and Facilitators of Generic OCP Prescribing

Health System Factors						
State substitution laws	Availability of samples	Insurance companies	Availability of generics	Performance metrics		
Workflow Factors						
Practice disruption	Default to generic	Pharmacy	Insurance	Formulary	Generic nomenclature	Point of care IT tools
Provider Factors						
Attitude towards generics	Lack of trusted sources	Reluctance to switch patient medication	Level of knowledge about generics	Accessibility of information about generics	Multiple generic brands	Specialists
Patient Factors						
Cost	Preference	Prior experience	Side effects	DTC advertising	Pill and package	

IDENTIFYING VETERANS AT HIGH-RISK FOR PROGRESSION TO END-STAGE RENAL DISEASE AND OPPORTUNITIES FOR NEPHROLOGY REFERRAL Joel C. Boggan; Richard M. Atkins; David Simel; Blake Cameron. Durham VAMC and Duke University, Durham, NC. (Control ID #2707788)

BACKGROUND: Patients with chronic kidney disease (CKD) are at increased risk for progression to end-stage renal disease (ESRD) and cardiovascular mortality. Appropriate nephrology referral and management of patients with CKD can slow progression to ESRD and mitigate cardiovascular risk. In this study, we sought to identify patients at high risk for progression to ESRD using predictive algorithms within Durham VA Medical Center (DVAMC) to determine appropriate nephrology referral patterns.

METHODS: We incorporated data on primary care and nephrology utilization within DVAMC over a two-year period from December 2014-December 2016 and nephrology referrals from December 2013 onward. We measured creatinine levels and degree of proteinuria for affiliated patients, when available. Five-year risks of progression to ESRD were estimated using the 3-variable Kidney Failure Risk Equation (KFRE) for all patients with a creatinine value, and the 4-variable KFRE for all patients with urine albumin values. We stratified the population according to the cutoffs from the KFRE (<5%, 5–15%, and >15%) as low, intermediate, and high-risk for progression to ESRD. We identified the number of patients who would benefit from nephrology referral at the threshold of 15% risk of progression over 5 years. Additionally, we estimated the number of patients currently followed within our Nephrology clinics with risks below the 15% threshold.

RESULTS: Overall, 59,449 unique patients were seen in primary care clinics during the study period and 2015 (3.4%) were referred to or seen within Nephrology. In the population, 10,192 patients had no creatinine values and could not have any risk assessment, while 16,481 patients had a urinary albumin value allowing for 4-variable estimation. During the study period, 2313 patients had a risk of progression to ESRD > 15% using the 3-variable formula, while 406 had risk > 15% using the 4-variable equation. Within these high-risk categories, 46% (1071 of 2313) and 48% (193 of 406) had had either a nephrology referral or clinic visit over the previous two years, although up to approximately 330 patients receiving hemodialysis followed in the community outside the nephrology clinic were not captured. Across the whole population, 47% of patients referred to or seen in Nephrology clinics had a risk of progression to ESRD < 15%.

CONCLUSIONS: Within a single Veterans Affairs medical center, approximately half of patients with a significant risk of progression to end-stage renal disease had not had either a nephrology referral nor a nephrology clinic visit. Many of these patients would likely benefit from nephrology referral for management of renal disease progression, while many patients are being referred to nephrologists who have lower risks for progression. Next steps include design and implementation of e-consult outreach and testing and referral protocols to optimize use of nephrology clinics within our veteran population.

ILLICIT DRUG AND TOBACCO USE DELAY TIME-TO-PRESENTATION IN PATIENTS WITH ASCENDING AORTIC DISSECTION Tanya Doctorian. Kaiser Permanente Fontana Medical Center, Fontana, CA. (Control ID #2704497)

BACKGROUND: Ascending aortic dissection (AoD) is the most lethal condition involving the aorta. Despite increasing awareness of AoD among clinicians and improvements in diagnostic imaging, the mortality and morbidity rates of this condition remain high. In an effort to further optimize outcomes, symptom onset and its impact on presentation is needed. The onset of symptoms to hospital presentation, or pre-hospital delay, is a known cause for increased morbidity and mortality. Despite illicit drug use, smoking, and alcohol abuse being a major public health issue in the United States, there are no studies providing insight into their impact on pre-hospital delays in ascending AoD. The objective of this study was to determine whether tobacco use, alcohol use, and illicit drug use were associated with delays in presentation of patients with ascending AoD.
METHODS: 235 patients presenting with ascending AoD from 2007 to 2016 to a tertiary hospital with a diverse patient population were retrospectively studied. 145 patients with complete data were included in this analysis. Patients without complete data were excluded. Symptom-onset-to-hospital-arrival time was analyzed for the following factors: smoking history, alcohol use, methamphetamine, cocaine, or marijuana abuse. Symptom onset time was identified by review of medical records and emergency services data. Non-parametric univariate and multivariate analyses were carried out to compare differences in time to presentation between groups.
RESULTS: See table
CONCLUSIONS: As expected, in this study there were pre-hospital delays in patients with current tobacco, methamphetamine, cocaine, or marijuana use/abuse. Contrary to expectation, alcohol use (current or past use) was not associated with pre-hospital delays. Of interest, symptom-onset-to-hospital-presentation remains long even in patients without tobacco, alcohol, or illicit drug use. Continued and enhanced population education and awareness, especially in smokers and illicit drug users, is necessary to see further decreases in pre-hospital delays and to further optimize outcomes in ascending AoD patients. Further research is needed to investigate other causes for increased symptom-onset-to-presentation time and barriers to healthcare access.

	Percentage of population	Symptom onset-to-presentation time {median (min-max)} in hours	P-value
Smokers			
Never	49.50%	2 (0.5 – 48)	Reference
Current	22.50%	8 (2 – 336)	<0.001
Past	27.90%	2 (0.5 – 144)	0.001
Alcohol			
Never	74.77%	3 (0.5 – 8)	Reference
Current	10.80%	4 (1 – 133)	0.06
Past	4.50%	1 (1 – 4)	0.416
Methamphetamine, Cocaine, or Marijuana abuse			
Never	88.20%	2 (0.5 – 8)	Reference
Current	9.00%	8 (1 – 366)	0.001
Past	2.70%	4 (1 – 4)	0.406

IMPACT OF A PILOT COMMUNITY-BASED CLINICAL PHARMACIST HYPERTENSION PROGRAM ON PATIENT ACTIVATION AMONG CHINESE AMERICAN SENIORS
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BACKGROUND: Older Chinese Americans have a disproportionately higher rate of undertreated hypertension (HTN) compared to non-Latino Whites, and Asian Americans report weaker patient-provider engagement than desired. As patient activation can be a powerful driver of improved HTN control, we assessed the efficacy of a culturally tailored clinical pharmacist intervention on patient activation among immigrant Chinese American seniors with uncontrolled HTN.
METHODS: We conducted a pre-post, prospective intervention with repeated measures in Los Angeles County. We screened and recruited patients from 8 community health centers and private practice clinics between 2015–2016. Eligible patients (age 60+, medically insured, past year visit at study clinic, at least 2 of 3 systolic blood pressure [BP] readings above JNC-8 goal in past year) were invited to a study information session through mailings and telephone calls in either Mandarin or Cantonese. Enrolled participants had 3 visits within 3 months with bilingual study pharmacists, who were trained to elicit HTN explanatory models when providing HTN education and use motivational interviewing (MI) and shared decision-making (SDM) when counseling patients on lifestyle changes and BP medications. Study participants' physicians received a brief summary of each visit and signed pharmacist recommendations for medications or lab orders if in agreement. Participants completed baseline and final surveys before their first and after their last pharmacist visit, including demographic information and the Patient Activation Measure (PAM). We also conducted chart reviews to obtain clinical information. We estimated a sample size of 50 patients would detect a clinically significant 3 to 5-point difference in our primary outcome, PAM scores, with 80% power. We tested for statistical significance ($\alpha = 0.05$) using the Wilcoxon signed rank test.
RESULTS: We screened 415 potential participants to enroll 50 immigrant Chinese American seniors who received the intervention. The average age was 71 years, and 23 (47%) were female. Participants had resided in the U.S. for an average of 30 years, but only 10 (20%) were comfortable speaking English. Median baseline level of trust in pharmacists was "somewhat" to "strongly trust". The mean baseline PAM score was 58.8 signifying "beginning to take action," with a mean change of −2.04 +/− 13.9 ($p = 0.48$) at follow-up.
CONCLUSIONS: While clinical pharmacist HTN interventions have shown success in some settings, our intervention utilizing MI and SDM strategies was not associated with increases in PAM scores for immigrant Chinese American seniors with uncontrolled HTN. Despite strong project involvement of community partners in these predominantly Asian neighborhoods, eligible seniors frequently declined to enroll. We will continue to work closely with our community partners to identify other team-based care approaches which may be more appealing and successful at increasing patient activation for HTN control in this population.

IMPACT OF A POPULATION HEALTH MANAGEMENT INTERVENTION ON DISPARITIES IN CARDIOVASCULAR DISEASE CONTROL
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BACKGROUND: Healthcare systems are using population health management (PHM) programs to improve the quality of cardiovascular disease care. Whether these programs also improve racial/ethnic disparities in care is unclear.
METHODS: Eighteen primary care practices were studied from 7/1/14-12/31/14. All used the same PHM information technology system (TopCare, SRG

Technology) to identify and track patients with cardiovascular disease or hypertension. To help patients meet quality metrics, 8 intervention practices were assigned a dedicated central population health coordinator and 10 control practices used office-based staff. Outcomes included clinically relevant low-density lipoprotein (LDL) cholesterol and/or blood pressure (BP) measures. The LDL goal was LDL < 100 mg/dL, or prescription of a high dose "statin". The BP goal was < 140/90 mm Hg for patients < 60 years, < 150/90 mm Hg for patients ≥ 60 years, or prescription of ≥3 BP lowering medications. We examined changes in meeting LDL and BP goals in intervention and non-intervention practices by self-reported race/ethnicity (non-Hispanic white, non-Hispanic Black, or Hispanic). Analyses used logistic regression with generalized estimating equations for repeated measures, adjusted for age, gender, health insurance, primary language, patient-provider attribution, and whether care was received in a health center.

RESULTS: There were 12,555 participants in the LDL analyses (85.5% non-Hispanic white, 4.8% non-Hispanic black, 4.7% Hispanic), and 41,183 participants in the BP analyses (79.7% non-Hispanic white, 7.5% non-Hispanic black, 6.6% Hispanic). Across all practices at baseline, there were racial/ethnic disparities (LDL: non-Hispanic white 70.3% at goal, non-Hispanic black 64.2%, Hispanic 68.5%, $p = .007$; BP: non-Hispanic white 76.4% at goal, non-Hispanic black 73.4%, Hispanic 74.8%, $p = .0003$). Comparing intervention and non-intervention practices before and after the study period, non-Hispanic white patients in intervention practices had significantly increased odds of LDL control (OR 1.20 95% CI 1.09–1.32), while Non-Hispanic black (OR 1.15 95%CI 0.80–1.65) and Hispanic (OR 1.29 95%CI 0.66–2.53) patients saw similar, but not statistically significant, changes. For odds of BP control, non-Hispanic white patients in intervention practices saw improvement (OR 1.13 95% CI 1.05–1.22), which was similar, though not significant, for non-Hispanic black patients (OR 1.17 95% CI 0.94–1.45), but Hispanic (OR 0.90 95% CI 0.59–1.36) patients did not. Interaction testing confirmed that pre-existing disparities did not improve ($p = 0.73$ for LDL and $p = 0.69$ for BP).

CONCLUSIONS: The intervention improved the odds of cardiovascular risk factor control in most analyses, though with wide confidence intervals in racial/ethnic minority patients, likely related to smaller sample sizes. However, there were no large changes in disparities. Future population health management interventions should explicitly target both healthcare equity and quality.

IMPACT OF A PRIMARY CARE TEAM REDESIGN IN A PATIENT CENTERED MEDICAL HOME ON ACCESS AND EMERGENCY/URGENT CARE UTILIZATION Alison R. Landrey[1]; Valerie S. Harder[2]; Marie Sandoval[1]; John King[3]; MacLean Charles[1]. [1]University of Vermont/Fletcher Allen Medical Center, Morristown, VT; [2]University of Vermont, Burlington, VT; [3]University of Vermont Medical Center, Burlington, VT. (Control ID #2706232)

BACKGROUND: Poor access to primary care is associated with decreased healthcare quality and increased cost. The development of the Patient Centered Medical Home (PCMH) model within the last decade has been inconsistent in its ability to fully address these issues. Further primary care redesign that incorporates a) team-based care with expanded roles for non-physicians and b) increased use of non-face-to-face visits may improve care access and value while providing a potentially more satisfying and efficient primary care work environment. More research is needed to evaluate such care team models. We assessed the impact of a team redesign on access to primary care and use of emergency department (ED) and urgent care services, a measure of care value, in a PCMH.

METHODS: A redesigned team was developed within a larger internal medicine PCMH from May 2015 to April 2016 and consisted of two co-located teamlets each comprised of one physician, one nurse practitioner, one registered nurse, and two licensed practical nurses. The redesign team utilized a) physician-NP co-management b) expanded roles for RNs and LPNs and c) dedicated provider time for telephone and email medicine. We compared changes in office, ED and urgent care visits during the implementation year compared with a baseline year for patients on the redesigned team compared to patients receiving the standard of care in the same clinic using a differences-in-differences method. Time to 3rd next available appointment for providers was used to assess access.

RESULTS: There were no differences between the redesign group ($n = 1807$ patients) and control group ($n = 4715$ patients) in per-patient mean change in office visits (Δ -0.04 visits vs. Δ -0.07; $p = 0.98$), ED visits (Δ 0.00 vs. Δ 0.01; $p = 0.25$) or urgent care visits (Δ 0.00 vs. Δ0.05; $p = 0.08$). Mean time to 3rd next available appointment improved for both the redesign and control groups during the implementation year (Δ-5.2 days vs. Δ -6.4 days).

CONCLUSIONS: The redesign did not significantly impact ED, urgent care or primary care utilization within 1 year of follow up. Time to 3rd next available appointment improved for both the redesign and control groups during the redesign implementation. This parallel improvement in primary care access may have limited the ability to demonstrate improvement in ED/urgent care utilization in the redesign group compared to control. Additionally, the 1 year duration may not have been long enough to observe significant differences in utilization, and ED/urgent care use may not have been the best measure of care value in this setting. Further studies of similar primary care redesign efforts could explore longer follow up, additional care value outcome measures, and patient and provider satisfaction.

IMPACT OF A PROGRAM TO SUPPORT ACADEMIC SCHOLARSHIP DURING INTERNAL MEDICINE RESIDENCY TRAINING ON RESEARCH PRODUCTIVITY Timothy Anderson[4]; Andrea Carter[2]; Shanta M. Zimmer[1]; Carla Spagnoletti[2]; Alison Morris[2]; Wishwa N. Kapoor[2]; Michael J. Fine[3, 2]. [1]University of Colorado, Denver, CO; [2]University of Pittsburgh Medical Center, Pittsburgh, PA; [3]VA Pittsburgh Healthcare System, Pittsburgh, PA; [4]University of California, San Francisco, San Francisco, CA. (Control ID #2704212)

BACKGROUND: Scholarship is an essential component of residency training that is required by the Accreditation Council for Graduate Medical Education and identified by residents as influencing career choices and satisfaction. Leadership and Discovery (LEAD) is a program developed in 2012 as a component of the University of Pittsburgh Medical Center Internal Medicine (IM) Residency Program that requires all categorical residents to engage in mentored scholarship, generally carried out as a research project. To assess its impact on resident scholarship, we compared the research productivity of residents before and after initiation of the LEAD Program.

METHODS: We compared the research productivity of categorical residents graduating in 2015 or 2016 who were exposed to LEAD (post-LEAD[FMJ1]) to those graduating in 2013 or 2014 who were not exposed to LEAD (pre-LEAD). As a control group, we also assessed research productivity during the same time frames for research track residents who had a research infrastructure independent of LEAD. For all IM residents who completed the 3-year training program between 2013 and 2016, we measured scholarly productivity by counting original, peer reviewed research publications and scientific

presentations at national and international meetings from the start of residency to 6-months following graduation. We excluded clinical case vignettes, reviews, and editorials. We identified data through Medline searches and self-reported annual surveys administered by the residency training program. We used chi-square tests to compare proportions, and Student's t-tests for means, using 2-tailed *P*-values < .05 to define statistical significance.

RESULTS: Our evaluation comprised 114 categorical residents (62 pre- and 52 post-LEAD); controls comprised 34 research-track residents (6 pre- and 18 post-LEAD). As shown in the Table, significantly larger proportions of post-LEAD than pre-LEAD categorical residents presented at a scientific conference (48% vs 29%, $p = .03$) and presented at a conference and published a peer review paper (23% vs 10%, $p = 0.05$). Post-LEAD residents also had a larger mean number of presentations and/or publications than pre-LEAD residents (1.3 vs 0.7, $p = .02$). Although significantly larger proportions of research track than categorical residents completed presentations and/or publications, these scholarship outcomes for research track residents did not change before and after LEAD.

CONCLUSIONS: Introduction of a longitudinal and experiential research program at the University of Pittsburgh was associated with increased research productivity among categorical IM residents, with no secular changes in research productivity among non-participating research track residents.

Scholarship Outcomes	Categorical Residents	Research-Track Residents						
	Pre-LEAD (*N* = 62)	Post-LEAD (*N* = 52)	Total (*N* = 114)	*P*-value pre- vs. post-LEAD	Pre-LEAD (*N* = 16)	Post-LEAD (*N* = 18)	Total (*N* = 34)	*P*-value pre- vs. post-LEAD
≥1 presentation	29%	48%	37%*	0.03	73%	56%	64%*	0.29
≥1 publication	21%	27%	23%*	0.43	67%	56%	61%*	0.52
≥1 presentation and ≥1 publication	10%	23%	16%*	0.05	60%	39%	48%*	0.23

*$p < 0.01$ for comparison of totals for Categorical and Research-Track Residents

IMPACT OF A STUDENT-FACULTY COLLABORATIVE PRIMARY CARE CLINIC ON EMERGENCY DEPARTMENT UTILIZATION: SHIFTING THE DISCUSSION TOWARDS VALUE-BASED HEALTHCARE Anjali Thakkar[2]; Bonnie B. Blanchfield[1]. [1]Brigham & Womens Hospital, Weston, MA; [2]Harvard Medical School, Cambridge, MA. (Control ID #2706905)

BACKGROUND: Many student-run clinics (SRCs) provide primary care to underserved patients who otherwise would pursue more expensive avenues of care such as through visits to emergency departments (ED). Decreasing ED use offers a major opportunity to create value and would be a welcomed justification for funding SRCs. However, few SRCs have rigorously studied this. Many patients in Crimson Care Collaborative (CCC), a network of student-faculty primary care clinics at 6 locations in Massachusetts, do not have primary care access, and are thought to be higher utilizers of the ED. This study estimates the value that CCC creates by identifying the change in ED utilization before and after patients enrolled at the CCC clinic at Massachusetts General Hospital-Internal Medicine Associates (MGH-IMA), and calculating the cost savings to the provider and payer. The effect other covariates may have on ED utilization will also be assessed.

METHODS: A retrospective analysis of 767 adult patients who enrolled at CCC-IMA between 9/1/10 and 9/30/16 is being conducted to determine if ED utilization changed after patients enrolled in CCC and had access to primary care. Descriptive analysis will clinically and demographically characterize the annual patient cohorts using Research Patient Data Registry (RPDR) and CCC RedCap survey data. RPDR will also provide ED visits for each patient; the 30 months pre and post enrollment in CCC will be used to estimate the average change. Outpatient clinic visits will be calculated for all patients post-enrollment. Financial data from MGH's internal cost accounting system for FY 2014 & 2015 will be used to calculate the cost and net revenue per ED visit, stratified and weighted by payer, to quantify financial impact to payers and the provider. A regression analysis will evaluate the effect of covariates on the changes in ED use.

RESULTS: Preliminary analysis of ED utilization shows that in the first 2 years of CCC operation, average ED utilization per patient increased by 14.5% ($p = 0.23$) and 52% ($p = 0.03$) despite CCC access; however, the subsequent three annual cohorts, 2013–2015, each show an average per patient decrease in ED utilization of 28% ($p < 0.001$), 40% ($p < 0.001$) and 35% ($p < 0.001$). The estimated avoided ED visit cost to the provider (MGH) is estimated at $28.5 K, $72.4 K, $81.2 K for 2013, 2014 & 2015 respectively. The estimated savings to payers for avoided ED visits is estimated at $31.3 K, $78.1 K, $90.04 K for 2013, 2014 & 2015 respectively.

CONCLUSIONS: It appears that CCC created value to both payers and the provider from 2013–2015 by providing an alternative source of care. As the CCC SRC program matured, effectiveness of decreasing ED utilization improved. Scheduling lead-times in early years, and other factors may have reduced outpatient access and contributed to early cohort results. Further analysis is ongoing and includes examining outpatient visit volume, in-depth financial analysis, and regression analysis to further our understanding of the value created by CCC.

IMPACT OF ADMISSION URINE CULTURE ON ANTIBIOTIC USE AND HOSPITAL LENGTH OF STAY Molly J. Horstman[2, 3]; Andrew Spiegelman[4]; Aanand D. Naik[3]; Barbara Trautner[1]. [1]BCM/VA Hospital, Houston, TX; [2]Baylor College of Medicine, Houston, TX; [3]Michael E. DeBakey VAMC, Houston, TX; [4]The Adivsory Board Company, Washington, DC. (Control ID #2705674)

BACKGROUND: Overuse of urine testing may result in downstream events that impact antibiotic use and hospital length of stay (LOS). The aims of this study were to examine the impact of inpatient urine culture testing on the first day of hospital admission on inpatient antibiotic use and hospital length of stay using a national administrative dataset.

METHODS: We performed a retrospective cohort study using a national dataset of adult hospitalizations from The Advisory Board Company from 2009 to 2014. We excluded hospitalizations that were pregnancy-related, had a urologic procedure, or had LOS greater than 30 days. The exposure was a urine culture on day 1 of hospitalization. Hospitalizations were matched with coarsened exact

matching by facility, patient age, gender, Medicare Severity-Diagnosis Related Group (MS-DRG), DRG severity level, DRG mortality level, Elixhauser co-morbidity score, and ICD-9 codes for infection on admission. A multi-level linear Poisson model and a multi-level linear regression model were used to determine the impact of urine culture on inpatient antibiotic use and LOS.

RESULTS: Matching produced a cohort of 88,481 ($n = 41,070$ with a urine culture on day 1, $n = 47,411$ without a urine culture). A urine culture on day 1 of admission was associated with an increase in days of inpatient antibiotic use (incidence rate ratio 1.26; p-value <0.001). The difference in antibiotic use between admissions with and without a urine culture on day 1 resulted in an additional 36,607 days of inpatient antibiotic use. Urine culture on day 1 of the admission resulted in a 2.1% (SE 0.7%) increase in LOS. The predicted difference in bed days of care between hospital admissions with and without a urine culture on the first day of admission resulted in 6,071 excess bed days of care overall. The impact of urine culture testing varied by MS-DRG. For example, urine culture testing on day 1 of the hospitalization resulted in a 4.5% increase in LOS (875 excess days) for patients admitted for major joint replacement of the lower extremity and 1,006 excess days of antibiotic use.

CONCLUSIONS: Collecting a urine specimen for culture is a simple procedure that has major downstream impacts. Overall, patients with a urine culture sent on the first day of the hospital admission receive more days of antibiotics and have a longer hospital stay than patients who do not receive a urine culture. These findings varied by diagnosis group. Targeted interventions for specific diagnoses may achieve the best balance between reducing the potential harm associated with low-yield urine cultures and supporting clinician autonomy to order a culture in the appropriate clinical setting.

IMPACT OF BISPHOSPHONATE USE ON INCIDENT CARDIOVASCULAR EVENTS AMONG ELDERLY BREAST CANCER SURVIVORS Nana Gegechkori[2]; Natalia Egorova[1]; Grace Mhango[1, 2]; Juan Wisnivesky[3, 2]; Jenny J. Lin[1, 2]. [1]Icahn School of Medicine at Mount Sinai, New York, NY; [2]Icahn School of Medicine at Mount Sinai New York, Brooklyn, NY; [3]Mount Sinai School of Medicine, New York, NY. (Control ID #2700556)

BACKGROUND: Cardiovascular disease (CVD) is one of the major causes of competing mortality in women with early-stage breast cancer. Recent studies suggest that bisphosphonates may decrease cardiovascular disease risk in elderly patients. Adjuvant bisphosphonates have shown to reduce the rate of breast cancer recurrence in the bone and improve breast cancer survival, among postmenopausal women. Because elderly breast cancer patients may also be at higher risk for developing CVD due to cancer treatment, we sought to evaluate whether bisphosphonate use was associated with decreased risk of developing new cardiovascular events after cancer diagnoses among women with primary breast cancer.

METHODS: We identified women >65 years with stage 0-III primary breast cancer diagnosed between 2007 and 2010 from the SEER-Medicare registry. We excluded women who had any history of CVD prior to cancer diagnosis. Study participants were followed from 6 months prior to until 36 months after the date of cancer diagnosis. Our primary outcome was a composite of incident heart failure, myocardial infarction, stroke, angina pectoris, and atrial fibrillation/flutter. Bisphosphonate use was defined as presence of at least one pharmacy claim from 6 months prior to cancer diagnosis to incident CVD event. We used propensity score matching by age, race/ethnicity, Charlson comorbidity score, and history of osteoporosis cancer stage, receipt of chemotherapy, surgery, use of angiotensin converting enzyme inhibitors (ACE-i), aldosterone antagonists, angiotensin receptor blockers (ARB), beta-blockers and statins to select a matched group of breast cancer survivors without bisphosphonate use. A competing risk Cox regression model was used to assess the association between time-to-new cardiovascular events and bisphosphonate use.

RESULTS: A total of 2180 breast cancer survivors had had at least one bisphosphonate prescription during the study period; the average length of bisphosphonate use of 15 months. Survival analyses showed that 87.0% of bisphosphonate users and 76.6% of non-bisphosphonate users were free of any cardiovascular disease after a median follow-up of 36 months ($p < .0001$). After propensity score adjustment, bisphosphonate use remained significantly associated with fewer incident cardiovascular events (hazard ratio 0.51, 95% confidence interval: 0.44 to 0.59).

CONCLUSIONS: Bisphosphonate use is associated with lower incidence of cardiovascular events among women >65 years old with primary early-stage breast cancer. Further work should evaluate the mechanisms underlying this association.

IMPACT OF COMORBIDITIES ON SURVIVAL AFTER INCIDENT HEART FAILURE: FINDINGS FROM THE NHANES I EPIDEMIOLOGIC FOLLOW-UP STUDY (NHEFS) Adithya Kumar[1, 2]; Binhuan Wang[2]; Robert Donnino[1]; Sundar Natarajan[1, 2]. [1]New York University School of Medicine, New York, NY; [2]The Department of Veterans Affairs New York Harbor Healthcare System, New York, NY. (Control ID #2706419)

BACKGROUND: Heart failure (HF) is the leading cause of hospitalization among US adults, significant increasing mortality and reducing quality of life. Most importantly, prognosis following HF is dismal, being worse than that for most cancers. This population-based observational study evaluates the mortality outcomes for individuals hospitalized for incident heart failure and elucidates the impact of co-existing clinical conditions on mortality.

METHODS: We identified participants admitted for heart failure from the NHEFS cohort of 14,407 adults. They were followed from their initial interview (1971–1975) until their last interview in 1992. Information regarding cardiovascular disease risk factors was collected at each interview. Health care facility stay data was used to identify hospitalizations and diagnosis of incident HF. Mortality before last interview was determined using information from the National Death Index-linked mortality file. The relationship between comorbidities and mortality was evaluated using: a) median survival time (with 95% confidence intervals [CI])) from life table analyses for the unadjusted analyses, and b) hazard ratios (with 95% CI) from Cox proportional-hazards models that adjusted for age, sex, race, and education. All analyses incorporated the complex sampling design (strata, cluster, and weight variables) to provide population estimates.

RESULTS: Our analysis focused on the sample of 1080 participants who survived their incident CHF-related event. Their median age was 72.2 years (interquartile range 64.6–78.1), 506 (46.8%) participants were male, 89.3% were white, and 37.2% did not complete high school. Median follow-up time was 14.96 years. Diabetes mellitus (DM) was present in 23.5%, hypertension (HTN) in 14.4%, hyperlipidemia in 45.0%, and prior myocardial infarction (MI) in 23.6%. Median survival time (with 95% CI) was lower for individuals with DM [0.73 (0.48–1.07) years with DM vs. 2.04 (1.46–2.58) years without DM, $p = 0.002$] and prior MI [1.42 (0.79–2.16) with prior MI vs. 1.64 (1.25–2.30) without MI, $p = 0.004$]. There was no significant difference in median survival time for hypertension [0.96 (0.69–1.60) with HTN vs. 1.67 (1.39–

2.19) without HTN, $p = 0.833$] or hyperlipidemia [1.37 (1.00–2.03) with hyperlipidemia vs. 1.62 (1.30–2.41) without hyperlipidemia, $p = 0.321$]. Participants with DM (HR = 1.82 (1.39–2.37), $p < .0001$), hypertension (HR = 1.45 (1.05–2.15), $p = 0.028$) and hyperlipidemia (HR = 1.37 (1.06–1.77), $p = 0.015$) were at very high risk for mortality using multivariable Cox models adjusting for age, sex, race, and education.

CONCLUSIONS: Participants with diabetes had the highest mortality after incident HF. In both adjusted and unadjusted analyses, patients with diabetes had significantly worse outcomes than those with other conditions. Patients with diabetes should be targeted for HF prevention and if HF develops, they should be the focus of intense monitoring and treatment.

IMPACT OF PATIENT SOCIO-ECONOMIC DISADVANTAGE AND BEHAVIORAL HEALTH ON READMISSIONS IN MASSACHUSETTS' TWO LARGEST SAFETY NET HOSPITALS

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BACKGROUND: Hospital readmission rates are increasingly used as indicators of quality of care and as bases for hospital reimbursements. Among elderly adults, socio-economic disadvantage and behavioral health conditions (SDBH) are associated with higher 30 day readmission rates (30DRE). The impact of SDBH on 30DRE in safety net hospitals (SNH), those caring for large shares of patients with SDBH, or among non-elderly adults is unclear. We sought to determine whether SDBH are associated with 30DRE in Massachusetts' (MA) two largest SNH.

METHODS: We conducted standardized interviews with 479 inpatients aged 18–64 on the medicine services regarding SDBH (insurance status, education, income, language, self-reported English, employment, marital status, living with others, social support, and concern about cost/safety of housing, affording food, paying for utilities, getting basic needs met) and, using open-ended questions, the events leading to admission. Physicians determined whether alcohol, substance use and psychiatric illness led to admission. We examined the impact of SDBH, using multivariable logistic regression models controlling for age, gender, clinical factors during admission (All Payer Refined Diagnosis Related Groups weight, intensive care unit stay) and clinical factors prior to admission (whether the admission was a 30DRE; had a primary care provider (PCP); number of emergency department, inpatient and outpatient visits in prior year).

RESULTS: Overall, 14% of patients had a 30DRE. Participants were most likely to be male (58%), aged 51–65 years (49%), and be unemployed (69%). Substantial minorities were unstably (33%) or publicly (9%) housed, had ≤1 person they count on for support (26%), and were concerned all the time about having enough money for basic expenses (25%). Most SDBH variables including education, employment and marital status, level of social support, language, and housing were not associated with 30DRE. However, being insured by Medicaid vs commercial insurance (OR 2.49, $p = 0.031$) and having a psychiatric illness that led to admission (OR 3.25, $p = 0.028$) were associated with increased odds of readmission. Being concerned about ability to pay utilities all the time (OR 3.1, $p = 0.057$) was of borderline significance. Compared with having an income of ≥ \$30 K, there was no difference for those earning \$5-20 K but patients with incomes of < \$5 k were less likely to be readmitted (OR 0.27, $p = 0.04$).

CONCLUSIONS: These SNH with robust readmission reduction programs achieved 30DRE that were similar across multiple dimensions of SDBH. Nonetheless, in order to avoid unfairly penalizing SNH in MA, hospital quality assessments should account for the greater 30DRE among patients with Medicaid insurance, economic concerns and psychiatric illness. Reimbursement methodologies using 30DRE should account for the greater likelihood of readmission among patients with economic concerns and psychiatric illness. A potential limitation was limited statistical power.

IMPACT OF RIFAXIMIN ON HEALTH-RELATED QUALITY OF LIFE IN PATIENTS WITH DIARRHEA-PREDOMINANT IRRITABLE BOWEL SYNDROME

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BACKGROUND: Irritable bowel syndrome (IBS) is associated with an impaired health-related quality of life (QOL). The adult IBS prevalence in North America is approximately 10 to 15 and females are generally 1.5 times more likely to have IBS vs males. Substantial quantitative and qualitative differences (eg, composition and diversity) in the gut microbiota have been observed in patients with IBS vs healthy individuals. Rifaximin is an oral nonsystemic antibiotic approved for the treatment of diarrhea-predominant IBS (IBS-D) in adults. The aim of this analysis was to examine the effect of repeat rifaximin treatments on IBS-related QOL.

METHODS: Adults with IBS-D who responded to a 2-week course of open-label (OL) rifaximin and subsequently experienced symptom relapse during an 18-week treatment-free observation phase were randomly assigned to receive two 14-day double-blind (DB) repeat treatments with rifaximin 550 mg or placebo, each three times daily. Each repeat treatment was separated by 10 weeks. A validated 34-item IBS-QOL questionnaire was completed either in person or by phone during the OL and DB phases of the study. Scoring of each subdomain on the IBS-QOL instrument utilized a 5-point Likert scale (range, 1 = "not at all" to 5 = "extremely" or "a great deal"). Overall and subdomain scores were summed to generate a score ranging from 0 to 100 with a higher score indicative of better QOL. The minimal clinically important difference was defined as improvement from baseline of ≥14 points in IBS-QOL score at a given time point.

RESULTS: Of the 2579 patients receiving OL rifaximin (mean age, 46.4 years; 68.2% female; mean ± standard deviation baseline IBS-QOL score = 48.3 ± 21.2), patients with response to OL rifaximin ($n = 1074$) had significantly greater improvement from baseline in IBS-QOL overall and subdomain scores compared with nonresponders ($n = 1364$) at 4 weeks posttreatment ($P < 0.001$ for all comparisons). A significantly greater percentage of responders achieved the minimal clinically important difference in IBS-QOL overall score from OL baseline to 4 weeks posttreatment vs nonresponders (52.2% vs 21.0%, respectively; $P < 0.0001$). The mean change from baseline in IBS-QOL overall and individual subdomain scores for interference with activity, body image, and food avoidance was significantly greater in OL responders to rifaximin remaining relapse-free during the OL observation phase (up to 22 weeks posttreatment; $n = 370$), compared with responders who relapsed during the OL observation phase ($n = 636$; $P < 0.05$). In the DB phase of the study, the minimal clinically important difference for the IBS-QOL overall score from baseline to 4 weeks posttreatment was achieved by a significantly greater percentage of patients receiving rifaximin ($n = 328$) vs placebo ($n = 308$; 38.6% vs 29.6%; $P = 0.009$).

CONCLUSIONS: Initial and repeat treatment with rifaximin resulted in clinically meaningful improvement of QOL in patients with IBS-D.

IMPACT OF THE AFFORDABLE CARE ACT ON OUT-OF-POCKET COSTS AND UTILIZATION OF PRESCRIPTION CONTRACEPTIVES Nora V. Becker. University of Pennsylvania, Philadelphia, PA. (Control ID #2691518)

BACKGROUND: The Affordable Care Act (ACA) mandates that preventive services, including FDA-approved prescription contraceptives, be covered by private health insurance plans with no consumer cost-sharing. Economic theory and empirical evidence suggest that decreasing the out-of-pocket (OOP) costs of contraception to consumers will result in increased utilization, however, the actual impact of the ACA mandate on OOP costs and use of prescription contraceptives has not yet been determined.
METHODS: Using a 10% sample of an administrative medical and prescription claims dataset from a large national insurer, I estimate individual OOP costs and utilization of eight types of prescription contraceptive methods for 679,864 individual women insured by 21,519 employers between 2008 and 2013. The impact of the ACA mandate is identified by using variation in the magnitude of the change in the OOP price at the employer level. If there is any response to the change in OOP price, we would expect a larger change in claim rates among women insured by employers where the OOP price dropped by a larger amount. This analysis is performed for the two most commonly claimed methods in the data, the pill and the IUD.
RESULTS: OOP costs of contraceptive have decreased sharply since the implementation of the ACA mandate. The mean and median costs for most methods fall sharply following August 2012. For both contraceptive methods, I find a statistically significant relationship between the drop in OOP price and the probability that a woman will use that method following the mandate. In other words, women working for firms where the OOP price dropped by larger amounts post-mandate demonstrate increased use of both the pill and the IUD compared with women in firms where the change in mean OOP price was smaller or zero. Claim rates for the pill increased by 3.62%, while claim rates for the IUD increased by 5.67%. Back-of-the-envelope estimates of the arc elasticity of demand for the pill (−0.04–−0.12) and IUDs (−0.03–−0.09) suggest inelastic demand for these methods.
CONCLUSIONS: My results suggest that the ACA mandate has produced large drops in OOP expenditures on prescription contraceptives, and that these price drops have increased utilization of the two most commonly used methods of birth control, the pill and the IUD. There is a larger impact on utilization of the IUD, a long-term method that is more effective than the pill, but prior to the mandate was also more expensive for privately-insured women. The magnitude of the impacts thus far suggest that privately-insured women are relatively unresponsive to changes in out-of-pocket price for prescription contraceptives. This fact may limit the ultimate impact of these price changes on overall rates of use of prescription contraceptives among privately insured women in the U.S.

IMPACT OF THE NEW YORK STATE PRESCRIPTION MONITORING PROGRAM (ISTOP) ON CHRONIC PAIN MANAGEMENT BY PRIMARY CARE PROVIDERS Josiah Strawser[2]; Lauren Block[1]. [1]Northwell Health, Lake Success, NY; [2]Hofstra Northwell School of Medicine, Hempstead, NY. (Control ID #2702863)

BACKGROUND: Prescription drug monitoring programs have been established in many states to minimize the abuse of controlled drug substances. Provider-initiated efforts to limit overprescription include the use of pain contracts, urine tests, monthly visits and pain management co-management. The purpose of this study is to investigate whether use of these management strategies by primary care providers has changed following implementation of the New York State Prescription Monitoring Program (IStop).
METHODS: An anonymous, cross-sectional survey was developed and distributed to primary care providers from four academic medical centers in New York. The survey investigated provider perspectives regarding their experience with IStop. Data was analyzed via STATA v.12 using descriptive statistics for the demographic data and Pearson's correlation coefficients for correlations between measures. A total of 135 providers responded from four institutions, including 48 attending physicians, 80 residents, and 4 NPs. Semi-structured interviews were also conducted with primary care providers, including residents, attending physicians and pharmacists. Interviews investigated provider perspectives regarding IStop usage and management of patients with chronic pain. Interview audio was transcribed and analyzed via an open-coding approach to identify interview themes and patterns.
RESULTS: Survey results indicated the following changes in primary care provider management of patients with chronic pain: 25% (32/128) of providers increased usage of monthly visits, 28% (36/128) of providers increased usage of pain management co-management with other health care providers, 46% (60/129) of providers increased usage of at least one of four management strategies - contracts, urine tests, monthly visits, pain management co-management. Residents indicated much higher rates of change in management strategies due to IStop usage; increase in the use of monthly visits ($p = 0.02$) and co-management ($p = 0.01$) occurred at a much higher rate in residents than attending physicians. Interview themes which were identified in 75% or more of interviews included emphasis on finding opioid alternatives when possible, emphasis on communication between the patient and provider to protect the relationship in chronic pain management, and the need for frequent patient visits in effective pain management.
CONCLUSIONS: Increased utilization of management strategies and the provider emphasis on communication and increased patient visits could indicate the effectiveness of IStop in reinforcing the importance of thoughtful management of chronic pain in primary care.

IMPACT OF WOMEN'S HEALTH RESIDENCY TRACKS ON CLINICAL PRACTICE Amy H. Farkas[2]; Melissa McNeil[4]; Erin C. Contratto[3]; Brigid M. Dolan[1]; Sarah A. Tilstra[5]. [1]Northwestern University, Chicago, IL; [2]UPMC, Pittsburgh, PA; [3]University of Alabama Birmingham, Birmingham, AL; [4]University of Pittsburgh Medical Center, Pittsburgh, PA; [5]University of Pittsburgh School of Medicine/Medical Center, Pittsburgh, PA. (Control ID #2705293)

BACKGROUND: To address the need for women's health training, internal medicine residencies have established women's health tracks (WHT) as a model of enhanced training for those interested in developing a gender focus to their careers. There has been little assessment of the impact of these tracks on the career outcomes of these graduates. The objective of this study was to determine if the graduates of WHT have continued their focus on gender specific care for women in their clinical practice.
METHODS: We conducted a multi-institutional survey of internal medicine WHT graduates starting in 2000 of the University of Pittsburgh, University of

Alabama, and Northwestern University. As a control for the impact of gender on clinical practice, we paired each WHT graduate with a non-women's health track (NWHT) female graduate from the same residency program. The survey was conducted online in the fall of 2016 and designed to assess their current clinical practice and incorporation of gender specific care. Descriptive statistics and statistical comparisons between WHT and NWHT graduates were performed using Fisher's exact test and Wilcoxon rank-sum test.

RESULTS: Out of the 216 graduates surveyed, 133 responded for a response rate of 61.6% (62.4% were WHT graduates and 37.5% were NWHT graduates). While our data did not meet statistical significance, there were differences between WHT and NWHT graduates. Among those who had completed training, WHT graduates were more likely to report being in primary care (40.9% vs 32.3%) and among those in primary care, 48.2% of WHT graduates reported a focus on women's health within their practice compared to 30.0% of NWHT graduates. WHT graduates were more likely to report treating menopause (85.2% vs 70%) and eating disorders (63% vs 40%) and to address contraception (88.9% vs 80%) and preconception counseling (85.2% vs 70%). Additionally, 22.2% of WHT graduates reported inserting sub-dermal contraceptives and 14.8% reported placing intrauterine devices as part of their practice where none of the NWHT graduates reported performing these procedures. Among those in subspecialty practices, 20.5% of WHT graduates reported that their practice was focused on women's health compared to 9.5% of NWHT graduates. Additionally, WHT graduates, in the subspecialties, were much more likely to report treating a women's health specific condition (73.7% vs 57.1%). Examples of women's health specific conditions treated included fertility concerns, pregnancy issues, and counseling regarding contraception and teratogenic medications.

CONCLUSIONS: Despite a non-significant difference in reporting of providing women's health care in primary care practice, the domain of the primary care providers from the WHTs is substantially broader than that of the NWHT. In addition, subspecialty graduates of WHT are more likely than NWHT graduates to incorporate women's health in their care of women patients.

IMPACT ON PATIENTS COMPLIANCE WITH MEDICATION USING PRE-PACKED BLISTERS FOR LONG TERM MEDICAL THERAPY (I-COMPLY STUDY) Andrei Brateanu[1]; Gautam Shah[3]; Jennifer Luxenburg[2]; Michele Reali-Sorrell[1]; Rita Lovelace[1]; Elizabeth Pfoh[1]; Nana Kobaivanova[1]. [1]CCF, Cleveland, OH; [2]Cleveland Clinic, Mayfield Heights, OH; [3]Mount Sinai Beth Israel, New York, NY. (Control ID #2706610)

BACKGROUND: In United States, billions of dollars are spent annually as a result of poorly controlled chronic medical conditions due to medication non-compliance. The aim of this study was to assess the effect of home delivered pill packs on medication compliance in a low income African American population.

METHODS: We conducted an open labeled randomized control trial of adult patients followed by primary care physicians at the Cleveland Clinic Stephanie Tubbs Jones Health Center and taking four or more different medications daily. Of the 353 patients who met the inclusion criteria, 114 consented to participate in the study and were randomized either to a study group or a control group. Patients in the study group had home delivered pill packs with medications packed according to the daily administration time and frequency. Patients in the control group continued to receive medications from pharmacies, as they did prior to being enrolled in the study. The primary outcome was medication compliance at least 4 months after enrollment, measured as the percentage of pills and number of daily medication doses missed per patient in the two groups. The mean percentage of missed pills between the two groups was compared using t-test and followed the intention-to-treat principle.

RESULTS: Of the 114 patients enrolled, 80 completed the study. Patients in the study (39) compared to the control group (41) had 6.3 ± 2.3 vs. 6.1 ± 2.8 chronic medical conditions ($p = 0.72$) and at the time of enrollment were receiving an average of 8.0 ± 2.2 vs. 7.4 ± 2.5 medications ($p = 0.34$). The percentage of missed pills per patient in the study group was lower than in the control group ($3.7\% \pm 6.0\%$ vs. $17.4\% \pm 16.6\%$, $p < 0.001$, respectively). The number of daily medication doses missed per patient was lower in the study group than in the control group (0.3 ± 0.5 vs. 0.7 ± 0.6, $p = 0.002$, respectively).

CONCLUSIONS: In a population of low income African American patients, home delivered packed medications improves compliance. The effect of such intervention on clinical outcomes needs to be studied in a larger cohort.

IMPLEMENTATION AND OUTCOMES OF A NATIONWIDE PATIENT-CENTERED MEDICAL HOME DEMONSTRATION IN FEDERALLY QUALIFIED HEALTH CENTERS Justin W. Timbie[2]; Claude Setodji[4]; Amii Kress[2]; Tara Lavelle[5]; Mark W. Friedberg[3]; Peter Mendel[6]; Emily K. Chen[2]; Beverly Weidmer[6]; Christine Buttorff[2]; Rosalie J. Malsberger[3]; Mallika Kommareddi[6]; Afshin Rastegar[6]; Aaron Kofner[2]; Liisa Hiatt[6]; Ammarah Mahmud[2]; Katherine Giuriceo[7]; Katherine L. Kahn[1, 6]. [1]David Geffen School of Medicine at UCLA, Los Angeles, CA; [2]RAND Washington, Arlington, VA; [3]RAND Boston, Boston, MA; [4]RAND Pittsburgh, Pittsburgh, PA; [5]Tufts University Medical Center, Boston, MA; [6]RAND Santa Monica, Santa Monica, CA; [7]Centers for Medicare & Medicaid Services, Baltimore, MD. (Control ID #2705241)

BACKGROUND: The Federally Qualified Health Center (FQHC) Advanced Primary Care Practice Demonstration was a nationwide patient-centered medical home (PCMH) demonstration involving health centers. We assessed the impact of financial and technical assistance to facilitate practice transformation on achievement of National Committee for Quality Assurance (NCQA) Level-3 PCMH recognition and assessed its impact on patients' utilization, cost, quality of care, and experiences.

METHODS: We compared changes in outcomes over time for Medicare beneficiaries attributed to 503 demonstration FQHCs relative to beneficiaries attributed to 827 comparison FQHCs using a difference-in-differences approach. To better understand the relationship between achievement of PCMH recognition and changes in beneficiary outcomes, we also conducted a post-hoc analysis—analogous to a "dose–response" analysis—that pooled demonstration and comparison FQHCs and compared changes in outcomes in FQHCs with different levels of PCMH recognition to FQHCs receiving no PCMH recognition by the end of the demonstration.

RESULTS: Seventy percent of demonstration FQHCs achieved NCQA Level-3 PCMH recognition. Beneficiaries attributed to demonstration FQHCs had 83 more FQHC visits and 30 more emergency department visits per 1000 beneficiaries per year than comparison FQHCs, 1.3 and 1.6 percentage points higher rates of diabetic eye exams and nephropathy screening, respectively, and $37 higher annual Part B expenditures per beneficiary ($p < 0.05$ for all results). Demonstration participation was associated with modest improvements in beneficiaries' perceptions of access and timeliness of care relative to comparison FQHCs but declines in specialists' knowledge of medical histories and being treated with courtesy and respect. Across both demonstration and comparison FQHCs, Level-3 recognition was associated with statistically significant increases

in primary care utilization and quality, decreases in specialty care utilization, and lower spending relative to FQHCs with Level-1, Level-2, or no recognition. Level-3 recognition was associated with 128 additional FQHC visits, 8 fewer inpatient admissions, and 40 fewer specialist visits per 1000 beneficiaries per year compared to non-recognized FQHCs. Quality of care improved on 3 of 5 process measures. Annual total Medicare expenditures were $262 lower per beneficiary in Level-3 FQHCs; inpatient and Part B expenditures were $192 and $61 lower, respectively. Changes in patient experiences were mixed.

CONCLUSIONS: While demonstration FQHCs did not consistently achieve better outcomes, PCMH implementation in both demonstration and comparison FQHCs was associated with increased primary care utilization, lower specialty and acute care utilization, and lower spending. Improvements in outcomes associated with PCMH recognition from this study provide empirical evidence to support the goal of primary care redesign in FQHCs while continuing to evaluate the effects of these efforts on patient outcomes.

IMPLEMENTATION OF A PAYER-LED, PRACTICE BASED CARE MANAGEMENT PROGRAM FOR HIGH COST, HIGH NEED PATIENTS Manik Chhabra[4]; Krisda H. Chaiyachati[1]; Anje Van Berckelaer[5]; David Grande[3]; Judy A. Shea[2]. [1]The University of Pennsylvania, Philadelphia, PA; [2]University of Pennsylvania, Philadelphia, PA, PA; [3]University of Pennsylvania, Philadelphia, PA; [4]Veterans Affairs Medical Center, Philadelphia, PA; [5]Health Partners Plan, Philadelphia, PA. (Control ID #2705456)

BACKGROUND: Health systems and payers have struggled to manage high-cost, high-need patients. Care management programs are a popular mechanism to assist these populations. One model uses a payer-led approach that, in collaboration with a health system, embeds care teams at clinic practice sites. However, evaluations of these programs have yielded uneven results, with little to no impact on cost and quality of care. Understanding the design and implementation of these programs may help contextualize these negative findings.

METHODS: We conducted semi-structured interviews to characterize barriers and facilitators during the early implementation period of a community-based care management (CBCM) program guided by the exploration, preparation, implementation, and sustainment (EPIS) framework. The CBCM was developed, funded, and implemented by a local Medicaid managed care organization (MCO), in collaboration with Community Behavioral Health (CBH), the behavioral health MCO for Medicaid recipients in Philadelphia, and 10 primary care practice sites in Philadelphia, to target high-cost, high-need patients. The intervention integrates Nurse Navigators (NNs), Community Health Workers (CHWs), and behavioral health case managers into clinic sites to identify, address, and coordinate care based on patients' health care and social needs. The MCO employed the NNs; the clinic sites hired the CHWs; CBH employed the behavioral health case managers. Key program and clinic staff members were interviewed beginning in July 2016, 6 months after the intervention start date. Interviews were digitally recorded, transcribed, coded and analyzed using modified grounded theory.

RESULTS: 45 interviews were conducted with program staff including, 10 CHWs, 8 NNs, 10 practice administrators, 1 pharmacist, 3 behavioral health case managers, and 13 clinicians. Overall, clinic staff believed the partnership with the MCO helped identify patient needs and improved access to resources. Barriers included legal obstacles, which resulted in a) duplicative operational processes, b) delayed information sharing, c) delayed integration of NNs hired by the MCO at sites, leading to staff turnover. Facilitators included practice size, which affected clinician integration in the program. Access to electronic medical records for CHWs and NNs also improved their communication with clinical providers. Staff found behavioral health integration was the most important component of the program, and helped address previously unmet mental health needs, and that CHWs played a vital role in fostering trust with patients resulting in additional insights for the clinical management of physical health needs.

CONCLUSIONS: Payer-led care management models for high-cost, high-need patients require attention to implementation processes and outcomes. This study informs key components of the partnership between payers and clinics sites, as well as which elements may be the largest drivers of improved patient care.

IMPLEMENTING A POST-MORTEM SURVEY TO IDENTIFY AREAS FOR QUALITY IMPROVEMENT Leah Korkis[1]; Jessica Kaltman[1]; Anne M. Walling[1]; Alia Bana[1]; Neil Wenger[2]. [1]UCLA, Los Angeles, CA; [2]University of California, Los Angeles, Los Angeles, CA. (Control ID #2706912)

BACKGROUND: Clinical ethics issues often arise at the end of life suggesting a need for quality improvement, yet the principal measure of quality of care for dying patients – the post-mortem family interview – is uncommonly implemented in clinical settings. We modified the Family Assessment of Treatment at End-of-Life, Short Form by adding items about continuity and decision making, and implemented the survey to evaluate the quality of care for patients dying in the hospital in an academic health system.

METHODS: For English-speaking patients who died in the hospital between July 2015 and October 2016, we attempted to identify the appropriate caregiver to mail the post-mortem survey after excluding patients who died <2 days after admission, patients <18 years old and traumatic deaths. We also excluded respondents who might suffer harm from the survey by eliciting input from the Offices of Legal Affairs and Patient Relations. Non-responders received up to 3 telephone calls and a postcard reminder. Respondents could opt out by telephone or mail and could request bereavement materials or a referral. Surveys were mailed 6 weeks after death. Because of low response rate during the first 3 months, we initiated a 6-month post-mortem survey before settling on a 3-month window.

RESULTS: Of 1311 decedents across two hospitals, 755 caregivers were mailed surveys and 206 (27%) responded, with no difference in response rate between 6-week and 6-month mailings. No adverse effects of survey were detected. Ratings were high for overall care quality (excellent/very good 82%), communication (always/usually 89%), staff caring (always/usually 95%) and emotional support (always/usually 80%). But lower ratings were received for care continuity (definitely 66%) and spiritual support (always/usually 63%). Twenty-two percent of respondents felt that a treatment decision was made during the final month of life that the patient would not have wanted and another 20% were unsure. Care ratings at 6 weeks and 6 months were not statistically different. Many responses included actionable write-in critiques such as inadequate continuity with the patient's primary care provider, fractious interprofessional interactions as death approached distracting from attention on the dying patient, lack of awareness of outpatient decisions among the inpatient teams, or poor coordination among teams. One in ten surveys named a particular clinician for providing exceptionally good or bad end of life care.

CONCLUSIONS: Surveying families after death is a complex endeavor with a low response rate, but the survey can identify areas for targeted quality improvement.

IMPLEMENTING THE CALIFORNIA END OF LIFE OPTION ACT

Neil Wenger[1]; Anne Coscarelli[2]; Charles Reynolds[2]; Thomas Strouse[2]. [1]University of California, Los Angeles, Los Angeles, CA; [2]UCLA, Los Angeles, CA. (Control ID #2703996)

BACKGROUND: The California End of Life Option Act, effective June 9, 2016, allows a terminally-ill, capable, adult California resident to request from his or her physician a drug to end life. The law specifies steps that must be followed: Two oral requests, witnessed written request, consulting physician concurrence, possible mental health assessment and avoidance of undue influence. Participation is voluntary for patients and clinicians, and physicians are not subject to liability or sanction. However, the Act does not focus on ensuring best end of life care and is vague regarding checks on affective distress, who might prescribe, relationships between prescribing and consulting physicians, and access to aid-in-dying drugs. We developed a mechanism to implement the Act and report on 6 months' experience.

METHODS: Informed by Oregon and Washington, UCLA Health System created an infrastructure aiming to ensure all regulations of the Act were followed; patients make fully autonomous, unencumbered choices; and end of life treatment is the best it can be for anyone requesting aid-in-dying. Clinical consultants, specially-trained social workers and psychologists, are mandated to work with each patient requesting aid-in-dying to carry out psychosocial assessment, counseling, psychoeducation and interdisciplinary communication. They use original materials to promote conversations around meaning, legacies and ethical wills; address psychosocial distress in patients and families; assist in end of life planning and earlier referral to hospice and palliative care; and address challenges such as managing patient expectations and assisting when continuity physicians decide not to prescribe. Implementation included physician education and guidance on interactions with patients and clinicians, patient and family education on handling the drugs, and pharmacy compounding an affordable aid-in-dying drug.

RESULTS: Over 6 months, 62 patients (54% males, 88% White, mean age 67 years, range 33–95) requested an aid-in-dying drug. Eighty-five percent had cancer. Patients enthusiastically participated in counseling, individual and family psychoeducation and legacy building; some welcomed referral to palliative care and hospice. Fourteen patients did not complete the process because they no longer perceived a need, had rapid disease progression or became incapable. Sixteen patients filled the aid-in-dying drug; thus far 6 ingested and died, 3 died without ingesting and 7 are holding the drug while continuing treatment. Eleven patients were ineligible due to prognosis, incapacity or being outside the health system, and for 21 patients the process continues. Twenty-four different physicians have prescribed or consulted thus far.

CONCLUSIONS: This organizational change to implement the End of Life Option Act creates a new, broadly accepted psychosocial standard of care for patients at the end of life while creating a mechanism for hands-on implementation of the Act, ensuring checks, balances and access.

IMPLEMENTING TRAINING IN A PRACTICE BASED RESEARCH NETWORK: AN EXPERT PANEL "MAKES THE MEDICINE (TRAINING) GO DOWN"

Ellen F. Yee[1]; Susan M. Frayne[2]; Diane Carney[3]; Brooke DiLeone[4]; Elizabeth M. Yano[5]; Lori A. Bastian[6]; Bevanne Bean-Mayberry[5]; Anne Sadler[7]; Karen M. Goldstein[8]; Alyssa Pomernacki[3]; Yasmin Romodan[3]; Ruth Klap[5]; Dawne Vogt[9]. [1]NMVAHCS, Albuquerque, NM; [2]VA Palo Alto Health Care System/Stanford, Menlo Park, CA; [3]VA Palo Alto Health Care System, Menlo Park, CA; [4]Childrens Literacy Initiative, Philadelphia, PA; [5]VA Greater Los Angeles HSR&D Center, Sepulveda, CA; [6]University of Connecticut, Farmington, CT; [7]Iowa City VAMC, Iowa City, IA; [8]Duke University School of Medicine, Durham, NC; [9]VA Boston HCS, Boston, MA. (Control ID #2706360)

BACKGROUND: Employee training in health care organizations is an essential component of maintaining high quality standards, but the optimal way to implement such training is unclear. Mandatory training may be resented or irrelevant. An Evidence-Based Quality Improvement (EBQI) approach that involved Expert Panels (EPs) was used to identify implementation strategies to engage VHA employee learners in a gender-sensitivity training program. The study objectives were (1) to evaluate whether EPs with key stakeholders could identify local site priorities that would inform gender sensitivity training and (2) to assess whether local implementation training design elements identified by an EP could be successfully implemented at multiple sites.

METHODS: Four geographically diverse sites in the VA's Women's Health Practice Based Research Network participated in this project. Local investigators and clinical leaders at each site identified key stakeholders for the EPs. Participants were sent a questionnaire prior to the EP meeting to rate the importance and feasibility of various strategies to advance VA gender sensitivity and implement the training in their facility. Summary ratings were presented at EPs to arrive at a group consensus for designing and implementing the training. Design elements included identification of local training strategies, responsible entities, supplemental organizational resources, prioritization of target clinical workgroups (departments, target clinics and providers), and identification of local barriers.

RESULTS: Survey completion rates ranged from 52-64%, and Expert Panel stakeholder attendance ranged from 40-79% (8–14 panelists). Different implementation approaches were identified across sites. Action plans were embraced at one site but rated as unhelpful at another. One site chose to rely on a single "go to" leader while another tapped an existing group to "own" the program. Perceived barriers to training implementation included: time, availability to participate in meetings/calls; and competing program implementation. Each site identified six workgroups to receive training. The number of design elements planned (ie, group or individual training; mandatory training or not; actions plans, use of supplemental posters, brochures, flyers) ranged from 3–6. Overall, there was a 100% implementation of the 3–6 design elements identified by sites. Training was implemented at all of the six workgroups at each site, though participation likely varied across these workgroups.

CONCLUSIONS: Four different sites chose different ways to implement this training program, and all sites implemented the training. Involving stakeholders in implementation design identified strategies that accounted for local organizational culture, prioritized leadership engagement to facilitate the training intervention, integrated organizational support for implementation/monitoring, and proactively ameliorated potential barriers and competing demands.

IMPLEMENTING UNIVERSAL PHQ SCREENING AT HOSPITAL ADMISSION TO IDENTIFY DEPRESSION AND POTENTIALLY REDUCE READMISSIONS: INITIAL RESULTS FROM A LARGE RETROSPECTIVE ANALYSIS

Danny Lee[2]; Rachel Fridman[3]; Joshua Lee[1]; Joshua Pevnick[3]. [1]University of California Los Angeles, Yorba Linda, CA; [2]Virginia Commonwealth University School of Medicine, Yorba Linda, CA; [3]Cedars-Sinai Medical Center, Los Angeles, CA. (Control ID #2690436)

BACKGROUND: As readmission penalties increase, providers seek to identify risk factors for readmission. Several risk factors have been studied, but

many are not amenable to treatment (e.g. older age). Depression, however, is a modifiable risk factor that could potentially be used to target interventions to reduce readmissions. Approximately 30% of inpatients are depressed as measured by Patient Health Questionnaire (PHQ) screening data. Furthermore, meta-analysis shows elevated PHQ scores to be associated with higher 30-day readmission rates (20.4% vs. 13.7% among patient with normal PHQ scores, $p < 0.01$). We evaluated whether the prevalence of depression and the relationship between depression and readmission persisted when PHQ data was obtained for operational, rather than research, reasons.

METHODS: We used a retrospective cohort study design. For operational reasons, ward nurses had been instructed to ask the two PHQ-2 questions of all inpatients soon after hospital admission to a large teaching hospital. Patients who answered 'yes' to at least one PHQ-2 question were then to be asked nine PHQ-9 questions. We compared readmission rates among all inpatients who had PHQ data obtained during 7/1/14-6/30/16. As per other studies of readmission, we excluded patients from the analysis who died before discharge, were discharged to another health care facility or hospice, left against medical advice, or were under observation. We classified PHQ-9 data into the six categories used in prior studies: no depression (0), minimal depression (1–4), mild depression (5–9), moderate depression (10–14), moderately severe depression (15–19) and severe depression (20–27).

RESULTS: During the period analyzed, 31,418 patients were admitted and had PHQ data obtained. For PHQ2 = 0 (92.5% of patients), the 30-day readmission rate was 15.3%. This did not differ from the PHQ2 > 0 rate of 15.9% (chi-square $p = 0.48$). For PHQ-9 showing no, minimal, mild, moderate, moderately severe, and severe depression, readmission rates were 12.8, 15.0, 16.4, 15.1, 17.7, and 17.6%, respectively.

CONCLUSIONS: We studied PHQ data obtained for operational reasons to determine whether it showed the same patterns as PHQ data obtained for research. Although readmission rates generally increased with higher operational PHQ-9 scores, patients on the lower end of the PHQ-9 scale had lower readmission rates than patients in whom no depression was detected (PHQ-2 = 0). This, in combination with the low prevalence of depression we detected (7% as compared with 30% in prior studies), suggests that this operational deployment of PHQ instruments may have missed many cases of depression. We suspect this may be due to less focus on PHQ data by ward nurses who had many competing priorities, as compared to PHQ data obtained by researchers. One major limitation is that we have not yet accounted for other risk factors for readmission (this work is ongoing).

IMPOSTER PHENOMENON ACROSS THE SPAN OF MEDICAL TRAINING Kayley Swope[1]; Britta M. Thompson[2]; Paul Haidet[1]. [1]Penn State College of Medicine, Hershey, PA; [2]Penn State Hershey COM, Hershey, PA. (Control ID #2702738)

BACKGROUND: The imposter phenomenon has been described anecdotally and empirically in medical students, but it is unclear how imposter feelings may fluctuate during times of transition in medical training. The purpose of this project was to explore the imposter phenomenon during times of transition compared to stable, non-transitional points during the school year.

METHODS: We surveyed first- and second-year medical students about gender, class year, and imposter feelings using the Clance Imposter Phenomenon Scale. The surveys occurred at both transition and non-transition points of the school year. First-year students completed surveys upon entry to medical school (transition) and will be completing them again later in the school year (non-transition). Second-year medical students completed surveys at the beginning of their school year (non-transition), and will be completing surveys at the beginning of their third year (transition).

RESULTS: There were response rates of 85/150 (56.7%) for the first-year class (transition) and 78/150 (52%) for the second-year class (non-transition). Of the total 163 students, 4.3% had minimal imposter feelings, 35.4% had moderate imposter feelings, 50% had frequent imposter feelings, and 10.4% had intense imposter feelings. The overall mean imposter score was 63.66 on a scale of 0–100 (SD = 13.37) which corresponded to frequent imposter feelings. This score is comparable to or slightly greater than other medical learners reported in the literature. There was a trend toward females having higher imposter scores ($p = 0.13$). Although second-year students (non-transition) tended to have higher imposter scores on the various subscales of the instrument, there was no significant difference between students in transition and students not in transition ($p = 0.624$).

CONCLUSIONS: The imposter phenomenon is an important facet of student wellness. Because transitions in education are pivotal in setting new patterns in students' professional development, it is important for educators to know when to intervene to mitigate effects of the imposter phenomenon. At this early stage in our project, there was no difference between transition and non-transition states, but we did see a trend toward higher imposter feelings in females and second-year students. Further research is needed to understand imposter feelings and their effects on the educational experiences of medical students.

IMPROVED ICU DOCUMENTATION USING A STANDARDIZED CHECKLIST IN A COMMUNITY-BASED TEACHING HOSPITAL Rohini S. Chatterjee[1]; Peter Clardy[2]; Rasika Chepuri[1]; Carey C. Thomson[2]. [1]Mount Auburn Hospital, Cambridge, MA; [2]Mt Auburn Hospital, Cambridge, MA. (Control ID #2701924)

BACKGROUND: Checklists have been implemented in large academic centers to improve documentation of intensive care unit (ICU) performance measures. Checklists improves documentation, and has been associated with lower complication rates and better clinical outcomes. Our goal was to compare documentation before and after implementation of a physician checklist in the ICU of a community-based teaching hospital.

METHODS: This mixed methods study employed both a survey assessment and a pre-post intervention chart review. In the survey, physicians reported their impression of how often they documented ICU performance measures in their notes. ICU performance measures included documentation related to daily awakening and breathing trials, head of bed elevation, GI and DVT prophylaxis, early mobility, urinary and vascular catheter utilization, nutritional support, and code status. Structured chart review consisted of convenience sampling of representative charts over a three-month period before and after implementation of the checklist, and included collection of data on the fields above. In the first analysis, we compared self-assessed rates of documentation of ICU performance measures from the survey with actual rate of documentation from chart reviews obtained prior to checklist implementation. In the second analysis, we compared rates of documentation before and after checklist implementation.

RESULTS: Physician response rate for the survey was 73 percent. There was a significant difference between self-reported and actual documentation of performance measures. Attending physicians consistently, and in some cases dramatically, overestimated their documentation of ICU performance measures relative to their actual performance. This variance was greatest for documentation related to mobility and early mobilization and was least for documentation related to spontaneous breathing trials. There was a substantial increase in

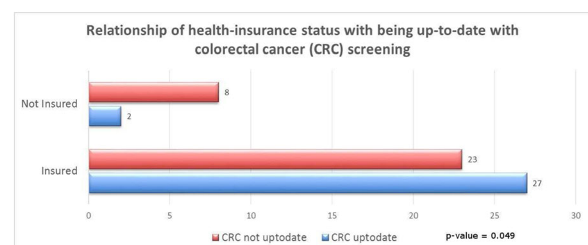
the documentation of ICU performance measures across all domains following checklist implementation. Overall, documentation of relevant domains increased from 37 to 91 percent following implementation. Improvement was noted across all domains and for all attendings. Improvement was greatest in the domains that started at lower levels, including GI prophylaxis and mobility.
CONCLUSIONS: This work demonstrates that a simple checklist-based intervention improves documentation practices of ICU staff in a community-based teaching. Future efforts will incorporate nursing-driven protocols and structured electronic documentation, and will seek to link improvements in documentation to improved clinical outcomes.

IMPROVING BURNOUT IN GENERAL INTERNAL MEDICINE: A FACULTY COACHING PROGRAM Kerri Palamara[2]; Beth Walker-Corkery[2]; Karen Donelan[2]; Mary F. McNaughton-Collins[1]. [1]MGH/HMS, Boston, MA; [2]Massachusetts General Hospital, Boston, MA. (Control ID #2703486)

BACKGROUND: Physician burnout is widespread and negatively impacting physicians, patients, and the healthcare system. The objective of our study was to develop and implement a 1-year faculty coaching program to help reduce burnout, improve resiliency, and improve workplace satisfaction, based on our successful Department of Medicine residency coaching program.
METHODS: We developed a 1-year, strengths-based, positive psychology curriculum. Existing faculty ($n = 309$) were informed of the program and encouraged to participate as coaches (if >3 years at MGH), coachees or both. New faculty for 2015–16 ($n = 40$) were automatically enrolled and assigned a coach. We obtained IRB approval to send an enrollment survey with brief demographics and to send participating faculty a baseline survey including questions from the Maslach burnout inventory (MBI), coping at work questions, workplace satisfaction, and patient safety culture metrics. Survey data was deidentified to program team. Faculty coaches ($N = 32$) were given 3 hours of training in positive psychology coaching, and assigned 2–3 coachees. Training introduced core coaching concepts and positive psychology in a dyad peer coaching model. The content of the training sessions included: #1 - What does success look like for me? What are my goals for the year, #2 - What are my strengths?, and #3 - What is the state of my work/life blend? What do I want to do about that? Faculty coach/coachee pairs will meet 3 times over 9 months (June 2016-Feb 2017). A follow-up survey will combine the above quantitative measures, as well as qualitative assessment of faculty regarding their experiences with the program.
RESULTS: Of 309 existing DGIM faculty members 13 volunteered to coach, 19 to coach AND be coached, and 13 to have a coach. 34 new faculty were enrolled automatically and assigned a coach. Total enrollment is 79 faculty, matched into 68 coach-coachee pairs. 50/79 faculty responded to the baseline survey. Among those scoring in the highest tertile (50%, $n = 25$) on a 5-question emotional exhaustion (EE) subset of the MBI, 39% reported good/excellent opportunities to reflect on their performance compared with 75% of those scoring lowest on EE (10%, $n = 5$). 44% of those with highest burnout indicators responded that they felt confident about being able to choose the best coping responses for hard situations compared to 81% of those reporting lowest burnout. In open ended questions, 42% reported administrative burden as the largest challenge faced at work.
CONCLUSIONS: Burnout in our DGIM faculty is high, on par with the national average. Those experiencing greater burnout have fewer opportunities to reflect on their performance and are less in tune with positive coping responses to stress. We demonstrated the feasibility of implementing a faculty coaching program among busy GIM faculty to address these concerns. Our follow-up survey will assess the impact of the faculty coaching program on measures of burnout and emotional well being.

IMPROVING COLORECTAL CANCER SCREENING AT A RESIDENT RUN INTERNAL MEDICINE CLINIC Maria M. Dahar[2]; Noor Khan[1]. [1]UPMC Mercy, Moon Township, PA; [2]UPMC Mercy, Pittsburgh, PA. (Control ID #2706475)

BACKGROUND: According to the American Cancer Society, the screening rate for colorectal cancer is the lowest among cancers. Barriers may include insurance, socioeconomic status, awareness, gender, ethnicity, or the facilities provided by a healthcare center and competence of the healthcare providers. In this study, we looked at the percentage of the patient population that is up-to-date with colorectal screening and how the care can be improved in an outpatient setting at our hospital
METHODS: A retrospective study was conducted at the UPMC Mercy Health Center in an outpatient setting in Pittsburgh, PA. Data was collected from 60 patients aged 50–73 years. Along with biographical information, data on prior colorectal screening, type of insurance and decision-making on ordering colorectal screening on part of residents was collected. Outcomes included evaluating if colorectal screening differed among patients on the basis of ethnicity, gender, or state of insurance, if colorectal screening and counseling was offered by the residents and to find out the main reasons of refusal on part of patients
RESULTS: Out of the 60 patients, 29 patients were up-to-date with their colorectal cancer screening, 30 were not and data for 1 patient was not found. Among patients who were not up-to-date, the screening was ordered for 10 patients. Most common modality for the screening was colonoscopy (28 patients). Among patients for whom screening was not ordered but were counselled, 4 patients lacked insurance, 10 refused to undergo screening for unknown reasons. There was significant association (p-value = 0.049) between patients lacking insurance and not being up-to-date with colorectal screening. There seems to be a trend of more chances of screening being ordered for men compared to women, p-value = 0.15. This could be because 7 out of 32 female patients lacked insurance compared to 3 out of 28 male patients. Our data shows patients were counselled without the regard for their state of insurance
CONCLUSIONS: Significant percentage of the population was not up-to-date with the colorectal screening. Counselling and patient education plays significant role in patients making decision in favor of screening. Resident physicians should be prepared to counsel every patient that is not up-to-date with their screening and be able to make them aware of the benefits of colorectal screening. Lack of insurance and awareness seem to be the most important factors for patients refusing to undergo colorectal screening



IMPROVING PROVIDER RECOGNITION AND TREATMENT OF INADEQUATE PHYSICAL ACTIVITY IN THE AGING POPULATION.

Samuel Good[1]; Kristyn Ertl[2, 1]; Jeff Whittle[2, 1]. [1]Medical College of Wisconsin, Milwaukee, WI; [2]Clement J. Zablocki Veterans Affairs Medical Center, Milwaukee, WI. (Control ID #2706145)

BACKGROUND: Most Americans do not achieve recommended levels of physical activity (PA); most doctors do not discuss PA. Studies in a few settings suggest that if intake staff routinely measure physical activity by asking the 2 item PA Vital Sign (PAVS) ("On average, how many days per week do you engage in moderate to strenuous exercise like a brisk walk?" and "On average, how many min do you engage in exercise at this level?") patients more often report discussing PA. We hypothesized that routine use of the PAVS at the time of intake would increase the likelihood of PA discussion during visits to Milwaukee VA primary care providers (PCPs).

METHODS: Four volunteer LPNs working in a Milwaukee VA primary care clinic included the PAVS in their check-in routine during the study period, while other LPNs in that clinic did not. Each Tuesday through Friday, we called a sample of patients who had seen a PCP in that clinic on the preceding day. We asked consenting patients if they had discussed PA with their PCP and/or intake LPN and whether they had received a recommendation to increase their PA.

RESULTS: We reached 196 of 332 patients (59%) who we attempted to contact. All contacts were men; the mean age was 65. Patients with documented PAVS responses were not more likely to recall discussing PA with their PCP or LPN than patients without documented PAVS (26/32, 81% vs. 113/164, 69%, $p = 0.16$ by chi-square). Among the 139 who recalled discussing PA with an LPN or PCP, 75 (38%) were advised to increase PA. Of 37 patients (19%) reporting a specific PA recommendation, the most common suggestion was to increase walking (58% of patients). Other recommended activities included biking (15%) and attending a gym (10%). Contacts who recalled discussing PA during their visit most commonly discussed PA with PCPs compared to LPNs (125/139, 90% vs. 37/139, 27% (some patients recalled PA discussion with both groups)) even when PA was assessed by participating LPNs as part of the PAVS system. Nonetheless, patients reported discussing PA with LPNs more frequently during PAVS encounters compared to non-PAVS encounters (10/32, 31% vs. 27/164, 16%, $p = 0.08$, Fisher's exact test).

CONCLUSIONS: Administration of the PAVS by intake staff did not significantly increase patient report that they had discussed PA during the clinic visit. When they recalled this discussion, it was usually attributed to the PCP, even when the LPN had clearly made the assessment, as documented in the patient note. However, the confidence intervals around the 12% increase we observed with PA assessment were wide (−5 to + 25%). Future work should assess the impact of PAVS administration on physician documentation of physical activity discussion and actual changes in patient levels of PA. Given increasing recognition of inadequate levels of PA and its health consequences, researches should also seek to identify barriers and facilitators to implementation and use of the PAVS and other approaches to increasing patient PA.

IMPROVING TELEPHONE MEDICINE EDUCATION AT A MEDICAL STUDENT RUN FREE CLINIC

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BACKGROUND: Outside of clinic visits, telephone communication is the primary mode of physician-patient contact. While approximately a quarter of all physician-patient interactions occur over the telephone, training in telephone medicine is at best limited, especially for medical students. Here we assessed the attitudes of and need for telephone medicine training among students in a medical student run free clinic, and then created a telephone medicine curriculum based on their responses. Subsequently, we evaluated the educational session's ability to improve confidence and comfort with telephone medicine among participants.

METHODS: We conducted pre-post educational intervention with medical student participants from the Weill Cornell Community Clinic (WCCC), a medical student-run free clinic in New York City. We initially surveyed outgoing leadership board members ($n = 21$) in efforts to create a telephone medicine intervention. From these responses we developed a 30-min educational intervention that included a lecture, interactive role-playing, and handouts for the incoming leadership board. The intervention was delivered at the WCCC annual leadership transition meeting. Pre-training surveys were collected 1 week prior to the meeting and post-training surveys were collected following the intervention at the meeting. Comparisons were performed using the chi-square test, and the significance level was set to $p < 0.05$.

RESULTS: 15 members of the incoming leadership board were surveyed. Prior to the intervention, 6 students (40%) had one or more telephone encounters with patients. Notably, only 1 (6.7%) reported a strong ability to communicate with patients. 14 out of 15 (93.3%) cited either neutral or minimal ability. 14 (93.3%) students agreed educational intervention would be useful. Interestingly, all thought telephone medicine encounters positively impacted patient care and would like to receive training on the topic. However, only 1 (6.7%) out of 15 had had telephone medicine training prior to medical school. None reported telephone medicine training in medical school yet. Following our educational intervention, medical students reported a statistically significant improvement in comfort with telephone medicine ($p = 0.01$). All thought the intervention had positive educational value. 13 students (86.7%) felt their communication skills and their ability to gather information over the phone improved while 2 (13.3%) felt neutral.

CONCLUSIONS: Analysis of the survey results reveals a robust interest and recognized value in telephone medicine. However, many have not been trained and cited concerns with their ability to communicate with patients over the phone. With a formal teaching protocol, such as our program, benefits potentially include increased comfort and confidence in communication skills with telephone medicine. We are currently planning for a 3-month follow-up survey which will be completed in February 2017.

IMPROVING USE OF POLST TO COMMUNICATE RESUSCITATION PREFERENCE FOR PATIENTS DISCHARGED FROM HOSPITAL TO NURSING HOME

Christine Haynes[3]; Cody Dashiell-Earp[2]; Robin Clarke[1]; Wendy Simon[3]; Samuel A. Skootsky[3]; Neil Wenger[4]; Frances Watts[1]; Anne M. Walling[1]. [1]UCLA, Los Angeles, CA; [2]UCLA, Venice, CA; [3]UCLA-University of California at Los Angeles, Los Angeles, CA; [4]University of California, Los Angeles, Los Angeles, CA. (Control ID #2703810)

BACKGROUND: Physician Orders for Life-Sustaining Treatment (POLST) is a legal document in many states that translates patient end-of-life treatment preferences into actionable medical orders preserved across care settings. POLST can be used to document patient preferences about resuscitation and life-prolonging interventions and then ensure continuity across healthcare settings. Yet, early data suggest inconsistent use of POLST in the hospital setting. If a decision not to receive resuscitation (DNR) reached in the hospital

is not transferred to the nursing home (NH), patients may receive undesired resuscitation leading to poor patient and family outcomes.

METHODS: We developed a measure captured in our electronic medical record and validated by chart review that reports whether patients with DNR orders at hospital discharge have an appropriately completed POLST at the time of NH transfer. We implemented an interprofessional quality improvement intervention at two hospitals: (1) education of residents and faculty on communication skills to guide discussion and use of POLST, (2) nursing huddle messages to encourage nurses on general medicine floors to discuss POLST with physicians when appropriate, and (3) case manager-driven prompts to physicians to consider POLST completion when a patient with a DNR order was discharging to a NH. To increase engagement, the intervention was augmented by (4) a small educational fund financial incentive for medical residents who appropriately completed a POLST at NH transfer of a patient with a DNR order, (5) daily emails to ward residents and attendings identifying POLST candidates, and (6) monthly emails to provide feedback to residents about their POLST completion rates. We compared POLST completion on resident general medicine teams for patients with DNR orders at discharge to NH using chi square tests at three time points: baseline (November 2014-January 2015), one year after implementation of the initial intervention (November 2015-January 2016) and 9 months after augmented intervention (August 2016-October 2016). Three months of data were used for each time point to minimize monthly fluctuations.

RESULTS: The intervention steps resulted in an 80% increase in POLST use from baseline to augmented for patients discharged to nursing home: baseline 22/56 (39%), intervention 36/71 (51%, $p = 0.2$ compared to baseline), and augmented intervention 44/63 (70%, $p = 0.003$ compared to baseline).

CONCLUSIONS: An interdisciplinary intervention can increase the use of POLST for patients with DNR orders transitioning to NHs. However, multiple components may be needed; after our initial intervention had minimal effect, a quality improvement framework guided intervention augmentation with performance feedback and targeted financial incentives, leading to statistically significant improvement. This intervention deserves testing with a control group and an assessment of how improvements in POLST utilization affect patient outcomes.

INCIDENCE OF COLORECTAL CARCINOMA FOLLOWING LUNG OR HEART TRANSPLANT - A DESCRIPTIVE STUDY USING THE UNOS DATABASE

Osama Diab[2]; Mridula Krishnan[2]; Arjun K. Theertham[3]; Lakshmi M. Chintalacheruvu[2]; Nina Zook[3]; Ryan Walters[2]; Renuga Vivekanandan[1]. [1]Creighton Medical center, Omaha, NE; [2]Creighton University, Omaha, NE; [3]Creighton University School of Medicine, Omaha, NE. (Control ID #2705914)

BACKGROUND: Post-transplant studies showed two to three fold increase in cancer incidence. These cancers tend to progress faster and have a worse response to treatment, which makes early detection crucial. Especially in lung and heart transplant patients who have a higher risk due to the aggressive and prolonged immunosuppression regimens.

METHODS: The incidence of a new colorectal cancer (CRC) diagnosis is presented for both lung transplant and heart transplant patients as frequency and percent. The cumulative (relative) risk of developing CRC was calculated using the Mantel-Haenszel test. Differences in time to a new CRC following transplant were estimated using the Kaplan-Meier method—patients were censored if they died or were lost to follow-up. SAS v.9.4 was used to conduct all statistical analyses and $p < .05$ was used to indicate statistical significance.

RESULTS: Patients included in the analysis had either a lung ($N = 4{,}203$) or heart ($N = 6{,}884$) transplant that occurred between 1987 and 2015. The overall incidence of new CRC following lung transplant was 3.4% (95% CI = 2.9 to 4.0%; $n = 143$) and 2.8% (95% CI = 2.4 to 3.2%;$n = 194$) following heart transplant. For lung transplant patient, women were twice as likely to develop CRC as men, whereas Caucasian patients were 62% less likely to develop CRC compared to non-Caucasian patients. Similar results were observed with heart transplant patients, albeit to a lesser extent, as women were approximately 1.5 times more likely and Caucasians were 40% less likely to develop CRC. The low overall incidence rate of new CRC precluded the calculation of mean or median time to new CRC via the Kaplan-Meier method. However, women developed CRC following lung transplant significantly earlier than men ($\chi 21 = 12.3$, $p < .001$), and non-Caucasian patients developed CRC following lung transplant significantly earlier compared to Caucasian patients ($\chi 21 = 23.7$,$p < .001$). In addition, women developed CRC following heart transplant significantly earlier than men ($\chi 21 = 5.7$,$p = .017$)

CONCLUSIONS: Incidence of new CRC following lung and heart transplant was 3.4 and 2.8% respectively, which is higher than the general population (0.041% per year). Currently, there is no protocol for CRC screening in thoracic transplant recipients. Further studies may be needed to determine the benefit of increased CRC surveillance, especially in non-Caucasian female patients.

Table 1. New Colorectal Cancer Incidence by Demographic Characteristics

	CRC Incidence Rate (%)	Relative risk {95% CI}	*P*
		Lung Transplant Patients (*n* = 4,203)	
Female vs Male	5.2 vs 2.5	2.12 [1.54,2.92]	<.001
White vs Non White	3.1 vs 8.1	0.38 [0.25,0.60]	<.001
Obese vs Non Obese	3.0 vs 3.5	0.87 [0.53,1.43]	0.585
Age ≥ 65 vs Age < 65	2.8 vs 3.5	0.80 [0.51,1.25]	0.259
		Heart Transplant Patients (*n* = 6,884)	
Female vs Male	4.0 vs 2.6	1.55 [1.11,2.17]	0.01
White vs Not White	2.6 vs 4.4	0.60 [0.41,0.87]	0.007
Obese vs Not Obese	2.4 vs 2.9	0.81 [0.55,1.20]	0.296
Age ≥ 65 vs Age < 65	2.9 vs. 2.8	1.03 [0.71,1.48]	0.89

INCORPORATING THE INDICATION INTO CPOE: TRANSFORMING PRIMARY CARE MEDICATION WORKFLOW

Kevin W. Kron[7]; Aaron Nathan[1]; Sara Myers[1]; Hannah Dym[1, 7]; Lynn A. Volk[5]; Pamela M. Neri[6]; Adam Wright[1, 7]; Mary Amato[2]; Alejandra Salazar[1]; Enrique Seoane-Vazquez[4]; Tewodros Eguale[1, 3]; Sarah K. McCord[3]; Rosa Rodriguez-Monguio[8]; Gordon D. Schiff[1, 7]. [1]Brigham and Women's Hospital, Boston, MA; [2]Brigham and Womens Hosptial/MCPHS, Boston, MA; [3]MCPHS University, Boston, MA; [4]Massachusetts College of Pharmacy and Health Sciences, Boston, MA; [5]Partners HealthCare, Wellesley, MA; [6]Partners Healthcare Systems, Inc., Wellesley, MA; [7]Partners Healthcare, Wellesley, MA; [8]UMass School of Public Health & Health Sciences, Amherst, MA. (Control ID #2682950)

BACKGROUND: Currently, medication orders lack information about the drug indication. Integrating indications could pave the way for a safer, more complete continuum of care for the patient and save time during prescribing

and related tasks (e.g. medication reconciliation). The goal is to design and build a prototype indications-based CPOE system that is both safer and more efficient than current CPOE systems, which limit indications to after-the-fact additions and are viewed as cumbersome by prescribers. When designing a system like this, it's critical to employ user-centered design to ensure that indications are implemented in a way that fits seamlessly into a prescriber's regular workflow.

METHODS: We have used a user-centered design process to develop an indications-driven CPOE prototype. Six expert webinars were hosted to consult high-level stakeholders on system design considerations necessary for building an indications-based CPOE system. To refine this list, we conducted 9 one-on-one contextual inquiry sessions with prescribers to observe prescribing activities and workflow, and 4 participatory design sessions to brainstorm design ideas directly with prescribers and better understand how to prioritize the information displayed. We employed iterative usability testing of new screen designs and workflow modifications with prescribers to ensure their needs and priorities are met.

RESULTS: We have developed a prototype CPOE - designed and user-tested to seamlessly integrate indications into the prescribing workflow. This includes hundreds of features designed to improve CPOE usability and safety, many of which use medication indications information to do so (e.g. providing drugs of choice for a given indication to avoid potential safety risks).

CONCLUSIONS: Indications-based prescribing has the potential to revolutionize prescribing by reengineering the prescriber workflow to incorporate indications. In addition to making prescribing more efficient, this has the potential to increase patient medication safety and adherence. Taking a user-centered design approach has helped to design a system that can meet the needs of users. Initial reactions to the prototype have been overwhelmingly positive and we have garnered widespread support for this initiative. Head-to-head testing of the prototype CPOE system is being conducted against two leading commercial vendors, Epic and Cerner, to compare satisfaction and error rate.

INCREMENTAL EFFECTS OF ANTIHYPERTENSIVE DRUGS: AN INSTRUMENTAL VARIABLE ANALYSIS OF THE SPRINT TRIAL

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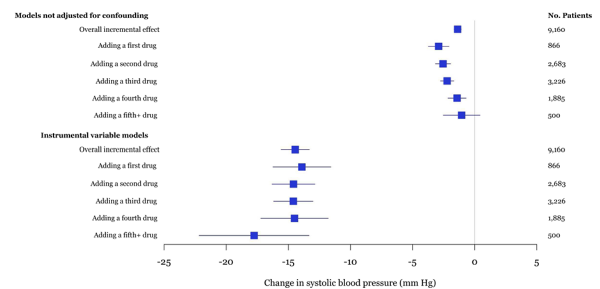
BACKGROUND: Nearly two-thirds of American adults with hypertension use multiple drugs to control blood pressure. Observational studies suggest that incremental effects on blood pressure and cardiovascular events diminish across successively higher numbers of drugs. However, these findings may be explained by confounding by indication, i.e., a treatment appears less effective or harmful because it is given to sicker patients. We performed an instrumental variable (IV) analysis to assess the incremental effects of antihypertensive drugs across different levels of baseline drug use while accounting for confounding.

METHODS: We analyzed secondary data collected from the SPRINT trial (n = 9,160). Our outcomes were systolic blood pressure (SBP), major cardiovascular events (myocardial infarction, other acute coronary syndromes, stroke, heart failure, or cardiovascular death), and composite serious adverse events. Our exposure was the number of antihypertensive drug classes at the study's end. Our instrumental variable was randomization status, i.e., treatment or control. We stratified by baseline number of drug classes to assess whether incremental effects varied among the first, second, third, fourth, or fifth drug class added to a patient's regimen.

RESULTS: In models that did not account for confounding by indication, adding antihypertensive drugs were associated with slightly lowered SBP (−1.4 mm Hg, 95% confidence intervals [CI], −1.7, −1.1). These effects diminished with each additional drug (Figure; interaction term P = 0.001). In these models, antihypertensive drugs were also associated with increased risk of cardiovascular events (absolute risk [AR] of events per 1,000 patient-years, 2.5; 95% CI, 0.4, 4.9). After addressing confounding in IV models, antihypertensive drugs were associated with larger SBP reductions (−14.4 mm Hg, 95% CI, −15.6, −13.3) and a decreased risk of cardiovascular events (AR, −6.8; 95% CI, −13.1, −1.1). Incremental effects on SBP (Figure) and cardiovascular events did not vary across baseline number of drugs in models that accounted for confounding. Antihypertensive drugs were not associated with adverse events in any model.

CONCLUSIONS: After accounting for confounding by indication, adding antihypertensive drugs led to significant reductions in SBP and risk of cardiovascular events but no differences in serious adverse events. These effects remained significant and similar in magnitude when adding a first, second, third, fourth, or fifth drug class.



INDUCED ABORTION AMONG WOMEN VETERANS: DATA FROM THE ECUUN STUDY

E. Bimla Schwarz[1]; Florentina Sileanu[3]; Xinhua Zhao[3]; Maria K. Mor[3]; Lisa S. Callegari[4]; Sonya Borrero[2]. [1]University of California, Davis, Sacramento, CA; [2]University of Pittsburgh and VA Pittsburgh, Pittsburgh, PA; [3]VA Pittsburgh, Pittsburgh, PA; [4]Veterans Health Administration, University of Washington, Seattle, WA. (Control ID #2700236)

BACKGROUND: Since 1976, the Hyde amendment has prohibited provision of abortion services using federal funds. We sought to describe the prevalence of induced abortion reported by women Veterans receiving VA healthcare compared to the larger US population.

METHODS: We analyzed data from women Veterans younger than 45 years, who participated in the "Examining Contraceptive Use and Unmet Need among Women Veterans" (ECUUN) study, a telephone-based, cross-sectional survey of randomly sampled women who had received VA primary care in the prior 12 months. We compared rates of abortion in ECUUN to age-adjusted data from the National Survey of Family Growth, a nationally-representative sample of US women. Among the 1485 Veterans who had been VA patients for 5 or more years, we used logistic regression to examine associations between abortion in the last 5 years and age, race/ethnicity, education, religion, marital status, parity, income, geographic region, medical and mental health comorbidities, deployment history, and housing instability. Geographic region and housing instability in the last 5 years were identified using VA administrative data.

RESULTS: ECUUN participants ($n = 2302$) were more likely to be Black (29% vs.14%) and single (50% vs. 33%) than the age-adjusted US population. Although Veterans were more likely to have college education (53% vs. 37%), they were less likely to have annual incomes over $40,000 (48% vs. 60%). Housing instability was documented for 15% of participating Veterans. Women Veterans were not less likely than age-adjusted US women to report ever having an abortion (17.6% among Veterans vs. 15.7%). In the last year, pregnancy rates were lower among Veterans than US women (67.3 vs. 87.6 per 1,000 women). However, Veterans' pregnancies were more likely to be unintended (37.0% among Veterans vs. 28.9%), resulting in similar reports of abortion in the last year (2.6 among Veterans vs. 3.3 per 1,000 women). Accounting for under-reporting, we estimate that 3% of women Veterans of reproductive age have abortions each year. Among the 1485 women who had been VA patients for 5 or more years, 1.8% reported abortion in the last 5 years. Veterans were more likely to report abortion if their annual income was less than $40,000 (3.3% vs. 0.5%; aOR:4.04, 95%CI:1.26-12.99), they had documented housing instability (4.3% vs. 1.3%; aOR:1.63, 95%CI:0.67-3.96), were single (2.9% vs. 0.8%; aOR:2.63, 95%CI:0.98-7.09), they had ever been deployed (2.5% vs. 1.1%; aOR:2.49, 95%CI:1.04-6.00), or had previously given birth (2.2% vs. 1.2%; aOR:3.08, 95%CI:1.16-8.13).

CONCLUSIONS: The Hyde Amendment, which precludes federal funding for abortion, does not result in lower rates of abortion among women Veterans compared to the general US population and likely increases vulnerable Veterans' out-of-pocket healthcare costs.

INFECTIOUS CONTROL: RAISING AWARENESS OF GERM INFESTED ACCESSORIES Gurneet Matharoo[1]; William T. Whitmire[1]; Daniel Schoolcraft[2]; Niket Sonpal[3]. [1]American University of Antigua, Osbourn, Antigua and Barbuda; [2]Medical University of Lublin, Lublin, Poland; [3]Touro College of Osteopathic Medicine, New York, NY. (Control ID #2703112)

BACKGROUND: The first thing we learn as medical professionals at any level of training is to practice high standards of infection control when interacting with patients. However, a gap in education arises when workers develop the misconception that hand hygiene alone is sufficient. In an era of fast paced health delivery, it is easy to recognize why accessories kept on hand and accessed regularly may not receive appropriate disinfection.

METHODS: Over a period of 9 days, a 31-question survey was distributed at random amongst various medical professional populations at health care centers over the United States and Canada. Results were tabulated through the online software service company, *Survey Monkey Inc.* The survey titled "How dirty are you?" engaged interest of medical professionals, and raised awareness as they answered subsequent questions. 79 responses were submitted as hard copy and uploaded manually. 52 responses were submitted directly through the web link itself. Results were then reviewed using confidence intervals of 95%(95CI) for proportions. 3 respondents failed to complete the survey completely therefore results were discarded to ensure accuracy.

RESULTS: Surveys were collected from 131 medical professionals (English). 55% of responses were males. 75% of professionals completing the surveys were third year medical students, 10% were residents, and physicians. 50/130 (38.5%; 95CI: 30.14–46.9) of workers report wearing artificial nails, hand or wrist jewelry, with 59/91(64.8%; 95CI: 55–74.6) admitting to never sanitizing their wrist-watches. When asked if one sanitizes their stethoscope after each usage, an astonishing 77/128(60.1%; 95CI: 51.6–68.6) replied sometimes, and 20/128 (15.6%; 95CI: 9.31–21.9) responded never. A significant finding amongst medical professionals was the 58/125(46.4%; 95CI: 37.7–55.1) who endorsed never sanitizing their cell phones. Data also showed 86/113(76.1%; 95CI: 68.2–84) never sanitize their clipboards, binders, and notebooks. With these replies the same professionals reported using gloves sometimes but not always 53/129 (41.1%; 95CI: 32.6–49.6) before touching the patient for any reason. An alarming 42/129 (32.6%; 96CI: 24.5–40.7) indicated they sometimes but not always wear gloves, specifically for performing physical examinations.

CONCLUSIONS: This study was performed to point out infection control errors that are not commonly discussed, can easily be made by anyone in healthcare. The survey was sufficient in determining that accessory hygiene should be critically appraised more often, since healthcare workers use personal protective equipment such as gloves inconsistently. Implementing and upholding rules involving regular stethoscope hygiene are minor changes that can provide an enhanced hygienic environment for patients and intuitions. Similar studies should be accomplished to determine personal and accessory hygiene specifics in larger health-care populations.

INFLUENZA VACCINATION BELIEFS AND PRACTICES AMONG PREDOMINATELY ELDERLY HISPANIC PRIMARY CARE PATIENTS Sharon Rikin[1]; Steven Shea[1]; Philip LaRussa[2]; Melissa Stockwell[2]. [1]Columbia University, New York, NY; [2]Columbia University, NY, NY. (Control ID #2689856)

BACKGROUND: The majority of influenza related deaths and hospitalizations are in individuals ≥65 years, yet the national influenza vaccination rate for this group is 63 and is lower in the Hispanic population (CDC, Flu Vaccination Coverage, US 2015–16). Previous studies have shown that negative predictors of vaccination include concerns for vaccine safety, efficacy, and side effects. However, there is a knowledge gap of how influenza vaccine-specific beliefs affect vaccination rates. The purpose of this study was to understand influenza vaccine health beliefs in a ≥65 year-old primary care population (with 63.1% vaccination rate in 2015–16) and investigate relationships between beliefs and vaccination.

METHODS: A questionnaire regarding influenza vaccine beliefs was administered to a convenience sample of 200 patients ≥65 years in an academic general internal medicine clinic with 88% participation rate. The study was approved by the IRB and consent obtained. A free response question regarding influenza vaccine concerns was evaluated qualitatively with predominant themes grouped into belief categories.

Logistic regression evaluated associations, adjusted for age, gender, and language.

RESULTS: Mean age was 74 years (SD 6.7), 73% female, 93% Hispanic, and 86% had high school level education or less. Influenza vaccination rate in the last year was 75%; 7.5% reported never receiving the vaccine. Only 46.5% reported the influenza vaccine was very effective; 47% that it was very safe. Many had specific concerns about the vaccine with themes emerging: general side effects (*n* = 23, 11.6%), vaccine causes the flu (*n* = 22, 11.1%), vaccine causes a cold (*n* = 12, 6%), alternative remedies are better than vaccines (*n* = 8, 4.0%), vaccine components (*n* = 5, 2.5%), get the flu despite vaccination (*n* = 4, 2.0%). Concerns for side effects, fear that the flu shot causes the flu, and believing that alternative treatments are more efficacious than vaccination were associated with reduced odds of vaccination (Table).

CONCLUSIONS: This study highlights which beliefs specific to the influenza vaccine are associated with decreased odds of vaccination. The patient-perceived distinction between cold, flu, and other symptoms warrants further exploration. This information can be used to develop targeted educational messages.

Odds of receiving influenza vaccine associated with vaccine beliefs

Belief	Category	OR	95% CI
Efficacy	Very/somewhat effective (ref)	–	
	Unsure	1.21	0.24,6.17
	Somewhat/very ineffective	0.18	0.03,1.30
Safety	Very/somewhat safe (ref)	–	
	Unsure	0.18	0.03,1.10
	Somewhat/very unsafe	0.38	0.06,2.58
Flu shot causes flu*		0.18	0.05,0.62
Flu shot causes a cold*		1.03	0.18,5.94
Other side effects*		0.15	0.05,0.50
Get flu despite vaccination*		0.61	0.05,6.95
Vaccine components*		0.61	0.07,5.14
Alternative remedies are better than vaccine*		estimate unreliable, quasi-complete separation	

* ref: no concern or not this concern

INITIAL CHALLENGES IN IMPLEMENTING SCREENING TOOL FOR PREGNANCY INTENTION IN A PRIMARY CARE INTERNAL MEDICINE CLINIC

Erin Murphy[2]; Carol A. Stamm[2]; Rebecca Petersen[2, 3]; Daniel Topp[2]; Christine Gilroy[1]. [1]University of Colorado Anschutz Medical Campus, Denver, CO; [2]University of Colorado Denver, Denver, CO; [3]Kaiser Permanente, Denver, CO. (Control ID #2706219)

BACKGROUND: Unintended pregnancy is a major public health issue and the ensuing social, health and economic problems have expansive societal effects. Half of the pregnancies each year in the US are unintended—higher than in other developed countries. Efforts to bolster contraceptive counseling and provision by primary care providers might potentiate this public health problem. There are no national quality assessment metrics evaluating efficacy of pregnancy intention screening and contraception use in primary care visits. For this study, we adopted the Oregon metric for pregnancy intention, asking ONE KEY QUESTION® [OKQ] (Do you wish to become pregnant within the next year?), with the aim to better prompt clinicians to address women's reproductive needs.

METHODS: This is a prospective quality improvement study utilizing chart review (EMR database query [EMR] and manual chart review [MCR]) to evaluate rates of documented contraception/preconception counseling. Inclusion criteria were all female patients age 18–50 cared for in the patient panel of 6 internal medicine interns. Prior to study initiation, all interns received a brief educational intervention for contraception/preconception counseling and coding/billing. MAs were trained to screen for pregnancy intention using OKQ during appointment intake. De-identified data obtained by independent reviewer at 5-week and 3-month intervals were compared longitudinally, examining 1) rates of OKQ asked during intake, 2) rates of documentation for contraception/preconception counseling, 3) rates of coding/billing for contraception/preconception counseling.

RESULTS: 5-week interval: −9/24 (38%) encounters documented OKQ response −5/24 (21%) encounters documented contraceptive counseling (MCR) -0/24 encounters coded for contraceptive/preconception counseling (EMR) 3-month interval: −0/16 encounters documented OKQ response −6/16 (38%) encounters documented contraceptive counseling (MCR) -0/16 encounters coded for contraceptive/preconception counseling (EMR)

CONCLUSIONS: −Consistency of MA inquiry for pregnancy intention decreased over time, yet providers proportionally increased their documentation of contraceptive/preconception counseling as seen in manual chart review. -Counseling sessions were not coded in visit bills. Speculations why include 1) providers are unaccustomed to coding for various forms of counseling (eg, weight loss and smoking cessation) even when these conversations occur (as seen in manual but not database chart review); 2) when diagnostics or prescriptions are not ordered, providers are less likely to bill for counseling session given EMR does not incentivize counseling coding. - This study is limited by small sample size, as well as general patterns and inter-provider variability of documentation by MAs and physicians.

INPATIENT ADDICTION CONSULTATION FOR HOSPITALIZED PATIENTS INCREASES POST-DISCHARGE ABSTINENCE AND REDUCES ADDICTION SEVERITY

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BACKGROUND: Alcohol and drug use results in substantial morbidity, mortality, and cost. Individuals with alcohol and drug use disorders are overrepresented in general medical settings. Hospital-based interventions offer an opportunity to engage with a vulnerable population that may not otherwise seek treatment.

METHODS: Prospective, quasi-experimental evaluation comparing 30-day post-discharge substance use outcomes of patients who were or were not seen by an addiction consult team during hospitalization at Massachusetts General Hospital in Boston, Massachusetts. Participants were 399 adult patients who screened high risk for having an alcohol or drug use disorder or who were clinically identified by the primary nurse as having a substance use disorder. The intervention consisted of an addiction consultation from a multidisciplinary specialty team offering pharmacotherapy initiation, motivational counseling, treatment planning, and direct linkage into ongoing addiction treatment. Primary outcomes were the Addiction Severity Index (ASI) composite score for alcohol and drug use and self-reported abstinence at 30-days post-discharge. Secondary outcomes included 90-day substance use measures and self-reported hospital and ED utilization.

RESULTS: Among 265 participants with 30-day follow-up, the ASI composite score for drug or alcohol decreased more in the intervention group compared to the control group (mean ASI-alcohol decreased by 0.24 vs. 0.08, $p < 0.001$; mean ASI-drug decreased by 0.05 vs. 0.02, $p = 0.003$.) Days abstinent increased more in the intervention group versus the control group (+12.7 days versus +5.6, $p < 0.001$). The differences in ASI-alcohol, ASI-drug and days abstinent all remained statistically significant after controlling for age, gender, employment status, smoking status, and baseline addiction level ($p = 0.018$, 0.018, and 0.02, respectively). In a sensitivity analysis assuming that patients who lost to follow-up had no change from baseline, the differences remained statistically significant. Among the 227 with 90-day follow-up, the mean ASI composite score for alcohol decreased more in the intervention group (−0.22 vs. -0.10, $p = 0.003$). The mean change in ASI-drug was greater in the intervention group but the difference did not reach statistical significance (−0.05 vs. -0.02, $p = 0.058$). The change in days abstinent remained significantly higher in the intervention group (11 vs. 5.5, $p < 0.001$). At 30-day follow-up, self-reported substance-related hospitalizations decreased significantly in the intervention group 61% vs. 51% ($p =$ 0.001), as did substance-related ED visits 66% vs. 53% ($p = 0.002$).

CONCLUSIONS: Addiction consultation significantly reduced addiction severity for alcohol and drug use and increased the number of days abstinent in the first month after hospital discharge.

INTERACTIVE ONLINE LEARNING INCREASES MEDICAL STUDENT KNOWLEDGE RETENTION VERSUS PASSIVE LEARNING: A RANDOMIZED CONTROLLED TRIAL Thomas D. Shiffler[2]; David Feldstein[2]; Yuyen Chang[1]; Emmanuel Contreras Guzman[3]; Christopher B. Bundy[3]; Emmanuel Sampene[4]. [1]University of Wisconsin - Madison, Madison, WI; [2]University of Wisconsin School of Medicine and Public Health, Madison, WI; [3]University of Wisconsin-Madison, Madison, WI; [4]UW Madison, Madison, WI. (Control ID #2705146)

BACKGROUND: Use of distance education and asynchronous learning to educate medical students is increasing as classroom time and time spent at main campuses is decreasing. While interactive education increases knowledge compared to passive learning, there is little evidence about the role and level of interactivity for online learning. Our main objectives were to determine: 1) if interactive online learning improves student knowledge vs. passive online learning; and 2) the time required for faculty to create interactive learning sessions and for students to complete them.

METHODS: Clinical Therapeutics is an online elective course for senior year medical students at the University of Wisconsin. It teaches how to treat over 70 common conditions and runs from December through March. We invited all students enrolled in the 2015–2016 course to participate. They were randomized to interactive online lectures (intervention) for 5 of the clinical topics or recorded lectures with identical content and no interaction (control). Intervention students received interactive case-based questions 4–5 times during each lecture. A correct response was required before proceeding and feedback was provided. All students completed a 5-question, multiple-choice quiz querying the most critical content of each lecture (25 total questions). The same quiz was completed 2 weeks later. Faculty reported the time to develop interactive sessions. Student time to complete the topics was captured via video start/stop times. Differences in quiz scores and student time to complete topics were assessed by 2-sample t tests.

RESULTS: 121 of 123 students consented to participate; 60 were randomized to the intervention and 61 to control. The most common residencies to which students applied were: Internal Medicine 17.4% ($n = 21$), Family Medicine 16.5% ($n = 20$) and Pediatrics 10.7% ($n = 13$). Average immediate quiz scores were 3.72 (out of 5) for the intervention group vs. 3.64 for control (difference = 0.086, $p = 0.433$). Average 2-week quiz scores were 3.54 for the intervention group vs. 3.29 for control (difference = 0.252, $p = 0.036$) which is a small to medium effect size (Cohen's d = 0.39). The 5 faculty spent 2–12 hours building interaction into the topics. The mean time for students to complete the topics ranged from 25.4 to 55.8 min (intervention) vs. 25.9 to 53.8 min (control). There were no statistically significant differences between groups for any lecture; the largest mean difference was 4.1 min greater for the intervention group.

CONCLUSIONS: Incorporating interactivity into online learning had no immediate effect on knowledge compared to passive online learning, but intervention students showed improved knowledge retention. The time for faculty to incorporate interactivity was not extremely burdensome and the increased student time to complete interactive topics was minimal. Studies to evaluate more extensive interactivity are warranted to see if it can increase short-term knowledge and provide larger increases in long-term knowledge.

INTERNAL MEDICINE RESIDENT COMFORT WITH COMMUNICATING GOALS OF CARE WITH SURROGATE DECISION MAKERS AT END OF LIFE. Ramy Sedhom[1]; David Barile[2]. [1]Rutgers - Robert Wood Johnson, Princeton, NJ; [2]University Medical Center of Princeton at Plainsboro, Plainsboro, NJ. (Control ID #2698269)

BACKGROUND: Internal Medicine (IM) faces challenges posed by the increasing number of older Americans, many of whom are incapacitated when faced with end-of-life decisions. Few physicians are certified in geriatrics or trained in palliative care. In addition, no formal training exists for communication with surrogates at the end of life. We investigated internal medicine resident comfort with communicating goals of care with surrogate decision makers at end of life.

METHODS: A survey of surveying physician trainees at three categorical IM residency programs was analyzed. The survey, developed by the investigators, included information regarding communication with surrogates at end of life; whether formal training or education was offered; faculty resources, and educational barriers. Participation was voluntary and consent required.

RESULTS: Fifty three of eighty three surveys were returned; a response rate of 64%. No resident felt adequately trained for communication at end of life with a surrogate decision maker. All house staff reported minimal training in geriatric and end of life care, with an average of 12 hours over their medical training. When asked about barriers to communicating recommendations to surrogates at end of life, conflicts with paternalism (82%), uncertain dynamics of decisions making (73%), and difficulty prognosticating (64%) were most commonly cited. Further complicating the physician-surrogate relationship was the uncertainty residents felt regarding the ethics of surrogate decision making. Shared decision making with surrogates was interpreted by some as the physician facilitating a decision made solely by the surrogate; others felt that decisions should be made jointly by the physician and surrogate that promoted the authentic values of the patient. Of importance, less than half of residents felt comfortable navigating all aspects of the POLST form and reported using it routinely in family meetings.

CONCLUSIONS: Our study highlights difficulties in decision making and goal setting with surrogates at end of life. Recent literature suggests high rates of post-traumatic stress disorder for surrogate decision makers obviating the need to better train health care providers navigating goals of care discussions. Our data suggests that resident trainees are uncomfortable with this role and are poorly trained in end of life communication. Increased use of the POLST form has been shown to significantly decreased surrogate stress and may serve as an educational tool for physicians involved with surrogate decision makers.

INTERNAL MEDICINE RESIDENTS AND FACULTY IMPLICIT BIAS TOWARDS LESBIAN, BISEXUAL, GAY AND TRANSGENDER PATIENTS: A NEEDS ASSESSMENT Eloho Ufomata[2]; Kristen Eckstrand[3]; Peggy B. Hasley[1]; Kwonho Jeong[1]; Doris Rubio[1]; Carla Spagnoletti[1]. [1]University of Pittsburgh, Pittsburgh, PA; [2]University of Pittsburgh Medical Center, Pittsburgh, PA; [3]Western Psychiatric Institutes and Clinic, Pittsburgh, PA. (Control ID #2704257)

BACKGROUND: People who identify as LGBT have suboptimal cancer screening and increased prevalence of mental health disorders. The Healthy People 2020 includes initiatives to improve the health, wellbeing and safety of LGBT individuals by enhancing provider's abilities to inquire and be supportive of patients' gender identity and sexual orientation; and improving cultural competency. Some attitudes exist outside conscious awareness, or are implicit, and may predict behavior. For example, studies have shown implicit racial bias leading to differences in treatment of African American patients in hypothetical case scenarios. Our goal was to evaluate implicit bias among internal medicine (IM) residents by use of the widely validated Implicit Association Task (IAT) as part of a curriculum development needs assessment.

METHODS: Participants were 153 IM residents and 35 faculty at one institution in an urban setting. The use of the IAT has been described extensively; it asks participants to pair images that signify either "gay" or "straight" with words that are positive (e.g. lovely, beautiful) or negative (e.g. agony, horrible). The program calculates the response times to assign a "D score" or relative latency score, as a measure of implicit associations. Project Implicit provided a unique IAT environment to collect anonymous IAT results from our study participants who were invited to complete the IAT in January 2016. We also asked survey questions on perception of the IAT.

RESULTS: A total of 110 participants (22 faculty and 88 residents, response rate 58.5%) completed the IAT. The average "D score" was 0.27 ± 0.42, which signifies a slight preference for straight people compared to gay people (see table for specific breakdown of D scores). A total of 31.4% of respondents felt that the use of the IAT increased their awareness of their own personal bias towards gay people while 41.2% were neutral and 27.5% disagreed.

CONCLUSIONS: A cohort of IM residents and faculty practicing in an urban setting were found to have a preference for straight people. This is consistent with IAT results from the general US population and of a national study of physicians, although our cohort's preference was only slight whereas in other populations the preference was stronger. Though it is unknown whether curricular content may change implicit bias, this study reinforces the need for additional efforts aimed at educating physicians about the care LGBT patients, so that despite the implicit bias against them, such patients may receive high quality, sensitive, and non-judgmental care.

Sample Distribution of IAT Score Categories

Implicit Association Descriptor	Percent (%) of Participants ($N = 110$)
strong automatic preference for straight people compared to gay people	15
moderate automatic preference for straight people compared to gay people	25
slight automatic preference for straight people compared to gay people	24
little to no automatic preference for straight people compared to gay people	20
slight automatic preference for gay people compared to straight people	8
moderate automatic preference for gay people compared to straight people	6
strong automatic preference for gay people compared to straight people	1

INTERNAL MEDICINE RESIDENTS' PERCEPTIONS OF ERROR REPORTING: A QUALITATIVE STUDY John Szymusiak[1, 1]; Thomas J. Walk[3]; Maggie K. Benson[1]; Megan Hamm[4]; Susan L. Zickmund[2]; Alda Maria Gonzaga[1]; Gregory M. Bump[1]. [1]University of Pittsburgh School of Medicine, Pittsburgh, PA; [2]University of Pittsburgh/VA Pittsburgh Healthcare System, Pittsburgh, PA; [3]VA Pittsburgh Healthcare System, Pittsburgh, PA; [4]University of Pittsburgh CHRC Data Center, Pittsburgh, PA. (Control ID #2698478)

BACKGROUND: Event reporting is important for recognizing types of errors occurring in a hospital and identifying ways to improve patient safety. Data show that a minority of reports are made by physicians, which has been targeted for improvement. Residents are front line providers, yet little is known about their reporting attitudes. Our study aims to identify drivers and barriers to reporting among internal medicine residents at two tertiary care, academic hospitals within our health-care system and to identify modifiable aspects of an institution's culture of safety that could encourage resident reporting. In so doing, we hope to improve patient care and promote career-long reporting in trainees.

METHODS: Four focus groups were conducted, two at each hospital of interest, with senior-level internal medicine residents as part of a larger study. Participants filled out a questionnaire with demographic information and assessing their reporting experience. They were then asked open-ended questions by a trained moderator based on a piloted focus group guide. All discussions were audio-recorded, de-identified, and transcribed verbatim. Using the "editing approach" to qualitative analysis a codebook was developed and applied independently by two trained coders.

RESULTS: The 4 focus groups varied in size from 7 to 11 participants, with a total of 35 participants. Thirty-three residents completed demographic data, 18 (55%) were PGY-3. Thirty participants (91%) rated their knowledge of how to report as fair, good, or excellent and 23 (70%) reported their likelihood of reporting an adverse event as $\geqq 50\%$. The barriers and drivers identified clustered into three categories; issues with the event itself, with the institution or its culture, and with the reporting system or process. Table 1 summarizes these themes.

CONCLUSIONS: Focus groups are useful to understand residents' attitudes about reporting. Interventions to encourage reporting can target each of the categories of drivers/barriers identified. These include showcasing system benefits of reporting others' errors, educating all members of the multidisciplinary team about the goals and process of event reporting, having reports go to neutral third party safety officers to protect anonymity, and making event reporting follow up part of existing resident conferences. Similar interventions

could prove effective at other academic institutions to improve resident engagement in patient safety.

Residents' Perceived Barriers and Drivers to Event Reporting

Domain	Barrier	Driver
Event Related Issues	Someone Else's Mistake	System Error
	"Human Error"	Harm or Potential to Harm
	Reported in Another Forum	Reckless Behavior
		Recurrent or Repeatable Event
Institutional & Cultural Issues	Differences in MD & RN Perspective	Potential for Improvement
	Blame-based System	Attending Encouragement
	"Waste of Time"/ Inefficacious	
	Culture of Low Expectations	
Reporting System/ Process Issues	Lack of Anonymity	Follow-up on Reports
	Difficult Reporting System	Visible Changes to System
	Lack of Transparency of Process & Consequences	
	Inappropriate Follow-up	
	Witnessed or Experienced Negative Consequences	

INTERNAL MEDICINE TRAINEE KNOWLEDGE, ATTITUDES, BEHAVIORS AND EXPERIENCES REGARDING PRE-EXPOSURE PROPHYLAXIS FOR HIV INFECTION

Christopher P. Terndrup[4]; Carl G. Streed[1]; Perry J. Tiberio[6]; Marissa A. Black[5]; John Davis[8]; Oni J. Blackstock[3]; E. J. Edelman[7]; Gail Berkenblit[2]. [1]Brigham & Women's Hospital, Boston, MA; [2]Johns Hopkins, Baltimore, MD; [3]Montefiore Medical Center/AECOM, New York, NY; [4]Oregon Health and Sciences University, Portland, OR; [5]University of Washington, Seattle, WA; [6]Yale New Haven Hospital, New Haven, CT; [7]Yale University School of Medicine, New Haven, CT; [8]Ohio State University, Columbus, OH. (Control ID #2707091)

BACKGROUND: Despite the proven effectiveness of pre-exposure prophylaxis ("PrEP") for HIV prevention with tenofovir-emtricitabine (Truvada), provider adoption remains low. Education and comfort with prescribing PrEP have been found to be significant barriers to prescription access. Given that adequately trained internists would provide a large pool of future PrEP prescribers, ensuring adequate training during residency is crucial to the implementation of PrEP as HIV prevention. We sought to understand current knowledge, attitudes, behaviors and experiences of Internal Medicine residents in using PrEP.

METHODS: We adapted the PCP PrEP survey, a prior survey of General Internists, and tailored it for trainees. Following a brief description of PrEP, we assessed self-reported knowledge of and prior training regarding PrEP, including side effects. Specific questions regarding residency training assessed comfort levels in prescribing PrEP. We evaluated resident attitudes towards PrEP in various contexts, and assessed their prior prescribing habits. All residents in five residency programs received recruitment emails via list serves for the online survey, sent by study coordinators at each site. Institutional review board exempt status from Johns Hopkins University School of Medicine was granted for this project prior to the release of the survey to the subjects, which was done between April and June of 2016.

RESULTS: We had a 35% response rate, with even distributions over 3 years of residency. While 96% of residents had heard of PrEP, only 25% endorsed prior training or education on PrEP. Only 19% rated their knowledge as very good or excellent, and 55% rated it as fair or poor. Only 11% had prescribed PrEP before, but 86% of those who had not indicated willingness to prescribe. Of all residents surveyed, 89% noted they would need more training before feeling comfortable doing so, and 88% identified lack of provider education as likely or extremely likely to be a barrier to prescribing. Lastly, 93% said that training during residency would be likely to facilitate their prescribing PrEP. 70% said that training all providers in the practice would be the most feasible way to implement PrEP in their primary clinics.

CONCLUSIONS: The majority of Internal Medicine residents reported a perceived need for more education before prescribing PrEP, yet only 25% had received prior training. In order to help combat the ongoing HIV epidemic, efforts to integrate PrEP education into residency training are needed.

INTERNISTS UNDERPERFORM IN PROVISION OF FIRST LINE CONTRACEPTION

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BACKGROUND: Long acting reversible contraceptives (LARCs), including intrauterine devices (IUD) and the contraceptive implant, are the most highly effective forms of birth control and are recommended as first line. However, LARC use remains low at only 7.2% of women aged 15–44. This is of importance to internists because the American College of Physicians considers contraception a "core competency" of women's health. One barrier to utilization of LARCs is a lack of primary care provider training. Although the data regarding internists is limited, a recent survey of primary care practices suggests that the majority of IUD insertions are performed by gynecologists and midwives. We aim to evaluate the variations that exist in the provision of LARCs according to provider type.

METHODS: Data from Truven Health MarketScan®, a national private insurance claims database, were used to examine LARC insertion rates among reproductive age women according to provider type. Study cohorts of women aged 13–45 were created for each calendar year between 2006 and 2014. Cohort size ranged from 3.88 million women (2006) to 7.32 million women (2012) per year. IUD and implant insertions were identified using ICD-9, CPT-4, and HCPCS codes. Provider type was identified using existing variables in the database. For claims coded as Medical Doctor, Osteopathic Medicine, MultiSpeciality Physician Group, Preventive Medicine, Pediatrician, Pediatric Specialist, Nurse Practitioner, and Physician Assistant, there was no way to further specify specialty. Therefore, we report the proportion of IUDs and implants inserted according to provider types of Internal Medicine, Family Practice, Obstetrics and Gynecology, and Midwife.

RESULTS: The rate of claims for IUD and implant insertions increased over time. For all study years, the proportion of IUDs inserted was lowest among internists (0.3–0.5%) and midwives (1.4–1.9%) and highest among family practice (5.0–6.0%) and gynecologists (76.2–83.9%). Similarly, the proportion of implants inserted was lowest among internists (stable between 0–0.5% with the exception of 2007 when it was 6.7%) and midwives (0–2.3%) and highest among family practice (increasing from 3.3% in 2008 to 9.3% in 2014 with the exception of 2007 when it was 20%) and gynecologists (72.8–77%).

CONCLUSIONS: Among reproductive age women, those who received first line contraception were far less likely to have had it inserted by an internist compared to by a family physician or gynecologist. This suggests that reproductive age women who are cared for by primary care internists may experience a disparity in accessing these standard of care contraceptive methods. The need to be referred to a specialist to obtain a LARC is an important barrier to use. Because LARCs are highly effective but underutilized, especially among women who see internists, our findings suggest that efforts to expand the training of primary care physicians in LARC provision is important in order to reduce barriers to access for women.

INTERPERSONAL VIOLENCE, POST-TRAUMATIC STRESS DISORDER, AND AGE-RELATED GENITOURINARY DYSFUNCTION IN WOMEN Carolyn J. Gibson[2]; Alison J. Huang[3]; Brigid McCaw[4]; Jun Shan[1]; Leslee Subak[3]; Stephen K. Van Den Eeden[1]. [1]Kaiser Permanente Northern California, Oakland, CA; [2]San Francisco VA Health Care System, San Francisco, CA; [3]University of California, San Francisco, San Francisco, CA; [4]Kaiser Permanente Division of Research, Oakland, CA. (Control ID #2706269)

BACKGROUND: Posttraumatic stress disorder (PTSD) and exposure to interpersonal violence are associated with genitourinary complaints among younger women, but little is known about the prevalence or impact of trauma experiences and sequelae among midlife and older women.

METHODS: We conducted the first study of the relationship of PTSD and interpersonal violence exposures to genitourinary dysfunction in midlife and older women. Data were drawn from the Reproductive Risks for Incontinence Study at Kaiser (RRISK), a prospective cohort of ethnically-diverse women aged 40 to 80 years enrolled in Kaiser Permanente Northern California, a large integrated health care system. PTSD symptoms, lifetime history of interpersonal violence exposures (physical or emotional intimate partner violence, sexual violence), and genitourinary symptoms (vaginal pain with sexual intercourse, vaginal irritation, and urinary incontinence) were assessed using standardized, structured-item questionnaire measures, including the Post-traumatic Stress Disorder Checklist-Civilian Version (PCL-C). Multivariable logistic regression models were used to predict genitourinary symptoms from PTSD and interpersonal violence exposures, adjusting for age, race/ethnicity, and body mass index.

RESULTS: In this sample of 2,016 community-dwelling women, (mean age 61 ± 10 years, 40% non-Latina White, 20% Latina White, 20% Black, and 20% Asian), 450 (22%) had clinically significant PTSD symptoms (PCL-C ≥30), 483 (24%) reported a history of physical or emotional violence, and 382 (19%) reported having experienced sexual violence. Thirteen percent reported vaginal pain with intercourse, 32% reported vaginal irritation, and 32% reported weekly or more frequent urinary incontinence. In multivariable analyses, women with clinically significant PTSD symptoms were more likely to report vaginal pain with intercourse (adjusted odds ratio [AOR] 2.12, 95% CI 1.55–2.89, $p < .001$), vaginal irritation (AOR 2.22, 95% CI 1.68–2.95, $p < .01$), and urinary incontinence (AOR 1.51, 95% CI 1.17–1.93, $p < .01$). Intimate partner violence was associated with vaginal pain with sexual intercourse (AOR 1.43, 95% CI 1.03–1.98, $p = .04$) and urinary incontinence (AOR 1.42, 95% CI 1.11–1.81, $p < .01$). Sexual violence was associated with vaginal pain with intercourse (AOR 1.46, 95% CI 1.03–2.09, $p = .04$) and vaginal irritation (AOR 1.44, 95% CI 1.05–1.98, $p = .02$).

CONCLUSIONS: Over 20% of midlife and older women in this ethnically-diverse community-based cohort reported clinically significant PTSD symptoms and exposure to interpersonal violence, which contributed to their risk of age-related symptomatic genitourinary dysfunction. These findings highlight the importance of systematic screening for PTSD and interpersonal violence among midlife and older women, and the need to determine best approaches for trauma-informed care in women across the aging spectrum.

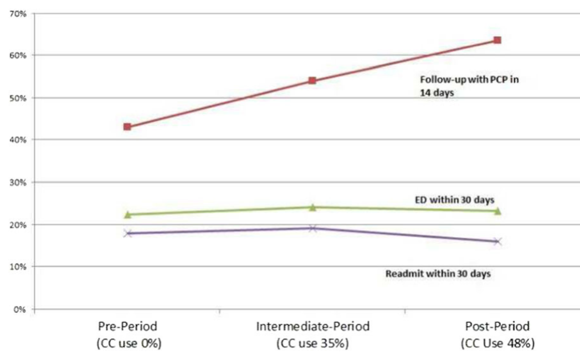
INTERVENTION TO IMPROVE POST-DISCHARGE PCP FOLLOW-UP WAS NOT ASSOCIATED WITH IMPROVEMENT IN READMISSION RATES Paawan Punjabi[1]; Lauren Doctoroff[1]; Anjala Tess[1]; Sarah O'Neil[1]; Ateev Mehrotra[2, 1]. [1]Beth Israel Deaconess Medical Center, Boston, MA; [2]Harvard Medical School, Boston, MA. (Control ID #2702499)

BACKGROUND: Driven by the Medicare Hospital Readmissions Reduction Program, hospitals are focusing significant resources to improve the transition from inpatient to outpatient care in an effort to decrease readmission rates. Some observational studies have found that patients who have early follow-up with their primary care provider (PCP) are less likely to have a readmission. Whether facilitating early follow-up with a PCP deters readmissions is unknown.

METHODS: To facilitate follow-up, the Beth Israel Deaconess Medical Center (BIDMC), an urban 651-bed tertiary care center, implemented a new system called Care Connection (CC) in October 2009. Through CC, inpatient physicians on the medicine and cardiology service can submit an electronic order to have a call center schedule the follow-up visit. This retrospective cohort study evaluated 4,225 hospitalizations on the medicine and cardiology service who were discharged home between September 2014 and September 2015 and had a BIDMC PCP. We compared rates of visits with a PCP within 14 days of discharge and hospital readmission within 30 days of discharge among those which CC was used controlling for age, diagnosis related group, and length of stay. In a sensitivity analysis, we conducted a difference-in-difference analysis comparing discharges from the medicine and cardiology service to those discharged from the neurology and vascular surgery service (where CC was not or minimally available). We compared this change before and after CC was available.

RESULTS: Among discharges from the medicine/cardiology service from September 2014–2015, 48.1% of physicians used Care Connection. Controlling for other factors, discharges with Care Connection were significantly more likely to follow-up with their primary care provider within 14 days (OR 6.65, CI (5.63-7.78), $p < .01$) but were not less likely to have a readmission (OR 0.90, CI 0.71-1.12, $p = 0.35$). These findings were echoed in the difference-in-difference sensitivity analysis, where there was a 7 percentage point greater increase in PCP follow-up among medicine/cardiology discharges but no greater decrease in readmissions.

CONCLUSIONS: While this automated scheduling intervention resulted in significantly increased rates of timely PCP follow-up, it did not reduce the rates of 30-day readmissions. Timely PCP follow-up alone may not be sufficient to deter readmissions.



CONCLUSIONS: When compared with previous research from the United States and Canada, this study suggests that readmission risk may be less sensitive to sociodemographic factors within Canadian contexts. Future research should investigate the degree to which the effects of sociodemographic factors are moderated by contextual factors of health systems such as universal health insurance coverage, and the cultural sensitivity/competence of care providers and hospital services. Attentiveness to patients' sociodemographic circumstances is an important component of patient-centered care. However, to prevent readmissions, efforts to improve standardized hospital-to-home care transition processes and follow-up care in the community should remain paramount.

INVESTIGATING THE SOCIAL DETERMINANTS OF 30-DAY UNPLANNED HOSPITAL READMISSION AMONG GIM PATIENTS IN TORONTO, CANADA. Robert W. Smith[2]; Kerry Kuluski[5, 6]; Andrew Costa[8]; Samir Sinha[1, 5]; Rick Glazier[7, 5]; Alan Forster[3, 4]; Lianne Jeffs[5, 7]. [1]Mount Sinai Hospital, Toronto, ON, Canada; [2]University of Oxford, Oxford, United Kingdom; [3]University of Ottawa, Ottawa, ON, Canada; [4]Ottawa Hospital, Ottawa, ON, Canada; [5]University of Toronto, Toronto, ON, Canada; [6]Sinai Health System, Toronto, ON, Canada; [7]St. Michael's Hospital, Toronto, ON, Canada; [8]McMaster University, Hamilton, ON, Canada. (Control ID #2671836)

BACKGROUND: Hospital readmissions remain a common and costly health system performance issue. The causal mechanisms leading to readmission are complex and not well understood—particularly the role of sociodemographic factors. The purpose of this study was to examine whether patient-level sociodemographic factors are independently associated with 30-day readmission among GIM patients at an urban teaching hospital in Toronto, Canada. This study is among the first in Canada to examine detailed patient-level sociodemographic factors in relation to hospital readmission among medical patients.

METHODS: 2058 GIM patients participated in a detailed survey (primarily in English) of sociodemographic information between the years 2012 and 2014. Survey data was linked to hospital administrative data from the Canadian Institute of Health Information (CIHI). Study inclusion and readmission ascertainment criteria were based on CIHI's 30-day medical readmission rate measure. After exclusions, 1427 adult, non-palliative patients discharged home were included in this study. Guided by a retrospective cohort design, multivariable Cox regression analyses were used to examine relationships between 13 sociodemographic variables and unplanned all-cause readmission over a 30-day timeframe. Indicators of illness-level that were controlled for include Hospital Admission Risk Prediction (HARP) index score (constituted by age, case mix group, discharge location, frequency of hospital use 6 months preceding the index admission), Charlson score, and inpatient length of stay.

RESULTS: Approximately 14.4% ($n = 205$) of patients experienced an unplanned all-cause readmission within 30 days. Patient-level sociodemographic factors did not exhibit significant associations with readmission. HARP scores from nine to 29 (compared to 0–2), were associated with 66% greater hazard of readmission (*adjusted HR* = 1.66, *95 % CI*: 1.08-2.54, $p = 0.02$). When HARP variables were analyzed as separate covariates, having experienced one previous admission (*adjusted HR* = 1.78, *95 % CI*: 1.22-2.59, $p < 0.01$) and at least four emergency department visits (*adjusted HR* = 2.33, *95 % CI*: 1.46-4.43, $p < 0.01$) were associated with increased hazard of readmission.

IS BIGGER DATA BETTER? PREDICTING READMISSIONS IN ACUTE MYOCARDIAL INFARCTION ON ADMISSION VERSUS DISCHARGE WITH ELECTRONIC HEALTH RECORD DATA Oanh K. Nguyen[1, 1]; Anil N. Makam[1, 1]; Christopher Clark[2]; Song Zhang[1]; Sandeep R. Das[1]; Ethan Halm[1, 1]. [1]UT Southwestern Medical Center, Dallas, TX; [2]Parkland Health & Hospital System, Dallas, TX. (Control ID #2697988)

BACKGROUND: Readmissions after hospitalization for acute myocardial infarction (AMI) are common, but the few available risk prediction models have poor predictive ability. We sought to assess whether an AMI-specific electronic health record (EHR) readmission risk prediction model derived and validated from data through the entire hospital course ('full stay' model) outperforms a model using data available only from the first day of hospitalization ('first day' model).

METHODS: EHR data from AMI readmissions from 6 diverse hospitals in north Texas from 2009–2010 were used to derive a model predicting all-cause non-elective 30-day readmissions which was then validated using five-fold cross-validation.

RESULTS: Of 826 consecutive index AMI admissions, 13% were followed by a 30-day readmission. History of diabetes (AOR 2.41, 95% CI 1.37–4.24), hypotension (SBP <100 mmHg) on admission (AOR 2.18, 95% CI 1.68–2.82), elevated creatinine (≥2 mg/dL) on admission (AOR 2.56, 95% CI 2.52–6.08), elevated BNP on admission (AOR 6.36, 95% CI 1.65–24.47) and lack of PCI within 24 hours of admission (AOR 1.31, 95% CI 1.02–1.69) were significant predictors of readmission. Our 'first-day' AMI readmissions model based on these predictors had good discrimination (Table). Adding three other variables from the hospital course - use of intravenous diuretics (AOR 1.58, 95% CI 1.07–2.31), anemia (hematocrit ≤ 33%) on discharge (AOR 2.04, 95% CI 1.20–3.46), and discharge to post-acute care (AOR 1.50, 95% CI 0.90–2.50) - improved discrimination of the 'full stay' AMI model but only modestly improved net reclassification and calibration.

CONCLUSIONS: A 'full-stay' AMI-specific EHR readmission model modestly outperformed a 'first-day' EHR model, a multi-condition EHR model, and the CMS AMI model. Surprisingly, incorporating more hospitalization data improved discrimination of the full-stay AMI model but did *not* meaningfully improve reclassification compared to the first-day model. Readmissions in AMI may be accurately predicted on the first day of hospitalization; incorporating more data from the hospital course did not meaningfully improve risk prediction.

Table. Model Performance and Comparison of AMI Readmission Models Versus Other Models

Model	C-statistic	p-value*	NRI† (95% CI)	Average Predicted Risk, %	
				Lowest Decile	Highest Decile
Full-stay AMI	0.78 (0.74-0.83)‡	[Ref]	[Reference]	1.6	43.9
First-day AMI	0.75 (0.70-0.80)§	0.001	-0.03 (-0.10-0.04)	2.1	41.1
Full-stay multi-condition	0.73 (0.68-0.78)	0.02	-0.12 (-0.23 to -0.01)	5.7	29.6
CMS AMI	0.74 (0.69-0.79)	0.02	-0.04 (-0.14-0.05)	7.2	24.3

Abbreviations: AMI, acute myocardial infarction; CI, confidence interval; EHR, electronic health record; NRI, net reclassification index

* p-values shown are for each model compared to the respective reference model

† The categorical NRI compares reclassification between the highest top risk quintile and the lowest four risk quintiles

‡ Optimism-corrected C-statistic 0.75, (95% CI 0.74-0.76)

§ Optimism-corrected C-statistic 0.73 (95% CI 0.71-0.74)

IS IT REALLY COST-EFFECTIVE TO RISK-ASSESS ALL HOSPITALIZED PATIENTS FOR PRESSURE INJURIES EVERY NURSING-SHIFT?

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BACKGROUND: Hospital-acquired pressure injuries are localized skin injuries that cause significant morbidity and mortality, and are costly to treat. Following the International Guidelines for pressure injury prevention reduce rates over Standard Care, but require risk-assessment among all patients each nursing-shift using the Braden Scale. The relative value of only continually risk-assessing at-risk patients - about 7% of hospitalizations - is uncertain. Our objective was to analyze the cost-effectiveness of nursing resources to risk-assess all patients or select risk-groups identified by machine learning compared to Standard Care.

METHODS: We obtained patient-level data on 43,787 encounters from a university hospital EHR between 2011–2014, including daily Braden scores. Longitudinal arrays of adult inpatients with ≥10 Braden scores were classified into 5 risk-groups: very high-risk [6–9]; high-risk [10–11]; moderate-risk [12–14]; at-risk [15–18]; low-risk [19–23]. We constructed a 10-state Markov model using supervised machine learning to calculate age-adjusted transition probabilities between risk-groups, pressure injury states and discharge states. Costs (2015 $US) and lifetime quality-adjusted life years (QALYs) related to pressure injury outcomes were added to the Markov model to compare the cost-utility of Standard Care, continual risk-assessment in all risk-groups or only follow-up risk-assessment in higher risk-groups. Probabilistic sensitivity analysis (PSA) tested model uncertainty at $100,000/QALY willingness-to-pay from the U.S. societal perspective.

RESULTS: Risk-assessing all patients every nursing-shift was cost-effective ($5,193, 15.43 QALYs) compared to Standard Care ($5,139, 14.00 QALYs) at an increment cost-effectiveness ratio of $37/QALY. Follow-up risk-assessment only among patients with Braden scores <19 dominated Standard Care ($1,745, 14.03 QALYs) in 50.89% of PSA simulations with small QALY gains. Follow-up among patients with lower Braden scores decreased costs at fewer QALYs.

CONCLUSIONS: Our analysis using real-world data maintains that follow-up risk-assessment among all patients cost-effectively prevents pressure injuries. Hospitals should encourage nurses' adherence to International Guidelines to benefit patients instead of cost-cutting.

IS UTILIZATION AND OUT-OF-POCKET SPENDING FOR HOSPITAL OUTPATIENT CARE, HIGHER FOR LOW-INCOME MEDICARE BENEFICIARIES?

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BACKGROUND: Hospital outpatient status, or observation status, is a Medicare billing designation for hospitalized beneficiaries whose anticipated length of stay is short, spanning fewer than 2-Midnights. Beneficiaries admitted under hospital outpatient status are subject to cost-sharing for their hospital stay under Medicare Part B, with no out-of-pocket spending limit. Low-income status has been associated with increased hospital utilization, and there is concern that such beneficiaries may be at risk for high utilization and uncontrolled out-of-pocket costs related to hospital outpatient care. The objective of this study was to assess whether low-income status is associated with high utilization and high financial liability for hospital outpatient care.

METHODS: This is a retrospective observational study of the 5% Part B Limited Data Set for Medicare Claims and county-level income and poverty data from the US Census Bureau, both from 2013. Beneficiaries were included if they were admitted under hospital outpatient status and had Medicare Part A and Part B coverage for the full calendar year. Patients were categorized into income quartiles based on the proportion of their county of residence living under the Federal poverty level. Beneficiaries in the tails of the poverty distribution were also examined to evaluate outcomes in the poorest and wealthiest counties. The primary outcomes were 1) high utilization 2) high financial liability, and 3) cost burden related to hospital outpatient care. We defined high utilization as 3 or more hospital outpatient stays in 12 months, high financial liability as an annual out-of-pocket cost greater than the 2013 Part A inpatient deductible ($1184) and cost burden as the ratio of out-of-pocket costs to estimated annual income. Logistic regression was used to assess whether poverty level was independently associated with high utilization and high financial liability.

RESULTS: Of the 56,454,361 claims, there were 132,539 hospital outpatient stays representing 67,641 unique Medicare beneficiaries. After adjustment for covariates, beneficiaries from the poorest counties were almost 2.5 times more likely to be high utilizers of hospital outpatient care compared to those in the wealthiest counties (AOR = 2.43, 95% CI: 1.88–3.14). Patients from the poorest quartile were approximately 50% more likely to sustain higher financial liability for observation care compared to those in wealthiest quartile (AOR = 1.54 95% CI 1.38–1.72). The cost burden for hospital outpatient care was 1.51% of estimated annual income among beneficiaries in the poorest counties compared to 0.58% from the wealthiest ($p < 0.0001$).

CONCLUSIONS: The poorest Medicare beneficiaries appear to utilize more hospital outpatient care and sustain higher out-of-pocket cost burden than their wealthiest counterparts. An out-of-pocket spending limit could help protect vulnerable beneficiaries from excessive costs.

ISCHEMIC ST-SEGMENT CHANGES ON ELECTROCARDIOGRAM IN ACUTE MYOCARDIAL INFARCTION- STILL COMMON?

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BACKGROUND: Prior studies report ischemic ST-segment changes on electrocardiogram (ECG) in 40–60% of patients with acute myocardial infarction (AMI) with important diagnostic and prognostic implications. Additionally, 1 to 6% of AMI patients had normal ECG on prior studies. These findings may have changed on the era of more sensitive cardiac troponin (cTn) assays.

METHODS: In a single-center we prospectively studied 569 patients who were evaluated for possible AMI in the emergency department from May 2013 to April 2015. Diagnosis of AMI was adjudicated by 2 independent physicians in accordance with the universal definition of AMI using all clinical information and required cTnI > 0.04 ng/ml (Siemens Ultra-cTnI). In situations where there was disagreement between the adjudicators, a third Cardiology adjudicator reviewed the case for final determination. Patients with ECG findings that led to immediate reperfusion therapy were excluded.

RESULTS: There were 45 (8%) patients with a diagnosis of AMI. Among AMI patients, the most common ECG findings were T-wave inversion 13 (29%) and normal 13 (29%) while 6 (13%) ECGs demonstrated ST-Depression ≥ 1 mm. Comparing patients with and without ST-segment elevation or depression, there was non-significantly higher cTnI levels (13.2 ± 28.3 vs. 5.9 ± 15.6 ng/ml; $p = 0.355$).

CONCLUSIONS: ST-segment changes on ECG are becoming less common in AMI. This may relate to smaller AMIs identified by more sensitive cTn assays which should be verified in larger trials.

Table 1: ECG Findings in Patients with Acute Myocardial Infarction

ECG Findings	$n = 45$	Number of Percutaneous Coronary Interventions	Number of Coronary Artery Bypass Grafting
Left Bundle Branch Block	1 (2%)	0	0
Left Ventricular Hypertrophy	10 (22%)	3	0
ST-segment Depression ≥ 1 mm	6 (13%)	2	1
ST-segment Depression 0.5-1 mm	0	0	0
ST-segment Elevation ≥ 1 mm	2 (4%)	1	0
ST-segment Elevation 0.5-1 mm	0	0	0
T-wave inversion	13 (29%)	1	0
Normal	13 (29%)	8	0

IT TAKES YOUR WHOLE LIFE OVER - PCP PERSPECTIVES ON ELECTRONIC INBASKET NOTIFICATIONS Sarah L. Cutrona[4, 2]; Laura Burns[1]; Hassan Fouayzi[1]; Rajani Sadasivam[2]; Devi Sundaresan[3]; Jerry H. Gurwitz[1]; Kathleen M. Mazor[1]; Lawrence Garber[3]; Terry Field[1]. [1]University of Massachusetts Medical School and Meyers Primary Care Institute, Worcester, MA; [2]University of Massachusetts Medical School, Worcester, MA; [3]Reliant Medical Group, Worcester, MA; [4]Edith Nourse Rogers Memorial Veterans Hospital, Bedford, MA. (Control ID #2705814)

BACKGROUND: Electronic Health Record (EHR) inbasket notifications allow care teams to communicate important patient information, but high volumes of notifications may contribute to physician burnout and may limit the safety and effectiveness of this communication mode.

METHODS: We used a mixed-methods approach to assess EHR inbasket management. We analyzed data for 75 primary care providers (PCPs) across a multisite healthcare system. PCPs were chosen based on their receipt of one or more automated notifications (alerts) sent to inbaskets as part of a previous randomized controlled trial. Alerts highlighted time-sensitive medication concerns for older patients post-hospital discharge (2010–2011) and were delivered at 10 am on day 3 post-discharge. Less than 2/3 were opened by PCPs within 48 hours. In our follow-up study, we sought to characterize the number of other notifications competing for attention in the PCPs inbaskets and to understand PCP perceptions of inbasket management. We used audit and access log EHR data to calculate the number of inbasket notifications present at the time of alert delivery and the number of notifications received by the PCP in the prior 7 days. We also tracked the time of day PCPs were opening alerts. To complement this work, we conducted one focus group ($n = 5$ PCPs) addressing EHR inbasket workflow. Audio recordings were transcribed and the transcript was reviewed by two reviewers for major themes.

RESULTS: The median number of notifications in PCP inbaskets at the time of alert delivery was 68.7 (IQR 41.3, 156.3). The median number of notifications arriving in PCP InBaskets during the 7 days prior to alert delivery was 379.8, IQR (295.0, 492.0). Tracking data followed for three days post-alert delivery showed PCP opening of alerts occurring from 5 am through midnight. Themes emerging from the focus group included high numbers of notifications, duplication/redundancy, anxiety associated with risk of delayed or missed review of critical information, and use of personal time daily (including on vacations) to review inbaskets. Inbasket overload was perceived as contributing to burnout; use of personal time to manage this overload was seen as impacting perceptions of students and family (participants described watching their own and other physicians' children opting not to pursue careers in medicine due to the lifestyle). Suggested methods for improvement included use of staff to help triage inbasket notifications, protocols to minimize back-and-forth messaging and system-wide interventions to decrease redundant and inactionable notifications.

CONCLUSIONS: EHR audit and access log data supports PCP reports of managing high volumes of inbasket notifications and of regular use of after-hours time including late night and early morning. Inbasket overload is perceived by some PCPs as a risk to patient safety, a factor contributing to burnout, and a potential influence on our future primary care workforce.

IT'S THE DIFFERENCE BETWEEN LIFE AND DEATH: A QUALITATIVE STUDY ON THE VIEWS OF TRAINED MEDICAL INTERPRETERS ON THEIR ROLE IN PATIENT SAFETY EFFORTS. Margaret Wu[3]; Shail Rawal[1, 2]. [1]University of Toronto, Toronto, ON, Canada; [2]University Health Network, Toronto, ON, Canada; [3]University of Toronto Medical School, Toronto, ON, Canada. (Control ID #2702202)

BACKGROUND: Patients with limited English proficiency (LEP) experience poorer quality care and more adverse events in hospital when compared to their English-proficient counterparts. The use of trained medical interpreters improves the quality of care delivered to patients with LEP. As a result, there is interest in defining the role of medical interpreters in efforts to improve patient safety. In developing such an understanding, it is important to consider the perspectives of medical interpreters. In this qualitative study, we sought to explore the views of trained medical interpreters on their role in patient safety efforts.

METHODS: We conducted a qualitative analysis of in-depth, semi-structured interviews with 15 trained medical interpreters affiliated with the Healthcare Interpretation Network in Toronto, Ontario. Interviews were audiotaped and transcribed verbatim. Participants' views on their role in patient safety efforts were independently analyzed by the two authors and organized into themes. Data analysis was informed by grounded theory and occurred concurrently with data collection. Interviews were conducted until theoretical saturation was reached.

RESULTS: Trained medical interpreters described being uniquely situated to prevent adverse events involving patients with LEP by: 1) facilitating robust communication between patient and provider, 2) enhancing patient comprehension, 3) speaking up when patient safety issues are identified, and 4) giving voice to patient concerns. Medical interpreters highlighted several important challenges to fulfilling these functions including, the hierarchical structure of healthcare teams, the ill-defined role of interpreters within such teams, and the ethical imperative for interpreters to remain impartial when mediating communication between patients and providers. These challenges affected the ability of interpreters' to play a more active role in improving safety for LEP patients.
CONCLUSIONS: Our study found that trained medical interpreters view their work as integral to the delivery of safe and high quality healthcare to patients with LEP. Medical interpreters and healthcare providers require a mutual understanding of their roles in order to effectively engage in patient safety efforts. In addition, medical interpreters need to be thoughtfully integrated into the healthcare team to leverage their unique skillset in improving safety for patients with LEP. Medical interpreters must also be empowered by healthcare teams to speak up when they identify patient safety concerns.

IT'S COMPLICATED: PATIENT AND PHYSICIAN ATTITUDES TOWARDS LUNG CANCER SCREENING IMPLEMENTATION

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BACKGROUND: Based on the results of the National Lung Screening Trial (NLST), national guidelines now recommend lung cancer screening with low dose computer tomography (LDCT) in high-risk individuals after a process of shared decision-making. However, the balance of risks and benefits is complex, and screening uptake has been mixed. Our aim was to explore patient and physician attitudes towards lung cancer screening and identify challenges and facilitators for screening interventions.
METHODS: We conducted in-depth, semi-structured interviews with primary care physicians (PCPs) and patients from two academic primary care clinics, including a safety net clinic, from August 2014-May 2016. We recruited 28 patients who met NSLT eligibility criteria using a combination of PCP referral, waiting room signs, and chart review. 12 PCPs were recruited via email. We assessed patient and physician attitudes regarding lung cancer screening, barriers and facilitators to screening, and preferred methods of communication. Two independent reviewers analyzed interview transcripts to identify emergent themes using a hybrid deductive-inductive process.
RESULTS: Of the 28 patients, 11 had received LDCT and 17 had not. 36% of participants were non-white, 66% were current smokers, and 74% were male. Over 20% of the participants had completed high school or less, 32% were on disability, and 21% were employed. Of the 12 PCPs, a majority were faculty (92%), female (67%), and white (50%). Most patients reported discussing smoking cessation with physicians but less consistently understood associations between smoking and lung cancer or screening. Among those who received LDCT, patients reported brief discussions with their physicians, limited shared decision-making, and a focus on benefits of screening rather than risks. Most patients were not deterred by concerns about radiation and false positives, but did worry about transportation, cost, navigation, and potential treatment if cancer were detected. Physicians were generally aware of lung cancer screening guidelines but inconsistent in their application, citing concerns about screening risks (false positives, testing frequency, radiation) complexity of decision-making and lack of systems for testing and follow-up. Both groups favored screening interventions that identified individual risks and benefits coupled with shared decision-making conversations between patients and providers. Additionally, physicians desired systems-level interventions including reminders, health coaching, and increases in capacity for screening and follow-up.
CONCLUSIONS: Both patients and physicians value shared decision-making about lung cancer screening but report different types of concerns and variable practices for screening and communication. As lung cancer screening is scaled up, this information can inform multi-faceted interventions on the patient, physician, and system level to identify high-risk patients, promote shared decision-making and facilitate structured follow-up.

IT'S NOT YOU, IT'S ME: PATIENT FLOW AND PERCEIVED SATISFACTION IN ACADEMIC PRIMARY CARE CLINICS

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BACKGROUND: Patient satisfaction is a commonly used metric of clinic performance. Prior studies have shown that patient satisfaction scores are directly associated with time-with-provider and inversely correlated to wait time. We therefore sought to explore patient-reported and provider-perceived satisfaction with respect to wait times and identify bottlenecks to patient flow in our academic clinics.
METHODS: We distributed anonymous surveys to patients at two primary care clinical sites affiliated with our academic center over the course of two weeks, asking patients to 1) rate their satisfaction with wait times on a five-point scale from "very dissatisfied" to "very satisfied" and 2) record the lengths of various steps of their appointment. In parallel, we circulated an anonymous online survey to 158 physicians and clinical support staff in the same two clinics to 1) measure perceived patient satisfaction regarding wait times on the same five-point scale and 2) qualitatively solicit perceived bottlenecks to patient flow. We generated a coding schema for the provider responses a posteriori.
RESULTS: We received 40 patient and 61 (39% response) staff surveys. Thirty-one (76%) patients reported being "satisfied" or "very satisfied", whereas only 10 (19%) staff perceived patients to be "satisfied" or "very satisfied". On average, patients wait 27.3 min from time of arrival to seeing their physician (SD = 19.3 mins). Though appointments are scheduled for 20 mins, the average time-with-provider extended to 30.4 mins (SD = 12.7 mins). We found no correlation between wait time (Rsq = 0.07) nor time-with-provider (Rsq = 0.04) and patient satisfaction. Fifty-two clinic staff (85%) reported perceived bottlenecks to patient flow, the three most common being "late provider" (90%), "late patient" (23%), and "scheduling" (16%).
CONCLUSIONS: Our data reveal a discrepancy between patient-reported and provider-perceived satisfaction regarding wait times in our primary care clinics. We hypothesize that patient-reported satisfaction reflects an acceptance of unfavorable wait times, as well as appreciation for the time they are able to spend with their provider, whereas provider perceptions of patient experience serve as proxy for provider discontent regarding clinic inefficiencies. Because provider dissatisfaction is a primary contributor to burnout, our ongoing work seeks to identify and address structural factors disrupting patient flow, including optimizing scheduling and maximizing clinic space to allow for flexibility in situations of provider

and/or patient tardiness. These efforts will not only enhance patient satisfaction and overall experience even more, but also remedy provider burnout by addressing policies and procedures affecting both patient and provider satisfaction.

JOY IN PRACTICE AS AN ENABLING STRATEGY FOR QUALITY IMPROVEMENT IN CARDIOVASCULAR CARE

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BACKGROUND: As part of the AHRQ Evidence Now initiative, the Heart of Virginia Healthcare collaborative (HVH) has designed a practice intervention initiative to improve performance on cardiovascular risk factors by 250 small to medium sized primary care practices in Virginia. Unlike most QI initiatives, HVH recognizes that widespread levels of stress and burnout amongst primary care clinicians and staff can be an obstacle to practice change for quality improvement. We designed our intervention to address those issues to help practices regain adaptive reserve as preamble to QI efforts.

METHODS: We brought practice representatives together for a "kickoff" meeting focused on sharing practical strategies for creating a positive practice environment by reducing waste, improving efficiency, and creating a supportive practice culture. They were shown how to use these gains to implement quality improvement activities such as pre-visit planning, collaborative care between clinicians and staff, and team documentation. Additional elements included meetings between practices and assigned coaches, a session on the evidence for the ABCS guidelines presented by a member of the USPSTF, and a closing session on strategies to improve personal and practice resilience.

RESULTS: Presenter ratings were consistently high [4.7 out of 5] and more importantly participants' self-rated confidence in their ability to a) Identify measurements of the ABCS of heart health for their patient populations based on recommended standards, b) Apply concepts to optimize clinical coding for the ABCS of heart health based on recommended standards, c) Identify and integrate key workflows in the primary care office or clinic based on exemplary practice models, d) Use concepts of exemplary practice research to optimize teamwork by building personal resilience and creating culture by design, and e) Define strategies for creating "joy in practice" based on exemplary practice research showed dramatic improvements when comparing pre- and post-meeting ratings [2.73 to 4.25, $p < .001$]. Finally, our practice coaches reported that practices that came to the kickoff meetings were the most engaged during the on-site portion of our practice support strategy.

CONCLUSIONS: Our experience suggests that the decision to first address factors leading to practice stress and clinician burnout created a readiness for change and quality improvement that might not have otherwise been achieved. Our ongoing practice coaching experience reinforces the importance of burnout and stress among provider teams as a key element influencing both motivation and actual ability to make meaningful and sustained changes. A consistent mindful focus on these elements by coaches, faculty and the practice teams themselves creates new opportunities, improved buy-in, and an enhanced "value proposition" in efforts to improve practice engagement.

KEEPING THE PROBLEM LIST TIDY: A PILOT STUDY OF OWNERSHIP AND CLUTTER IN AN ACADEMIC PRIMARY CARE CLINIC EMR.

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BACKGROUND: Avoiding disorganized and cluttered EMR documentation is an increasingly important factor in decreasing cognitive burden, improving clinician sanity, and promoting patient safety. Lack of ownership of the list, variation in diagnostic language, and coding/billing pressures contribute to undermining the value of this communication tool. In an effort to establish the value of the problem list, we sought to examine problem list characteristics and identify dysfunctional practices in problem list management

METHODS: We performed a one-week audit of outpatient EMR problem lists at our academic-affiliated primary care clinic, now 4 years into EPIC (TM) implementation. A random sample of patients with return continuity visits were chosen to systematically examine problem lists. In addition to characterizing the number of problems, list contributors (PCP versus other) and the proportion of problems entered by the PCP, documented problems were classified as true diagnoses, or "problematic" problems (symptoms without diagnosis, self-limited syndromes, administrative labels, past medical history items, family/social history items, duplicate entries).

RESULTS: Of the 194 return visits during the one-week audit period in November 2017, 87 randomly chosen visits were to 25 clinicians (11 senior clinicians, 14 resident physicians), and the average patient age was 58.8 (+12.7) years. The average number of problems documented on the problem list was 11.5 (+27.1, range 3–40), and patients aged >65 differed little from those <65 in the number of problems t (14.2 vs 11.2, $p = .10$). The designated PCP contributed on average 4.6 (+5.4) of the problems. The total number of problem list contributors averaged 3.9 (+2.6). On average, 89% (78/87) of charts reflected at last one "problematic" problem. Symptoms without a specific diagnosis represented 2.2 (+2.6) of problems, and undifferentiated pain symptoms 1.1(+1.8) of problems. Self-limited health care problems remained on the problem list in 29.9% (26/87) of charts. Items of family history/social history and past medical history were present in 28.8% (25/87), and 40.3% (35/87), respectively. Duplicate problems and administrative diagnoses were identified in 43.6% (38/87) and 18.9% (16/87) of problem lists, respectively. Problem lists were only slightly longer for senior clinicians than for resident clinicians (12.5 + 7.6 versus 10 + 5.8) and reflected no more often problematic problem lists.

CONCLUSIONS: EMR problem lists at this academic primary care clinic with a mature EMR implementation are lengthy and cluttered. Lack of ownership of the problem list is apparent, and inappropriate and irrelevant problems are prevalent. Senior clinicians are not demonstrably better than resident physicians at less cluttered, more concise problem lists. With external pressures and inadequate maintenance undermining the value of the problem list, future studies should examine the specific value of the list for clinicians and develop better guidance for physicians-in-training.

KEEPING UP WITH SOCIAL MEDIA

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BACKGROUND: Social media is 2nd nature in today's generation and is available for all healthcare professionals and patients. It has become a platform for networking and education, from public health programs to patient care and health care tips. There is also a risk of breaking legal and ethical grounds with health care professionals communicating with patients through social media. The average user checks their phone nearer to 150 times per day with an

average, 23 times a day for messaging, 22 times for voice calls and 18 times to get the time. This proves that social media plays a large role in the day to day lives of clinicians.

METHODS: A 33 question written survey was presented to 3rd year and 4th year medical students, Medical Residents, and Registered Nurses at 3 major hospitals in the NYC area. The survey was completed over a one-week period and the data was then analyzed. This study questions queried how medical residents, future physicians and healthcare professionals feel about using social media as a platform to engage with patients.

RESULTS: Surveys were collected from 193 participants (113 MS3, 42 Medical Residents, 28 MS4, 7 Nurses). Most were ages 25–29 (55.2%), female (54.2%), Asian (44.8%), and US IMG (59.6%). Most participants believe that social media has affected medicine in a positive way (62.2%). Nearly four in five participants who believed social media had a positive impact (80.3%) use social media as a learning tool for medicine in their daily life and majority (88%) of them use it to stay up to date with current medical information (eg, events, journals, guidelines, etc.). One in six of the same participants (16.2%) feel it is professional to communicate or connect with patients through social media; and nearly half of them (42.1%) use e-mail as the platform to communicate with their patients. The main concern regarding using social media platforms to interact with patients online (77.8%) is due to concern about privacy, followed by (48.1%) due to concern about liability. Majority of those (77.8%) would post valuable medical information (i.e. health tips, articles, resources, links to studies) on social media to be accessible for patient's health and care.

CONCLUSIONS: Healthcare professionals have different views on using social media as a platform to engage with their patients. Despite the majority agreeing that the popularity of social media in today's generation has positively impacted medicine, a large amount are still hesitant to use it to communicate with their patients due to concerns of privacy and liability. However, majority would still use social media as learning tool, staying up to date with medicine and posting valuable information for their patients.

KNOWLEDGE THAT LIFESTYLE BEHAVIORS PREVENT CANCER AND BEHAVIORAL ADOPTION

Jaya Aysola; Hairong Huo; Marilyn M. Schapira. University of Pennsylvania, Philadelphia, PA. (Control ID #2707453)

BACKGROUND: Lifestyle behaviors contribute to the majority of cancer diagnoses, yet we lack sufficient understanding if knowledge of this fact motivates behavioral change. The objective of this study is to examine if awareness that lifestyle behaviors reduces cancer risk is associated with a higher likelihood of adopting those behaviors.

METHODS: We analyzed data on a nationally representative sample of US adults without a prior diagnosis of cancer ($n = 3502$) from the 2015 Health Information National Trends Survey (HINTS). Our primary predictor was the response to a 4-point Likert scaled question, "how much do you think health behaviors like diet, exercise, and smoking, determine whether or not a person will develop cancer (a lot, somewhat, a little, not at all). Linear and logistic regression models estimated associations between our primary predictor and self-reported behavioral outcomes related to diet, exercise, sedentary activity, obesity, and smoking. In multivariable regression models, we adjusted for age, gender, race/ethnicity, household income, education level, employment, and talking to friends about health (yes, no).

RESULTS: About 47% ($n = 1648$) of the study population reported that health behaviors such as diet, exercise, and smoking had "a lot" and about 34% ($n = 1187$) reported it had "somewhat" to do with whether a person developed cancer. While about 19% ($n = 667$) reported that it had very little or nothing to do with whether a person develops cancer or not. Significant predictors of reporting that lifestyle behaviors related to cancer risk included race/ethnicity and educational level. There were no significant associations detected between knowledge that lifestyle behaviors related to cancer risk and exercise and sedentary behaviors (weekly exercise time, daily TV watching), obesity (BMI), and current smoking status. However, knowledge that lifestyle behaviors had a lot to do with cancer risk was significantly associated with increased use of menu calorie information and vegetable consumption in both unadjusted and adjusted analyses. For example, individuals that reported that lifestyle behaviors had little to do with cancer were significantly less likely to consume the daily recommended amount of vegetables [Adjusted Odds Ratio (95% Confidence Interval): 0.5 (0.4, 0.8)].

CONCLUSIONS: Our findings suggest that increased awareness that lifestyle behaviors relate to cancer risk is associated with a greater adoption of behaviors related to diet alone and highlights an opportunity for health care providers to discuss dietary modifications in the context of cancer prevention.

LEARNER EXPERIENCES WITHIN A NOVEL INTERPROFESSIONAL PRACTICE MODEL

Temple Ratcliffe[1]; Ann Ding[1]; Lauren S. Penney[2]; Erika Bowen[1]; Sean E. Garcia[1]; Christopher Moreland[1]; Kanapa Kornsawad[1]; Luci Leykum[2]. [1]Medicine, UTHSCSA, San Antonio, TX; [2]STVHCS/UTHSCSA, San Antonio, TX. (Control ID #2704083)

BACKGROUND: Poor communication is a well-documented issue with hospital care, impacting diverse outcomes from errors to poor care transitions. Numerous barriers exist to effective communication, including professional silo-ing and lack of patient engagement. Collaborative Care (CC) is a novel interprofessional practice model where patients, families, and the team of interprofessional providers partner to deliver high-quality care. Key CC elements include novel interprofessional rounding and daily team reflections. Little is known about learners' experiences on these teams in teaching hospitals. We report on their experiences on our CC team.

METHODS: Semi-structured interviews were conducted with learners ($n = 16$) and attendings ($n = 2$) at the end of their rotations on the CC team. Interview transcripts were first deductively coded using frameworks informed by complexity science and learner constructs of interest. New themes were inductively identified.

RESULTS: Common themes identified were Loss (e.g. explicit teaching moments), Uncertainty during Rounds (e.g. when to discuss sensitive topics), Adaptability and Flexibility (e.g. adjusting to novel rounding style), Workflow (e.g. perceived inefficiencies), Communication with Patients and the Team (e.g. opportunities for improved communication skills), Conceptualization of Teaching and Education (i.e. interplay of teaching and learning in patient care), and Conceptualization of Collaborative Care (i.e. key elements of CC).

CONCLUSIONS: Learner and attending experiences illustrated the tensions the CC model can pose for professional identities and hierarchies. CC was discussed as something done to patients during rounds, rather than a global

approach to care delivery. Neither group seemed to embrace key aspects of the CC model including conceptualizing the larger interprofessional team or recognizing alternative forms of learning taking place. Some learners appreciated perceived benefits for patients and improved interprofessional relationships. These findings highlight the challenges involved in instituting new models of patient care in teaching hospitals and speak to the need to better set expectations of learners and attendings.

LET'S TAKE A WALK: EXAMINING THE ATTITUDES OF OLDER AFRICAN-AMERICAN HEMODIALYSIS PATIENTS REGARDING EXERCISE Debora Afezolli[1]; Shenglin Zheng[3]; Janet Seo[1]; Haniya Syeda[1]; Jasvinder Bhatia[2]; Sara Folta[3]; Christine Liu[1]. [1]Boston Medical Center, Boston, MA; [2]Boston University Medical Center, Boston, MA; [3]Tufts University, Boston, MA. (Control ID #2706257)

BACKGROUND: Kidney failure disproportionately affects African Americans; older African-Americans are one of the fastest growing groups of hemodialysis (HD) patients. Kidney failure is associated with increased risk of muscle wasting, leading to overall poorer quality of life and physical impairment. Many older adults on HD develop difficulties with self-care activities and have trouble walking. A potential intervention to halt the physical decline in older adults with HD is increased exercise. Greater levels of exercise have been associated with decreased mortality in HD patients. Our goal was to explore the attitudes of older African American HD patients regarding exercise, in order to devise targeted strategies to improve physical function in these patients.

METHODS: A convenience sample of HD patients aged 65 or older followed at an urban academic medical center underwent 30–40 min semi-structured interviews in their homes. The interview guide included open-ended and Likert style questions about general physical function, falls, and exercise. The Falls Efficacy Scale-International (FES-I) was administered. Interviews were audiotaped and transcribed. Four research team members simultaneously reviewed interview data and determined dominant themes using data patterns facilitated by Nvivo 11. Intercoder reliability was ≥0.8.

RESULTS: A total of 10 older African-American HD patients (mean age 73.0 ± 5.0 years, 60% women, mean years on HD 4.8 ± 4.5) were interviewed between November 2015 and January 2016. Ninety percent of participants did *not* think hemodialysis was a contraindication to exercise, and 100% agreed that getting up and moving could make them feel better. Sixty percent expressed willingness to undertake exercise at least three times a week. Mean FES-I score was 22.3 ± 9.3 points, consistent with a moderate level of concern for falling. Themes that emerged as barriers to exercise (see Table below) were self-barriers (cited by 90% of the participants), health problems, and environmental restrictions. Themes that emerged as facilitators of exercise were self-motivation (cited by 80% of the participants), support from families and friends, as well as feasible means of exercise.

CONCLUSIONS: In this predominantly African-American sample, older adults on HD view themselves as capable of undertaking exercise, and are willing to do it multiple times a week. To successfully use exercise to improve physical function in older African American HD patients, future interventions should include components that address barriers, such as home modifications for safety, and leverage motivators such as family and friend support.

Barriers and facilitators to exercise in older African-American patients on HD

	Theme	Examples
Barriers	Self-barriers	"I don't have anything to motivate me to say, well let's get up and do this. Let's go take a walk." "I feel like I'll get up later, I'll get up in a few min. I keep laying there."
	Health problems	"My back pain and knee pain prevent me from moving, regardless of whether I have hemodialysis." "I feel lightheaded, and if I feel, if I get up and feel lightheaded I just sit back down and wait a few min, and then I get up and try it again."
	Environmental restrictions	"I don't do too much outside walking when there is ice on the ground." "I don't go to people's houses unless I know what kind of step they have."
Facilitators	Self-motivators	"Life motivates me to get moving… I love living" "God makes it easy for me to move" "I mean the only way I'm going to get out of this chair is to get up and start moving around. If I sit here it's just going to get harder and harder for me to do, so I have to try, I have to try"
	Family and friend support	"I have the lady downstairs that won't let me stay in bed, saying, "Come down. Come down." "Sometimes I walk downstairs, like go to the mailbox and say hi to people that is down there that you know, and then come back upstairs."
	Feasible exercise	"I'll go to the grocery store, walk around there for a while, and go shopping" "Walks to HD and walks back so that gets him exercise. Moves for about 15–20 min, takes his time."

LIFE-YEARS LOST TO PREVENTABLE CAUSES-OF-DEATH IN THE US, 2014 Glen B. Taksler[1]; Michael B. Rothberg[1]; R. Scott Braithwaite[2]. [1]Cleveland Clinic, Cleveland, OH; [2]New York University School of Medicine, New York, NY. (Control ID #2705388)

BACKGROUND: Modifiable behavioral risk factors pose a substantial mortality burden in the US. We sought to explain the number of life-years lost to modifiable risk factors in 2014.

METHODS: Based on data from the National Vital Statistics System, we developed a microsimulation model to assess the number of life-years lost to preventable disease risk factors. First, we simulated 2014 life expectancy in the US population aged ≥15 y, based on 28 competing risk factors (17 modifiable, such as hypertension, and 11 non-modifiable, such as genetics) that contributed to 19 mortality-causing conditions (which were based on the 10 leading causes-of-death for each age decile). An individual could have multiple risk factors (e.g., hypertension, obesity) and multiple mortality-causing conditions (e.g., breast cancer, heart disease) but could only die of a single cause. All individuals faced background mortality risk based on age, sex and race. To estimate the number of life-years lost to each modifiable risk factor, we

examined the change in mortality for a series of counterfactual US populations that each eliminated a single risk factor. We compared the results with the change in life-years lost for an “optimal” population that eliminated all modifiable risk factors. Recognizing that some less common factors might place substantial burden on small population subgroups, we also estimated life expectancy gained in individuals with each modifiable risk factor.

RESULTS: In 2014, the greatest number of preventable life-years were lost to obesity (303 million life-years, 22.2% of total preventable life-years), diabetes (267 million life-years, 19.6% of total), hypertension (209 million life-years, 15.4% of total), tobacco (206 million life-years, 15.1% of total) and hyperlipidemia (+130 million life-years, 9.5% of total). Fewer life-years were lost to alcohol misuse, HPV, sexual behaviors, bipolar disease, anxiety, vaccines, hepatitis B/C, illicit drug use, head trauma and environmental toxins (each 1–3% of total). However, in affected individuals, a substantial number of years were lost to alcohol misuse (+17.5 years/individual), tobacco (+10.0 years/individual), hepatitis B/C (+7.6 years/individual) and bipolar disease (+7.3 years/individual). Individual losses to obesity (+4.8 years/individual), diabetes (+2.6 years/individual), hyperlipidemia (+1.0 years/individual) and hypertension (+0.9 years/individual) were smaller.

CONCLUSIONS: We analyzed the contribution of modifiable behavioral risk factors to causes-of-death in the US population. Our findings suggest that obesity resulted in 47% more life-years lost than tobacco in 2014, but tobacco caused similar life-years lost as hypertension. Results also highlight tension between population health approaches to mortality prevention (which were influenced by both gains in life expectancy and number of affected individuals in each age group) vs. individualized goals for use in clinical practice (which were only influenced by gains in life expectancy).

LIVING ALONE IS ASSOCIATED WITH DISCHARGE TO POST-ACUTE SKILLED NURSING FACILITY CARE AFTER HOSPITALIZATION Daniel E. Lage[1]; Michael Jernigan[2]; Yuchiao Chang[2]; John Hsu[2]; Joshua Metlay[2]; Sachin J. Shah[2]. [1]Harvard Medical School, Boston, MA; [2]Massachusetts General Hospital, Boston, MA. (Control ID #2700217)

BACKGROUND: Use of skilled nursing facility (SNF) care after hospitalization appears to vary substantially across hospitals and regions, but the association with patient outcomes is less clear. One challenge to understanding variation in SNF use and outcomes has been the lack of information on patient level determinants of SNF admission. In particular, the amount of potential home support during the post-hospitalization recovery period may be an important determinant of SNF use. We examined whether those who live alone are at greater risk to be discharged to SNF.

METHODS: We conducted a retrospective cohort study at the Massachusetts General Hospital. Eligible subjects were admitted to the medical service from the community, at least 50 years old at the time of admission, had hospitalizations of at least three days, did not have a major surgical procedure during their admission, and were discharged alive between July 2014 and August 2015. Demographic, clinical, and discharge data were extracted from the electronic medical record. Information about the living environment and activities of daily living was obtained from a standardized “Initial Nursing Assessment” that was completed on the first day of admission (missing for <1% of eligible admissions). Education and income measures were obtained from zip code-level US Census data. We performed multivariable logistic regression to assess if living alone at the time of hospitalization was associated with subsequent discharge to SNF.

RESULTS: Of the 8021 eligible subjects, 25.4% reported living alone prior to admission. Subjects living alone were more likely to be female (54.9% vs. 43.4%, $p < 0.001$), older (72.5 vs. 69.6 years, $p < 0.001$), sicker (Elixhauser Comorbidity Index = 3.7 vs. 3.5, $p < 0.001$), and more independent prior to admission [e.g. dressing (82.2% vs. 75.9%, $p < 0.001$) and bathing by themselves (79.2% vs. 73.4%, $p < 0.001$)]. Among all subjects, 15.3% were discharged to SNF. Patients living alone were more likely to be discharged to SNF (20.4% vs. 10.8%, $p < 0.001$). After adjustment for age, sex, race, income, education, insurance status, comorbidities, length of stay, and activities of daily living, patients living alone had double the odds of being discharged to SNF (OR 2.12, 95% CI 1.82 to 2.47, $p < 0.001$).

CONCLUSIONS: Patients living alone are more likely to be discharged to SNFs. This association persisted even after accounting for clinical and functional status. Future work will examine how home support (and potential compensating features such as home health services) might interact with clinical and functional measures to determine post-discharge outcomes. Further, studies that evaluate the impact of SNF admission on patient outcomes, including hospital readmission, should account for differences in home support that might confound observed differences.

LIVING BETTER BEYOND PAIN: RANDOMIZED TRIAL OF OFFICE- VERSUS COMMUNITY-BASED SELF-MANAGEMENT OF CHRONIC PAIN Barbara J. Turner[1, 1]; Zenong Yin[2, 1]; Natalia Rodriguez[1]; Raudel Bobadilla[1]; Mariza Rodriguez[1]; Maureen J. Simmonds[1, 1]; Paula Winkler[1, 1]; Yuanyuan Liang[3, 1]. [1]University of Texas Health Science Center at San Antonio, San Antonio, TX; [2]University of Texas San Antonio, San Antonio, TX; [3]University of Maryland School of Medicine, Baltimore, MD. (Control ID #2705344)

BACKGROUND: Primary care clinicians are increasingly frustrated by the lack of available and affordable strategies to manage chronic pain. A practical, effective intervention is needed to engage and educate patients about chronic pain self-management. We developed a 6 month (mo) curriculum in Spanish and English for patients about pain management strategies such as stretching, exercise, goal setting, sleep hygiene and mindfulness. To assess how best to deliver this program, we randomized patients to receive the intervention in clinic from a trained community health worker (CHW) or in a convenient community library from clinic physicians and other experts.

METHODS: In two academic primary care clinics serving primarily low income Hispanics, eligible patients were age 35 to 70 and treated with >2 mos opioids for chronic back or leg pain. Patients were randomized to: 6 monthly meetings 1-on-1 with a CHW or 9 group lectures in a library over 6 mos. The same trial was repeated for two 6-mo cohorts and ended in 12/16. The primary outcome was change in 5X sit-to-stand test (5XSTS) from baseline to 3- and 6-mos. Change in 50-feet speed walk (50FtW) and Symbol-Digit Modalities Test (SDMT) were assessed at both times while change in 6-min walk (6 MW) and Patient Health Questionnaire-9 (PHQ-9) were assessed at 6 mos. Linear mixed effects models were estimated and adjusted for study arm, sex, age, BMI, % visits missed, and % make-up visits.

RESULTS: Among all study subjects ($N = 111$), 55% were women, 78% Hispanic, mean age 56.5 (SD = 9.01), and mean BMI 34.5 (SD = 8.43). Mean baseline measures were: 5XSTS 22.6 s (sec) (SD = 14.0), 50FtW 19.3 secs (SD =

6.39), 6 MW 948.4 ft (SD = 376.0), SDMT 30.9 (SD = 11.8) and PHQ-9 13.0 (SD = 7.4). Subjects in clinic ($N = 53$) and community ($N = 58$) arms did not differ significantly on any variable. 69 (62%) subjects completed 3 mo measures and 67 (60%) 6 mo measures. Baseline mean 5XSTS improved by 4.9 sec (SD = 13) at 3 mos ($P = 0.003$) and by 5.3 sec (SD = 10.8) at 6 mos ($p < 0.001$). After adjustment, improvements appeared for both arms in: 5XSTS at 3 and 6 mos (both $P < 0.001$); 50FtW at 3 mos ($P = 0.03$) and 6 mos ($P = 0.04$); SDMT at 3 and 6 mos (both $P < 0.001$); and PHQ-9 at 6 mos ($P = 0.001$). 6 MW improved at 6 mos only for the clinic arm ($P = 0.03$).

CONCLUSIONS: In this trial of a self-management educational intervention for chronic pain, subjects in both study arms had significant improvement in physical function and cognitive measures at both 3- and 6-mos and depression improved at 6 mos. Other than the 6 MW which improved for the clinic arm only, the equivalent benefits from the CHW-led clinic program and the community-based program suggest that this curriculum can be effectively delivered in either setting. Although longer term outcomes need to be assessed, this practical educational intervention promises to relieve the burden of chronic pain management shouldered by primary care physicians.

LOCALIZATION OF ABDOMINAL PAIN IS A USEFUL CLUE TO DIAGNOSIS OF UNDERLYING DISEASES: THE IMPORTANCE OF RIGHT-FLANK, LEFT-FLANK, RIGHT-SUBCOSTAL AND GENERALIZED ABDOMINAL PAIN Shun Yamashita; Masaki Tago; Naoko Kunami; Naoko E. Furukawa; Shu-ichi Yamashita. Saga University Hospital, Saga, Japan. (Control ID #2690785)

BACKGROUND: The relationship between the localization of abdominal pain and the diagnosis of underlying diseases has not been reported recently, in the era of highly developed diagnostic imagings. By analysis of recent data of new outpatients with abdominal pain, we elucidated the relationships between the localization of abdominal pain and the diagnosis.

METHODS: We retrospectively analyzed the new patients who visited the outpatient clinic or emergency room of the department of General Medicine, Saga University, Japan, for abdominal pain from April 2014 to July 2015. We checked their age, sex, the localization of abdominal pain and the diagnosis. The localization of pain was classified into 11 categories; right or left subcostal, right or left flank, right or left lower, epigastric, periumbilical, mid lower, generalized and undefined abdominal pain. The diagnosis was determined by a physician after later than 3 months of the first visit, and the diagnosis was divided into 11 categories by 3 physicians; esophageal and gastroduodenal, hepatic and biliary, pancreas, intestinal, urinary, gynecological, musculoskeletal, respiratory, cardiovascular, dermatological disease, and others. The relationships between the localization and the diagnosis were analyzed by Chi-squared test.

RESULTS: There were 472 patients (13%) visiting with abdominal pain of 3698 new patients during the research period. The mean age was 50 ± 20 years, and 191 patients (41%) were male. The most frequent localization of abdominal pain was epigastric (29%), followed by mid-lower (19%) and right-lower (12%). The most frequent diagnosis was intestinal disease (53%), followed by disease of the esophagus/stomach/duodenum (43%) and urinary tract (8.1%). There were some significant relationships between diagnosis and the localization of pain (Chi-squared test, $p < 0.05$); generalized abdominal pain with intestinal disease (likelihood ratio 4.4, 95% confidence interval 1.8 to 11.1), left flank pain with urinary disease (3.7, 1.8 to 7.2), right-subcostal pain with hepatic and biliary disease (3.6, 1.5 to 7.9), right flank-pain with urinary disease (3.1, 1.4 to 6.3), right gynecological disease (3.1, 1.5 to 5.4), Epigastric pain with hepatic and biliary disease (2.6, 1.8 to 3.2), epigastric pain with pancreatic disease (2.5, 1.4 to 3.3), epigastric pain with esophageal and gastroduodenal disease (2.2, 1.7 to 3.0) and mid-lower abdominal pain with gynecological disease (2.2, 1.2 to 3.6).

CONCLUSIONS: Right-flank and left-flank pain can be diagnostic clues to urinary diseases, right subcostal pain to liver and biliary diseases and generalized abdominal pain to intestinal diseases, respectively.

LONGITUDINAL ANALYSIS OF REAL-WORLD BASAL INSULIN UTILIZATION FOR TYPE I AND TYPE II DIABETES PATIENTS SWITCHING TO INSULIN GLARGINE U-300 (TOUJEO®) Yvonne Zhang[1]; Luc Sauriol[2]; Jennifer Glass[1]; Brad Millson[1]. [1]QuintilesIMS, Mississauga, ON, Canada; [2]Sanofi, Montreal, QC, Canada. (Control ID #2705079)

BACKGROUND: Background: Toujeo® (300 U/mL insulin glargine) is a long-acting insulin therapy approved for use in Canada in May 2015 for both type I and type II diabetes. Patients on basal insulin therapy that are experiencing poor glycemic control will often increase their dose to achieve glycemic targets, which can lead to increased costs to insurers and increased risk of hypoglycemic events. Besides a threefold higher concentration compared to Lantus® (100 U/mL or Gla-100), both pharmacokinetic and pharmacodynamic profiles of Toujeo® have previously been shown to be flatter and longer, with lesser intra-/inter-variability, which makes them more reproducible. Little information exists on how these changes impact patient utilization in a real world setting. The current study utilized real-world claims data to examine how average daily insulin dose changed when patients switched from a standard basal insulin, including insulin glargine 100U/mL, insulin detemir and neutral protamine Hagedorn (NPH) insulin to Toujeo®.

METHODS: Methods: The study utilized longitudinal private drug plan claims data from QuintilesIMS Canadian Private Drug Plan Database. The study was performed looking at Type I and Type II diabetes patients who switched from a standard basal insulin to Toujeo®. Patients were indexed on their first claim of Toujeo® between April 2014 and March 2016. Patients' basal insulin therapy was tracked for up to 12 months following the index date and calculated as average daily dose (ADD) in international units (IU) of insulin. Patients who did not have continuous coverage or who were inferred as potentially suffering from gestational diabetes were excluded from the analysis. To ensure a fair comparison, the first three months of dose titration were excluded from the analyses. Differences in ADD of insulin were compared pre- and post-switch to Toujeo®. Changes in use of concomitant medications pre and post-switch were also examined as an exploratory objective.

RESULTS: Results: 231 Type I and 1,028 Type II patients were identified in the study. In Type I patients, the ADD was 88 IU in the 3 months prior to switch and 73 IU following switch to Toujeo® ($p = 0.018$) Similarly, in Type II patients, the ADD was 111 IU in the 3 months prior to switch and 98 IU following switch to Toujeo® ($p = 0.010$). No change in concomitant medication use was seen with this decrease in insulin dosage.

CONCLUSIONS: Conclusion: In Canadian real-world practice, the overall basal insulin ADD was seen to be reduced once patients were switched (and titrated) to Toujeo®. The reduced dosing required for Toujeo® suggests a potential lower budget impact for payers. Further study is also needed to understand the impact on overall patient outcomes and safety.

LOWER DISCHARGE SYSTOLIC BLOOD PRESSURE (SBP) AND POOR OUTCOMES AMONG HOSPITALIZED PATIENTS WITH HEART FAILURE AND REDUCED EJECTION FRACTION (HFREF) AND STABLE ADMISSION-TO-DISCHARGE SBP Cherinne Arundel[2]; Phillip Lam[3]; Daniel Dooley[3]; Apostolos Tsimploulis[4]; Shani Weerakoon[5]; Gerasimos Filippatos[6]; Javed Butler[7]; Prakash Deedwania[8]; Michel White[9]; Ioannis Kanonidis[10]; Charity Morgan[11]; Wen-Chih Wu[12]; Wilbert Aronow[13]; Maciej Banach[14]; Gregg Fonarow[1]; Ali Ahmed[15]. [1]UCLA David Geffen School of Medicine, Los Angeles, CA; [2]Washington DC Veterans Affairs Medical Center, Washington, DC; [3]Georgetown University/Medstar Washington Hospital Center, Washington DC, DC; [4]Georgetown University/Medstar University Hospital, Washington DC, DC; [5]Georgetown University Hospital, Washington DC, DC; [6]University of Athens, Athens, Greece; [7]Stony Brook, Stony Brook, NY; [8]UCSF Fresno, Fresno, CA; [9]Montreal Heart Institute, Montreal, QC, Canada; [10]Aristotle University, Thessaloniki, Greece; [11]University of Alabama-Birmingham, Birmingham, AL; [12]Providence Veterans Affairs Medical Center, Providence, RI; [13]New York Medical College, Valhalla, NY; [14]Medical University of Lodz, Lodz, Poland; [15]Washington DC Veterans Affairs Medical Center, Washington DC, DC. (Control ID #2691263)

BACKGROUND: Heart failure (HF) is the leading cause for hospital admission and readmissions among elderly Medicare beneficiaries. Furthermore, the in-hospital and post-discharge mortality rates for HF remain high despite therapeutic advances. An SBP of <120 mm Hg has been associated with adverse short-term poor outcomes in hospitalized patients with HF. However, SBP may fluctuate between admission to discharge in decompensated hospitalized patients with HFrEF. We examined if a low discharge SBP among hospitalized patients with HFrEF with a stable admission-to-discharge SBP was independently associated with poor outcomes.

METHODS: In the Medicare-linked OPTIMIZE-HF registry, 10625 hospitalized patients with HF had EF ≤40%. A stable admission-to-discharge SBP was defined as SBP fluctuation of <20 mm Hg between hospital admission and discharge. Of the 5615 patients with stable SBP, 2812 (50%) had SBP <120 mm Hg. Propensity scores for a discharge SBP of <120 mm Hg, estimated for each of the 5615 patients, were used to assemble a cohort of 1372 pairs of patients, with a discharge SBP <120 vs ≥120 mm Hg, who were balanced on 58 baseline characteristics. The 2744 matched patients had a mean (±SD) age of 76 (±10) years, a mean (±SD) EF of 24 (±7) percent, a mean (±SD) discharge SBP of 120 (±16) mm Hg, 39% were women, and 12% African American.

RESULTS: During 2.1 years of median follow-up (max, 6.0 years), all-cause mortality occurred in 76 and 71% of matched patients with a discharge SBP <120 vs ≥120 mm Hg, respectively (HR, 1.23; 95% CI, 1.13–1.35; Figure). A discharge SBP <120 mm Hg was also independently associated with higher risk of all-cause readmission (HR, 1.16; 95% CI, 1.07–1.26), HF readmission (HR, 1.25; 95% CI, 1.13–1.39), and the combined outcome of total readmission or total death was (HR, 1.17; 95% CI, 1.09–1.27).

CONCLUSIONS: Among hospitalized patients with HFrEF and stable admission-to-discharge SBP, a low discharge SBP was independently associated with higher risk of poor clinical outcomes.

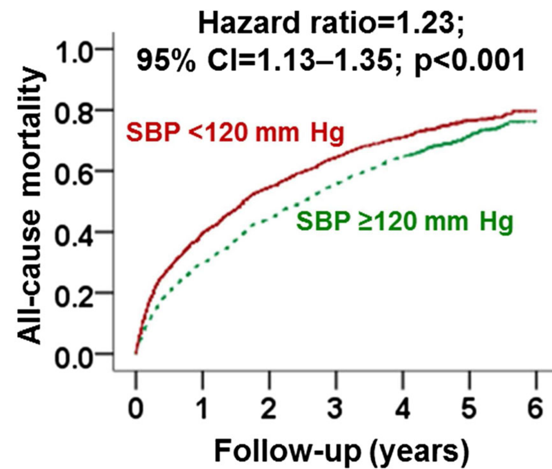

Figure Kaplan-Meier plots for all-cause mortality by discharge systolic blood pressure (SBP) in a propensity-matched cohort of patients with heart failure and reduced ejection fraction (CI=confidence interval)

M HEALTH COMMUNITY NETWORK: A PILOT STUDY IN COORDINATED CARE FOR INTIMATE PARTNER VIOLENCE SURVIVORS Mary Logeais[1]; Lynette M. Renner[2]; Cari Clark[3, 1]. [1]University of Minnesota, Minneapolis, MN; [2]University of Minnesota, St. Paul, MN; [3]Emory University, Atlanta, GA. (Control ID #2701535)

BACKGROUND: Intimate partner violence (IPV) is a significant public health concern with substantial health consequences. Though not definitive, research has shown that healthcare providers who screen for IPV and counsel patients can reduce victimization and positively impact physical and mental health. Recent clinical guidelines recommend addressing IPV, yet few patients disclose IPV to healthcare providers and few medical professionals screen for IPV. Best practices to assess and respond to IPV are incompletely understood. This study aims to better understand current practices and barriers for IPV screening, counseling and referral in one academic outpatient health system. This pilot work will inform a larger project that will investigate whether a coordinated clinical response to IPV decreases healthcare utilization, reduces victimization, improves health outcomes, and increases provider knowledge.

METHODS: Data from this mixed method study include interviews with 10 outpatient multi-specialty clinic managers utilizing the Agency for Healthcare Research and Quality's Delphi Instrument, interviews with 4 primary care clinic staff (including a medical director, nurse manager, social worker and licensed practical nurse), responses to the Physician Readiness to Manage Intimate Partner Violence questionnaire ($N = 23$) and five months of screening data captured in the electronic health record (EHR) after routine screening was implemented ($N = 9044$).

RESULTS: Overall, interviews highlighted insufficient training for staff, lack of formal policies for screening or documentation, and inadequate clinical resources to support interventions. Few primary care respondents felt they had sufficient knowledge and preparation to address IPV. Subspecialty respondents reported they did not have or were not aware of official policies for assessment or treatment of IPV; yet, 8 out of 10 respondents reported that

mandatory universal screening policies applied to their clinics. EHR data revealed that less than 50% of adult patient encounters included a screen for IPV in primary care. 83% of respondents reported a lack of or unawareness of on-site resources for IPV and only 13% reported having adequate knowledge of community-based services. Of interest, the majority of providers believed it was within their scope of practice to screen for IPV.

CONCLUSIONS: These results suggest there are considerable opportunities to improve upon not only staff knowledge, but also models of care delivery for IPV victims including connections to the community sector. This pilot study serves as a springboard to the next phase of this organizational intervention whereby routine EHR screening and referral practices will be introduced across a multispecialty outpatient practice. We anticipate this will highlight advantages and limitations of universal screening and lend insight into how these practices impact diverse patient populations beyond women of child-bearing age, including transgendered patients and cultural minorities.

MACHINE LEARNING WITH UNSTRUCTURED DATA IMPROVES IDENTIFICATION OF HOSPITALIZED PATIENTS WITH HEART FAILURE Saul Blecker[1]; David Sontag[3]; Leora I. Horwitz[1]; Gilad Kuperman[2]; Stuart Katz[1]. [1]NYU School of Medicine, New York, NY; [2]New York-Presbyterian Hospital, New York, NY; [3]MIT, Cambridge, MA. (Control ID #2705397)

BACKGROUND: Interventions to reduce readmission following hospitalization for acute decompensated heart failure (ADHF) require early identification of patients. Electronic health record (EHR)-based approaches to identify patients can range in complexity from simple algorithms based on few data elements to machine learning algorithms using big data. The purpose of this study was to compare performance of a range of algorithms to identify patients with ADHF. Given the emphasis that hospitals currently place on patients with ADHF, we developed models with high sensitivity to avoid missed opportunities for care improvement; this approach assumed secondary chart review would be necessary to confirm a diagnosis. We therefore estimated the time needed for secondary review by providers following initial screening with each algorithm.

METHODS: We performed a retrospective study of hospitalizations for patients age ≥ 18 at an academic medical center in 2013–2015. Using a random 75% development set, we developed four algorithms to identify hospitalizations with a principal diagnosis of ADHF using EHR data through the second midnight of hospitalization: 1) one of three characteristics: heart failure on the problem list, loop diuretic use, or brain natriuretic peptide ≥ 500 pg/ml; 2) logistic regression of 31 clinically-relevant data elements; 3) machine learning approach using L1-regularization logistic regression and unstructured data, including provider notes and radiology reports; 4) machine learning with both structured and unstructured data. We assessed performance of each algorithm in the 25% validation set. We also conducted a brief survey of providers who perform chart review for ADHF to estimate time needed for secondary screening following primary screening with each algorithm.

RESULTS: We included 37,229 hospitalizations in the study, of which 1,294 (3.5%) carried a principal diagnosis of ADHF. Algorithm 1 had a sensitivity of 0.98 and positive predictive value (PPV) of 0.14 for ADHF. Algorithm 2 had an area under the receiver operating characteristic curve (AUC) of 0.96 and a PPV of 0.15 when setting the sensitivity at 0.98. Both machine learning algorithms had AUCs of 0.99; with a sensitivity of 0.98, algorithms 3 and 4 had PPVs of 0.30 and 0.34, respectively. Based on survey of three providers, we estimated providers spent 8.6 min per chart review; using this this parameter, providers would spend 61.4, 57.3, 28.7, and 25.3 min on secondary chart review for each case of ADHF if initial screening was done with algorithms 1, 2, 3, and 4, respectively.

CONCLUSIONS: Traditional approaches with structured data can accurately identify nearly all patients with ADHF but are limited by a large number of false positives. Machine learning algorithms with unstructured notes and radiology reports can retain this sensitivity while significantly reducing false positives, thereby improving provider efficiency for delivery of quality improvement interventions.

MAIN FINDINGS FROM THE MYNEWOPTIONS STUDY: A RANDOMIZED CONTROLLED TRIAL OF A WEB-BASED REPRODUCTIVE LIFE PLANNING INTERVENTION Cynthia H. Chuang[1, 1]; Carol Weisman[1]; Diana Velott[3]; Erik B. Lehman[4]; Merry-K. Moos[6]; Christopher Sciamanna[2]; Richard Legro[1]; Christopher Armitage[5]; Vernon Chinchilli[1]. [1]Penn State College of Medicine, Hershey, PA; [2]Penn State Hershey, Hershey, PA; [3]Penn State Hershey College of Medicine, Hershey, PA; [4]Pennsylvania State University, Hershey, PA; [5]University of Manchester, Manchester, United Kingdom; [6]UNC Chapel Hill, Chapel Hill, NC. (Control ID #2706560)

BACKGROUND: The Affordable Care Act (ACA) requires that most private insurers cover FDA-approved contraceptive methods without cost-sharing. Thus, privately insured women may be well positioned to respond to interventions designed to assist them in making optimal contraceptive choices. A promising intervention is reproductive life planning, which is recommended by the Centers for Disease Control and Prevention (CDC), the American Congress of Obstetricians and Gynecologists (ACOG), and is required of Title X family planning programs. Reproductive life planning involves setting goals for having or not having children and making a plan to achieve those goals. How reproductive life planning affects contraceptive choices has not been evaluated in controlled trials.

METHODS: The MyNewOptions study enrolled 987 privately insured (Highmark Health), women ages 18 to 40 who were not intending pregnancy in the next year and had Internet access. After completing a baseline survey, women were randomized to one of three arms: reproductive life planning (RLP); reproductive life planning with contraceptive action planning (RLP+); or contraceptive information only. The RLP intervention was an interactive web-based tool adapted from the CDC's reproductive life planning tool. The RLP+ intervention added a contraception action planning component, which guides users to identify solutions ahead of time for challenges commonly encountered when using contraception. Women were prompted by email every 6 months for the duration of the 2-year study to complete follow-up surveys and re-visit the study website. The main outcomes were contraceptive use, long-acting reversible contraceptive (LARC) use, method adherence, and contraceptive satisfaction throughout the 2-year study period.

RESULTS: Participants completed an average of 3.5 (out of 4) follow-up surveys. Contraceptive use and LARC use increased from 88.5 and 8.4%, respectively, at baseline to 94.8 and 17.9% at 2 years. The outcome variables did not differ significantly by group allocation.

CONCLUSIONS: The null findings may be due to lack of intervention intensity, web-based intervention format, unintended intervention effect of the control condition, or a ceiling effect in our well educated, privately insured

sample. The overall increase in LARC use reflects the national secular trend. Our results suggest that reproductive life planning may not be effective at guiding privately insured women toward more effective contraceptive methods.

MANAGING COMPLEX PATIENTS IN PRIMARY CARE: WHICH PHYSICIANS HAVE ENOUGH TIME? Chinyere U. Okereke[1]; Michelle T. Vo[1]; Connie S. Uratsu[1]; Courtney R. Lyles[2]; Richard W. Grant[1]. [1]Kaiser Permanente Northern California, Oakland, CA; [2]University of California San Francisco, San Francisco, CA. (Control ID #2705372)

BACKGROUND: Complex patients often have multiple medical issues and health concerns that can be challenging for providers to effectively address during time-limited primary care visits. We surveyed primary care physicians (PCPs) about their complex patients to investigate factors associated with PCPs' perceptions that they do not have enough time during visits.

METHODS: PCPs ($n = 199$) from a single, large integrated care delivery system were enrolled into one of two clinical trials (NCT02375932 and NCT02707146) designed to help complex patients prepare for upcoming visits. At study baseline, all physicians reviewed lists of their complex patients (including patients with recent admissions, multiple medications, uncontrolled diabetes, and new [<1 year] patients with care gaps) and completed a brief survey about managing these patients. Here we report physician and patient panel factors associated with physicians reporting not having enough time during visits with these patients. This outcome was dichotomized as "Never/rarely" vs. "Occasionally/often/always" and analyzed using chi-squared tests. We also investigated factors associated with physicians reporting whether they were able to get through all the items on their agenda during these visits.

RESULTS: Physician survey respondents (response rate 93%) had a mean age of 46.8 (±8.5) years, 18.9 (±9) years of clinical practice, and 64.3% were women. More than half of physicians ($n = 105$, 52.8%) reported that they never/rarely had enough time during visits with their complex patients. These physicians were more often women (57.8% vs. 43.7% men, $p = 0.06$), new to the medical group (<5 years, 64.2% vs. 48.6%, $p = 0.05$), and working less than full time (<80% time, 70.5% vs. 50%, $p = 0.09$). We found several significant differences in the complex patient panels reviewed. Physicians reporting that they rarely/never had enough time had a greater proportion of non-white (50.5% vs. 42.4%, $p < 0.01$) and female (53.5% vs. 45.6%, $p < 0.01$) patients. Counter to our expectation, their complex patients were less likely to be on multiple medications (% of panel with >=6 medications: 26.5% vs. 39.2%, $p < 0.01$) and had similar age distributions (% >65 years of age: 35.9% vs. 38.0%, $p = 0.25$). Despite perceived lack of time, only 12% of physicians (24/199) reported never/rarely getting through all their agenda items during visits. None of the examined provider or panel factors were significantly predictive of which providers had trouble getting through their visit agendas.

CONCLUSIONS: Our results provide further insight into the challenges faced by primary care physicians. Efforts to reduce primary care burn-out should include professional training to help PCPs, particularly newer ones, grapple with time management for their complex patients. Moreover, complex patients creating these time pressures may have issues and concerns that are not be readily identified by factors such as age or medication burden.

MEASURING PROFESSIONAL IDENTITY FORMATION EARLY IN MEDICAL SCHOOL: VALIDITY EVIDENCE. Adina Kalet[1, 3]; Hyuksoon Song[2, 3]; Lynn Buckvar-Keltz[1, 3]; Verna Monson[1]; Steven Hubbard[1]; Ruth Crowe[1, 3]; Rafael Rivera[1]; Sandra Yingling[4]. [1]New York University School of Medicine, New York, NY; [2]Georgian Court University, Lakewood, NJ; [3]New York University, New York, NY; [4]University of Illinois, Chicago, Chicago, IL. (Control ID #2701253)

BACKGROUND: An evidence-based approach to understand ethical medical professional identity formation (PIF) is needed. Scored by an expert, the Professional Identity Essay (PIE) produces a developmental stage (8 potential levels) based on a constructivist-developmental methodology developed in dental, law students and military officer trainees. We assessed the validity and utility of measuring baseline PIF in a professionalism curriculum and hypothesized that PIE stage would correlate with undergraduate humanities majors, subscores on admissions Multiple Mini Interviews (MMI), and DIT2 score, but would not correlate with gender, SES, URM status, age, MCAT scores, or GPA.

METHODS: During medical school orientation, all 132 entering medical students completed 1) the Professional Identity Essay (PIE) and 2) the Defining Issues Test (DIT2), a validated measure of moral reasoning. A trained expert (VM) scored narrative responses to seven prompts (Inter-rater ICC .83, 95% CI [.57 - .96], intra-rater ICC .85, 95% CI [.50 - .93]). The DIT2 N2 score reflects the proportion of the time students used universal ethical principles to justify a response to six moral dilemma cases. Students' reflections following a debriefing were content-analyzed. Admissions data was obtained for consenting students.

RESULTS: 129 students consented (57% women, mean age 23 (range 18–34, SD 1.7). Distribution of PIF stage scores was along 4 stages (2–3: 16 (12%), 3: 59 (45%), 3–4: 49 (37%) 4: 6 (4%)). DIT2 scores indicated a strong preference for post-conventional moral reasoning (N2) relative to moral justifications based on personal interest or maintaining norms, with a mean DIT2 N2 score of 54% (range 9.7%-76.5%). PIF stage as measured by the PIE was correlated with DIT N2, $\rho = .19$ ($p < .05$), MMI-Conflict Resolution, $\rho = .26$ ($p < .05$) and MMI-Team Work, $\rho = .22$ ($p < .05$), but no other admission variable. DIT N2 score and MMI-Responsibility were correlated $\rho = .18$ ($p < .05$). Content analysis of 130 students' reflective writing on PIE stage and DIT score report revealed mostly positive reactions to the PIF curriculum (117/130, 90%). Students with mixed negative reactions (28/130, 21%) reported confusion, concern about future training, or dissatisfaction with the gap between their self-perception and the results. Students who demonstrated an analytic approach to evaluating their feedback tended not to report negative reactions, even when they were surprised by the feedback.

CONCLUSIONS: A developmental evidence grounded measure of PIF is a feasible and acceptable part of a medical professionalism curriculum for entering medical students, distributes similarly to groups in other professional training programs and correlates with a validated measure of moral reasoning and admissions MMI stations that assess relevant constructs. This approach is acceptable and intriguing to our students and may be useful as an approach to competency-based professionalism curricula.

MEASURING SKILLS IMPROVEMENT FROM A SHARED DECISION MAKING WORKSHOP FOR INTERNAL MEDICINE INTERNS Fredrik Amell[1]; Ross Merkin[3]; Darlene LeFrancois[2]. [1]Montefiore, Greenwich, CT; [2]Montefiore Medical Center, Bronx, NY; [3]Montefiore, New York, NY. (Control ID #2700845)

BACKGROUND: Shared Decision Making (SDM) is a method of patient-doctor communication that provides a framework for resolving preference-sensitive decisions, i.e. those in which a treatment or test is neither obviously effective nor harmful, in terms of absolute risk. Effective use of SDM generates a treatment plan that is consistent with patient preferences. It contrasts with the more traditional model, in which the physician builds an argument supporting his or her professional opinion with minimal patient input, and also contrasts with the completely patient-driven model, in which patients are passively presented information and left to make a decision with minimal guidance. Evidence suggests that many patients prefer SDM, and that it increases both congruence between patient values and treatment decisions, as well as informed consumption of health care. Widespread utilization of SDM is hindered by a lack of training that yields both an appreciable improvement of individual physicians' SDM skill sets, as well as a corresponding change in daily clinical practice. The workshop utilized in this study targeted novice physicians during the most formative years of their training. It contrasts with prior workshops that targeted attending physicians who are less likely to assimilate SDM than those of novice physicians. The current workshop also utilized observed standardized clinical encounters (OSCEs) to challenge common misconceptions regarding clinical scenarios appropriate for utilizing SDM.

METHODS: Forty-five Post-Graduate Year-1 (PGY1) physician interns in the categorical Internal Medicine Residency Program at Montefiore Medical Center, Bronx NY, in groups of 8–10, attended a mandatory 2-hour workshop during their ambulatory block rotation from September 2015 through December 2016. The workshop was part of a series of several interactive sessions geared toward the practice of high value care. The principles of SDM were reviewed, and the implementation of SDM was practiced using SDM barrier identification, problem-solving and role-playing in a fishbowl configuration where the instructor played role of patient and interns took turns performing SDM steps. Pre- and post-workshop video-recorded standardized clinical encounters OSCEs were performed to quantitatively assess skills improvement. These data were analyzed by an SDM expert blinded to whether the OSCE was obtained pre- or post-seminar. OSCEs were graded using the SDM-q9 scoring system on a scale of 9 to 54 evaluating sum of points from risk-benefit discussion, preference elicitation and other key components of SDM. Data were analyzed using paired student t-test.

RESULTS: 29/48 (60%) of interns completed both pre and post workshop OSCEs, who demonstrated a 57% increase in SDM proficiency (pre-workshop SDM-q9: 28/54, post-workshop SDM-q9: 44/54, $p = 0.0001$).

CONCLUSIONS: Interactive SDM workshops can improve SDM skill sets in novice physicians. Further research required to assess retention and incorporation into actual practice.

MEDIA COVERAGE OF THE HEALTH EFFECTS OF MARIJUANA

Ann Abraham[4]; Sandy J. Zhang[4]; Uche Okoye[4]; Alexandra Woodbridge[4]; Rosa Ahn[2]; Deborah R. Korenstein[1]; Salomeh Keyhani[3, 5]. [1]Memorial Sloan Kettering Cancer Center, Pelham, NY; [2]Oregon Health and Science University, Portland, OR; [3]University of California at San Francisco, San Francisco, CA; [4]San Francisco VA Medical Center, San Francisco, CA; [5]San Francisco VA, San Francsico, CA. (Control ID #2700272)

BACKGROUND: There is little data on the harms or therapeutic benefits of marijuana. Despite the gap in evidence, there has been a decline in the public perception of the harms of marijuana use. News media are large contributors to the national perspective on marijuana. It is important to determine what the media is communicating about the health effects of marijuana to the general public.

METHODS: We identified relevant articles from publications in Pew's top ten newspapers by print circulation that had articles indexed on Lexis Nexis. These papers included: The New York Times, The Daily News New York, The New York Post, The Denver Post, USA Today, and the Los Angeles Times. We selected all articles published between 1/1/12 and 5/1/2016 (date the study was initiated), whose major subject was "marijuana". If more than 100 articles were available in this time period from a particular publication, we randomly selected 100. We excluded articles less than 200 words in length, opinion pieces, and focused on synthetic marijuana. One reviewer categorized each article into one of the following topic areas: health, business, public policy, crime, entertainment or other. If the article mentioned a health effect, a second reviewer extracted reported health benefits and harms and rated the overall impression the article communicated about the benefits vs. risks of marijuana. We used the following three categories to rate the overall message of each article: 1) the benefits of marijuana outweigh the harms; 2) the harms of marijuana outweigh the benefits and 3) neutral impression of the harms vs. benefits. We compared the message content of articles focused on health to compared to those not focused on health using descriptive statistics.

RESULTS: We identified 564 articles across publications; 84 were excluded leaving a final sample of 480 articles. Articles were categorized as follows: public policy ($n = 190$, 40.0%), crime ($n = 113$, 23.5%), business ($n = 74$, 15.4%), entertainment and celebrity news ($n = 69$, 14.4%), health ($n = 31$, 6.5%), and other ($n = 1$, 0.002%). Mentions of the health effects of marijuana were found about a third of articles ($n = 151$, 31.5%), of which 89 (58.9%) described health benefits of marijuana and 105 (69.5%) described risks. Overall about half of articles ($n = 79$, 52.7%) communicated a favorable impression of marijuana, 58 (38.7%) communicated a negative impression and 13 (8.7%) communicated a neutral impression. Of the 31 articles focused on health, 19.4% ($n = 6$) communicated a favorable impression compared to 60.8% ($n = 73$) of the 120 articles not focused on health (p-value $< .001$). Articles that were not focused on health were more likely to communicate a favorable impression of the harm vs. benefit profile of marijuana compared to articles primarily focused on health (OR 6.4 95% CI 2.37–17.29).

CONCLUSIONS: Despite a lack of robust evidence on the harms risks and benefits or marijuana, a majority of lay-press articles communicate a favorable impression of the health effects of marijuana.

MEDICAL CONTRAINDICATIONS TO ESTROGEN AND CONTRACEPTIVE USE AMONG WOMEN VETERANS: RESULTS FROM THE ECUUN STUDY

Colleen P. Judge[3]; Xinhua Zhao[2]; Maria K. Mor[2]; Florentina Sileanu[2]; Sonya Borrero[1]. [1]University of Pittsburgh and VA Pittsburgh, Pittsburgh, PA; [2]VA Pittsburgh, Pittsburgh, PA; [3]University of Pittsburgh School of Medicine, Pittsburgh, PA. (Control ID #2687727)

BACKGROUND: Women Veterans have high rates of medical comorbidities, many of which are contraindications to estrogen-containing combined hormonal contraception (CHC). Contraindications to CHC may impact eligibility for and use of effective contraceptive methods. We aimed to describe the prevalence of contraindications to CHC among women Veterans at risk for unintended pregnancy, and to characterize the relationship between contraindications and contraceptive use.

METHODS: We analyzed data from the Examining Contraceptive Use and Unmet Need Among Women Veterans (ECUUN) study, a telephone-based survey with a national sample of 2,302 women Veterans ages 18–45 who received primary care at the VA in the last year. This analysis includes women at risk for unintended pregnancy, defined as heterosexually active within three months prior to interview, not currently pregnant or trying to conceive, and with no history of hysterectomy or infertility. Seven conditions representing relative or absolute contraindications to CHC were examined: hypertension, stroke, thromboembolism, coronary artery disease, breast cancer, migraine with aura, and smoking in women over 35 years old. The primary outcome was contraceptive use in the month prior to interview. Women were classified as using no method, CHC methods (pill, patch, ring), non-CHC prescription methods (IUD, implant, Depo-Provera, sterilization) or non-prescription methods (barrier methods, withdrawal, natural family planning). Multivariable logistic regression was used to assess the relationship between contraindications to CHC and contraceptive non-use as well as CHC use among contraceptors, while controlling for age, race/ethnicity, marital status, education, income, insurance and parity.

RESULTS: Of 1169 women Veterans at risk for unintended pregnancy (mean age 33.9 years), 25% had at least one medical contraindication to CHC. The most prevalent conditions were hypertension (15%), smoking in women over 35 (7%) and history of thromboembolism (3%). Eighty-eight percent reported contraceptive use in the past month: 22% used CHC methods, 50% non-CHC prescription methods, and 16% non-prescription methods. Women with contraindications to CHC were more likely to report contraceptive non-use in the past month than were women without contraindications (16% vs. 10%, $p =$ 0.004; adjusted OR [aOR]:1.74, 95% CI:1.14, 2.66). Among 1034 women using any contraception, women with contraindications were less likely to report CHC use than women without contraindications (17% vs. 27%, $p =$ 0.001; aOR:0.68, 95% CI:0.45, 0.99).

CONCLUSIONS: In a national sample of women Veterans at risk for unintended pregnancy, women with medical contraindications to CHC were less likely to use CHC methods, but were also more likely to report contraceptive non-use. These findings suggest appropriate medical screening for CHC use in VA healthcare settings, but also draw attention to an important gap in contraceptive care for women Veterans with medical comorbidities.

MEDICAL RESIDENTS WORKING WITH VULNERABLE PATIENTS IMPROVE THEIR PSYCHOSOCIAL SKILLS: A SWISS PILOT STUDY. Pau MOTA. University of Lausanne (Switzerland), Lausanne, Switzerland. (Control ID #2701875)

BACKGROUND: Scientific literature has shown that patients at high risk of vulnerability are involved in more health care use and in more encounters, which are perceived as difficult by physicians (1–2). Physicians involved in difficult encounters denoted worse psychosocial orientation practice (1–3). Medical residents are usually not trained for dealing with socioeconomic challenge after their medical degree, and physicians who experience many of their patients as difficult are more likely to end in burnout (2–6). This study aims to take advantage of a specific setting, the outpatient clinic at the University of Lausanne, in Switzerland, a university outpatient primary care clinic, in which medical residents frequently work with patients holding high levels of vulnerability (in 2015, more than 20% of encounters in the primary care clinic were patients with no insurance or depending on social welfare). The main objective of this study was to assess the medical resident beliefs about psychosocial aspects of health care, both before and after working in a university setting dealing with patients at high socioeconomic risk.

METHODS: This is a prospective study with a 6 months follow-up. To assess medical resident beliefs about psychosocial aspects of health care we used the Physician's Belief Scale (PBS). PBS is a validated questionnaire of 32 items designed to assess the importance given by the psychosocial care to the dimension in the therapeutic process (7). We compare the PBS score of medical residents both before and after having worked 6 months in the outpatient clinic.

RESULTS: All the new medical residents were included ($n = 11$). Mean age 32.4 years (+/− 3.3 sd). 7 women and 4 men. Mean of years of training 5.3 years (+/− 1.1 sd). After 6 months, we observed a decrease on the global PBS score mean from 79.5 to 76.4 ($p = 0.47$ using a Wilcoxon rank sum test). If we analyse by gender group, we observe a PBS score decrease for women (from 75.8 to 69.8) and an increase for men (from 85.75 to 87.7). Indeed, after six months we observed that the differences between genders tended to be significant, which was not the case at enrolment ($p = 0.10$ vs. $p = 0.44$). A second wave of medical new residents ($n = 16$) is currently under study (final results are expected in march-april 2017), with which we will be able to extend the sample size to a total of 27 to perform a similar analysis.

CONCLUSIONS: We observe an improvement of the medical residents PBS score after 6 months working with patients in socio-economical adversity. Even though the observed differences are not statistical significant, probably due to the small sample size, we could conclude that working with patients in socioeconomical adversity improve the medical residents' beliefs about psychosocial aspects of health care, and that there may be gender differences in this improvement.

MEDICAL STUDENTS ON INTERNATIONAL MEDICAL TRIPS: EVALUATING THE INFLUENCE OF EXPERIENTIAL LEARNING ON CLINICAL SELF-EFFICACY AND KNOWLEDGE Alexandra Strauss[1]; Hugo Narvarte[2]. [1]University of South Florida, Tampa, FL; [2]University of South Florida Morsani College of Medicine, Tampa, FL. (Control ID #2707483)

BACKGROUND: Previous studies have documented an association between international health experiences and positive educational influences on participants' knowledge, skills, and attitudes. However, the international health experiences studied were all of several weeks duration. Many medical schools participate in shorter duration international health experiences but little evidence exists regarding the effectiveness of such trips on educational outcomes. This study sought to evaluate the educational impact of a one-week international medical trip.

METHODS: The training experience was a one-week international health experience in Jarabacoa, Dominican Republic, consisting of medical students from a southeastern university. A training expert was consulted to apply principles of experiential learning theory to the educational experience. Students were surveyed before and after the health experience regarding clinical self-efficacy and educator self-efficacy, and tested on relevant medical knowledge.

RESULTS: Paired-sample t-test results demonstrate significant improvements across all targeted objectives. Clinical self-efficacy increased significantly (pretest M = 3.71, SD = 0.95; posttest M = 4.24, SD = 0.62); t(31) = 5.69 ($p < .001$, CI95 0.33, 0.71) as did student self-efficacy regarding ability to educate patients on various diagnoses (pre-test M = 3.52, SD = 0.96; posttest M = 4.26, SD = 0.69); t(31) = 6.81 ($p < .001$, CI95 0.51, 0.95). Furthermore, medical knowledge of trained and experienced topics significantly increased (pretest M = 68.10, SD = 12.34; posttest M = 73.83, SD = 16.68); t(31) = 2.43 ($p = .02$, CI95 0.93, 10.53), whereas there was no change in non-targeted medical topics.

CONCLUSIONS: Brief international health experiences in combination with a focused preceding curriculum can have significant educational value based upon measures of medical knowledge and self-efficacy; and thus, can be a positive complement to conventional medical school curricula. We speculate that this effect occurs because of the intensive and focused nature of the clinical experience consistent with experiential learning theory.

MEDICALLY TAILORED MEAL DELIVERY FOR DIABETES PATIENTS WITH FOOD INSECURITY: A RANDOMIZED CLINICAL TRIAL

Seth A. Berkowitz[1]; Linda M. Delahanty[2]; Jean Terranova[3]; Andrea Pyke[3]; Deborah J. Wexler[2]. [1]MGH, Boston, MA; [2]Massachusetts General Hospital, Brookline, MA; [3]Community Servings, Boston, MA. (Control ID #2688398)

BACKGROUND: Food insecurity, inconsistent food access owing to cost, leads to poor health for patients with diabetes, but clinicians currently have few treatment options. We tested the feasibility of medically-tailored meal delivery (MTM). We hypothesized that MTM would improve the Healthy Eating Index 2010 (HEI) dietary quality score. Higher HEI scores are associated with improved glycemic control and reduced diabetes complications.

METHODS: In preliminary results for the Community Servings: Food as Medicine for Diabetes randomized clinical trial (NCT02426138), 29 adults (age > 18 years) with hemoglobin A1c > 8.0% who reported food insecurity (using the 2-item 'hunger vital sign') were enrolled between June 2015 and October 2016. The intervention was home delivery of freshly prepared medically tailored (by a registered dietitian) meals, from Community Servings, a non-profit organization. We used a randomized crossover design, randomly assigning the order of 'on-meals' (10 meals/week delivered for 12 weeks) and 'off-meals' (12 weeks usual care and a Choose MyPlate healthy eating brochure). HEI was assessed by three 24-hour food recalls in both the 'on-meals' and 'off-meals' periods, averaged, and adjusted for baseline HEI score. Higher total HEI score (range: 0–100) and higher sub-category scores (range: 0–5, 0–10, or 0–20) represent 'better' dietary quality. A difference of 5 points in total HEI score is clinically significant. Linear mixed models accounted for repeated measures in the analysis.

RESULTS: Participants were 69% female and had a mean age of 57.8 (SD 12.1) years. Sixty-six percent were non-Hispanic white, 24% were non-Hispanic black, and 10% were Hispanic. Over 50% had Medicaid insurance. The intervention led to large and statistically significant improvements in the mean total HEI score (69.4 when 'on-meals' and 37.5 'off-meals'; $p < .0001$), and for most sub-categories (Table).

CONCLUSIONS: Home delivery of medically tailored meals substantially improved dietary quality for food insecure patients with diabetes. Longer-term studies should evaluate the effect of MTM on clinical outcomes.

Healthy Eating Index Results

	On Meals	Off Meals	*P*
HEI Total (0–100)	69.4	37.5	<.0001
HEI 1: TOTAL VEGETABLES (0–5)	4.4	2.5	<.0001
HEI 2: GREENS AND BEANS (0–5)	3.7	0.4	<.0001
HEI 3: TOTAL FRUIT (0–5)	3.3	1.3	0.0003
HEI 4: WHOLE FRUIT (0–5)	3.7	1.3	0.0002
HEI 5: WHOLEGRAIN (0–10)	4.6	1.5	0.0007
HEI 6: TOTAL DAIRY (0–10)	5.5	4.6	0.27
HEI 7: TOTAL PROTEIN (0–5)	4.7	3.8	0.006
HEI 8: SEAFOOD AND PLANT PROTEIN (0–5)	3.4	1.4	0.0003
HEI 9: LESS FATTY ACIDS (0–10)	7.5	4.2	0.0003
HEI 10: LESS SODIUM (0–10)	1.7	2.9	0.14
HEI 11: LESS REFINED GRAIN (0–10)	8.8	6.1	0.001
HEI 12: FEWER 'EMPTY' CALORIES (0–20)	18.0	7.6	<.0001

Score range in parentheses.

Higher score represents 'better' consumption for all categories (e.g. a higher empty calories score represents lower consumption of 'empty' calories)

MEDICARE ADVANTAGE BENCHMARKS, BIDS, AND REBATES BEFORE AND AFTER THE AFFORDABLE CARE ACT

Zirui Song. Massachusetts General Hospital, Boston, MA; Harvard Medical School, Boston, MA. (Control ID #2707566)

BACKGROUND: To slow the growth of Medicare spending, changes to Medicare financing are increasingly debated. Some policymakers propose reforming Medicare from a traditional defined benefit to a fixed government contribution per beneficiary. This approach would build on the Medicare Advantage (MA) program, in which private insurers compete to administer the Medicare benefit to seniors. A third of Medicare beneficiaries are now in MA, yet little is known about the impact of federal payments to MA plans (the "benchmark") on the plans' pricing decisions (the "bid") for seniors. In 2012, MA payment rates nationwide changed under the Affordable Care Act (ACA). This study evaluates the impact of changes in plan payments on plan pricing decisions and, in turn, their implications for the benefits that beneficiaries in MA receive.

METHODS: This study used 2006–2014 MA plan payment data from the Centers for Medicare and Medicaid Services. All local plans that submit prices under the competitive bidding system in MA, including special needs plans, were included. Employer group waiver plans and regional PPO plans were excluded. This study examined the impact of changes in the benchmark on plan bids and beneficiary rebates across the time period, as well as before and after the ACA, using a longitudinal multivariable model at the county and plan level, controlling for characteristics of the market, coding intensity, contract type, and secular trend. It was also weighted by beneficiary enrollment. The benchmark, bid, and rebate were all risk-standardized to reflect a beneficiary of 1.0 risk.

RESULTS: The growth in MA benchmark payments before the ACA slowed in the years after the ACA. Across the study period, for every $1 change in the MA benchmark payment, MA plans changed their bids by an average of $0.58 in the same direction ($p < 0.001$), consistent with imperfect competition in the MA market and incomplete pass-through of federal payments or cuts to beneficiaries. In the years after the ACA, this bid response was on average $0.70 ($p < 0.001$), suggesting that the MA market was less competitive in the

later years relative to the earlier years. Plans with higher benchmark payments lowered their bids more than plans receiving lower benchmark payments, thereby buffering the decrease in rebates faced by beneficiaries.

CONCLUSIONS: After passage of the ACA, private plans in Medicare on average lowered their bids in response to decreases in federal payments. This lessened the decrease in rebates faced by beneficiaries, potentially explaining the continued growth in MA enrollment after the ACA. Competition in the MA market remained imperfect and appeared to have decreased after the ACA. As debate over the reform of the entire Medicare program towards a competitive bidding ("premium support") system intensifies, these national findings on the effect of federal payments on plan pricing and its implications for beneficiary rebates and enrollment may serve as a useful guide for policymakers and the public.

MENTAL HEALTH AND ACCULTURATION IN FIRST GENERATION CHINESE AMERICAN IMMIGRANTS IN NEW YORK CITY: A CONTEMPORARY CROSS-SECTIONAL ANALYSIS Helen Ma[3]; Martin C. Fried[1]; Johanna Hase[2]; Rachael Hayes[2]; Aiyi Zhang[2]; Colleen C. Gillespie[2]. [1]NYU, Astoria, NY; [2]NYU School of Medicine, New York, NY; [3]New York University, New York, NY. (Control ID #2704867)

BACKGROUND: Chinese Americans represent the fastest growing immigrant population in the United States, and they face unique mental health challenges. To best care for this population internists should understand the effects of acculturation, defined as the change that occurs when an ethnic minority encounters a dissimilar dominant culture. The relationship between acculturation and mental health is complex. We sought to describe this relationship in Chinese immigrants currently living in New York City.

METHODS: We analyzed data from the Chinese American Cardiovascular Health Assessment, a cross-sectional survey of foreign-born Chinese adults living in New York City ($n = 2071$). Primary outcomes included depression, stress and physical symptoms, and the primary exposure was acculturation. Rates of depression, stress, and physical symptoms were surveyed using validated tools. Acculturation was evaluated using the Stephenson Multigroup Acculturation Scale, which is an assessment of both ethnic and dominant society immersion (ESI and DSI). Mean acculturation, depression and stress scores were stratified by demographics. Differences were assessed using one-way ANOVA analysis.

RESULTS: Our population was generally middle-aged, well-educated, and employed. Younger age, female gender, shorter duration of residence in the US, single marital status and poor perceived health were associated with higher rates of depression and stress. Overall the cohort was more acculturated to China (average ESI 3.67 out of 4) than America (DSI 2.11 out of 4). Participants who were depressed had lower acculturation to ethnic society compared to those without depression (ESI 3.59 vs ESI 3.67, $p = 7.13e\text{-}5$). This difference was not seen when comparing acculturation to dominant society in depressed vs not depressed participants (DSI 2.08 vs DSI 2.11, $p = 0.53$). Higher levels of stress were associated with lower acculturation to both ethnic (ESI 3.62 vs 3.67, $p = 0.003$) and dominant cultures (DSI 2.0 vs 2.12, $p = 0.002$). Participants with depression and stress were more likely to have physical symptoms and lower self-rated health.

CONCLUSIONS: We performed a descriptive analysis of Chinese immigrants living in NYC to characterize the interaction between acculturation, depression and stress. We observed that depressed participants had lower acculturation to their ethnic society, but not dominant society, perhaps suggesting a protective effect of connection to one's home society. Future mental health interventions may target patients with low acculturation by increasing access to community events, employing Chinese community health workers, or leading group visits to targeted groups. This study is consistent with prior research demonstrating a relationship between physical symptoms and mood in Chinese immigrants. Internists should consider physical symptoms as potential indicators of underlying mood disorders in this underserved population, as early identification may lead to improved diagnosis and treatment.

MODELING PATIENT COST SAVINGS FROM ELECTRONIC CONSULTATIONS Scott Shipman; Karen Jones. Association of American Medical Colleges, Washington, DC. (Control ID #2707536)

BACKGROUND: Healthcare costs borne by patients are an insufficiently addressed aspect of patient care and high value healthcare models should strive to reduce these costs. Recent research highlights the significant time burden and opportunity costs to patients obtaining ambulatory healthcare. Referrals to specialty providers have increased dramatically, with substantial cost and access implications for patients. Some health systems have introduced an innovative alternative, electronic consultations (eConsults), which provide a high-reliability mechanism for primary care physicians to receive timely input from specialists. The eConsult often averts the need for a referral and subsequent in-person specialty visit(s). We sought to estimate the patient savings enabled by eConsults.

METHODS: Expenses associated with specialty office visits include out-of-pocket medical costs, transportation, childcare, etc. We calculated average out-of-pocket patient expense for adult specialty visits and estimated transportation costs using published travel times. Opportunity costs for adult specialty visits were derived using published ambulatory visit times and the 2015 median hourly wage to value the patient's time in foregone activities. For patients 65 and over, the comparable retiree wage was used. Since one in ten of older adults are accompanied to ambulatory visits by adult children we estimated the additional costs for that subgroup. We used our opportunity cost estimates to assess the potential overall patient savings in an eConsult model of care. Using the midpoint from earlier research showing that eConsults can substitute for 8–20 percent of specialty visits, we applied the cost per visit to the specialty visits averted.

RESULTS: The mean out-of-pocket cost for specialty visits was $36, travel costs were $12, and opportunity costs were $37. Combining direct and indirect costs, we estimate $85, $65, and $104 for adults under age 65, over 65 (alone) and over 65 (accompanied) respectively. Of the 105 million ambulatory visits resulting in referrals in 2009, 57.8 million or more were from primary care providers. eConsults could have replaced 8.1 million of those referrals, resulting in savings to patients of over $657 million.

CONCLUSIONS: eConsults that avert a specialty visit represent a considerable savings to patients, particularly when opportunity costs are considered in addition to direct costs. This is a conservative estimate, since we have considered only the minimum of direct expenses. Further, as initial specialty referrals leads to multiple visits over time, there are added savings to patients that accrue. Unnecessary specialty visits are costly to patients and impede access to care for those who require in-person care. eConsults represent a promising innovation to improve timeliness of specialist input while reducing costs of care.

MODIFIABLE COMMUNICATION FACTORS CONTRIBUTING TO HOSPITAL READMISSION RATES FOR AFRICAN AMERICAN PATIENTS IN PRIMARY CARE Jessica Valente; Natrina Johnson; Ugo Edo; Leah S. Karliner. UCSF, San Francisco, CA. (Control ID #2704445)

BACKGROUND: Many interventions have been developed to facilitate patients' transitions from the hospital back to primary care. However, disparities remain in readmission rates for vulnerable populations, including a 34% higher readmission rate for African American patients from our urban academic general medicine practice. We set out to identify modifiable factors contributing to higher readmission rates for this group.

METHODS: We recruited self-identified African American patients receiving primary care in our general medicine practice who were discharged from Medicine or Cardiology services at our tertiary care hospital between 7/2013 - 6/2014 to participate in semi-structured individual interviews. Interview transcripts were coded by two researchers using both inductive and deductive coding to identify modifiable factors contributing to high readmission rates.

RESULTS: After excluding those who had died and those whose primary care provider (PCP) preferred patient not be contacted, we identified 100 eligible patients, and interviewed 24. Thirteen (54%) had multiple admissions during the study period. Five major themes emerged: 1) Importance of continuity with a single PCP (Patient only sees cardiologist: "because too many different primary care providers, they don't do anything"), 2) Impact of patient-provider relationship ("just that ear to listen to you and literally give you constructive criticism or a solution to something is so refreshing to get sometimes. And so to get that in my life, she [PCP] was right on time, because I didn't have that outlet."), 3) Deficiencies in the discharge process (Patient unexpectedly discharged after procedure was postponed: "It was a nurse saying, 'You're gonna be leaving' after starving me all day"), 4) Obstacles to disease self-management (Patient admitted for hyperglycemia: "I was making an aggressive attempt to lose weight…then I made the mistake of getting these juices, thinking that they would curb appetite, not realizing that they had all this sugar in them."), and 5) Coordination across settings (Patient closely followed by outpatient GI: "I think if the [inpatient team] talked to my GI [doctor], they would have said, hey, this is what we usually do and the protocol. Because that's what they deal with").

CONCLUSIONS: Our interviews revealed the importance of different aspects of communication for successful discharges and readmission prevention for this vulnerable population, including building strong continuity relationships and listening skills in primary care, enhancing information-sharing between settings, improved self-management education, and adequate preparation for discharge. Our next step is to develop systems-based interventions focused on these communication areas.

MORTALITY AFTER NONFATAL OPIOID OVERDOSE: MEDICATIONS FOR OPIOID USE DISORDER ARE ASSOCIATED WITH LOWER RISK Marc Larochelle[2]; Dana Bernson[3]; Thomas Land[3]; Thomas Stopka[4]; Alexander Y. Walley[1]. [1]Boston Univ, Boston, MA; [2]Boston University School of Medicine and Boston Medical Center, Boston, MA; [3]Massachusetts Department of Public Health, Boston, MA; [4]Tufts University School of Medicine, Boston, MA. (Control ID #2706600)

BACKGROUND: Methadone, buprenorphine, and naltrexone are approved medications for opioid use disorders (MOUD) that reduce opioid craving and use, and increase opioid abstinence in randomized controlled trials. MOUD are associated with improved survival in observational studies. People who survive an opioid overdose are at high risk for subsequent fatal opioid overdose; however, the mortality benefit from MOUD among overdose survivors is not known. We hypothesized MOUD would be associated with reduced risk of opioid-related and all-cause mortality.

METHODS: We conducted a retrospective cohort study of Massachusetts residents ages 11 years and older who experienced a nonfatal opioid overdose in 2013–2014. We used individually linked state-based data from ambulance encounters, hospital treatment, the prescription monitoring program, substance use treatment programs, all payer claims, and death records. Nonfatal opioid overdose was identified from ambulance encounters with evidence of opioid overdose using a natural language processing algorithm, and from emergency department and inpatient encounters with ICD-9 codes for opioid poisoning. We examined the number and proportion of individuals who subsequently received MOUD defined as treatment in a methadone maintenance program, receipt of buprenorphine, or receipt of naltrexone in each month. We examined time to opioid-related and all-cause mortality, censoring for the end of the study period or, for opioid-related mortality, death due to another cause. We used a multivariable Cox proportional hazards model with MOUD as the monthly time varying predictor of interest. We controlled for age, sex, and receipt of prescription opioids or benzodiazepines as monthly time varying covariates.

RESULTS: We identified 11,438 individuals who survived an opioid overdose. 7,092 (62%) were male; 1,411 (12%) were between 11 and 24 years of age, 5,907 (52%) were between 25 and 44 years of age, and 4,120 (36%) were 45 years of age or older. Over a median follow-up of 10 months, 2,642 (23%) people received MOUD in one or more months [693 (6%) received methadone, 1,672 (15%) buprenorphine, 624 (5%) naltrexone]. Opioid-related mortality was 2% ($n = 240$), and all-cause mortality was 6% ($n = 649$). Compared to not receiving MOUD in a given month, receipt of MOUD was associated with a decreased risk of opioid-related mortality (adjusted hazard ratio (AHR): 0.2 [95% confidence interval (CI): 0.1–0.6]) and all-cause mortality (AHR: 0.3 [95% CI: 0.2–0.5]).

CONCLUSIONS: A minority of individuals received MOUD following nonfatal opioid overdose; however, MOUD was associated with a 70% reduction in all-cause mortality, and an 80% reduction in opioid-related mortality. Efforts to link and engage overdose survivors with MOUD may substantially improve survival and warrant study in prospective controlled trials.

MULTIMORBIDITY AND LONG-TERM DECLINE IN PHYSICAL FUNCTIONING AND ACTIVITIES OF DAILY LIVING AMONG OLDER ADULTS Melissa Y. Wei[2, 3]; Mohammed U. Kabeto[2]; Kenneth Mukamal[1]; Kenneth M. Langa[2, 3]. [1]Beth Israel Deaconess Medical Center/ Harvard Medical School, Boston, MA; [2]University of Michigan, Ann Arbor, MI; [3]Institute for Healthcare Policy and Innovation, University of Michigan, Ann Arbor, MI. (Control ID #2703648)

BACKGROUND: Multimorbidity is highly prevalent in the general population, particularly among older adults, but its optimal quantification and associations with long-term physical functioning and disability are uncertain. We aimed to quantify the associations of multimorbidity with future physical functioning and activity limitations using a newly developed and validated comprehensive multimorbidity-weighted index

(MWI) that weights 81 chronic conditions by current physical functioning, a universally-valued and patient-oriented outcome, in community-dwelling adults.

METHODS: The Health and Retirement Study (HRS) is a nationally-representative longitudinal cohort of >38,000 adults aged ≥51 years followed since 1992. In 2000, participants were interviewed about physician-diagnosed chronic conditions, from which their MWI was computed. In 2010, participants reported their physical functioning using a modified Short Form-36 physical functioning scale (range 0–100) and number of limitations with activities of daily living (ADLs, range 0–5) and instrumental activities of daily living (IADLs, range 0–6) limitations. We included participants with complete follow-up through 2010. The MWI was examined as a continuous and categorical variable. With baseline MWI as the exposure, we used multivariate linear regression to measure the longitudinal association with continuous physical functioning and the number of ADL and IADL limitations over 10-year follow-up. All models were adjusted for age, sex, race/ethnicity, and education.

RESULTS: There were 18,519 eligible respondents in the 2000 interview after excluding 93 (0.5%) adults missing ≥1 chronic condition variables. After 10-year follow-up, 6403 (34.5%) died, and 1256 (6.8%) were lost to follow-up. The final sample included 10,860 participants with a mean ± SD age of 66.6 ± 10.4 years. At baseline, participants had a weighted mean ± SD MWI of 4.9 ± 4.8, and 0.50 ± 1.2 ADL and 0.32 ± 0.95 IADL limitations. After follow-up, participants with the highest quartile MWI had 0.88 ADL limitations (95%CI: 0.74-1.01) and 0.46 IADL limitations (95%CI: 0.37–0.55), while those in the lowest quartile had 0.15 (95%CI: 0.11–0.20) ADL limitations (all $p < 0.001$) and no significant IADL limitations. Physical functioning declined by −28.6 (95%CI: −30.8, −26.4) for those in the highest versus lowest quartile MWI (−10.1, 95%CI: −11.4, −8.7) (both $p < 0.001$). There was a dose–response association between increasing MWI quartiles with physical functioning decline and number of ADL and IADL limitations.

CONCLUSIONS: In this nationally-representative cohort, a multimorbidity index weighted to current physical functioning was strongly associated with long-term decline in physical functioning and greater ADL and IADL limitations, with more than a doubling in those with the greatest MWI. Multimorbidity has profound associations with future physical functioning that are easily captured with a readily-measured index that can target older adults at higher risk for functional decline and disability.

MULTIMORBIDITY AND PHYSICAL AND COGNITIVE FUNCTION IN NATIONALLY-REPRESENTATIVE US ADULTS: PERFORMANCE OF A NEW MULTIMORBIDITY-WEIGHTED INDEX Melissa Y. Wei[2, 2]; Mohammed U. Kabeto[2]; Kenneth M. Langa[2, 2]; Kenneth Mukamal[1]. [1]Beth Israel Deaconess Medical Center, Boston, MA; [2]University of Michigan, Ann Arbor, MI. (Control ID #2703266)

BACKGROUND: Multimorbidity is currently one of the greatest challenges facing patients and providers, but its quantification remains challenging. We recently developed a new multimorbidity-weighted index (MWI) that weights 81 chronic conditions by their impact on physical functioning in community-dwelling adults. We now assess its association with subjective and objective physical and cognitive outcomes in an independent, nationally-representative cohort of US adults.

METHODS: The Health and Retirement Study (HRS) is an ongoing, nationally-representative longitudinal cohort of ≥51 year-old US adults. In 2010, participants completed an interview on physician-diagnosed chronic conditions and physical functioning items adapted from the Short Form-36 physical functioning scale. We used multivariable linear regression to obtain coefficients for 16 chronic conditions on physical functioning and used Pearson's correlation coefficient and the Kappa statistic to validate the weights of the original, independently-derived MWI. We then used multiple linear regression to determine the association between the original MWI (continuous and quartiles) and continuous measures of grip strength (kg), gait speed (m/s), basic and instrumental activities of daily living (ADL/IADL) limitations, and cognitive performance using the modified Telephone Interview for Cognitive Status (TICS-m). All models were adjusted for age, sex, race/ethnicity, body mass index, smoking status, education, and household net worth.

RESULTS: Among 20,805 eligible participants, 184 (0.9%) missing ≥1 health conditions were excluded, leaving a final sample of 20,621 adults with a mean ± SD age of 67 ± 9 years. Associations between chronic conditions and physical functioning varied several-fold (median coefficient 7.0, range 2.0-25). MWI values based on weightings observed in the HRS and the original published cohorts were highly correlated (Pearson's r = 0.92) and had a classification agreement of 85 and Kappa statistic of 0.80 ($p < 0.0001$). The mean ± SD MWI was 5.2 ± 4.6. Participants in the highest quartile of MWI had decreased grip strength (−2.91 kg, 95%CI: −3.51, −2.30), slower gait speed (0.11 m/s, 95%CI: 0.06, 0.15), a greater number of ADL (0.79, 95%CI: 0.71, 0.87) and IADL (0.49, 95%CI: 0.44, 0.55) limitations, and decreased TICS-m score (−0.59, 95%CI: −0.77, −0.41) in adjusted models compared with the lowest quartile MWI (all $P < 0.001$). We observed a graded relationship for all outcomes with increasing MWI quartiles.

CONCLUSIONS: A multimorbidity index weighted to physical functioning performed nearly identically in a nationally-representative independent cohort of adults as it did in its original development cohorts, confirming its broad generalizability. In this independent cohort, MWI was strongly and consistently associated with subjective and objective physical and cognitive performance. Thus, the MWI appears to be a valid measure of multimorbidity in US adults.

MULTIPLE RISK FACTOR COUNSELING TO PROMOTE HEART-HEALTHY LIFESTYLES IN THE CHEST PAIN OBSERVATION UNIT: PILOT RANDOMIZED CONTROLLED TRIAL David A. Katz[1, 1]; Mark Graber[1]; Patricia Lounsbury[2]; Mark Vander Weg[1, 1]; Philip Horwitz[1]; Xueya Cai[3]; Alan Christensen[1]. [1]University of Iowa, Iowa City, IA; [2]University of Iowa Hospital and Clinics, Iowa City, IA; [3]University of Rochester Medical Center, Rochester, NY. (Control ID #2707528)

BACKGROUND: Admission to the chest pain observation unit (CPOU) may be an advantageous time for patients to consider heart-healthy lifestyle changes while undergoing diagnostic evaluation to rule out myocardial ischemia. The aim of this pragmatic trial was to assess the effectiveness of a multiple risk factor intervention in changing CPOU

patients' health beliefs and readiness to change health behaviors. A secondary aim is to obtain preliminary estimates of the intervention's effect on diet, physical activity, and smoking.

METHODS: We conducted a pilot randomized controlled trial (RCT) of a moderate intensity counseling intervention in 140 adult patients with at least one modifiable cardiovascular risk factor (CRF) who were admitted to the CPOU of an academic emergency department (ED) with symptoms of possible acute coronary syndrome (ACS). Study patients were randomly assigned to full counseling (face-to-face cardiovascular risk assessment and personalized counseling on nutrition, physical activity, and smoking cessation in the ED, plus two telephone follow-up sessions) or minimal counseling (brief instruction on benefits of modifying cardiovascular risk factors (<5 min) and informational handout) by a cardiac rehabilitation specialist. We measured Health Belief Model constructs for ischemic heart disease, stage of change, and self-reported CRF-related behaviors during 6-month follow-up using previously validated measures. We used linear mixed models and logistic regression (with generalized estimating equations) to compare continuous and dichotomous behavioral outcomes across treatment arms, respectively.

RESULTS: In both treatment arms combined, patients showed significant increases in the perceived benefits of improving CRF-related behaviors (27.7 vs. 26.6, $p = .0001$) and increased readiness to change dietary behavior and PA during follow-up: intake of saturated fat (83 vs. 49%), fruit and vegetable consumption (83 vs 56%), and regular exercise (34 vs. 14%) at 6-months and baseline, respectively ($p < .0001$ for all comparisons). Although roughly 20% more patients in the full counseling arm reported having received counseling on diet and physical activity during CPOU admission, there were no significant differences between treatment arms for any cardiovascular health beliefs, stages of change, or CRF-related behaviors during longitudinal follow-up.

CONCLUSIONS: Patients admitted to the CPOU demonstrate sustained changes in several cardiovascular health beliefs and risk-related behaviors during follow-up; this provides further evidence that the CPOU visit is a "teachable moment" for cardiovascular risk reduction. A multiple risk factor intervention that aimed to build motivation to change and problem-solving skills did not significantly improve behavioral outcomes, compared to minimal counseling. Future studies should evaluate more intensive ED-initiated counseling interventions to engage patients in changing cardiovascular risk behaviors, in coordination with primary care.

MUSIC TO MY EARS: BRIGHTENING THE DAYS OF HOSPITALIZED PATIENTS Feifei Xue; Scott Wright. jhusom, Baltimore, MD. (Control ID #2706698)

BACKGROUND: For most people, listening to music is pleasurable. This act can serve as a calming influence, it can be a satisfying distraction, and it is capable of lifting low spirits. Hospitalized patients may experience boredom, fear, and unease; these emotions may be related to both the acute illness and missing the comforts of home. In an attempt cheer up hospitalized patients and to connect them with a preferred experience from their past, we designed a brief intervention that would bring the gift of music to their hospital room. A priori, we hypothesized that such an intervention might serve to upgrade their mood and minimize their awareness of pain.

METHODS: This pilot study assessed the impact of an intervention that was delivered to 151 hospitalized adult patients that were admitted to a general medicine wards at a large academic hospital in Baltimore. After consenting to participate, the patients were asked a series of questions, including the modified HADS (Hospital Anxiety and Depression Scale), a validated pain scale (that uses response options along a 10-point Likert-scale), and assessments of their appreciation of music. Following this data collection, subjects selected 1 or 2 songs of their choice for their listening enjoyment. These favorite songs were played from an internet-based library (Spotify) and delivered through noise-cancelling headphones, uninterrupted for the length of the track. Mood and pain were reassessed immediately after listening to this music session; paired t-tests were used to assess for differences in scores.

RESULTS: A majority of the patients studied were female ($n = 86$, 57%), and their mean age was 57 years. Two thirds of patients were Caucasian (64%), and 51 patients were African American. Ninety percent of patients reported listen to music in their free time, and 89% of patients explained that they enjoy listening to music when they are alone. The patients' modified HADS score (−4.99, standard error [SE] = 0.45, $p < 0.0001$) and pain score (−0.72, SE = 1.51, $p < 0.0001$) were both significantly decreased after listening to a couple of their favorite songs. The 2 most frequently requested songs were "Sangria" by Blake Shelton, and "My Heart Will Go On" by Celine Dion. The genre of music that were selected with the greatest frequency were Rock ($n = 28$) and Country ($n = 28$). All patients (100%) enjoyed the music session. Spontaneous comments were recorded from patients and 2 representative quotes are shown here: "You truly made my day. I love that song and haven't heard it in so long", and "That was such nice treat. You should have been here the day when I was really sick; I could have used some music then."

CONCLUSIONS: This study demonstrates that bringing music to hospitalized patients and encouraging them to listen to their favorite songs are genuinely appreciated. If this intervention can enhance moods and reduce pain for patients in the hospital, directing resources to make it sustainable may be justified.

NATIONAL TRENDS IN MEDICAL COMPLEXITY OF ADMITTED EMERGENCY DEPARTMENT ADULT PATIENTS FROM 2009–2013 Matthew Basciotta; Luke Brindamour; Ivana Jankovic; Kenneth Mukamal. BIDMC, Brookline, MA. (Control ID #2706514)

BACKGROUND: In the setting of major changes to health care delivery, there is a perception that patients admitted to hospitals are increasingly complex. Although complexity, can be difficult to capture, it is generally defined by an increased number of chronic medical problems, increased severity of complications related to a chronic medical condition, or both. By understanding trends in patient complexity, hospitals will better be able to direct economic and human resources (level of nursing care, number of providers etc.) to better care for their patient populations.

METHODS: In this observational serial cross sectional study, we utilized publicly available NHAMCS emergency room data. Time period included 2009–2013 (excluding 2011, for which data was unavailable). Inclusion criteria was patients >18 years old admitted to inpatient services or transferred to another hospital from the emergency department. Using time (year) as exposure of interest, outcomes assessed included number of comorbidities, age, number of medications prescribed, and triage level at point of care. We accounted for changes in survey detail and format between 2009–2010 and 2012–2013 by capping at data points available in earlier surveys. Results were analyzed using linear regression to evaluate changes in continuous variables and ordered logistic regression to evaluate ordinal variables. All analysis were performed with Stata statistical software.

RESULTS: Age, number of medications and number of comorbidities were analyzed as continuous outcome variables with year as a continuous exposure variable. Age and number of medications were significantly correlated with year. Every increase in 1 year after 2009 was associated with an increased age of patients by 0.74 years ($p = 0.002$) and number of medications given by 0.10 ($p = 0.014$). Number of comorbidities among the five diagnoses that were surveyed across all years was not significantly correlated with year ($p = 0.38$). Triage level was recorded as 1–5 and was analyzed as an ordinal variable with ordered logistic regression. Every increase in 1 year was associated with an odds ratio of 1.08 of a more acute triage level ($p = 0.014$).

CONCLUSIONS: Over 2009–2013 we found statistically significant increases in age, triage level and number of medications prescribed to patients admitted from the ED. We did not observe a significant trend towards increased comorbidities, however this was likely limited by fewer listed comorbidities in data sets prior to 2012 (five vs 10). Despite this limitation, all other variables trended significantly towards increased medical complexity. Additional studies could be performed prospectively to confirm this trend and evaluate for factors that would better capture medical complexity. This analysis could also be extended as data from 2014–2016 becomes available. It would be interesting to evaluate how changes in access to care across this time period have effected patient complexity and stress on hospitals.

NATIONAL TRENDS IN USE OF MEDICARE'S ANNUAL WELLNESS VISIT

Ishani Ganguli[1, 2]; Jeffrey Souza[2]; J. Michael McWilliams[2]; Ateev Mehrotra[2]. [1]Brigham and Women's Hospital, Chestnut Hill, MA; [2]Harvard Medical School, Boston, MA. (Control ID #2706549)

BACKGROUND: In 2011 Medicare introduced the Annual Wellness Visit (AWV) - a form of the periodic health exam that has been a mainstay in primary care. The AWV is free for patients and has been promoted as a way for clinicians to encourage preventive care. While small studies have suggested pockets of adoption, some call visit requirements onerous and it is unclear where and how AWVs are being used across the US. We examined national growth of AWVs and characteristics of clinicians and patients who use them.

METHODS: Using a national 20% sample of 2010–2014 Medicare fee-for-service beneficiaries, we calculated AWV rates among eligible beneficiaries in hospital referral regions and across demographic and clinical characteristics, including linkage to a primary care physician (PCP; family practice, general practice, or internal medicine) affiliated with an Accountable Care Organization (ACO). We characterized clinicians performing AWVs.

RESULTS: The percent of beneficiaries getting an AWV each year grew from 7.5% in 2011 to 15.6% in 2014. In 2014, whites, urban residents, and those with higher income, few comorbidities (Table), and an ACO-affiliated PCP (25.9% vs 17.6%,$p < 0.01$) were more likely to receive an AWV. Among those who received an AWV in 2014, 53.4% had one the prior year. AWV rate varied across regions from San Angelo,TX (3.0%) to Appleton,WI (34.3%). Nearly 90% of AWVs were done by PCPs; the top 10% of all AWV providers accounted for 43.7% of AWVs.

CONCLUSIONS: AWV use has grown modestly, particularly in ACOs and certain regions. These patterns, in light of challenges with AWV documentation, suggest visit use may be contingent on physician or institution-specific availability of templates, workflows, or non-physician health workers to facilitate them. AWV use was higher among whites, higher-income, urban, and relatively healthy beneficiaries, raising concern that disadvantaged groups who might most benefit from AWVs are least likely to receive them. Further work should explore whether AWVs improve care.

Patient Characteristic	n(% with at least one visit in 2014)	Adjusted Odds Ratio(95%CI)
Gender Male	2,655,724(14.5%)	Ref
Female	3,327,430(16.5%)	1.16(1.16,1.17)
Age 18-64	982,144(8.7%)	0.55(0.55,0.56)
65-74	2,365,406(18.1%)	Ref
75-84	1,731,109(17.6%)	0.95(0.95,0.96)
85+	904,495(12.9%)	0.66(0.65,0.66)
Race White	5,046,238(16.3%)	Ref
Black	569,377(11.0%)	0.78(0.77,0.79)
Other	367,539(13.2%)	0.86(0.85,0.86)
Area-level income <2x Federal Poverty Level	2,826,193(12.2%)	Ref
>2x FPL, <90% percentile	2,337,608(17.9%)	1.57(1.55,1.58)
≥90% percentile	573,777(22.2%)	1.29(1.29,1.30)
Setting (Rural Urban Commuting Area Code) Metropolitan	4,263,240(17.1%)	Ref
Micropolitan	808,916(12.8%)	0.81(0.80,0.82)
Rural	873,268(10.5%)	0.66(0.66,0.67)
Number of comorbidities 0	1,951,043(14.7%)	Ref
1	1,278,207(18.5%)	1.31(1.30,1.32)
2	845,091(17.4%)	1.23(1.22,1.24)
3+	1,908,813(13.7%)	1.05(1.04,1.06)

NEEDS ASSESSMENT FOR SCALE-UP OF THE WOMEN'S HEALTH PRACTICE-BASED RESEARCH NETWORK

Anju Sahay[3]; Alyssa Pomernacki[3]; Diane Carney[3]; Rachel Golden[3]; Elizabeth M. Yano[1]; Alison Hamilton[1]; Ruth Klap[1]; Susan M. Frayne[2]. [1]VA Greater Los Angeles HSR&D Center, Sepulveda, CA; [2]VA Palo Alto Health Care System/Stanford, Palo Alto, CA; [3]VA Palo Alto, Palo Alto, CA. (Control ID #2702961)

BACKGROUND: The 60-site national VA Women's Health-Practice Based Research Network (WH-PBRN) focuses on improving care of women Veterans. It promotes a culture of continual organizational learning by fostering collaboration, supporting practice-based research/quality improvement (QI) initiatives, and disseminating findings. To inform its next phase of scale-up, we conducted a needs assessment of WH-PBRN Site Leads (SLs) and Co-SLs to characterize their participation and elicit their perspectives.

METHODS: In Fall 2016 we emailed a cross-sectional, 2-page, self-administered survey to all SLs and Co-SLs ($n = 65$) at 57 sites (after excluding 3 with SL in transition). It asked about recent involvement in PBRN activities, willingness to participate in future activities, and perspectives about usefulness/importance of participation.

RESULTS: The 65 respondents (response rate 78%) came from 50 sites. Among 45 SLs, 76% were clinicians and 24% researchers; among 20 Co-SLs, 85% were clinicians and 15% researchers. Most had been in the

role for at least 12 months (80% of SLs, 70% of Co-SLs). During the past 12 months, respondents participated actively by attending the monthly national calls 1–5 times/year (43%) to 6–12 times/year (48%) and read the monthly Newsletter 1–5 times/year (52%) to 6–12 times/year (40%). Going forward, 72% expressed willingness to serve as a key informant for a rapid-cycle Practice Scan survey (describing elements of local women's health clinical practices) at least quarterly, and 23% were willing to complete it 9–12 times/year. All (100%) respondents rated the monthly national calls as somewhat/very useful to hear results of research studies, for presentation about SL roles, and to learn about the structure of WH care at other facilities; 93% rated as useful the WH-PBRN's quarterly Full Community calls, open to not only SLs and Co-SLs but also clinicians, managers and researchers at the site. All (100%) reported the following as somewhat/very important to them regarding their WH-PBRN role: improve quality of care for women Veterans; strengthen local site connections; participate in multi-site research/QI; and learn about new WH research findings. There were no statistically significant differences in responses based on role (SL vs Co-SL) or duration in role (<12 months vs longer).

CONCLUSIONS: Nearly all clinicians and researchers in the national WH-PBRN community of SLs/Co-SLs participate in WH-PBRN activities, though scope of engagement varies by site. Findings have triggered modifications to WH-PBRN processes, in preparation for scale-up efforts, and provide lessons relevant to other PBRNs seeking to engage members from diverse backgrounds. The fact that SLs/Co-SLs engage in WH-PBRN activities, find value in their role, and are willing to participate in future rapid-turnaround practice characteristics surveys bodes well for the WH-PBRN's ability to support VA's efforts to be a learning healthcare system.

NON-BUPRENORPHINE OPIOID UTILIZATION AMONG PATIENTS USING BUPRENORPHINE/NALOXONE (SUBOXONE)

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BACKGROUND: Buprenorphine/naloxone is commonly used to treat opioid dependence, however, non-buprenorphine prescription opioid utilization among these patients has not been well defined. We sought to characterize patterns of opioid utilization among incident buprenorphine/naloxone (Suboxone) users in eleven states.

METHODS: We used IMS Health anonymized, individual-level, all-payer pharmacy claims to identify incident users of buprenorphine/naloxone between January 2010 and August 2013. We focused on patients 18 years of age and defined each patient's first treatment episode as the length of time from the patient's incident prescription for buprenorphine/naloxone (index fill) until the first day of a gap where the patient had no buprenorphine/naloxone on-hand for 90 or more days. We calculated measures of non-buprenorphine opioid utilization during the first treatment episode as well as during 12-month periods prior to and following this episode.

RESULTS: Of the 22655 individuals meeting inclusion criteria, 49% were female and 50% were between 25 and 46 years of age. The median length of the first treatment episode was 79 days (interquartile range [IQR], 30 to 226 days). More than half (58%) of buprenorphine/naloxone recipients filled prescriptions for other opioids following buprenorphine/naloxone treatment and 30% filled at least one opioid prescription during their treatment episode. The median total of morphine milligram equivalents (MME) 12 months prior to treatment was 250 mg/per month (IQR 38 to 1347) then declined to 221 mg/per month (IQR 39 to 1034) and 175 mg/per month (IQR 25 to 1106) during and following the treatment episode, respectively. The median MME per opioid day supplied prior to, during and following the first treatment episode remained constant at 40 mg per day.

CONCLUSIONS: Treatment with buprenorphine/naloxone is associated with reduced non-buprenorphine opioid use. However, a substantial proportion of patients fill prescriptions for non-buprenorphine opioids during and following such treatment.

NONPHARMACOLOGIC TREATMENTS FOR MENOPAUSE-ASSOCIATED VASOMOTOR SYMPTOMS

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BACKGROUND: Vasomotor symptoms (VMS) are bothersome for many perimenopausal women. Use of pharmacologic and herbal treatments for VMS are limited due to safety profiles and/or uncertain efficacy. Thus, many women look to nonhormonal, nonpharmacologic treatments. We aimed to determine the effects of acupuncture, yoga, structured exercise and relaxation on VMS among perimenopausal and postmenopausal women.

METHODS: We conducted a rigorous, protocol driven (PROSPERO # CRD42016029335) review of fair-to-good quality systematic reviews (SR) and randomized controlled trials (RCTs) for each intervention. Risk of bias (ROB) was assessed for SR and RCTs using validated tools. Meta-analysis (MA) were conducted when indicated and feasible using standardized mean differences (SMD). Heterogeneity was measured with I^2.

RESULTS: Of 239 SR and 1135 RCT citations, 10 SRs and 14 RCTs were eligible. ROB was low for acupuncture and paced respiration trials, and moderate for exercise and yoga trials. Updated MAs suggest the following: acupuncture is effective at reducing VMS frequency (SMD −0.66, 95% CI −1.06 to −0.26, $I^2 = 61.7\%$, 5 trials) and severity (SMD −0.49, 95% CI −0.85 to −0.13, $I^2 = 18.1\%$, 4 trials) when compared to waitlist, though similar analyses were not significant when compared to sham acupuncture; yoga is associated with reductions in VMS severity (SMD −0.36, 95% CI −0.65 to −0.07, $I^2 = 0.0\%$, 4 trials); structured exercise was not associated with reductions in VMS frequency (SMD −0.08, 95% CI −0.33 to 0.16, $I^2 = 0.0\%$, 4 trials) or severity (SMD 0.06, 95% CI −0.21 to 0.10, $I^2 = 0.0\%$, 5 trials); and paced respiration is not associated with a decrease in VMS frequency (SMD 0.04, 95% CI −0.73 to 0.82, $I^2 = 56.6\%$, 3 trials) or severity (SMD 0.06, 95% CI −0.69 to 0.80, $I^2 = 65.1\%$, 3 trials).

CONCLUSIONS: Low to moderate quality evidence supports acupuncture and yoga when compared to control for reducing VMS. Structured exercise and relaxation do not appear beneficial. Larger, high quality trials are needed to further support the use of these interventions.

Strength of Evidence for Effects of Interventions on Vasomotor Symptoms

Comparison	#RCTs (Patients)	Findings	Strength of Evidence
Acupuncture vs Waitlist	4 (501)	SMD 0.66 lower (1.06 lower to 0.26 lower)	Moderate
Acupuncture vs sham acupuncture	8 (644)	SMD 0.35 lower (0.70 lower to 0.01 higher)	Moderate
Yoga vs control	4 (157)	SMD 0.36 lower (0.65 lower to 0.07 lower)	Low
Structure exercise vs control	4 (431)	SMD 0.08 lower (0.33 lower to 0.16 higher)	Moderate
Paced respiration vs control	3 (161)	SMD 004 higher (0.73 lower to 0.82 higher)	Low

NUMERACY, HEALTH LITERACY, COGNITIVE IMPAIRMENT AND 30-DAY READMISSIONS AMONG PATIENTS WITH HEART FAILURE: THE VANDERBILT INPATIENT COHORT STUDY (VICS)

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BACKGROUND: Numeracy has emerged as an important skill in chronic disease management and prior studies have found low numeracy to be associated with adverse patient outcomes. Yet, little research has focused on numeracy in the context of heart failure (HF), a condition which requires patients to use numerical skills to monitor their weight, fluid intake and dietary salt, especially in the immediate post-hospitalization period. Here, we examined the relationship between numeracy, health literacy, and cognitive impairment with 30-day readmissions among patients hospitalized for acute decompensated heart failure (ADHF).

METHODS: The Vanderbilt Inpatient Cohort Study (VICS) is a prospective longitudinal study of adults hospitalized with acute coronary syndromes and/or ADHF. We studied 883 adults hospitalized with ADHF. During hospitalization, a baseline interview was performed in which demographic characteristics were obtained. Numeracy was assessed with both objective (serial subtraction task from the Short Portable Mental Status Questionnaire [SPMSQ]) and subjective measures (shortened Subjective Numeracy Scale [SNS-3]), as was health literacy (Brief Health Literacy Screen [BHLS] and the Short Form of the Test of Functional Health Literacy in Adults [sTOFHLA]). Cognitive impairment was assessed with 9 items of the SPMSQ. Through electronic chart review, medical comorbidities and the severity of illness during the index hospitalization were determined. The outcome of interest was any 30-day readmission to an acute care hospital. Poisson regression was used to examine the association between numeracy, health literacy, and cognitive impairment and readmission within 30 days, while adjusting for demographic and clinical characteristics.

RESULTS: Of the 883 patients admitted for ADHF, 23.7% ($n = 210$) were readmitted within 30 days. Overall, 36% of the study sample had low objective numeracy skills, 24% had low objective health literacy skills and 32% were cognitively impaired. In both unadjusted and adjusted analyses, (objective) numeracy and cognitive impairment were not associated with 30-day readmissions. Objective health literacy was associated with 30-day readmissions in unadjusted analysis, but not in adjusted analyses. A history of diabetes, a greater number of comorbidities and a higher number of prior hospitalizations the year before index admission were independently associated with 30-day readmissions in fully adjusted models.

CONCLUSIONS: Low numeracy, low health literacy and impaired cognition were present in more than one in three patients, but were not associated with 30-day readmissions in adjusted analyses. Our findings suggest that other influences may play a more dominant role in determining 30-day readmission rates among patients hospitalized for ADHF.

OBESITY AND BREAST DENSITY INCREASE ESTROGEN RECEPTOR NEGATIVE BREAST CANCER RISK IN PREMENOPAUSAL WOMEN

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BACKGROUND: Understanding the relationship between risk factors and estrogen receptor (ER) subtypes of breast cancer is essential to risk prediction and prevention counseling in primary care. Breast density and obesity increase breast cancer risk, with differential effects across ER subtypes. Moreover, obesity is inversely associated with the percentage of breast density and confounds its association with breast cancer risk. Thus, we evaluated whether ER subtype-specific effects of breast density vary by body mass index (BMI).

METHODS: We conducted a case–control study of women in the Mayo Mammography Health Study and the San Francisco Mammography Registry. Breast density was measured on digitized film mammograms as dense area (DA) and nondense area (NDA) using a computerized threshold technique. Percent density (PD) was calculated as DA/(DA + NDA). BMI (kg/m^2) was categorized as normal/underweight (<25), overweight (25–30), and obese (>30). We evaluated the association between density measures and ER subtype using logistic regression, adjusted for age and study and stratified by BMI and menopausal status. For density measures, odds ratios (OR) were estimated per standard deviation (SD). We used a Wald chi-squared test to assess for interactions between BMI and density measures. Contrasts were constructed to test for heterogeneity of association by subtype.

RESULTS: The study consisted of 1823 invasive breast cancers (1538 ER-positive, 285 ER-negative) and 4720 controls. Mean time from mammogram to diagnosis was 4.4 years. PD and DA were positively associated, and NDA inversely associated, with invasive breast cancer across all BMI categories. In premenopausal women, there was a statistically significant interaction between BMI and PD for subtype-specific risk ($P_{interaction} = 0.03$). This was driven by heterogeneity of association between PD and subtype in overweight and obese women where a one-SD increase in PD was associated with a higher risk of

ER-negative cancers, $P_{heterogeneity} = 0.08$ and 0.09, respectively (Table). In postmenopausal women, a one-SD increase in PD was associated with increased risk of both ER-positive and negative cancers, without BMI-density interactions.

CONCLUSIONS: Premenopausal overweight/obese women with dense breasts have an elevated risk of ER-negative cancer. While prior studies have shown obesity and breast density are individually associated with ER-negative cancer in this demographic, ours is the first to show an interaction between these risk factors. Premenopausal overweight/obese women should be counseled on weight reduction and their increased risk of ER-negative breast cancer.

Associations of percent density with subtype-specific breast cancer risk in premenopausal women, by BMI category

	BMI < 25 per-S.D. OR (95% CI)	**BMI 25-30** per-S.D. OR (95% CI)	**BMI > 30** per-S.D. OR (95% CI)
ER-positive	1.90 (1.57, 2.29)	1.23 (0.95, 1.59)	1.69 (1.23, 2.32)
ER-negative	1.51 (1.04, 2.21)	1.93 (1.19, 3.13)	3.04 (1.57, 5.89)
$P_{heterogeneity}$	*0.27*	*0.08*	*0.09*

$P_{interaction} = 0.03$ for interaction between BMI and PD

OBSERVATION UNIT UTILIZATION IN DECOMPENSATED HEART FAILURE AND CLINICAL PREDICTORS FOR APPROPRIATE TRIAGE

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BACKGROUND: Acutely decompensated heart failure (ADHF) represents a significant financial and health burden in the United States with more than 1 million hospitalizations annually and 3% of annual health care expenditure. Currently, 75% of patients presenting to Emergency Departments (ED) are admitted to the hospital, however, estimates suggest as many as 50% may be safely treated in Observation Units (OU). The use of OUs is a cost-effective alternative to inpatient admission for ADHF, however, data to support appropriate triage of patients is sparse. We sought to isolate clinical data indicative of Length of Stay (LOS) greater than 48 hours that is readily available to the ED physician.

METHODS: We performed a retrospective cohort study with patients admitted from the ED with ADHF. Patients with end-stage renal disease, heart transplant, or ventricular-assist device were excluded. Demographic and clinical data pertinent to the evaluation of heart failure in the ED were collected. We compared patients with LOS < 48 hours to those with longer stays using Chi-Square analysis, Two-Sample T-Test, Cochran Armitage Trend Test, as well as Wilcoxon Rank Sum Test.

RESULTS: Of the 553 patients included in the study, 234 (42%) had LOS > 48 hours. The mean age was 70.3 years (standard deviation, 14.8 years) and 53% were female. Patients were more likely to require >48 hours of care if they had a higher Charlson Comorbidity Index (4.4 vs 3.9, $p = 0.014$), had systolic pressure <90 mmHg (3.8% vs 0.9%, $p = 0.021$) or had BNP >200 pg/mL (72.8% vs 60.9%, $p = 0.006$). Chest x-ray findings of pulmonary vascular congestion (21.6% vs 15.0%), pulmonary edema (6.3% vs 4.1%), or pleural effusion (21.2% vs 14.3%) were likewise associated with increased LOS ($p = 0.003$). Patients with LOS > 48 hours were also more likely to be anemic (hemoglobin 11.8 vs 12.2, $p = 0.005$), have a lower lymphocyte percentage count (19.7 vs 22.1, $p = 0.009$), and have higher troponin (0.07 vs 0.05, $p = 0.042$).

CONCLUSIONS: The Observation Unit is a growing care modality for ADHF. Our study identifies clinical characteristics readily available to the ED physician suggestive of the need for inpatient care. Multivariate analysis and prospective validation will be necessary to further develop our findings into a clinically useful triage tool.

OLDER ADULTS PERCEPTIONS ABOUT OVERUSE OF HEALTHCARE SERVICES

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BACKGROUND: The U.S. spends more on health care than other high-income nations, but has worse health outcomes. This has led many experts to suggest that health care is overused in the U.S., exposing patients to harm with little likelihood of benefit. Older Americans may be particularly vulnerable to overuse. Despite national initiatives to encourage clinicians and patients to talk openly about overuse, it is unknown whether patients believe that overuse is a problem and have insights as to its causes and consequences. Our goal was to illuminate the experiences and perspectives of older adults with respect to overuse of healthcare, in order to begin developing a framework for understanding overuse in older adults.

METHODS: People 65 years of age and older were recruited from senior centers in Baltimore, Maryland. We conducted five separate focus groups of 8 people each using guiding questions that had been pilot tested with individual older people. Four groups included participants from lower-income black neighborhoods and one from a mixed-income white neighborhood. Audio recordings were transcribed and analyzed using conventional and directed qualitative content analysis.

RESULTS: Virtually all participants expressed that they or an acquaintance had experienced some overtesting or overtreatment, expressing agreement that terms such as "unnecessary," "wasteful" and "overdoing it" characterized these encounters. Major themes that were expressed as contributing to overuse were: (1) poor quality of communication between patients and doctors; (2) treating individual complaints instead of "the whole person"; (3) few efforts to engage patients in shared decision-making; (4) inadequate communication between different health care providers involved in a patient's care; and (5) little trust in the clinician. Yet, many participants also expressed concern that they had received too little care.

CONCLUSIONS: Although overuse of healthcare seems not to be a primary concern of older people, we learned what they perceive to be drivers or determinants of overuse of healthcare. The next step will be to explore whether or not these perceived drivers do, in fact, contribute to overuse, using observational research and survey methods. Engaging patients in the decision process and enhancing communication between patients and doctors and between health care providers may be effective at reducing overuse, but this remains to be proven.

OLDER ADULTS' VIEWS AND COMMUNICATION PREFERENCES AROUND CANCER SCREENING CESSATION

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BACKGROUND: Research and clinical practice guidelines recommend against cancer screening in patients with limited life expectancy because the benefits of screening may take years to accrue but the harms may be immediate. Older adults with limited life expectancy still frequently receive cancer screening. Patient preferences may be an important contributor to continued screening.
METHODS: We conducted individual interviews with 40 community dwelling adults 65+ years of age. We examined their views on the decision to stop cancer screening when life expectancy is limited and to their preferences for how clinicians should communicate recommendations to cease cancer screening. The interviews were audio-recorded and transcribed verbatim. Two investigators independently coded the transcripts using qualitative content analysis and results are summarized as major themes.
RESULTS: The participants' mean age was 75.7, 23 participants were female, and 25 were white. We identified three major themes: First, participants were amenable to stopping cancer screening especially in the context of a trusting relationship with their clinician. Second, although many participants supported using age and health status to individualize the screening decision, they were more skeptical of the role of life expectancy. All except two participants objected to a Choosing Wisely statement about not recommending cancer screening in those with limited life expectancy, often believing that clinicians cannot accurately predict life expectancy. Third, participants preferred that clinicians explain a recommendation to stop screening by incorporating individual health status but were divided on whether life expectancy should be mentioned. Specific wording of life expectancy was important; many felt the language of "*you may not live long enough to benefit from this test*" was unnecessarily harsh compared to the more positive messaging of "*this test would not help you live longer*".
CONCLUSIONS: Although research and clinical practice guidelines recommend using life expectancy to inform cancer screening, older adults may be skeptical of the role of life expectancy in screening and may not prefer to hear about life expectancy when discussing screening. The described communication preferences can help inform future screening discussions. The mismatch of patient preference and guideline language needs to be reconciled to enable implementation of guidelines.

OPIOID PRESCRIBING AT INITIAL ENCOUNTERS FOR PAIN IN UNITED STATES PRIMARY CARE SETTINGS Mallika Mundkur[1, 2]; Kathryn Rough[1, 2]; Krista Huybrechts[1, 2]; Raisa Levin[1, 2]; Joshua Gagne[1, 2]; Rishi Desai[1, 2]; Elisabetta Patorno[1, 2]; Niteesh K. Choudhry[1, 2]; Briain Bateman[1, 2]. [1]Brigham and Women's Hospital, Lexington, MA; [2]Brigham and Women's Hospital and Harvard Medical School, Boston, MA. (Control ID #2705386)

BACKGROUND: Prescriptions by primary care clinicians account for nearly half of all opioids dispensed in the United States. Recent guidelines issued by the Centers for Disease Control and Prevention (CDC) have specifically targeted this group of clinicians, yet opioid-prescribing patterns in primary care settings are not well documented. The main objective of this study was to characterize variation in opioid prescribing at initial encounters for ten pain conditions commonly managed by primary care clinicians.
METHODS: We used insurance claims data from the Optum Research Database, from January through December of 2014, to evaluate individuals 18 years or older with an initial presentation to a primary care setting for one of ten common pain conditions: joint pain, non-radicular back pain, back pain with radiculopathy, muscular sprains/strains, musculoskeletal injuries (e.g. ligamentous tears), nephrolithiasis, headache, dental pain, tendonitis/bursitis, and neck pain. Patients with history of opioid use or a prior visit for the pain condition were excluded, as were those with a history of cancer, hospice/palliative care, recent surgery or hospitalization. The main outcomes assessed were: (1) the proportion of initial encounters for pain associated with an opioid prescription fill and (2) the proportion of dispensed opioid prescriptions with >7 days' supply. We used multivariable logistic regression to determine whether a number of covariates, such as age, comorbidities, recent medications and substance abuse history, were significant predictors for our primary outcome. We also used a mixed linear regression model to determine adjusted rates of our primary and secondary outcome by state.
RESULTS: We identified 205,560 individuals who presented to a primary care setting in an initial encounter for pain. Overall, 9.1% of encounters were associated with an opioid fill, ranging from 4.1% (headache) to 28.2% (dental pain). The median days' supplied was 7 [IQR 5,12], and 10% of prescriptions supplied ≥30 days of opioids. Recent use of benzodiazepenes, history of smoking and male gender were significant predictors of opioid use ($p < .05$). States with the highest rates of opioid use following initial pain encounters, adjusting for case-mix and other measured differences, were Alabama (16.6%) and Arkansas (15.9%), while the lowest rate of use was observed in New York (3.7%).
CONCLUSIONS: Opioid prescribing occurs in nearly one of ten initial encounters for pain in primary care settings with a wide range of inter- and within-condition variation. Primary care clinicians should consider further reducing days' supplied at initial encounters, as the total quantity dispensed may pose risk to patients or household members. We expect that policies enforcing the CDC's recently recommended 7-day limit on initial opioid supplies will have a drastic impact on prescribing within primary care.

OPIOID TAPERING IN PATIENTS WITH CHRONIC PAIN: A QUALITATIVE STUDY OF PATIENT AND PROVIDER EXPERIENCES Nicole Johnson[4]; Cleveland Shields[5]; Stewart C. Alexander[5]; Matthew J. Bair[1, 3]; Palmer MacKie[3]; Monica Huffman[3]; Marianne S. Matthias[2, 3]. [1]Center for Health Information and Communication, Indianapolis, IN; [2]Roudebush VAMC, Indianapolis, IN; [3]Indiana University, Indianapolis, IN; [4]Indiana University Purdue University Indianapolis, Indianapolis, IN; [5]Purdue University, West Lafayette, IN. (Control ID #2698023)

BACKGROUND: In response to increases in opioid use and misuse in chronic pain treatment, state laws and institutional policies have increasingly focused on reducing opioid doses. However, little is known about the impact of mandated dose tapering on patients or their primary care providers (PCPs). Such an understanding is essential to optimize outcomes for patients and mitigate potential harms.
METHODS: Qualitative interviews were conducted with patients and their PCPs in a large safety-net hospital system as part of a larger study on opioid management. We used constant comparative methods to analyze the data.
RESULTS: To date, 6 PCPs and 12 of their patients completed interviews. Descriptions of experiences with opioid tapering centered around 3 key themes: Theme 1: Relationships and Trust Provide Safety Nets. Relationships and support were critical during tapering. One PCP stated, "I said [to the patient], this is a trial. I'm not leaving. I'm with you. We've been together a long time. I'm not going to disappear on you" (PCP1). A patient described a similar feeling. "Dr. X said… we'll try cutting you back. If you don't feel that you can do that, we'll move it back [to the original dose]… and

I'm happy with that" (P20). Theme 2: Patients Need to Understand Reasons for Tapering. For many patients, their understanding of why they were being tapered affected their attitudes toward tapering. One patient who did not understand said, "I asked [my doctor] and she said that a lot of people was OD'ing on pain medication and getting addicted. I told her I was in a lot of pain and this was not addiction" (P6). In contrast, a PCP described helping a patient with severe lung disease to understand why she was being tapered. "We were able to… directly talk about the [opioid] medication's effects on her respiratory system. So I think having that tangible [risk] helped her to buy into it" (PCP2). Theme 3: Policies Legitimize Tapering. Some patients believed that institutional policies are warranted. One patient stated of being tapered, "I think she's being reasonable. It's the hospital that wants her to cut back. Well, they've got a point. They probably have a helluva lot of addicted people out there" (P3). PCPs identified the importance of policies in supporting tapering, particularly when there is patient resistance. "This is law. I'm not going to break that" (PCP1). Another PCP noted, "Once I hit that wall with a patient, it is nice to say, honestly, it is out of my control" (PCP2).

CONCLUSIONS: Successful opioid tapering while maintaining a positive patient-provider relationship is critical for effective patient care. This study highlights the importance of trust and effective communication during opioid tapering, while also pointing to the importance of institutional policies to facilitate tapering decisions.

OPIOID TAPERING IS NOT ASSOCIATED WITH GREATER RISK OF LOSS TO FOLLOW-UP IN PATIENTS ON CHRONIC THERAPY

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BACKGROUND: There is emerging consensus that tapering chronic opioid therapy (COT) may be beneficial when the risks of continuing the same dose exceed the benefits. However, it is possible that reduction in COT dose could be associated with loss to follow-up if dissatisfied patients terminate care, but this association has not been examined. We sought to determine whether COT patients who were tapered were more likely to be lost to follow-up compared to other COT patients.

METHODS: Using electronic medical record data from 7/2009 to 7/2015, we conducted a retrospective cohort study of patients receiving COT in an urban health system in Bronx, NY. To be eligible, patients: 1) were prescribed COT (>3 opioid prescriptions in two consecutive six-month periods from 7/2009 to 7/2010 [baseline period]); 2) had a stable COT dose (<20% change in mean morphine equivalent daily dose [MEDD] within the baseline period); and 3) did not have an ICD-9 code for cancer. Patients were classified as having "tapered" if they had a 30-90% reduction in mean MEDD from the baseline dose in two consecutive six-month time periods between 7/2010 and 7/2014. We identified each patient's final outpatient encounter during the study time frame, and patients were considered lost to follow-up (LTFU) if their final encounter occurred prior to 1/2015. To estimate the time to loss, we determined the number of six-month time periods to the final encounter, starting from the end of either the baseline period if no tapering occurred, or, if tapering occurred, from the end of the first tapering period. We used X^2 to compare the proportions LTFU in the tapered and non-tapered groups. Separately, we calculated rates of loss to follow-up in both groups and a hazard ratio using Cox regression, adjusting for patient age, race and ethnicity, and baseline COT dose.

RESULTS: Of the 679 COT patients who met eligibility criteria, 181 (26.7%) were tapered and, of those tapered, 56 (30.9%) were LTFU. Patients who were tapered were significantly less likely to be LTFU (OR 0.54, $p < 0.001$). Among those tapered, 17 (9.4%) were LTFU at one year after tapering (vs 46 [9.2%] in the non-tapered group). Overall, patients were LTFU at similar rates in both groups, which was not statistically significant (10.3% LTFU per person-year in the tapered group versus 10.6% in the non-tapered group). In Cox regression, those who tapered had no greater risk of being LTFU over time (HR 1.08, CI 0.8-1.5) compared to those in the non-tapered group.

CONCLUSIONS: In this cohort, tapering was not associated with greater risk of loss to follow-up. A limitation is the lack of a standardized definition for tapering; ours is conservative but may exclude patients with faster opioid tapers. Nonetheless, our findings are reassuring given the health consequences of being lost to follow-up. Further research is needed but these findings may have important implications for the millions of patients on COT in primary care for whom tapering could be an appropriate option.

ORGANISED PROGRAMME AND SOCIAL INEQUALITIES IN MAMMOGRAPHY SCREENING: A 22-YEAR POPULATION-BASED STUDY IN GENEVA, SWITZERLAND

José Luis Sandoval[1]; Jean-Marc Theler[1]; Stéphane Cullati[1]; Christine Bouchardy[4]; Orly Manor[5]; Jean-Michel T. Gaspoz[2]; Idris Guessous[1, 3]. [1]Geneva University Hospitals, Geneva 14, Switzerland; [2]University Hospitals, Geneva 14, Switzerland; [3]University of Lausanne, Lausanne, Switzerland; [4]University of Geneva, Geneva, Switzerland; [5]Hebrew University-Hadassah, Jerusalem, Israel. (Control ID #2704466)

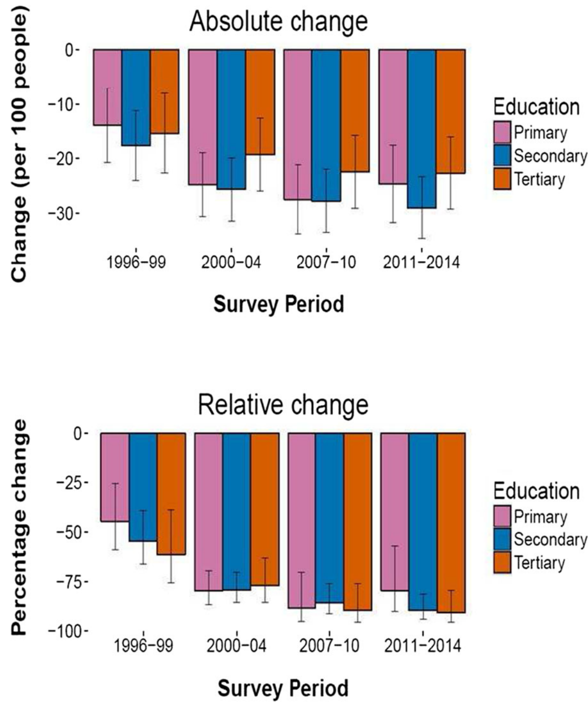
BACKGROUND: Breast cancer (BC) mortality decreased in developed countries due, at least in part, to generalisation of mammography screening. Organised programmes aim to increase participation and decrease social inequalities in screening access. We characterised the evolution of socioeconomic disparities in mammography screening before and after the implementation of an organised programme in Geneva, Switzerland.

METHODS: We included 5345 women aged 50-74ys with no past history of BC who participated in a cross-sectional study between 1992–2014. Outcome measures were: 1) never had a mammography (1992–2014) and 2) never had a mammography. Educational attainment was divided in 3 groups (primary, secondary and tertiary) and period in two groups (before the introduction of screening programme in 1999 and after). We calculated measures of relative and absolute change, including the relative (RII) and slope (SII) indexes of social inequality adjusted for age and nationality. We compared screening prevalence before and after screening programme implementation using Poisson models.

RESULTS: The proportion of unscreened women decreased during the study period from 30.5 to 3.6%. Women with lower education more probably never had a mammography (RII = 2.39, $p < 0.001$; SII = 0.10, $p < 0.001$). Introduction of organised screening decreased the proportion of unscreened women independently of education (prevalence ratio before vs after = 4.41, $p < 0.001$), but absolute and relative inequalities persisted (RII = 2.11, $p < 0.01$; SII = 0.04, $p < 0.01$). The observed discrepancies between relative and absolute measures reinforce the need of using both measures to characterise changes in inequality (Figure).

CONCLUSIONS: Introduction of an organised programme increased women adherence to mammography screening but did not eliminate social disparities in screening participation.

Absolute and relative changes (95%CI) in proportion of women that never had a mammography during surveyed years with 1992–1995 period as reference



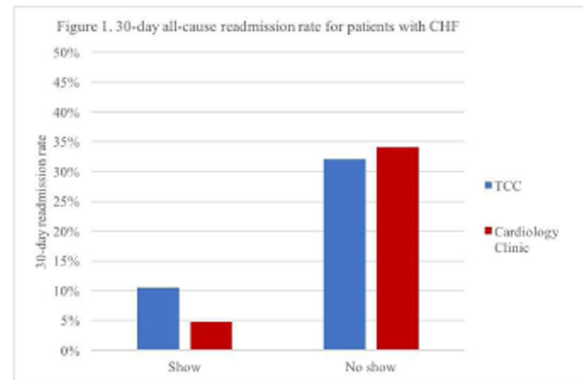
OUTCOME OF A TRANSITIONAL CARE CLINIC TO REDUCE HEART FAILURE READMISSION IN HIGH-RISK INNER CITY POPULATION Justin S. Lee; Felix M. Reyes; Miguel A. Ramirez; Mafuzur Rahman. SUNY Downstate Medical Center, Brooklyn, NY. (Control ID #2705538)

BACKGROUND: In the US, the cost of healthcare expenditure on heart failure (HF) treatment is estimated to increase up to $69.7 billion by 2030. Black population with low socioeconomic status has significantly higher rates of HF than other ethnicities in the US. Central Brooklyn consists of 80% black ethnicity, with 31% living below poverty level. Managing patients with chronic medical conditions in this area is particularly challenging as many of them do not fully understand the importance of adherence with medical treatment plan. Reasons for hospital admissions for HF exacerbation include not only medication non-compliance, but also failure to follow up with primary care appointments. Our institution has established a transitional care clinic (TCC) in May 2015, with aims to aid patients with chronic medical conditions by providing early post-discharge follow up regardless of patient's financial or insurance status.

METHODS: Retrospective review was conducted for patients who were scheduled for TCC with a diagnosis of HF, from May 2015 to October 2016. Our TCC model includes, follow up appointment within 7 days post-discharge, pre and post-clinic phone calls and additional TCC clinic visits as needed to bridge patient over to his or her primary care clinic. A 30-day readmission rate was calculated and compared between patients who followed up with our TCC and who did not by Fisher's exact test. Also, readmission rates were compared for patients who followed at TCC vs. cardiology clinic.

RESULTS: Total of 204 admissions for HF were identified in the study period. Majority of patients were black (91%) with a mean age of 65 years and median length of stay of 5 days. Out of 137 patients who did not follow up with our TCC, 44 were readmitted (32.12%). From the 67 patients who followed with our TCC, 7 were readmitted (10.45%).

CONCLUSIONS: Our transitional care clinic model demonstrates early success with 21% decrease in 30-day all-cause HF readmission in patients who were followed up at the clinics. Rate of readmission did not differ significantly on patients who were followed at TCC vs. those who were followed by their cardiologists. Future study design can be directed towards cost analysis, comparison to historical data from other inner-city population and interventions focused on ways to increase compliance with TCC appointment.



OUTCOMES AFTER BREAST CANCER SURGERY IN NURSING HOME RESIDENTS: A NATIONAL STUDY Victoria Tang[1]; Ken Covinsky[2]; Rebecca L. Sudore[2]; W. John Boscardin[2]; Emily Finlayson[2]. [1]UCSF/VASFMC, San Francisco, CA; [2]University of California, San Francisco, San Francisco, CA. (Control ID #2702769)

BACKGROUND: Over 60% of cancer-related operations in nursing home residents occur for breast cancer and can cause significant functional disability, especially in frail older adults. We aim to study the functional and mortality outcomes after inpatient breast cancer surgery in long-term care nursing home women.

METHODS: We used data from the 2003–2012 Medicare Files and the Minimum Dataset for Nursing Homes to identify long-term stay nursing home residents age ≥67 who underwent inpatient breast cancer surgery. We examined 30-day mortality and hospital re-admission rates, stratified by procedure type (lumpectomy, mastectomy, and axillary lymph node dissection with either lumpectomy or mastectomy [LND]). In multivariate analysis, we examined factors associated with 1-year mortality and functional trajectories. Functional status was measured by assessing the degree of dependence in seven activities of daily living (on the Minimum Data Set-Activities of Daily Living [MDS-ADL] scale of 0 to 28 points, with higher scores indicating greater functional difficulty and 2 point difference as clinically significant).

RESULTS: We identified 5,969 nursing home residents who underwent inpatient breast cancer surgery (age: 82 ± 7, 83% white, 57% dementia). On average, residents experienced significant functional decline that persisted 1 year after surgery (MDS-ADL score worsened 2.8 points after lumpectomy, 4.1 points after mastectomy, and 4.6 points after LND). Thirty-day readmission and mortality were also high after surgery: 23 and 9% after lumpectomy, 13 and 4% after mastectomy, and 16 and 2% after LND, respectively. The 1-year all-cause mortality was high, in all treatment groups: 42% for lumpectomy,

31% for mastectomy, and 30% for LND. In a multivariate analysis, poor baseline MDS-ADL score before surgery was strongly associated with death at 1 year in all treatment groups - HR 1.7, 95%CI 1.2–2.4 after lumpectomy, HR 2.1, 95%CI 1.6–2.7 after mastectomy, and HR 1.7, 95%CI 1.4–2.1 after LND.

CONCLUSIONS: Among nursing home women residents who undergo breast cancer surgery, 30-day hospital readmission and mortality are high, as is 1-year all-cause mortality. Poor baseline function prior to surgery was strongly associated with 1-year mortality. Individualized goal-oriented care, such as hormonal therapy or symptom management only, should be considered in nursing home residents, particularly those with poor baseline function.

OUTCOMES FOR HIP FRACTURE PATIENTS ON HOSPITALIST VS. NON-HOSPITALIST SERVICES

Carlton R. Moore[1]; John Stephens[1]; Mukhtar Adem[1]; Jamison Chang[2]; Edmund A. liles[1]. [1]University of North Carolina at Chapel Hill, Chapel Hill, NC; [2]Univeristy of North Carolina at Chapel Hill, Chapel Hill, NC. (Control ID #2703539)

BACKGROUND: Hip fractures are a major health problem in the geriatric population in the United States, with estimated costs of $18billion annually. Hip fractures are highly morbid in the elderly, as deconditioning and acute complications compound chronic comorbidities. To improve care for this high-risk population, hip fracture patients are preferentially admitted to our medicine hospitalist service with co-management from the orthopedics consult service. The hospitalist service developed a clinical pathway that facilitates evidence-based care processes such as initiating venous-thromboembolism prophylaxis, physical therapy and removal of urinary catheters on post-operative day #1. However, due to a variety of factors, some hip fracture patients are admitted to non-hospitalist services (e.g., orthopedics). The purpose of our study is to compare outcomes for hip fracture patients on hospitalist vs. non-hospitalist services.

METHODS: We included all discharges from UNC Hospitals from July 2014 - June 2015 with a primary ICD-9 diagnosis of hip fracture. We excluded patients if they were ≤18 years old or if the hip fracture was caused by "high energy" trauma (e.g., motor vehicle accident). We conducted univariate analyses using t-tests for comparison of continuous variables and Pearson chi-squared for categorical variables. Multivariate logistic regression was used to assess for independent associations with LOS ≤ 7 days and 30-day readmission.

RESULTS: Two hundred patients were included in the study (Table). Patients on the hospitalist service had significantly shorter LOS compared with patients on non-hospitalist services (5.6 vs. 6.7 days, $p = 0.038$). In adjusted analyses (controlling for race, gender, insurance, admission day of the week, Charlson comorbidity index, and administered blood transfusion), patients on the hospitalist service were more likely to have LOS ≤ 7 days (OR: 2.28, 95%CI: 1.05–4.95, $p = 0.039$). The 30-day readmission rates on the hospitalist and non-hospitalist services were not significantly different.

CONCLUSIONS: Our study shows that hip fracture patients admitted to a hospitalist service that uses clinical pathways have reduced LOS. Future studies will evaluate if the reduced LOS is associated with improved care processes.

Table. Patient Characteristics (n=200)

Characteristic	Value			p-value
	Overall (n=200)	Hospitalist (n=138)	Non-Hospitalist (n=62)	
Female, %	73.0	76.8	64.5	.085
Age, years (sd)	*77.5 (13.3)*	*80.0 (10.8)*	*71.9 (16.2)*	<.001
Charlson comorbidity index (sd)†	5.7 (2.3)	5.7 (2.0)	5.6 (2.7)	.678
Received blood transfusion, %	19.5	22.6	12.9	.114
Admitted to hospital on Thursday, Friday or Saturday, %	46.5	45.7	48.4	.720
Length of stay, days (sd)	***5.9 (3.4)***	***5.6 (3.1)***	***6.7 (4.0)***	***.038***
Length of stay ≤ 7 days, %	***80.5***	***85.5***	***69.4***	***.008***
30 Day Readmission, %	8.5	7.3	11.3	.412
White race, %	83.5	84.1	82.3	.628
Insurance, %				
Medicare	73.5	77.5	64.5	.059
Medicaid	12.5	8.7	21.0	.021
Private	24.5	23.2	27.4	.594
Self pay	0.5	0.7	0.0	.502

†measure of disease severity based on patient age and comorbidities

OVERUTILIZATION OF THE OBSERVATION UNIT FOR DECOMPENSATED HEART FAILURE

Michael Mashiba[3]; Scott Lawler[2]; Vivek Mendiratta[2]; Vincent Lipari[3]; Fawaz Georgie[2]; Paul Nona[1]; Joseph Gibbs[3]. [1]Henry Ford Health System, West Bloomfield, MI; [2]Henry Ford Helath System, Detroit, MI; [3]Henry Ford Hospital, Detroit, MI. (Control ID #2705904)

BACKGROUND: Acutely decompensated heart failure (ADHF) remains a significant health burden in the United States, with high mortality and cost. To promote quality care, the Centers for Medicare and Medicaid Services have decreased reimbursement for hospital systems with high readmission rates. Observation Units (OU) are a less-costly option for treatment of ADHF, however outcome data beyond 30 days is sparse. We sought to evaluate long-term outcomes and utilization for patients treated in the OU for ADHF.

METHODS: We performed a retrospective cohort study with patients admitted from the Emergency Department (ED) with ADHF. Patients with heart transplant, ventricular-assist device, or end-stage renal disease were excluded. Demographic and 12-month outcomes were collected. Patients discharged from the OU were compared with those admitted using Chi-Square Analysis, Fisher Exact Test, and Two-Sample T-Test. OU patients later admitted were also compared with those admitted from the ED.

RESULTS: Of the 535 patients included in the study, 427 were triaged to OU. Of these, 156 (37%) had LOS > 48 hours and required admission. The mean age was 71.4 years (standard deviation, 14.9 years) and 52% were female. OU patients converted to admission had higher Charlson Comorbidity Index (4.5 vs 3.9, $p = 0.012$) and higher 12-month mortality (17.3% vs 9.2%, $p = 0.014$) compared to those discharged. When converted patients were compared to those admitted from the ED, mortality (17.3% vs 10.3%, $p = 0.210$) and Charlson (4.3 vs 4.5, $p = 0.552$) were comparable. Patients triaged to OU showed no difference in readmissions, downstream OU visits, or adverse cardiac events. However, OU patients later admitted had shorter time to death compared to patients triaged directly to inpatient units (137.3 vs 257.9 days, $p = 0.023$). Patients cared for in the OU were more likely to follow-up outpatient (41.0% vs 25.9%, $p = 0.041$).

CONCLUSIONS: The OU is a venue for high-quality care for ADHF. Our study showed overutilization of the OU, commonly defined as over 15% conversion. A possible difference in time to death exists due to suboptimal triage, but multivariate analysis is needed to confirm. Enhanced risk-stratification for patient triage is needed.

PAIN AND SUBSTANCE USE AMONG PERSONS LIVING WITH HIV: ASSOCIATIONS WITH CO-MORBID ILLNESS AND VIRAL SUPPRESSION

Daniel J. Hindman[1]; Jeanne C. Keruly[2]; Richard D. Moore[1]; Geetanjali Chander[2]. [1]Johns Hopkins, Baltimore, MD; [2]Johns Hopkins University, Baltimore, MD. (Control ID #2706135)

BACKGROUND: Pain has been shown to be common in persons living with HIV (PLWH). Our objectives were to investigate the relationships between pain and substance use, depressive, anxiety, and post-traumatic stress symptoms among PLWH and to examine the association between pain and viral suppression.

METHODS: We performed a prospective cohort study of PLWH in the Johns Hopkins HIV Clinical Cohort who underwent an Audio-Computer Assisted Self-Interview (ACASI) at 6 month intervals querying drug and alcohol use, pain and mental health symptoms. Our primary outcome was the presence of moderate to severe pain obtained from the EuroQuol. HIV viral load was obtained from laboratory data. Alcohol and drug use were ascertained via the AUDIT and the NIDA ASSIST. Anxiety, depressive and trauma symptoms were obtained using the GAD-7, PHQ-8 and Primary Care PTSD, respectively. We performed bivariable and multivariable analysis, using generalized estimating equations to account for repeated measures, to examine the relationship between variables. Analyses were adjusted for age, sex, and race.

RESULTS: Between September 2013 and June 2016, 1431 individuals underwent 1967 ACASIs. 62.3% were male, 84.2% African American, median age 40.8. 576 out of 1431 (40.3%) reported moderate to severe pain at baseline. In univariate analysis, being female ($p = 0.026$), PTSD ($p < 0.01$), anxiety ($p < 0.01$) depression ($p < 0.01$), current cocaine use ($p < 0.01$), current heroin use ($p < 0.01$), prescription opioid use ($p < 0.01$), and current tobacco use ($p < 0.01$) were associated with pain. 95% of patients with symptoms of PTSD also met criteria for at least mild depression. Multivariable analysis of factors associated with pain is in table 1.

CONCLUSIONS: Depressive symptoms, anxiety symptoms, female sex, current cocaine use, and current or prior prescription opioid use were associated with patient report of pain. Pain was not associated with lower rates of viral suppression. Our results indicate that pain occurs in a complex milieu of substance use and mental illness. Effectively treating pain may require that clinicians also treat associated mental health and substance-related comorbidities.

Table 1

Characteristic	OR	95% CI
Sex (female=reference)	0.79	0.63-0.99
Age (per year older)	1.02	1.01-1.03
Current heroin use	0.85	0.49-1.50
Moderate alcohol use (none=reference)	0.86	0.69-1.07
Hazardous alcohol use (none=reference)	0.77	0.53-1.08
Current cocaine use	1.71	1.15-2.54
Prescription opioid use prior to last 3 months (none=reference)	1.81	1.30-2.51
Prescription opioid use within the last 3 months (none=reference)	2.74	1.55-4.86
No PTSD + mild depression*	2.98	2.35-3.79
No PTSD + moderate to severe depression*	4.82	2.81-8.25
PTSD without depression*	2.38	0.66-8.55
PTSD + mild depression*	3.91	2.29-6.69
PTSD + moderate to severe depression*	6.05	3.01-12.15
GAD (per 1 unit increase in score)	1.03	1.01-1.07
Viral Suppression	0.86	0.65-1.13]

*Reference = neither PTSD nor depression.

PATIENT AND CAREGIVER UNDERSTANDING OF PROGNOSIS AFTER HIP FRACTURE Rachel Eikelboom[1]; Anna Gagliardi[2]; Rajiv Gandhi[4]; Paul Kuzyk[3]; Peter Cram[5]. [1]University of Toronto, Toronto, ON, Canada; [2]Toronto General Research Institute, Toronto, ON, Canada; [3]Mount Sinai Hospital, Toronto, ON, Canada; [4]Toronto Western Hospital/University Health Network, Toronto, ON, Canada; [5]University Health Network and Mt. Sinai Hospitals, Toronto, ON, Canada. (Control ID #2703837)

BACKGROUND: Hip fracture (HF) is common among the elderly and mortality and morbidity are high. Patient and surrogate understanding of the seriousness of HF is unclear. We interviewed older patients hospitalized with HF, or their surrogate decision makers (SDMs), to explore their understanding of HF treatment options and prognosis.

METHODS: We used mixed methods to conduct interviews consisting of both open- and closed-ended questions that explored understanding of HF prognosis, treatment options, and recovery. We approached older patients (>65 years) hospitalized with HF, or their SDMs, at two academic hospitals in Toronto, Canada between August 2015 and July 2016. All interviews occurred within 72 hours of hospital admission, either pre- or post-operatively. All participants had provided informed consent for surgery at time of interview. We asked all participants to estimate probability of mortality and probability of living independently within 30 days of surgery (range 0-100%). Interviews were audio-recorded, transcribed, and analyzed using thematic content analysis. We gathered supplementary data from medical records including patient demographics, medical history and pre-fracture functional status. We compared participant assessment of HF mortality and likelihood of living independently to estimates from the American College of Surgeons National Surgical Quality Improvement Program (ACS NSQIP) risk calculator.

RESULTS: We conducted 12 interviews (9 patients, 3 surrogates) before reaching thematic saturation (mean age for patients 83 years, 75% women). The mean mortality estimated by participants was 6.7% (range 0–20%) and mean mortality calculated from NSQIP was 7.5% (range 0.1–27.8%). The mean probability of living independently within 30 days of surgery estimated by participants was 90.8% (range 65–100%), and mean probability calculated from NSQIP was 33% (range 23.4–64.4%). We identified four major themes from our interviews: nature of injury; treatment; recovery expectations; and patient experience. Many patients were unclear about risk factors for or predisposition do HF. Though all participants had received HF surgery or provided informed consent for surgery, they had difficulty describing treatment options. Participants expressed uncertainty about recovery timeline and probability of complete return of function, as well as content and duration of rehabilitation.

CONCLUSIONS: Older patients and their SDMs seem to understand the mechanism of HF, but lack understanding of prognosis, outcomes and functional recovery even after providing informed consent for surgery. Interventions are needed to ensure that older patients with HF and family members understand the seriousness of the injury and prolonged recovery trajectory.

PATIENT AND STAFF PERCEPTIONS OF A MOBILE INSULIN TITRATION INTERVENTION FOR UNCONTROLLED DIABETES PATIENTS: A QUALITATIVE STUDY Erin Rogers[1]; Sneha Aaidisani[1]; Rebecca Friedes[1]; Dana Moloney[1]; Natalie K. Levy[2]. [1]NYU School of Medicine, New York, NY; [2]NYU School of Medicine, Bellevue Hospital, New York, NY. (Control ID #2701934)

BACKGROUND: In the Spring and Summer of 2016, a text-messaging intervention to titrate basal insulin in patients with type 2 diabetes and poor glycemic control was implemented at two safety net health care systems in New York City. The goal of the current study was to conduct a qualitative evaluation assessing barriers to, and facilitators of, implementation of the mobile insulin titration intervention (called "MITI").

METHODS: We conducted in-depth qualitative interviews with patients ($N =$ 36) and physician, nursing and administrative staff ($N = 19$) at the two health care systems implementing MITI. Interviews were transcribed and coded by two study investigators using a codebook guided by the Consolidated Framework for Implementation Research and through iterative, consensus-driven content analysis.

RESULTS: Patients and staff perceived MITI as convenient and time-saving for patients, easy to use, and effective at achieving its clinical goals. Patients were comfortable sharing health information via text, and felt good about communicating with their health team remotely. Interviewees across stakeholder groups felt that MITI was helpful beyond insulin titration by reminding and motivating patients to engage in healthy behaviors and improving medication adherence. Staff felt MITI worked well with existing workflows and expressed a desire to see MITI expanded to other chronic conditions. Nurses responsible for weekly titration reported initial concerns over safety/liability, time required to deliver the program, difficulties reaching patients for titration calls and the need for ongoing support/training in using the online texting platform. Perceived barriers to MITI implementation reported by providers included perceived lack of patient cell phone access or texting capabilities and patient language barriers. There was also a theme that emerged across interviewees of an unmet need for additional diabetes management support among this population, beyond insulin support provided by MITI. The project team made several modifications to MITI operations in response to these findings.

CONCLUSIONS: Patients and staff were overwhelmingly supportive of MITI and believed it had many benefits. Initial implementation of MITI should address nurse comfort, workload and training, and sites should provide ongoing support and training for nurses after implementation. Future research should explore options for integrating additional diabetes support for patients enrolled in MITI or after they are discharged from the program.

PATIENT CHARACTERISTICS ASSOCIATED WITH LEAVING A USUAL SOURCE OF CARE DESPITE IMPROVED INSURANCE COVERAGE AFTER MASSACHUSETTS HEALTH REFORM

Elena Byhoff[3, 4]; Nancy R. Kressin[2]; Amresh D. Hanchate[1]; Norma Terrin[3]; Alejandro Moreno-Koehler[3]; Amy LeClair[3]; Karen M. Freund[4]. [1]Boston University School of Medicine, Boston, MA; [2]Dept of Veterans Affairs and Boston University, West Roxbury, MA; [3]Tufts Medical Center, Boston, MA; [4]Tufts University School of Medicine, Boston, MA. (Control ID #2706431)

BACKGROUND: Massachusetts Insurance Reform has allowed for expanded insurance coverage. Little is known about the characteristics of patients who switch or lose primary care despite increasing access through stable insurance coverage. Frequent changes in care, particularly related to changes in insurance coverage, may lead to suboptimal chronic or acute disease management. By understanding which patients are at risk of leaving their usual source of care (USOC), we can identify those who might benefit from outreach.

METHODS: Longitudinal cohort study to describe significant patient characteristics associated with staying in continuous care despite insurance switches. We use electronic medical and billing data from two large Academic Medical Centers in Boston to identify a cohort of patients and their USOC from 2004 through 2014. USOC is defined as ≥2 visits per year at the same clinic. We define two populations of patients who are identified as using the medical centers as their USOC beginning in 2004: (1) Those lost from USOC within 2 years for insurance reform (by 2010) (2) those who stay with USOC through 2014. We excluded patients who aged into Medicare during this time period. We identify those who left USOC adjusting for insurance changes, including loss of insurance, site of care, comorbidities, and socio-demographic factors. We then compare these covariates between groups using ANOVA, Chi Squared and Student's T tests.

RESULTS: Of the 80,610 total patients included in our cohort, 66,330 patients remained with their USOC through 2014. Of those that continued to visit their USOC, 15,826 (24%) had switches in insurance coverage, including loss of insurance. 14,280 patients (17.7%) left their USOC, of those, 3,178 (22.3%) experienced loss of insurance. There was no significant difference in the gender of those who stayed with their USOC compared to those who left (17.8% of men vs 17.7% of women, $p = 0.26$). Non-Hispanic white patients were more likely to leave their USOC compared to Black or Asian/Pacific Islander (19.3% vs 16.3% vs 14.0%, $p < 0.0001$). The mean Charlson Comorbidity Index was similar in patients who stayed vs left (1.78 vs 1.79, $p = 0.031$). Using census-track level data, the median income was $55,116 for those who stayed in USOC vs $59,039 for those who left (IQR $44,395-$77,276).

CONCLUSIONS: We show that in two large academic medical centers, insurance coverage loss was common despite insurance reform. Non-Hispanic white and higher income patients were more likely to leave their USOC controlling for changes in insurance status. Understanding characteristics of this population may help target patients who may have changes in USOC to prevent potential gaps in care.

PATIENT CHARACTERISTICS ASSOCIATED WITH VARIABLE LEFT VENTRICULAR RECOVERY IN TAKOTSUBO SYNDROME

Jae Kim[1]; Charan Yerasi[2]; Alaa Azzouqa[1]; Itsik Ben-Dor[1]. [1]Medstar Washington Hospital Center, Washington, DC; [2]St Joseph's Hospital and Medical Center, Phoenix, AZ. (Control ID #2705492)

BACKGROUND: Takotsubo syndrome (TTS) is an acute and usually reversible heart failure syndrome. The degree of recovery of left ventricular systolic function is variable and in this study we sought to identify determining factors and compare adverse event profiles.

METHODS: We conducted a retrospective analysis of the medical records of 90 TTS patients treated at our institution from 2006 to 2014. All presented with acute cardiac symptoms, left ventricular regional wall motion abnormalities, and absence of culprit atherosclerotic coronary artery disease. Patients were grouped based on degree of left ventricular ejection fraction (LVEF) evidenced on follow-up echocardiography, namely LVEF <50% (partial group) or LVEF ≥ 50% (full group). Various demographic characteristics and comorbidities, as well as laboratory, electrocardiography and echocardiography data were analyzed. Medication profiles were also compared between groups.

Adverse events analyzed included cardiogenic shock, use of mechanical ventilation, development of intramural thrombus and new onset arrhythmias.

RESULTS: Compared with full recovery patients, partial group patients were older (76.7 ± 12 years vs. 70.3 ± years; $P = 0.04$), with a higher prevalence of co-morbid endocrine disorder (25.9% vs. 7.9%; $P = 0.02$). All patients that were initially dentified as having endocrine disorder had a specific diagnosis of hypothyroidism. A greater portion of partial group patients were on levothyroxine replacement therapy (22.2% vs. 3.2%; $P = 0.003$). Use of ACEi/ARB was 18.5% in partial vs. 36.5% in full group ($P = 0.09$). We found no significant between-group differences in type of triggering event or peak cardiac biomarker levels. Initial electrocardiographic abnormalities differed in QT duration which was longer in partial group (540.6 ± 70.7 ms vs. 460.7 ± 34.4 ms; $P = 0.01$). Mean LVEF on initial echocardiogram was lower in partial group, but this was not statistically significant (25.0 ± 5.8% vs. 32.5 ± 9.5%; $P = 0.08$). Follow up LVEF was 37.9 ± 7.6% in partial group and 58.0 ± 4.2% in full group ($P < 0.005$). Follow up time did not statistically differ between groups ($P = 0.26$). There was no statistically significant difference between groups in length of hospital stay or rate of adverse events.

CONCLUSIONS: TTS typically presents with characteristic transient left ventricular dysfunction with variable degree of recovery after the acute episode. Those with partial recovery were older and had a longer QT duration on initial EKG. Triggering event did not differ between groups. Co-morbid endocrine disease (i.e. hypothyroidism) and levothyroxine replacement both associated with partial LV recovery.

PATIENT COMFORT WITH WHICH PROVIDER CAN RECOMMEND MEDICATION DISCONTINUATION Amy Linsky[2, 3]; Steven R. Simon[2]; Kelly Stolzmann[2]; Barbara Bokhour[4]; Mark Meterko[1]. [1]VHA Office of Analytics and Business Intelligence (OABI), Bedford, MA; [2]VA Boston Healthcare System, Boston, MA; [3]Boston Medical Center, Boston, MA; [4]ENRM Bedford VA, Bedford, MA. (Control ID #2699358)

BACKGROUND: Patients often receive care from multiple providers and may be given different advice about whether to discontinue medications. Patients may trust recommendations from one provider over another. We assessed patients' level of comfort with having pharmacists, primary care providers (PCPs) and/or specialists advise them to stop medicine and the characteristics associated with those patterns of comfort.

METHODS: We conducted a national mail survey using the Patient Perceptions of Discontinuation (PPoD) instrument of 1600 randomly sampled Veterans receiving Veterans Affairs (VA) primary care prescribed ≥ 5 medications. To create four outcome groups for patterns of comfort, we combined responses to two yes/no items: 1) "Imagine that a specialist…prescribed a medicine for you. Would you be comfortable if your PCP told you to stop taking it?" and 2) "Imagine that your VA PCP prescribed a medicine for you. Would you be comfortable if a VA clinical pharmacist told you to stop taking it?" The primary predictors were eight validated attitudinal scales. Other predictors included demographics, health status, and health care experiences. Multinomial regression modeling associated patient factors with patterns of comfort.

RESULTS: Respondents ($n = 803$; adjusted response rate, 52%), were predominantly male (85%); non-Hispanic white (68%), age ≥ 65 years (60%), with generally poor (16%) or fair (45%) health. There were 281 (38%) respondents who said "no" to both questions (PCP-N/Pharm-N) and 146 (20%) who said "yes" to both (PCP-Y/Pharm-Y). There were 155 (21%) respondents who said "no" to the PCP stopping a specialist's medicine but "yes" to the pharmacist stopping the PCP's prescription (PCP-N/Pharm-Y). There were 153 (21%) who said the pharmacist could not stop a PCP's medicine, but the PCP could stop the specialist's (PCP-Y/Pharm-N). In adjusted multinomial regression models with PCP-N/Pharm-N as the reference, those with chronic obstructive pulmonary disease were less likely to be PCP-Y/Pharm-N (OR 0.52, CI 0.31–0.88). Respondents with greater medication concerns were more likely to be PCP-Y/Pharm-Y (OR 1.45, CI 1.09–1.92). Those with more interest in shared-decision making were more likely to be PCP-N/Pharm-Y (OR 1.41, CI 1.04–1.92). Finally, if one had greater trust in their PCP, they were less likely to be PCP-N/Pharm-Y (OR 0.52, CI 0.34–0.81), but more likely to be PCP-Y/Pharm-N (OR 2.16, CI 1.31–3.56) or PCP-Y/Pharm-Y (OR 1.83, 1.13–2.98).

CONCLUSIONS: Patients have varying patterns of whom they feel comfortable to make deprescribing decisions about their medicines. Those with more concerns about medicines were more amenable to anyone telling them to stop taking them, and trust in one's PCP was associated with allowing the PCP to supersede the specialist. As multidisciplinary models of care expand, understanding how patients perceive the roles of various providers is important as it may influence adherence to recommendations.

PATIENT EMPOWERMENT PROGRAM (PEP) HAS A LASTING IMPACT: PATIENT REPORT OVER A YEAR LATER Nadiya Pavlishyn[2]; Lisa Altshuler[2]; Kayla Maloney[2]; Rebecca Deng[2]; Sondra Zabar[2]; Joseph Plaksin[2]; Adina Kalet[2]; Andrew B. Wallach[1]. [1]Bellevue Hospital, New York, NY; [2]NYU School of Medicine, New York, NY. (Control ID #2702503)

BACKGROUND: The shift toward a Patient Centered Medical Home has redefined healthcare delivery to be a patient centered affair. While this is beneficial, it also calls for patients to be more activated in the doctor's office and responsible in their self-directed care outside of the office. For patients with chronic diseases, the burden of illness is even higher and requires significantly more effort in disease self-management. We developed 4 hour Patient Empowerment Program (PEP) to bridge that gap through a program training patients with diabetes in the skills necessary to communicate effectively with providers and engage in shared decision making (SDM). Previously, we reported improved diabetes self-care behaviors at 6 months post intervention based on standardized questionnaires. This study examined participants' perspectives on PEP from 1–2 years post intervention.

METHODS: 71 patients with type 2 diabetes mellitus were recruited from 2 urban safety-net hospitals to participate in PEP. 33 patients completed the intervention and 28 patients completed a 6-month follow-up assessment. Participants were predominantly low-income, racial minorities, with limited health literacy (Newest Vital Sign M = 2.21, SD = 1.67). We reached 22 of those 28 participants, at 11 to 20 months post intervention (M = 16, SD = 2.31). They were interviewed via telephone, with structured open-ended questions asking them to reflect on what they took away from the classes, and whether they'd behaved differently during doctor visits or cared for their diabetes differently since the classes. A qualitative analysis was made of these responses, using Dedoose software to assist in analysis.

RESULTS: All 22 patients recalled PEP and could identify key concepts from it. Participants referenced the doctor-patient relationship, from "how to improve relationship with my doctor" to "practicing role of doctor and patient in interaction and relationship". 86% of participants identified changes in their behavior since PEP- 36% identifying that they share more information with their doctor now than they did before, 18% reporting that they ask more questions, and another 18% reporting that they are more proactive in their diabetes care. When asked about their diabetes self-management, prevalent themes were better diet/food choices, exercise, and adherence to medication. 3 patients reported losing weight since the classes.

CONCLUSIONS: Despite follow up occurring almost a year later for some, and almost 2 years for others, the message of PEP was clear and compelling. Participant's perspective on their role as a patient changed from a passive recipient of healthcare to a more engaged and activated one. They felt empowered to participate in SDM with their doctors and more comfortable speaking up for their preferences. While further validation is necessary, PEP offers an important way to prepare patients to become true partners with their providers.

PATIENT EXPERIENCE WITH INTER-HOSPITAL TRANSFER: A QUALITATIVE STUDY Stephanie Mueller[1]; Evan Shannon[1]; Jeffrey L. Schnipper[2]; patricia dykes[2]. [1]Brigham and Women, Boston, MA; [2]Brigham and Women's Hospital, Boston, MA. (Control ID #2703707)

BACKGROUND: Inter-hospital transfer (IHT) exposes patients to risks of care fragmentation and remains a largely unstudied care transition. In this study, we investigated patient experience with IHT.

METHODS: We developed interview guides to investigate patient experience with IHT using themes extracted from prior research along with stakeholder input. We conducted semi-structured interviews on a purposeful sample of patients transferred within the previous 48 h to the General Medicine, Cardiology or Oncology services at Brigham and Women's Hospital (Boston, MA). We used Content analysis to interpret data obtained from transcribed interviews. Using an *a priori* analytic framework, two independent reviewers coded data into discrete categories, meeting regularly for analytic discussions to iteratively modify themes and interpretations.

RESULTS: Interviews were conducted with 10 recently transferred patients (2 medicine, 6 cardiology, 2 oncology). Analysis yielded three primary themes: (1) "Decision to transfer," (2) "Communication regarding transfer," and (3) "The transfer process" (Table). Patients often described a joint decision to transfer between themselves and the referring care team, most often to receive more specialized care, and expressed satisfaction with the transfer. Most patients expressed dissatisfaction with the timing of transfer, including time of day, delay, and lack of notice, with less focus on communication between providers. Patients often focused on the physical transfer process (ambulance ride, hospital room) (Table).

CONCLUSIONS: Appreciating patients' experience with IHT is an essential step towards understanding of the impact of IHT on primary stakeholders. Notably, patients focused on elements of IHT that more directly impacted them, including timing of transfer, and the physical transfer process, with less focus on communication between providers of which they might be less directly aware. These identified themes may provide important patient-centered targets in improving this care process.

Table. Themes of Patient Experience with IHT

Theme	Patient Example
Decision to Transfer	
Reason for transfer	"I was at [Outside Hospital] for about a week and a half for my latest stint. I went in with pancreas issues. The recommendation after a week and a half was that they would send me to...a hospital that have actual specialists that deal with the pancreas, whether it be surgery wise or nutrition wise. There they weren't well-equipped enough at [Outside Hospital] to deal with my condition basically, so they wanted me to go to...Brigham" (Patient 3)
Expectations of care	"I didn't wanna sit there for weeks for no reason. They could only keep me alive for so long. What's the point? Yeah, I was happy that I was transferred over here. Yeah... I feel a lot more comfortable here." (Patient 8)
Communication Regarding Transfer	
Timing of transfer	"They transferred me at, like, midnight." (Patient 8) "The only downside was that I really didn't know any time really, when I'd be transferred, so I'm guessing that's something that you get complaints about or concerns about from people... so I was told Wednesday, so I was planning on Wednesday... I was telling my family, I'm like, "Oh, if you're not busy, you can come by before Wednesday cuz I'm getting transferred"... it was just kind of difficult because they switched it up last minute. I think I found out at 6:30 last night that a bed opened up at Brigham and Women's, they'll be here in an hour and a half... so I had an hour and a half to basically pack up all my stuff." (Patient 3) "Three times my uncle was already on his way here from [his house]. Three times I had to call him. I don't know if you should stop where you are because they just cancelled the ambulance." (Patient 5) "Well, let's put it this way. I found out that we were being transferred at 8:00—I don't—maybe 9:00. We didn't leave by ambulance until 1:00 in the morning. Getting here was just unreal. Once we got here, you know, they were ready for us." (Patient 9)
Information exchange between transferring and receiving treatment teams	"I didn't have any concerns about it, but a lot of what was going on was behind, quiet behind the scenes. I didn't know too much about what was going on." (Patient 1) "Well, yeah, they use the same computer system now, so all my stuff is in the computer—all my meds, everything. It's all there. I don't even think they really need to talk." (Patient 8)
The Transfer Process	
The physical transfer process	"They called an ambulance team out in [transferring location], and they came up with a stretcher, got me all set up on that. Got me in the ambulance. It was pretty quick. I kept dozing off, so it was really quick. There was three paramedics with me. The one in the back kept giving me my medication every two hours, and they gave me the medication maybe three times. My two hour pain med and then an anxiety pill, and then there was another pill I was due while I was in the ambulance ride; she gave me those, which I guess that's what was making it where it seemed so quick. I was dozing in and out quite a bit." (Patient 4) "The ambulance drivers are very good. They covered me up in the ambulance and one sat there and talked if I wanted to talk, and I had no problem whatsoever. I got over here safe and sound, no problem." (Patient 10) "The ambulance ride was awful...Maybe she smoked or maybe the guy that was taking care of me smoked. I smelled cigarettes, and I can't handle that. A whiff of that and I'm like "oh my God". It was on adults and everything. I felt like it was on my skin. I just showered. After six days, I just showered. It felt like it was on my skin. Then when [the ambulance] was just going, rocking back and forth, I had very low blood pressure. Maybe I'm just running low, and I'm laying down, and I'm scared to death. You guys obviously are speeding and I didn't have my glasses on, so I didn't see anything." (Patient 5)
Impressions on arrival	"I was really surprised to see how nice the room was, and how roomy a room it was, as compared to [Outside Hospital]." (Patient 1) "When I got here, I went by the nurse's station, so I was aware that they knew that who I was and I was coming in and what room I was gonna be in and all that." (Patient 7) "I mean, as soon as I got here—the nurses are awesome. As soon as I got here, they got right on the computer, checked it out, got my meds right away." (Patient 8)

PATIENT EXPERIENCE: COMPARISON OF PRIMARY CARE PATIENTS' AND UNANNOUNCED STANDARDIZED PATIENTS' PERCEPTIONS OF CARE Lisa Altshuler[4, 4]; Michelle E. Carfagno[6]; Nadiya Pavlishyn[4]; Anne Dembitzer[4]; Kelly J. Crotty[5]; Richard E. Greene[4, 1]; Andrew B. Wallach[1, 1]; Reina Smith[1]; Barbara Porter[3, 1]; Kathleen Hanley[2]; Sondra Zabar[4]; Mark D. Schwartz[4]. [1]Bellevue Hospital, New York, NY; [2]NYU, New York, NY; [3]NYU SOM, New York, NY; [4]NYU School of Medicine, New York, NY; [5]New York University, NY, NY; [6]NYU School of Medicine, Dix Hills, NY. (Control ID #2707245)

BACKGROUND: Patient experience is an important quality indicator, and healthcare organizations spend considerable resources assessing patient satisfaction. Yet a view of patient experience gleaned from patient satisfaction measures tends to show high levels of reported satisfaction, with little variation. Unannounced standardized patients (USPs) have been used to assess providers' clinical skills, but can also provide other information about the healthcare encounter. This study examined the concordance between USP and patient reports of care at the same site.

METHODS: Data was gathered at Bellevue Hospital Primary Care Clinic, a city safety-net hospital. USPs assess internal medicine residents training there, and complete a behaviorally anchored checklist of resident skills and interactions with other staff, wait times, ease of clinic navigation, and perceptions of team functioning. Data from 155 USP visits from July 2015-Oct 2016 was used in this study. Independently, as part of team-training efforts in the Primary Care Clinic, patient satisfaction surveys were collected, addressing similar issues. At the end of a clinic visit, research assistants unrelated to patient care asked patients to complete a 30-item survey. 118 surveys were completed between July-November 2016. 11 items appeared on both scales (though worded slightly different) and were used in this comparison. These included questions about clerical (CA) and patient care associates (PCA), and providers (MDs, NPs, PAs), provision of information, team functioning and clinic environment. Of the 11 items, 4 had the same response choices. 7 had differing

numbers of responses (eg 4 vs 3 point Likert scales), evenly distributed across patient and USP scales. For each of these items, we collapsed items so to maximize positive ratings (eg. on a 4 point scale from poor to excellent, "good" and "excellent" were combined rather than "good" and "fair"). Chi-square analyses were computed to examine group differences.

RESULTS: On chi-square analyses, 9 of the 11 items significantly differed between the USP and patient groups, with patients more likely to have positive ratings. These included rating PCAs as friendlier ($x^2 = 8.67(1,206)$, $p = .003$) and providers better at answering questions ($x^2 = 11.75$ (2,265), $p = .003$); reporting that they received sufficient/clear instructions about medication refills and follow-up ($x^2 = 29.5(2,264)$, $p = .0001$); finding the clinic atmosphere calmer than did USPs ($x^2 = 10.5$ (2,265), $p = .005$) and noting that the team functioned better ($x^2 = 7.31(2,268)$, $p = .026$). There were no significant differences in willingness to recommend the clinic or on clarity of CAs' communication.

CONCLUSIONS: Results of this study document the differing perspectives of patients and USPs. Consistent with previous work, patients in our study tended to rate most items higher than did the USPs. USPs provide a different, and likely a more critical look at the clinical setting and this information can enhance efforts to improve patient experience.

PATIENT KNOWLEDGE OF RISKS AND BENEFITS OF PERCUTANEOUS CORONARY INTERVENTION DOES NOT INFLUENCE PATIENT PREFERENCE FOR TREATMENT FOR STABLE CORONARY ARTERY DISEASE

Neal Yuan; Nadra Lisha; R. Adams Dudley; W. John Boscardin; Grace A. Lin. University of California San Francisco, San Francisco, CA. (Control ID #2706818)

BACKGROUND: In patients with stable coronary artery disease (CAD), percutaneous coronary intervention (PCI) may help with more rapid relief of anginal symptoms but does not reduce mortality or risk of cardiovascular events when compared with optimal medical therapy (OMT) alone. Nevertheless, many patients who may not benefit continue to receive PCI. Prior studies have found that patients are not well informed and preferences are not well incorporated into the treatment decision. Increasing patient knowledge has been promoted as a key intervention for improving shared decision-making for stable CAD treatment. It is unknown how significantly patient knowledge influences both patient preference and the treatment received for stable CAD. We sought to understand the relationships among patient knowledge, preferences, and treatment received.

METHODS: We surveyed patients with stable CAD referred for elective cardiac catheterization for CAD evaluation across four large U.S. academic centers. Patient completed surveys either immediately pre- or post-cardiac catheterization. The survey consisted of 23 questions covering the three primary domains of decision-making: knowledge, communication, and preferences. Self-reported demographics and medical history were collected. Treatment received was verified by chart review. Knowledge score was calculated using the number of correct responses to knowledge questions. We used linear regression to evaluate the relationship between knowledge score and patient preferences. We used logistic regression to study the association of patient preference with treatment received.

RESULTS: Of the 101 patients surveyed, 52.0% agreed or strongly agreed that they would prefer receiving OMT over PCI. More knowledge did not predict a patient's treatment preference (OMT or PCI), even after adjustment for age, gender, race, education, desired level of decision-making involvement, and degree of symptoms ($\beta = -0.04$, $p = 0.74$). The majority (80.8%) of patients desired a substantial role in the decision-making process. Expressing a preference for OMT over PCI did not correlate with receiving OMT. Only 24% of patients stating that they strongly would prefer medications over PCI actually received OMT alone. In contrast, patients expressing an ultimate preference for PCI were nine times more likely to receive PCI (OR 9.05, 95% CI 2.32–38.94).

CONCLUSIONS: Greater knowledge of the risks and benefits of stable CAD treatment did not appear to affect a patient's preference for treatment. While the vast majority of patients desired a substantial role in forming the treatment decision, treatment received was associated with patient preference only in patients who preferred PCI. Thus, interventions aimed only at improving knowledge may not substantially influence patient preference for treatment or treatment received.

PATIENT MORTALITY DURING UNANNOUNCED ACCREDITATION SURVEYS AT US HOSPITALS

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BACKGROUND: The Joint Commission (TJC) performs week-long unannounced on-site surveys at US hospitals as an integral part of their accreditation process. The stakes for performance during TJC surveys are high since a citation can significantly affect a hospital's reputation. To date, no research has addressed whether this heightened vigilance during survey weeks is associated with patient outcomes. If surveyors' presence improved outcomes, it would imply that the survey-week scramble to improve staff compliance has a safety impact worth further study. We hypothesized that surveyors' presence would improve safety outcomes, with a larger effect in major teaching hospitals, which have both greater resources and reputational incentives to ensure survey compliance.

METHODS: Observational analysis of Medicare admissions at 1,984 TJC-surveyed hospitals from 2008–2012. We identified survey weeks using historical dates extracted from the TJC website. We measured rates of 30-day mortality, and secondary outcomes (*C. diff.*infections, in-hospital cardiac arrest mortality and the composite Patient Safety for Selected Indicators (PSI)-90 measure) from 3 weeks before to 3 weeks after surveys. We then compared rates of these outcomes during survey weeks vs. average rates in the ±3 week period with logistic regression, adjusted for beneficiary characteristics. Additional sub-analyses were conducted for major teaching hospitals. Standard errors were clustered at the hospital-level.

RESULTS: There were 244,787 admissions during 3,417 survey weeks and 1,462,339 admissions in the ±3 week period during 2008–2012. Patient characteristics, admission diagnoses and procedures were similar across survey and non-survey weeks. Across all surveyed hospitals, there was a significant decrease in 30-day mortality for admissions occurring during a survey week vs. the surrounding 3 weeks (7.03% vs. 7.21%, adjusted difference 0.11%, $p = 0.032$), with stable rates during non-survey weeks ($p > 0.13$). This observed decrease was larger than 99.5% of mortality changes among 1,000 random permutations of hospital-survey date combinations. Larger effects were observed among major teaching hospitals, where 30-day mortality fell from 6.41% on non-survey weeks to 5.93% during survey weeks (adjusted difference 0.39%, $p = 0.027$), a 6.1% relative decrease. We did not find any

significant differences between survey and non-survey weeks among safety-related secondary outcomes.

CONCLUSIONS: Admissions during TJC survey weeks have significantly lower 30-day mortality than non-survey weeks, particularly in major teaching hospitals. These results are unlikely explained by confounding given that patient/admission characteristics were indistinguishable between survey and non-survey weeks and surveys are unannounced. Though the mortality effects we observed were modest, these results suggest that changes in practice occurring during periods of surveyor observation may meaningfully impact patient mortality.

PATIENT NAVIGATION TO PROMOTE SMOKING CESSATION IN PRIMARY CARE: PRELIMINARY FINDINGS FROM AN ONGOING RANDOMIZED CONTROLLED TRIAL Karen E. Lasser[1]; Lisa M. Quintiliani[2, 3]; Ve Truong[1]; Ziming Xuan[3]; Lori Pbert[4]. [1]Boston Medical Center, Boston, MA; [2]Boston University, Boston, MA; [3]Boston University School of Public Health, Boston, MA; [4]University of Massachusetts Medical School, Worcester, MA. (Control ID #2700692)

BACKGROUND: Primary care practices are implementing patient navigation widely to promote smoking cessation. Little is known about the reach and effectiveness of such programs.

METHODS: We analyzed data from an ongoing trial of patient navigation and financial incentives to promote smoking cessation among primary care patients who are daily smokers at an urban safety-net hospital; smokers in the precontemplation stage were excluded. 177 participants were randomized to the intervention arm and received up to four hours of patient navigation over six months and financial incentives for biochemically confirmed cessation. Two navigators delivered the intervention; each worked twenty hours per week. Navigators were given flexibility in how to reach participants (in-person, text, and/or by phone). The navigators' goal was to link participants to tobacco counseling; navigators were not formally trained as tobacco treatment counselors. We analyzed process data (e.g. ability to contact patients by phone, complete motivational interviewing calling script), receipt of the minimum intervention dose (at least one in-person meeting) and outcome data (linking patients to counseling and pharmacologic therapy). We used chi square tests to compare differences between groups, and multivariable logistic regression to examine predictors of having a nicotine replacement therapy (NRT) prescription sent to the patient's pharmacy via the EMR. We controlled for variables of a priori clinical significance and those with $p < 0.1$ in bivariable analyses.

RESULTS: Navigators contacted 86% of participants by phone (navigator 1 contacted 93%; navigator 2 contacted 78%; $p = 0.004$). Stage of change with respect to smoking cessation was not associated with ability to contact participants; navigators contacted 92% of participants in contemplation stage vs. 84% in preparation stage ($p = 0.14$). Navigators completed a motivational interviewing calling script with 53% of participants and met 24% of participants in person. Very few participants accepted referrals to counselling (quit line or hospital smoking cessation resources) or pharmacotherapy other than NRT. Navigators sent NRT prescriptions to 34% of participants (60/177). In multivariable analyses limited to participants who received at least one in-person meeting or navigation by phone, meeting the navigator in person was associated with an increased odds of receiving NRT (OR 3.7, 95% CI 1.6–8.4). Black participants were less likely to receive NRT compared to non-black participants (OR 0.3, 95% CI 0.15–0.71).

CONCLUSIONS: Meeting participants in person may help navigators connect with and link smokers to NRT. Given the limited acceptance of referrals to tobacco treatment, navigators should be trained in tobacco treatment counselling. Further interventions are needed to increase uptake of NRT by black smokers.

PATIENT PERCEPTION OF BEDSIDE FIRM ROUNDS: MIXED METHODS STUDY OF A NOVEL APPROACH TO BEDSIDE ROUNDS Allen Shih[1]; Nana Addo-Tabiri[2]; Andre N. Sofair[1, 2]. [1]Yale School of Medicine, New Haven, CT; [2]Yale New Haven Hospital, New Haven, CT. (Control ID #2705161)

BACKGROUND: Transition of care between medical teams represents a juncture critical for patient safety and quality, yet often occurs without patient involvement. Concerns over patient privacy, understanding, and comfort helped to drive the decline in bedside rounding in favor of hallway and conference presentations. Our institution recently introduced 'Firm Rounds' during which one outgoing night team and two accepting day teams jointly transition care using 3 pillars: a patient-centered presentation of the history and physical at the bedside, a 'warm handoff' including introductions of the accepting team by name and role, and discussion of a teaching point by the resident. Our project seeks to explore patient perceptions regarding patient involvement in transitions of care at the bedside.

METHODS: Semi-structured interviews were conducted with 38 English-speaking adults admitted to the general inpatient medical floor at Saint Raphael's Campus of Yale New Haven Hospital between November 2014 to March 2015. Conducted within 48 hours of admission, this mixed methods study comprised a quantitative portion with a 5-point Likert scale and a qualitative interview. Questions included the experience with rounds, interactions with doctors, patient comfort level with the process, and degree of understanding of their care. Interviews were audiotaped, transcribed, analyzed using the constant comparative method, and conducted until thematic saturation was reached. Chi-squared test assessed answer independence.

RESULTS: Patients described the following positive attributes of bedside rounds: meeting the medical team, helping teach the medical team, and understanding more about their illness. Patients found importance in listening to presentations, asking questions, and engaging with the medical team. Although patients enjoyed undivided attention from physicians, distractions included too many participants in rounds, confusion about team member's roles, and apparent boredom by several listeners. 68% of patients felt that rounding in a 2-bed hospital room was acceptable. Although physicians sought to use patient-centered language, 53% of patients stated that medical jargon was still used. After bedside rounds, 58% of patients stated that they had a better understanding of their condition and treatment plan. Patients commonly viewed bedside rounds as educational to themselves and round attendees.

CONCLUSIONS: Our study suggests that patients hold positive views regarding bedsides rounds and prefer it to rounds taking place outside the room. While patient hold a variety of preferences for how bedside rounds are conducted, the majority found rounds to be informative, personable, and beneficial. Concerns over patient privacy or use of medical jargon weighed less heavily than the perceived benefits of team communication and education. We found that well-conducted, patient-centered bedside rounds such as Firms Rounds can enhance patient-physician rapport and foster patient understanding and satisfaction.

PATIENT SATISFACTION WITH A LARGE PRIMARY CARE TELEMEDICINE SERVICE Kathryn A. Martinez[1]; Mark N. Rood[2]; Nikhyl Jhangiani[1]; Adrienne Boissy[1]; Michael B. Rothberg[1]. [1]Cleveland Clinic, Cleveland, OH; [2]Cleveland Clinic Foundation, Chagrin Falls, OH. (Control ID #2702118)

BACKGROUND: Interest in use of telemedicine for primary care delivery is increasing, however information regarding patient satisfaction is limited. The objective of this study was to characterize factors associated with patient satisfaction with telemedicine encounters.

METHODS: We analyzed all completed primary care encounters between January 2013 and August 2016 from the Online Care Group telemedicine service, one of the largest telehealth companies in the US, serving patients in 48 states. Patient characteristics, including age, sex, and geographic region were provided by the user when accessing the system. Encounter characteristics, including time of day, wait time, visit length, and whether patients used a coupon for a free or reduced-cost visit were recorded by the telemedicine system. Patient diagnosis and prescription receipt were recorded by the visit provider. At the completion of the encounter, users were asked to rate their satisfaction (on scales of 0 to 5 stars) with 1) the telemedicine system overall, and 2) their telemedicine provider. We dichotomized satisfaction measures as 5 stars versus less than 5 stars. Using multivariable logistic regression, we evaluated the association between patient characteristics, encounter characteristics, and patient diagnosis and prescription receipt with satisfaction with 1) the telemedicine service overall and 2) with the visit provider.

RESULTS: There were 56,863 completed encounters during the study period with 601 providers; 60% of patients were female and 64% were under 40 years. Eighty-five percent rated their satisfaction with the provider 5 stars, and 78% rated their overall experience 5 stars. Mean wait time was 5.1 min (Interquartile Range (IQR): 1.2–6.1 min) and the mean visit length was 7.1 min (IQR: 3.4–8.8 min).In the multivariable model regarding the telemedicine service overall, receipt of a prescription (Odds Ratio (OR):3.30; 95%Confidence Interval (CI):3.04–3.59), and coupon use (OR: 1.39; 95%CI:1.24–1.57) were associated with greater odds of rating satisfaction 5 stars. In the adjusted model regarding visit providers, greater satisfaction was also associated with both prescription receipt (OR: 3,72; 95%CI: 3.38–4.09) and coupon use (OR: 1.55; 95%CI: 1.34–1.79). In both models, longer visit length was associated with higher satisfaction and longer wait time was associated with lower satisfaction, but these effect sizes were small. Neither call time of day nor patient diagnosis was associated with satisfaction in either model.

CONCLUSIONS: In this large nation-wide cohort of telemedicine patients, satisfaction with both service overall and individual providers was high. However, satisfaction varied significantly by both coupon use and prescription receipt. Patient expectations of telemedicine may differ from those of traditional outpatient care, and be more heavily influenced by consumer-oriented demands.

PATIENT SATISFACTION: “ACCENTUATING THE POSITIVE” IN PATIENT CARE Garrett Oberst; Abigail Lawson; Christina Fahey; Dylan Woolum; Stephanie A. Rose; David Rudy. University of Kentucky, Lexington, KY. (Control ID #2705382)

BACKGROUND: Process improvement is a vital component of health organizations. Hospitals commonly identify areas of strengths and weaknesses through patient satisfaction surveys. Normally, areas of weakness are identified and plans are made to rectify these deficiencies. While sometimes successful, it can lead an organization to overlook its strengths and focus on weaknesses which may lead to a “blame and shame” organizational culture. Appreciative Inquiry (AI) is an alternative to this method. AI works by promoting positive successes. The aim of this project is to identify positive aspects of patient care in the cancer center in an academic medical center.

METHODS: Interviews were conducted in the outpatient chemotherapy infusion and inpatient bone marrow transplant units in a large, university-based cancer center. All patients were over 21 years of age. No identifying information was collected other than the date and setting of the interview. Patients were asked about a time that they were a part of excellent patient care. Patients were asked to identify people who contributed or helped during this experience and why these individuals were so impactful. Additionally, patients were asked to name three wishes that could enhance their experience. Researchers took written notes of patients’ responses. Notes were analyzed qualitatively, reviewed by the authors, and thematic areas were identified. An operational definition was developed for each theme to decrease subjectivity. Two iterations of theme development were performed. Patient responses could fall into more than one category. Discrepancies were assigned final codes based on simple majority ratings.

RESULTS: 102 interviews were conducted, with 78 (77%) conducted in outpatient chemotherapy infusion and 24 (23%) in inpatient bone marrow transplant. The four common themes identified in patients’ responses regarding their positive experiences were caring (68% of patients), personalized care (50%), communication (41%), and professionalism (38%). The themes of the responses regarding improvements were wait time (28% of patients), facilities (15%), scheduling (10%), availability of staff (10%), and staff performance (8%). 49% of patients could not identify an improvement.

CONCLUSIONS: Patients at the cancer center most appreciated the way in which they were treated by their healthcare providers rather than the level of healthcare that they received. Additionally, the improvements in care that most patients suggested tended to be related to operational improvements such as wait time and facility improvements rather than to the performance of their healthcare providers or the way that they were treated. Surprisingly, nearly half of patients interviewed were unable to identify an improvement. Future goals include review of these findings with the cancer center, which will allow us to focus on both strengths and weaknesses.

PATIENT-CENTERED PRIMARY CARE, SOCIAL NETWORKS, AND CANCER PREVENTION KNOWLEDGE AND BELIEFS IN US ADULTS Jaya Aysola; Hairong Huo; Marilyn M. Schapira. University of Pennsylvania, Philadelphia, PA. (Control ID #2707630)

BACKGROUND: We lack understanding about whether patient-centered primary care and social networks predict cancer prevention knowledge and beliefs among US adults. The primary objective of this study was to evaluate if factors such as having patient-centered primary care and discussing health with social ties were associated with cancer prevention knowledge and beliefs.

METHODS: We analyzed data on a nationally representative sample of US adults without a prior diagnosis of cancer ($n = 3502$) from the 2015 Health Information National Trends Survey (HINTS). Our first predictor was whether one had a regular source of care that was patient centered (yes or no). To have patient-centered care, one would have to have a regular provider, excluding psychiatrists and other mental health professionals, and have answered “Always” or “Usually” to several questions that assessed patient-centeredness. (Cronbach’s alpha 0.86). Our second predictor was the response

to the question, “Do you have friends or family members that you talk to about your health?” (yes or no). Our primary outcomes were awareness of the relationship between lifestyle behaviors and cancer risk (yes or no) and the following beliefs about cancer: everything causes cancer (agree or disagree), prevention is not possible (agree or disagree), and there are too many recommendations about cancer (agree or disagree). With logistic regression models, we estimated associations between our two predictors and cancer knowledge and belief outcomes. In multivariable regression models, we adjusted for age, gender, race/ethnicity, household income, education level, and employment.

RESULTS: About 81% of the study sample had knowledge that lifestyle behaviors influence cancer risk and about 60% agreed with the belief that everything causes cancer, about 30% agreed with the belief that prevention was not possible, and about 73% agreed with the belief that there were too many recommendations about cancer. We found no significant associations between both our predictors (having patient-centered care, discussing health with social ties) and knowledge that cancer behaviors influence cancer risk. However, we found significant associations between discussing health with social ties and cancer-related beliefs. For example, talking with your friends about health meant you were less likely to belief that everything causes cancer [(Adjusted Odds Ratio (95% Confidence Interval): 0.6 (0.4, 0.9)]and that prevention is not possible [(Adjusted Odds Ratio (95% Confidence Interval): 0.4 (0.3, 0.6)]

CONCLUSIONS: Our findings suggest currently social networks influence cancer knowledge and beliefs more so than having patient-centered care and highlights a need for primary care providers to discuss cancer prevention with their patients.

PATIENTS' PERCEPTIONS ABOUT PARTICIPATION IN ONLINE HEALTH RESEARCH IN AN URBAN SAFETY-NET SETTING

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BACKGROUND: As smartphone usage grows among low SES groups and ethnic minority populations, mHealth has the potential to improve health and reduce disparities. However, low-income, diverse populations have lagged in adoption of information technology for health. Formative work is needed to design online interfaces that address the needs and concerns of diverse populations.

METHODS: We conducted a 2-hour focus group with 11 participants to understand their ideas regarding sharing personal data via smartphone apps. Participants had either participated in prior studies and given consent to be contacted about upcoming studies or were recruited via flyers posted in ambulatory clinics. Inclusion criteria included age over 18, ambulatory care patients in the safety-net setting, English-speaking, and ownership of a smartphone with weekly or daily use. Participants were excluded if they had significant cognitive or visual impairments. The two audio recordings set up in opposite areas were transcribed using a digital transcription service. Two researchers separately analyzed the transcripts to inductively identify themes in the participant's responses and agreed upon a common set of themes.

RESULTS: Four themes regarding individuals' willingness to participate in data sharing applications on their smartphones were identified: accountability and trust, fear of data misuse, usability, and altruism. Participants were very concerned about jeopardizing their personal information through data sharing; they were only willing to share health information with trusted sources (i.e. their doctors and known health institutions), but were hesitant to share with others. Individuals also heavily stressed that knowing the reason for the research study would influence their decision to share their personal data. Three specific fears regarding data misuse frequently arose during the focus group: fear of geographic tracking, financial harm, and medical information privacy breach. Participants also highlighted the importance of usability of mobile platforms, emphasizing ease of use as an important factor Many wanted to participate in research that would lead to public good (altruism).

CONCLUSIONS: Concerns about participation in online health research echo known concerns about research participation in general and about overall internet data sharing. These concerns appear to be particularly acute in our sample drawn from a safety net healthcare system. This formative work informed iterative design of our planned mobile application for online health research. The next step will be to conduct individual interviews and usability testing of the mobile app research platform with diverse populations, with the goal of enhancing the diversity of research participation in online studies.

Patients' Perceptions about Mobile Data Sharing

Accountability and Trust	“I have to be able to trust them with my information, whatever they're going to do it stays with them and no one else gets involved in it that don't need to know about it” “I don't like to give out personal information, but it really depends on who's asking. If it's a doctor, that's different.”
Fear of Data Misuse	“The only thing I don't dig is somebody being able to track me minute by minute, day by day around each block, no, that's not happening. Everything else I could care less about.” “What if you're looking for a job? Any hacker can get that information. If you have some disease that's going to impair your job, your job search is going to be pretty screwed, if they have access to your medical records.”
Usability	“Basically the reason I don't use the phone for emails, or Facebook, or just any apps or whatever…I will go to the bus stop, I will dial 511, departure times puts you in the bus stop, and it will tell you within so many min this bus is coming, blah, blah, blah. I don't need a frigging app, okay?…It isn't worth the drama.”
Altruism	“…to help somebody else, sure, I'm all right with that. I mean it's all about trying to help someone else.”

PATIENTS' PERSPECTIVES ON REASONS FOR READMISSION

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BACKGROUND: Readmissions increase costs for hospitals, patients and their families. We examined patient perspectives on the reasons behind readmissions in one urban academic medical center.

METHODS: Between June and August 2016, semi-structured interviews were conducted with patients with unplanned readmissions to the medicine services within 30 days of inpatient discharge. Patients and/or proxies were

asked about original discharge experience, the reasons for returning to the hospital, adequacy of care post-discharge (either in-home or at a facility), and access to socioeconomic resources. Interviews were conducted in English, Spanish, and Mandarin Chinese, transcribed verbatim, and de-identified. A team of four coders conducted thematic analysis using Dedoose® software.

RESULTS: 36 interviews were conducted with 35 participants, who ranged in age from 21 to 90 with a median age of 59 years. 49% were women, 69% were non-Hispanic white, and 94% completed the interview in English. 60% of the participants were covered by Medicare or Medicaid almost half were originally discharged to a post-acute care (skilled nursing, long term acute care, rehabilitation) facility. Three common themes emerged regarding patient perceived reasons for readmission: (1) problems with post-acute facilities, (2) language barriers, and (3) communication issues. Patients reported a mismatch between their clinical care needs and services available at some post-acute facilities, with some describing regret after selecting a facility based primarily on proximity to home or family. Some non-English speaking patients and their families reported an inability to obtain written discharge instructions in a language they could read and understand, even if an interpreter provided verbal instructions at the time of discharge. Poor communication between members of the care team, the hospital and post-acute care facilities, and patients/families and providers was identified by patients as contributing to readmissions, particularly when parties failed to relay information about topics such as plan for discharge or timeline for follow-up appointments.

CONCLUSIONS: Patients identified three factors that contributed to readmissions. Future interventions could aim to: improve networks of post-acute care focusing on the medical capabilities of individual facilities; heighten access to materials in the languages most prevalent in the local patient population; and improve patient care transition communication among members of the care team, with post-acute facilities, and with patients and families.

PEER REVIEW OF VIDEOED TEACHING ENCOUNTERS: A NOVEL METHOD FOR CONTINUING TEACHING EDUCATION

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BACKGROUND: Practicing clinicians are held to well-established standards for the ongoing maintenance of clinical knowledge through CME requirements. While no such standard exists for cultivation of teaching skills, this is an equally critical component of professional development for medical educators. In this qualitative study, we evaluated the acceptability and efficacy of a novel method for teaching skills development. Faculty reviewed self-selected video segments of peer teaching during small group sessions. Monthly sessions were moderated by a master educator who guided direct observation of and reflection upon observed teaching, including highlighting efficacious teaching methods.

METHODS: Semi-structured post-curriculum telephone interviews were conducted with 20 of the 40 total participating faculty during summer 2016. We created an open-ended question script that was used by an experienced interviewer. The 20-min interviews were audio-recorded, de-identified, and transcribed verbatim. Using the editing approach of qualitative analysis developed by Crabtree and Miller, a codebook was developed and refined. Two coders independently applied the codes to interview transcripts using ATLAS.ti (Scientific Software, Berlin Germany) software. After coding, discrepancies between coders were adjudicated until agreement was achieved. Original coding files prior to adjudication were used to calculate intercoder reliability. The mean Kappa statistic was 0.66, which is characterized as "substantial agreement."

RESULTS: Seven senior faculty, 7 junior faculty and 6 medical education fellows were interviewed. Generally, interviewees viewed the curriculum positively. The most frequently cited advantages of participation included 1) exposure to new teaching strategies, 2) the ability to give/receive direct feedback, 3) gaining a new perspective on individual teaching behavior, and 4) the "safety" of the learning environment. Despite an overall endorsement of the curriculum, the following criticisms emerged: 1) discomfort reviewing video 2) difficulty giving feedback across hierarchy 3) technology challenges. None described the curriculum as unsafe, critical or evaluatory. Most faculty reported incorporating (12/20) or planning to incorporate (6/20) a new teaching behavior into their practice. Twelve described an increase in self-reflective behaviors outside of curricular sessions. All interviewed would recommend the curriculum to other faculty and endorsed a plan for continued participation.

CONCLUSIONS: Though faculty development for the maintenance of teaching skills is effective, formal programs are underutilized. This novel curriculum which focuses on direct observation of and reflection upon individual teaching encounters, is an effective, acceptable and efficient means to improve and expand the teaching practice of medical educators. This longitudinal, self-directed curriculum serves as a model for similar interventions at other academic institutions.

PEER-DELIVERED COGNITIVE BEHAVIOR INTERVENTION REDUCED DEPRESSION AND STRESS

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BACKGROUND: As many as 70% of individuals with diabetes people report chronic pain, increasing risk for depression and stress, both linked to poor long-term health outcomes. While professional-delivered cognitive behavioral therapy (CBT) improves mood in individuals with chronic pain, many underserved communities lack resources for such programs. We examined whether a CBT-based program delivered by trained community members can improve depressive symptoms and stress in individuals with diabetes and chronic pain immediately following a 12-week intervention, and 1 year later.

METHODS: This community-based, cluster-randomized, controlled trial engaged individuals with diabetes and chronic pain. Community members were trained and certified on each session of the 8-session program. They then delivered the intervention entirely by telephone over 12 weeks. The intervention incorporated adaptive coping skills, setting diabetes self-management behavioral goals, stress reduction techniques, and cognitive restructuring. Controls (C) received supportive general health advice with an equal number of contacts. Depressive symptoms and stress were assessed using the PHQ-8 and Cohen's Perceived Stress validated instruments, and participants were asked about use of specific stress-reducing strategies. Assessments occurred at baseline, 3 months, and 1 year.

RESULTS: The 177 participants had mean age 59 ± 10 years, 96% were African Americans, 79% were women, 45% used insulin, and baseline mean physical functioning scores from the Short Form 12 were 38 ± 9. At baseline, 3-month, and 12-month follow-up, the proportion at risk for moderate or greater depression was 41%, 17%, and 20% for the intervention group (INT) (51% relative change between baseline and 12 months, $p < 0.01$) and 52%,

33%, and 36% for C (31% relative change, $p < 0.01$), respectively (change difference $p = 0.02$). Compared with baseline, stress improved 2.3 ± 5.8 points more in INT than in C participants at 3 months ($p < 0.01$) and 1.4 ± 5.7 points more at 12 months ($p = 0.11$). At 3 and 12 months, 98 and 89% of INT participants and 67 and 63% of C participants reported use of deep breathing, and 96 and 87% (INT) and 72 and72% (C) used exercise to reduce stress, respectively ($p < 0.01$ for all).

CONCLUSIONS: This peer-delivered CBT program resulted in clinically important immediate post-intervention and sustained improvements in depressive symptoms, stress, and stress reduction practices. Community members may be mobilized to improve depression and stress in individuals with chronic pain.

PERCEIVED DISCRIMINATION AND CONTRACEPTIVE USE AMONG WOMEN VETERANS IN THE ECUUN STUDY

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BACKGROUND: Perceived discrimination has been linked to use of less effective (i.e., non-prescription) contraceptive methods in non-VA settings. Our objective was to describe experiences with perceived race-based discrimination in the VA healthcare setting and assess its association with contraceptive use in a national sample of women Veterans.

METHODS: We analyzed data from the Examining Contraceptive Use and Unmet Need Among Women Veterans (ECUUN) study, a national telephone-based survey of 2,302 women Veterans ages 18–45 who had received care at VA in the prior 12 months. This analysis included women who were at risk of unintended pregnancy, defined as having had heterosexual intercourse within the past year, not pregnant or trying to conceive, and no history of hysterectomy or infertility. Participants were asked about experiences with race-based discrimination when receiving care in VA, using the 7-item Perceived Discrimination in Healthcare Scale, and about their contraceptive use at last heterosexual intercourse. Discrimination was dichotomized as any versus none. Contraceptive methods were classified as prescription and non-prescription methods. Prescription methods were further categorized as: sterilization, IUD/implant, and hormonal methods (pill, patch, ring, and injection). Rates of discrimination were examined for the overall sample and by race/ethnicity. Logistic and multinomial regression analyses were used to examine associations between discrimination with use of any prescription contraception and type of prescription method compared to non-prescription plus no method.

RESULTS: In our sample of 1,341 women Veterans, 52.3% were white, 27.8% black, 12.6% Hispanic, and 7.2% “other” race/ethnicity; mean age was 33.9 years. Overall, 12.8% reported ever experiencing race-based discrimination when receiving care in VA. Blacks, Latinas, and women from “other” racial/ethnic groups reported higher levels of discrimination than whites (18.5%, 19.5 and 21.7% vs. 7%; $p < 0.001$). In unadjusted analyses, women who reported discrimination were less likely to use any prescription contraception than women who reported no discrimination (66.3% vs. 73.9%, $p =$ 0.04 and OR:0.68, 95% CI:0.48–0.96), with the largest difference in rates of IUD/implant use (15.1% vs. 22.9%, $p = 0.05$ and OR:0.51, 95% CI:0.31–0.83). After adjusting for race/ethnicity, age, income, marital status, parity and insurance, the association between race-based discrimination and use of any prescription method was no longer statistically significant (OR:0.79; 95% CI:0.55–1.14) and was borderline significant for IUD/implant use (OR:0.62, 95%: CI:0.37–1.04; $p = 0.07$).

CONCLUSIONS: While we did not find significant associations between perceived race-based discrimination and contraceptive use in adjusted models, about 20% of non-white women reported experiencing race-based discrimination when receiving VA care. These rates are concerning and warrant further investigation to ensure high-quality, respectful health care for all Veterans.

PERCEIVED DISCRIMINATION BY HEALTHCARE PROVIDERS AMONG INDIVIDUALS WITH A HISTORY OF INCARCERATION

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BACKGROUND: An estimated 65 million US adults have a criminal record. Discrimination based on criminal history has been documented in employment, housing and receipt of other social services, but has not been examined in health care settings. Perceived discrimination in healthcare settings based on race and/or sexual identity has been associated with poor health outcomes. This study examines the prevalence of perceived discrimination by health care providers due to criminal history and its association with self-reported general health status.

METHODS: The Transitions Clinic Network (TCN) is a national network of primary care clinics that aim to engage individuals with chronic diseases into care within six months of release from prison. Baseline surveys of TCN patients upon clinic enrollment measured demographics, medical history, and general health status. Perceived discrimination due to criminal history was defined as a “yes” response to the question “Have you ever felt that you were treated unfairly by healthcare providers (doctors, nurses, etc.) because of your criminal record?” Univariate and bivariate analyses determined the prevalence of perceived discrimination and other covariates. The association or perceived discrimination with self-reported health status were explored using logistic regression modeling adjusted for covariates where $p < 0.2$ in bivariate analyses (age, race/ethnicity, marital status, employment status, and TCN clinic region [Atlantic, New York, California, and Alabama/Puerto Rico]).

RESULTS: Of the 751 participants completing the baseline survey, 203 (27%) reported perceived discrimination due to criminal history by health care providers. There was high prevalence of self-reported chronic health problems including mental health conditions (71%), cardiovascular disease (47%), metabolic disorders (37%), infectious disease (24%), respiratory conditions (22%), and other health conditions (59%) and 46% reported fair or poor general health status. When compared to those not reporting discrimination, those who reported discrimination due to criminal history were slightly older (mean age 47.9 ± 10.64 yrs vs. 45.6 ± 11.35 yrs; $p = 0.01$), and there were significant differences across TCN region ($p = 0.01$). In logistic regression models controlling for age, race/ethnicity, marital status, employment status, and TCN clinic region those who reported perceived discrimination by health care providers due to criminal history had higher odds of reporting fair/poor health status (OR 1.56, 95%CI 1.12–2.21).

CONCLUSIONS: Perceived discrimination by health care providers due to criminal history was associated with significantly higher odds

of fair to poor self-reported general health status. Screening for criminal history, while important clinically, has the potential to contribute to patients perceived discrimination. Future studies could examine how to promote non-stigmatizing patient-care strategies for the one in four potential patients who are US adults with criminal histories.

PERSPECTIVES OF CLINICIANS AT SKILLED NURSING FACILITIES ON 30-DAY HOSPITAL READMISSIONS

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BACKGROUND: Skilled nursing facilities (SNFs) play an important role in the readmission process. Few studies have examined the factors that contribute to readmissions from SNFs, leaving hospitalists and SNF clinicians with limited evidence on how to reduce SNF readmissions.

METHODS: We prospectively identified consecutive readmissions from SNFs to a tertiary-care hospital. Using a root cause analysis instrument, semi-structured interviews were conducted with SNF clinicians who cared for the readmitted patients. A total of 24 cases were reviewed from 15 SNFs across Connecticut. Interviews were conducted from August, 2015 to November, 2015. Transcripts of the interviews were inductively analyzed using grounded theory methodology.

RESULTS: The SNFs in our study included 12 for-profit and 3 non-profit facilities. The number of licensed beds in each facility ranged from 73 to 360. Nurses involved in direct patient care comprised 21 of 28 (75%) participants. Administrators (14%) and advanced-practice nurses (11%) made up the remainder of participants. The average age of patients in our study was 74.1 years. (SD = 13.4 years) Common comorbidities included polypharmacy (79%), congestive heart failure (42%), dementia (38%), and chronic obstructive pulmonary disease (21%). The most frequent index admission diagnoses were acute decompensated heart failure (ADHF) (13%), acute kidney injury (13%) and urinary tract infection (13%). The most frequent readmission diagnoses were ADHF (13%), hypoxemic respiratory failure (13%) and pneumonia (13%). Five main themes emerged from our analysis: (1) Mismatches between patient clinical needs and facility disposition, (2) Incomplete coordination of care, (3) Incompletely addressed goals of care, (4) Barriers to obtaining necessary information, and (5) Challenges in SNF processes and culture. (Table 1)

CONCLUSIONS: SNF clinicians perceived a strong link between patient acuity at the time of transfer and readmissions. As SNFs work to expand their clinical capabilities, they struggle to win buy-in from physicians and families, many of whom view SNFs as incapable of managing acute illness. Our findings underscore a fundamental tension between hospitals and SNFs: Which facility is responsible for services that may prevent a readmission? SNF clinicians expressed near unanimity that fragmented models of care and barriers to communication made it difficult to design solutions to this dilemma. This study highlights the clinical, system-related, communication and cultural challenges that contribute to readmissions from SNFs. Successful interventions for reducing SNF readmissions will require a multifaceted approach to these problems.

Themes and representative quotes on SNF readmissions

THEME	QUOTE
Wrong patient, wrong place: Mismatch between patient clinical needs and facility capabilities	He was respiratory compromised from day one of admission [to our SNF]… (Nurse Manager)
Bedeviling details: Incomplete coordination of care	What ends up sometimes sending them back [to the hospital] is that they're waiting for an outpatient follow-up. Urology's a big one… They come with hematuria. I have to send them back to the hospital. (Director of Nursing)
Code status: Incompletely defined goals of care	I know working in long-term care or short-term rehab, the palliative talks in the hospital outweigh our talks by a lot. (Administrator)
Missing links: Communication errors about important clinical information	We just had a patient come in who used to get IV Lasix twice a week, and we weren't updated on that. (Advanced Practice Nurse)
Change starts at home: Challenges in SNF processes and culture	I don't know if there's quite the good handoff between the doctors that are on-call and the doctors that are here. There could be a thousand patients they're covering for. That's something they can work on better. (Administrator)

PHARMACOLOGIC TREATMENT OF HYPERTENSIVE URGENCY IN THE OUTPATIENT SETTING: A SYSTEMATIC REVIEW

Claudia L. Campos[2]; James L. Wofford[2]; Deanna Jones[2]; Asima Ali[3]; Charles Herring[3]; Augustus Caine[2]; Janine Tillett[2]; Robert Bloomfield[2]; Lisa Porter[2]; Karen S. Oles[1]. [1]Wake Forest Baptist Health, Winston-Salem, NC; [2]Wake Forest University, WInston-Salem, NC; [3]Campbell University, Winston Salem, NC. (Control ID #2704766)

BACKGROUND: Acute severe uncontrolled hypertension without end-organ damage (hypertensive urgency), is common. Despite its long-term morbidity and mortality, guidance regarding immediate management is sparse. Objectives: To summarize the evidence examining the benefits and harms of different antihypertensive medications to treat hypertensive urgency in adults.

METHODS: Data sources: PubMed, Cochrane Central Register of Controlled Trials (CENTRAL), Database of Abstracts of Reviews of Effects (DARE), Cochrane Database of Systematic Reviews, Web of Science, Google Scholar, and Embase. Study selection: We evaluated prospective controlled clinical trials, case–control studies, and cohort studies of hypertensive urgency in emergency department or clinic settings. Data extraction: We initially identified 11 223 published articles. We reviewed 10 748 titles and abstracts (after removing duplicates) and identified 538 eligible articles. We assessed the full text for eligibility and included 38 articles written in English that were clinical trials or cohort studies and provided blood pressure data within 48 h of treatment. For each, we extracted the author, country, year, study type, setting, sample size, demographics, medications, details of treatment, primary outcome, adverse effects, and initial and subsequent blood pressures. Quality assessment: Studies were appraised for risk of bias using components recommended by the Cochrane Collaboration. The main outcome measured was blood pressure change with antihypertensive medications. Mean arterial pressures were calculated when not explicitly calculated by the authors. Length of follow-up and medication dosages varied widely. Data analysis: Since studies were too diverse both

clinically and methodologically to combine in a meta-analysis, tabular data and a narrative synthesis of studies are presented.

RESULTS: We identified 20 double-blind randomized controlled trials and 13 cohort studies, with 262 participants in prospective controlled trials. However, we could not pool results of studies.Most of the medications evaluated in this review were short acting and the studies were not long enough to evaluate longterm morbidity of mortality.

CONCLUSIONS: To this date, longitudinal studies are still needed to determine how best to lower blood pressure in patients with hypertensive urgency.

PHYSICIAN BURNOUT AND JOY OF PRACTICE: EARLY MIXED-METHODS FINDINGS FROM THE IMPLEMENTATION OF STANFORD PRIMARY CARE 2.0 Jonathan G. Shaw; Cati Brown-Johnson; Garrett Chan; Megan Mahoney; Marcy Winget. Stanford School of Medicine, Stanford, CA. (Control ID #2699151)

BACKGROUND: With 73% of physicians in a recent survey reporting they would not choose the same profession again, burnout and lack of Joy of Practice (JoP) are critical risks for primary care and healthcare systems. In 2016, Stanford launched an ambitious team-based primary care redesign, "Primary Care 2.0" (PC 2.0), with the goal of addressing the Quadruple Aim of healthcare (ie. the Triple Aim plus reducing workforce burnout) with following components: 1. An expanded "Care Coordinator" (CC) role for medical assistants including scribing, population health management, and between-visit care management; 2. Health coaching and Motivational Interviewing; 3. "Lean" quality improvement to support a Learning Health System; 4. Telehealth; 5. Protected provider time for care coordination; and 6. An onsite extended interdisciplinary care team (i.e., mental health, pharmacy, physical therapy). The objective for this research was to assess early indications that PC 2.0 might reduce burnout and improve JoP for MDs and CCs.

METHODS: Mixed methods were used to assess the impact of PC 2.0 on burnout and JoP. Validated surveys were fielded at key milestones in the project (pre "go-live" 5/2016, and early sustainability 10/2016). Change from baseline in professional fulfillment (burnout) and perceived meaningfulness of work (JoP) were calculated overall and by provider type. Interviews were conducted with providers (immediately post "go-live" 7/2016), coded using Nvivo software, and analyzed for emerging themes.

RESULTS: In qualitative interviews, some MDs reported highly positive JoP experience with CC in-exam scribing. One MD described it as "a dream come true… I can just sit with a patient and I can just talk." There was a perception reported by MDs and CCs that EHR interferes with meaningful physician-patient interaction. Identified barriers to supporting MDs with in-visit CC scribing involved challenges in co-scheduling MD + CC slots, which brought up new needs for IT support and redesign. Quantitative results supported qualitative observations, showing positive, albeit not statistically significant, improvements in professional fulfillment for all providers (MD: May 3.4 ± 0.5 95%CI -> Oct 3.7 ± 0.3; CC: May 3.6 ± 0.3 -> Oct 4.0 ± 0.2). CCs also experienced marginal improvements in perceived meaningfulness of work with patients, reflecting our qualitative findings that CC fulfillment and sense of meaning in PC 2.0 exceeds previous experience in more traditional medical assistant roles (May 4.2 ± 0.6 -> Oct 4.6 ± 0.4).

CONCLUSIONS: Initial evidence suggests that the Primary Care 2.0 model may positively impact burnout prevention for multiple levels of clinic care roles. Specifically, one element that may support physician JoP is CC scribing, which allows MDs to connect directly with patients without EHR interference. CCs also appear to gain meaning and fulfilment from this increased exam room involvement.

PHYSICIAN CHARACTERISTICS AND LOW-VALUE SERVICE USE Aaron L. Schwartz; J. Michael McWilliams; Anupam B. Jena. Harvard Medical School, Boston, MA. (Control ID #2705979)

BACKGROUND: Recent advances in measuring low-value service use have confirmed that such services are common. However, it is unknown whether physicians exhibit substantial variation in use of such services, or whether physician characteristics predict use. Using claims-based measures, we estimated (1) across-physician variation in low-value service use, (2) associations between physician characteristics and low-value service use, and (3) associations between physician characteristics and reduction in use of a low-value service after a recent guideline publication.

METHODS: Counts of 18 primary care-oriented low-value services were tallied for 14.9 million Medicare patients of 85,234 primary care physicians in 14,125 provider organizations from 2008–2013. Physician characteristics obtained from claims and Doximity datasets included age, gender, MD vs DO credential, foreign vs domestic medical school, USNews top 20 medical school, publication authorship, clinical trial participation, professorship, receipt of drug/device payments, and patient count. Multilevel modeling was used to estimate within-organization-across-physician and across-organization variation, controlling for patient clinical, sociodemographic and geographic characteristics. Cross-sectional and difference-in-difference regressions were used, respectively, to assess for physician characteristics associated with (1) overall service use, and (2) differential reduction in colonoscopies for elderly patients after a USPSTF D recommendation.

RESULTS: Average frequency of low-value services was 31.7 low value services per 100 patients per year (unadjusted SD = 15.9). Multilevel modeling with covariate adjustment yielded an across-physician SD of 6.7 (ratio $90^{th}/10^{th}$ percentile use = 1.74), and an across-organization SD of 8.3. Physician characteristics associated with lower levels of low-value service use ($p < 0.05$) included educational characteristics (MD credential, domestic training, top ranked medical school), academic affiliation (professorship status), smaller patient panel, demographic characteristics (younger age, male gender), and no receipt of pharmaceutical/device company payments. Associations were similar when comparing physicians within the same provider organization. However, associations were generally minimal in magnitude (e.g. 1.2 more low-value services per 100 patients per year associated with foreign medical study). Professorship was the only characteristic associated with greater reductions in colonoscopy following USPSTF recommendations.

CONCLUSIONS: Variation in physicians' low-value service use is substantial even within organizations. However, physician characteristics predict only minimal differences in service use. Thus, efforts to identify more wasteful physicians (e.g. for quality-improvement interventions or

to guide patients' choice of physician) would benefit from direct measurement of service use rather than prediction based on physician characteristics.

PHYSICIAN EMPATHY IS NOT ASSOCIATED WITH DIABETES OUTCOMES IN PRIMARY CARE Kathryn A. Martinez[1]; Richard M. Frankel[2]; Amy K. Windover[3]; Anita D. Misra-Hebert[1, 1]; Leonard Calabrese[1]; Michael B. Rothberg[1, 1]. [1]Cleveland Clinic, Cleveland, OH; [2]Indiana University School of Medicine, Indianapolis, IN; [3]The Cleveland Clinic, Cleveland, OH. (Control ID #2701881)

BACKGROUND: Physician empathy is a key component of patient-centered care. The association between empathy and patient outcomes, however, is not well-established. One small study of 29 physicians (Hojat et al., 2011) found a positive association between physician empathy and clinical outcomes in diabetes. The objective of this study was to evaluate this relationship using a larger, more diverse sample of physicians and their diabetic patients.

METHODS: We used physician empathy data collected during a required communication skills course conducted at the Cleveland Clinic Health System between August 2013 and May 2014. Course participants included all full and part-time physicians in Internal and Family Medicine. At the start of the course, each physician completed the Jefferson Scale of Empathy (JSE), a validated 20-item measure of physician empathy. Scores range from 20 to 140 with higher values indicating greater empathy. Diabetic patients in each physicians' panel were identified via the electronic health record. Patients' HbA1c and LDL values closest to the date on which their physician completed the JSE were used for analysis. Mixed effects linear modeling was used to assess the association between physician empathy and their patients' HbA1c and LDL. Models controlled for patient sociodemographic and clinical characteristics, including body mass index (BMI) and Charlson comorbidity score. Models also adjusted for a number of physician characteristics, including sex, age, years of experience, specialty (Internal Medicine versus Family Medicine), and whether they were an MD or a DO. Analyses were restricted to those patients who had at least two visits with their assigned physician in the past year. As a sensitivity analysis, we reproduced the methods of Hojat et al. (2011), stratifying JSE scores into tertiles and using dichotomous HbA1c and LDL outcomes.

RESULTS: The sample included 150 physicians and 11,542 patients. Seventy percent of physicians were in Internal Medicine, 57% were male and mean (SD) physician age was 50 years (9.5). The mean physician empathy score was 117.5 out of 140 (12.5). Most (80%) patients were white, average patient age was 66.4 years (13.4) mean BMI was 33.3(7.7), and mean Charlson score was 1.6(1.3). The mean HbA1c value was 7.1(1.4) and mean LDL was 87.6(32.2). In the adjusted linear models, there was no significant association between physician empathy scores and patients' HbA1c ($\beta = 0.01$; $p = 0.892$) or LDL ($\beta = -0.04$; $p = 0.369$). Likewise, in the sensitivity analyses, there was no association between physician empathy and their patients' HbA1c or LDL.

CONCLUSIONS: In a large diverse sample of diabetic primary care patients and their physicians, we found no association between physician empathy and diabetes-related outcomes. While interventions to increase physician empathy may result in better patient-centered care, the impact of such interventions on clinical endpoints is unclear.

PHYSICIAN IDENTIFIED BARRIERS TO CARE FOR HIGH RISK PATIENTS AT PRIMARY CARE PRACTICES SEEKING NATIONAL COMMITTEE FOR QUALITY ASSURANCE RECOGNITION MARIA MCGURRIN, BA, CATHERINE L. LIANG, MBA, HANNAH ARNOW, BA, TAYLOR WILLIAMS BS, JUSTIN LANZAFANE BA, MAI LE BA CENTER FOR POPULATION HEALTH, PARTNERS HEALTHCARE, SOMERVILLE, MA, USA Maria L. McGurrin; Catherine Liang; Justin John Lanzafane; Taylor Williams; Hannah Arnow; Mai Le. Partners Healthcare, Somerville, MA. (Control ID #2706033)

BACKGROUND: The Patient Centered Medical Home (PCMH) model of care seeks to improve care quality by enhancing care coordination and the patient's ability to self manage their condition, particularly for patients with complex and chronic diseases. The Center for Population Health and Partners Healthcare provides support to practices applying for PCMH recognition from the National Committee for Quality Assurance (NCQA). As part of the application the practices are required to identify patients who they consider 'high risk' and who they believe could benefit from additional care management. The practice then creates a structured care plan containing the patient's preferences for care and lifestyle goals, the provider's treatment goal, a self management plan, and any identified barriers to care. This study aims to characterize through qualitative analysis what types of barriers were recorded by providers in the 'barriers' section of the care plan.

METHODS: The text entered into the 'Barriers' section of the care plan from 45 different practices applying for recognition was analyzed and sorted into categories based on an established rubric. The NCQA application process involves a chart review in which the care plans for 30 of the most recently seen patients from the practices 'high risk' list are reviewed for completeness. Provider entries into the 'Barriers' section which did not meet the NCQA intent and thus did not 'pass' chart review, or patients who had no barriers identified were excluded.

RESULTS: Of the 1,350 patients included in the chart reviews, 607 patients (44%) had a barrier recorded. As shown in Table 1 there was a large distribution of barrier types. Patient 'Lifestyle Barriers', including patient diet, exercise level, substance use, motivation level and the presence of environmental stressors were the most common type of barriers (39.82%). 'Difficulty Managing Symptoms of Complex Conditions' including patient mental health status, acute illnesses, difficulty accessing specialty care, comorbidities, advanced disease state, advanced age, and chronic pain were the second most common type of barrier (30.78%). In contrast Patient Medication or Treatment Regimen Compliance and Patient/Caregiver Declining Care were the two least common barrier types at 4.15 and 1.5% respectively.

CONCLUSIONS: This analysis of provider reported patient barriers serves to illustrate the most common challenges chronically ill, high utilization patients face when seeking care. Understanding which barriers chronically ill patients at different types of primary care practices continue to face could allow us to adjust the PCMH model to better meet their needs or create targeted programs to address

those barriers being faced such as difficulty accessing specialty care, communication barriers or challenges related to the patient's health literacy.

Barrier Type Distribution- All Practices

Medication/ Treatment Regimen Compliance	Difficulty Managing Symptoms of Complex Conditions	Lifestyle Barriers	Socioeconomic Barriers	Health Literacy	Communication Barriers	Patient/ Caregiver Declines Care	Patient Doesn't Tolerate Medication /Treatment
4.15%	30.78%	39.82%	7.16%	4.77%	7.04%	1.5%	4.77%

PHYSICIAN KNOWLEDGE AND VIEWS ABOUT MAMMOGRAM BREAST DENSITY REPORTING Jenny J. Lin; Jordonna Brown; Laurie Margolies; Lina Jandorf. Icahn School of Medicine at Mount Sinai, New York, NY. (Control ID #2700486)

BACKGROUND: Women with dense breasts may be more likely to develop breast cancer than women with less dense breasts, and dense breast tissue makes it harder for radiologists to interpret mammogram results so that mammograms may be less accurate. Further imaging with breast ultrasound or MRI may be ordered in addition to mammograms for women with dense breasts. Many states have required that mammogram reports sent to patients also include information about breast density. However, there are currently no consensus screening guidelines or recommendations for women with dense breasts, and it is not clear how breast density affects counseling about breast screening.
METHODS: An anonymous self-administered survey about knowledge, attitudes and practices regarding breast cancer screening for women with dense breasts was sent to primary care providers (PCPs), radiologists and gynecologists. The survey items were developed based on iterative discussions with PCPs and radiologists. Descriptive and univariate analyses were used to assess differences between PCPs and specialists.
RESULTS: A total of 151 surveys have been returned. Of the respondents, 74% were female, 75% were attending-level physicians, 42% were PCPs, 28% were radiologists and 18% were gynecologists. Most (65%) practiced in an academic setting, 18% practiced in the community and 17% were in private practice. Almost half of the respondents did not know if their state had a law mandating breast density reporting. More than half (56%) reported that they always or often discussed normal mammogram results with their patients, but only 25% reported that they always or often discussed breast density with patients. Only 28% felt "very comfortable" answering patients' questions about breast density, 37% were able to correctly identify that very dense breasts can increase risk for breast cancer by 2–5 fold, and two-thirds felt they needed more education about breast density and supplemental screening. Compared to gynecologists and radiologists, PCPs were less likely to know about breast density laws in their state (31% vs. 69%, $p < 0.001$) and to correctly identify increase in breast cancer risk with very dense breasts (18% vs. 81%, $p < 0.001$). PCPs were more likely to be uncomfortable answering questions about breast density (65% vs. 35%, $P < 0.001$) and to want more education about breast density (57% vs. 43%, $P < 0.001$).
CONCLUSIONS: PCPs are uncertain about how to counsel women with dense breasts regarding mammography and/or supplemental screening. There is a clear need for more education about and guidelines on how to best manage women with dense breasts.

PHYSICIAN TRAINEES' EXPERIENCES OF MORAL DISTRESS REGARDING POTENTIALLY FUTILE TREATMENTS AT THE END OF LIFE IN THE UNITED KINGDOM: A QUALITATIVE STUDY Elizabeth Dzeng[1]; Rachel Weiss[1]; Sophie Vergnaud[2]. [1]University of California, San Francisco, San Francisco, CA; [2]National Health Service, London, United Kingdom. (Control ID #2693814)

BACKGROUND: Moral distress, the inability to act in accordance with one's ethical beliefs due to hierarchical or institutional constraints, has been associated with burnout and poor well-being. Significant moral distress amongst American physician trainees might occur when they feel obligated to provide treatments at the end of life that they believe to be futile or harmful. In contrast to the US, policies in the United Kingdom permit physicians to make a decision to withhold or abort resuscitation that they believe would be inappropriate following discussions with the family. The aim of this study was to explore whether moral distress surrounding resuscitation at the end of life occurred in the UK, a country whose health policies surrounding end of life care are notably different than those in the US.
METHODS: We conducted semi-structured in-depth interviews with 14 physician trainees in the UK regarding moral distress and attitudes surrounding do-not-resuscitate (DNR) decision-making. Interviews, which were audio-taped and professionally transcribed, lasted an average of 60 min. Transcripts were analyzed and double coded using thematic analysis. Themes and patterns emerged from initial interviews and analysis, and were refined and validated in subsequent interviews through questions added to the interview guide and probing of key themes during the interviews.
RESULTS: UK trainees infrequently experienced feelings of ethical conflict surrounding resuscitation, though some respondents did note one or two rare but notable cases of resuscitation they felt were inappropriate. Themes that arose included a feeling of shared attitudes around providing care that was in a patient's best interest. Please see Table 1 for example quotations of UK junior doctors. Distress instead appeared to arise from other areas such as insufficient resources or personnel to provide optimal care and a lack of control over the nature of their work.
CONCLUSIONS: Along with the US data previously described in Dzeng, *et al.*, 2016, we describe different degrees of moral distress surrounding potentially futile resuscitation at the end of life between US and UK trainees. We hypothesize that UK policies and culture allow physicians to withhold inappropriate or ineffective resuscitation, allowing physicians to act in ways that are in accordance with their ethical beliefs. Different policies surrounding resuscitation at the end of life in the US and UK might contribute to different degrees of moral distress amongst physician trainees regarding potentially futile treatments at the end of life.

US and UK trainee responses surrounding moral distress regarding resuscitation provided at the end of life

UK trainees (in response to question of whether they have experienced moral distress after defining the term in the interview prompt)	US trainees (from Dzeng, et al., 2016)
"Probably not actually. I think I've been lucky in that my seniors, my hospital are of an attitude that I share about quality of life not too invasive procedures." "I don't think so. Nothing that I would consider to be at that level as you phrase it. I don't think it's ever been a massive ethical dilemma for me. I can't really think of any situations where I've had to do something or been asked to do something that I've so strongly disagreed with I felt uncomfortable about it."	"It felt horrible. I felt like I was torturing him. Absolutely torturing him. He was telling us we were torturing him. I didn't think we were necessarily doing [the right] thing for the patient. I think that a lot of times that's what happens when we go aggressive care all the way." "A lot of things happen when you

Dzeng E, Colaianni A, Roland M, et al. Moral Distress Amongst American Physician Trainees Regarding Futile Treatments at the End of Life: A Qualitative Study. J Gen Intern Med. 2016;31(1):93–99. doi:10.1007/s11606-015-3505-1.

PILOT OF QUALITATIVE COMPARATIVE ANALYSIS (QCA) TO STUDY COMPLEX OUTCOMES C. Scott Smith[2]; Bridget O'Brien[5]; Pete Spanos[1]; Anne P. Poppe[4]; Brent A. Moore[6]; nancy Harada[7]; Rebecca Brienza[3]; Anais Tuepker[8]. [1]Louis Stokes Cleveland VA Medical Center, Cleveland, OH; [2]University of Washington, Boise, ID; [3]VA Connecticut Healthcare System, West Haven, CT; [4]VA Puget Sound HCS, Seattle, WA; [5]UCSF, San Francisco, CA; [6]Yale University, West Haven, CT; [7]Coordinating Center, Centers of Excellence in Primary Care Education, Long Beach, CA; [8]Posrtland VA Medical Center, Portland, OR. (Control ID #2705149)

BACKGROUND: Evaluation of complex outcomes, such as choosing a primary care career, can be difficult due to non-linear causative pathways. QCA is a realist evaluation method that may be well suited to this task.[i] It is based on set theory, using AND, OR, and NOT to specify relationships. QCA can be performed using dichotomous crisp sets (csQCA), or partial inclusion 'fuzzy sets' (fsQCA). The purpose of this study was to assess QCA as a method for enterprise evaluation. [i] Thygeson NM, Peikes D, Zutshi A. Mixed Methods: Fuzzy Set Qualitative Comparative Analysis and Configurational Comparative Methods: Powerful Methods to Study and Refine Patient-Centered Medical Home Models. Rockville, MD: Agency for Healthcare Research and Quality. February 2013. AHRQ Publication No. 13-0026-EF.
METHODS: Interested representatives from our group used a csQCA to analyze primary care career data for physicians and NPs. They brainstormed characteristics that could influence the outcome, reduced the number by multi-voting, and set dichotomization cut points for the data. Initial subset/superset analysis was performed on these characteristics. Only those with consistency ≥ 0.8 were included in the crisp set algorithm unless no characteristic reached that threshold, in which case the highest consistency characteristic(s) were included. The csQCA analysis was performed using fsQCA 2.5 for Windows.
RESULTS: The analysis team initially identified 18 potential characteristics that might influence choice of primary care career. These were reduced to four each for the MD and NP analyses with multi-voting. Things associated with physicians going into primary care (consistency 1.0, coverage 0.67-modest effect) were: high co-training time; *OR* Primary care track *AND* adequate staffing ratio. Things associated with NP going into primary care (consistency 1.0, coverage 1.0-strong effect) were: training for collaboration *AND* high rating of clinical experience; *OR* high co-training time *AND* high rating of clinical experience; *OR* high co-trianing time *AND* inadequate staffing ratio.
CONCLUSIONS: We conclude that QCA shows great promise as an enterprise evaluation method. The ability of this technique to function with small sample sizes and to suggest multiple possible pathways to an outcome seem to match our program developmental stage well. The method suggests several interesting facts about the primary care practice decision. Co-training time, time spent together working with other professions, seems particularly important. This could suggest that limited resources be spent on coordinating schedules rather than developing new curriculum. Beyond that, physician trainees appear to be more influenced by structural characteristics (staffing ratio, academic track), while NP residents seem more influenced by process issues (rating of the clinical experience, whether they learned to work collaboratively in teams).

PILOT RCT OF A TECHNOLOGY-ASSISTED WEIGHT MANAGEMENT INTERVENTION WITHIN PRIMARY CARE AT THE VA NEW YORK HARBOR HEALTHCARE SYSTEM Clare M. Viglione[1, 2]; Srishty Amarnani[1, 2]; Dylaney Bouwman[1, 2]; Katja Lazar[1, 2]; Yixin Fang[3]; Scott Sherman[1, 2]; Adina Kalet[2]; Craig Tenner[1, 2]; Melanie Jay[1, 2]. [1]VA New York Harbor Healthcare System, New York, NY; [2]NYU School of Medicine, New York, NY; [3]New Jersey Institute of Technology, Newark, NJ. (Control ID #2705319)

BACKGROUND: Obesity is under-treated and primary care teams find it difficult to provide effective lifestyle-based weight management counseling. Further, only 10% of eligible patients attend MOVE!, the VA weight management and health promotion program. We developed an intervention called *Goals for Eating and Moving* (GEM) to improve counseling within primary care (PC) and increase attendance in intensive weight management programs such as MOVE!.
METHODS: Veterans with a Body Mass Index of greater than or equal to 30 or between 25 and 29.99 with at least one comorbidity were recruited by phone and randomized to GEM or "Enhanced Usual Care" (EUC). GEM utilizes the Patient Aligned Care Teams (PACTs) within the VA to deliver 5As counseling (Assess, Advise, Agree, Assist and Arrange) to promote modest weight loss and behavior change. Participants use a goal-setting tool to generate tailored materials, which facilitates in-person and phone counseling with health coaches. Coaches support PACT counseling during regular PC visits and encourage participants to join VA weight management services. Veterans in GEM received the intervention and Veterans in EUC met with a coach to receive the VA "healthy living messages" pamphlet. At baseline and 3 months, participants had weight measurements and completed surveys. We used the Paffenbarger Physical Activity Questionnaire and a 17-item screener to derive fruit and vegetable intake, energy from fat, and dietary fiber. Vegetable intake (leafy greens/salad) and sugar-sweetened beverage were measured as individual items. We performed per-protocol analyses (Wilcoxon Rank sums test and Spearman Correlation) to assess the relationship between GEM and different variables.
RESULTS: Thirty-one Veterans (mean age = 53.48, 63% male, mean BMI = 31.72) enrolled and 25 returned at 3-months (1 dropped out and 5 were lost-to-follow up). Those in GEM lost significantly more weight at 3-months (−1.59 kg, SD = 1.76) than those in EUC (−0.63 kg, SD = 3.42, $p = 0.03$).

There were no statistically significant differences in diet and physical activity. For Veterans that received GEM, higher number of phone coaching sessions was correlated with weight loss (Spearman Correlation −0.58, $p = 0.09$).
CONCLUSIONS: This early analysis indicates that GEM promotes small but significant ($p = 0.03$) weight loss at 3-months and identified the need for high patient retention and engagement, since the number of health coaching calls may correlate with weight loss. Based on this we have refined protocols for phone coaching to ensure that scheduling and reminder calls are patient-centered. This pilot study informed the development of a multi-site cluster-RCT of GEM to begin in June 2017 (NIH # 1R01 DK111928-01).

PILOTING A MOBILE APPLICATION TO ASSIST IN DIABETES PREVENTION IN EAST HARLEM, NEW YORK Victoria L. Mayer[1]; Emily Hanlen-Rosado[1]; Daphne Brown[1]; Crispin N. Goytia[1]; Carol R. Horowitz[2]. [1]Icahn School of Medicine at Mount Sinai, New York, NY; [2]Mount Sinai School of Medicine, New York, NY. (Control ID #2705717)

BACKGROUND: While low-income and racial/ethnic minoritiy individuals have traditionally been on the access poor side of the “digital divide,” with low access to the internet and mobile technology, growing evidence shows that the gap is narrowing rapidly. The East Harlem Partnership for Diabetes Prevention, an 11-year old community-academic collaboration, utilized community-based participatory research to develop and pilot test a mobile application (app) aimed at assisting members of the East Harlem community in making lifestyle changes. The mobile app has three different components: a newsfeed (articles related to diabetes prevention, diet, and exercise), challenges/achievements (tailored to user-selected goals), and resources (locations for healthy food and free to low-cost physical activity in the area).
METHODS: We recruited participants at 3 community organizations in East Harlem and asked them to engage with the app 15 min a day, 3 days a week, for 4 weeks. After 4 weeks, participants were asked to complete a survey and participate in a focus group. Research coordinators took notes during focus groups. We analyzed count data for each survey item and examined themes discussed during focus groups.
RESULTS: We obtained consent from 53 participants (of 106 approached). 43 participants downloaded and engaged with the app for 4 weeks. 40 participants completed the survey and 23 participated in focus groups. Participants were largely racial/ethnic minorities; 45% identified as Black; 80% identified as Hispanic/Latino. After engaging with the app, 57.5% of participants “liked the app a lot.” 90% of users identified the app as helpful in learning about health topics and 85% as helpful in achieving their overall health goals. 70% found the newsfeed component to be very useful while 45% of users found the resources to be very useful. Users responded that the app was useful in changing aspects of their behavior; 80% said the app helped them improve their diet and 77.5% said the app helped them improve their activity/fitness level. Participants were interested in the following additional features: 70% in a food tracker, 62.5% in an exercise tracker, and 60% in a tool to connect with an exercise or cooking buddy. 75% of participants would recommend this app to a friend or family member, and 75% of users said that they would like to continue using the app once the pilot was complete. Focus group participants reported feeling “motivated” by the app and “looked forward” to using it daily. Participants felt that they learned health content that they did not know prior to using the app.
CONCLUSIONS: Participant are interested in a mobile app that is community-specific and helps them to improve diet and increase physical activity. Participants sought ways to connect with other community members and resources. As users in low-income communities gain more access to mobile technology, community-based technology development has the potential to provide new tools for health promotion.

POLICE-REPORTED CRIME AND GEOGRAPHIC DISPARITIES IN OBESITY AND HYPERTENSION IN CHICAGO Elizabeth L. Tung; Jennifer A. Makelarski; Kelly Boyd; Kristen Wroblewski; Chenab Navalkha; Monica E. Peek; Stacy T. Lindau. University of Chicago, Chicago, IL. (Control ID #2706040)

BACKGROUND: Violent crime is an endemic public health crisis in U.S. cities. Communities with a high prevalence of violent crime may experience psychosocial stress and trauma, which prior studies have linked to higher rates of metabolic and cardiovascular disease. In prior studies, however, health conditions are typically self-reported and subjective measures (e.g., “How safe is your neighborhood?”) are commonly used as proxies for violence exposure. The purpose of this Chicago-based study is to examine the relationship between police-reported crime and objectively measured obesity and hypertension status.
METHODS: We analyzed cross-sectional data for 15,173 patients seen in at least one of 3 primary care clinics at an urban academic medical center. Patient-level health data were obtained from the electronic health record using each patient’s first visit between 6/2014 and 5/2015, including body mass index (BMI) and blood pressure (BP) measurements. Obesity was defined as BMI ≥ 30 kg/m2 and hypertension was defined as systolic BP ≥ 140 mmHg or diastolic BP ≥ 90 mmHg. These data were linked to contemporaneous geocoded crime counts (total crimes, drug-related crimes and violent crimes) obtained from the City of Chicago Police Data Portal. Crime counts were aggregated to the census tract level and calculated as an annual crime rate per 1000 population. Census tracts were classified into 4 crime exposure risk quartiles, each containing 81 census tracts. We used generalized linear mixed models (logit function, clustered by census tract) to assess obesity and hypertension status as a function of crime exposure risk quartile, controlling for patient demographic characteristics (age, gender, race/ethnicity, insurance status), clinic site, and neighborhood characteristics (median household income, educational attainment, and poverty level).
RESULTS: In a 324 census tract region of Chicago, median total crime rates in each quartile ranged from 54 to 240 crimes per 1000 population. Of patients included in this study, 41% were obese and 33% had hypertension. Compared to patients living in the lowest quartile, patients living in the highest quartile for total crime had 73% higher adjusted odds of obesity (95% CI, 1.39–2.15) and 24% higher adjusted odds of hypertension (95% CI, 1.03–1.49); patients living in the highest quartile for drug-related crime had 63% higher adjusted odds of obesity (95% CI, 1.28–2.08) and 25% higher adjusted odds of hypertension (95% CI, 1.08–1.46); patients living in the highest quartile for violent crime had 84% higher adjusted odds of obesity (95% CI, 1.46–2.32) and 24% higher adjusted odds of hypertension (95% CI, 1.03–1.50).
CONCLUSIONS: In a densely-populated, high-poverty region in Chicago, exposure to total, drug-related, and violent crime was consistently associated with obesity and hypertension. Interventions to mitigate the harmful health effects of crime, particularly in high crime communities, may be critical to population health improvement.

POSITIVE ASPECTS OF PATIENT CARE Dylan Woolum; Abigail Lawson; Christina Fahey; Garrett Oberst; Stephanie A. Rose; David Rudy. University of Kentucky, Lexington, KY. (Control ID #2705457)

BACKGROUND: Traditional approaches to reforming physician satisfaction in the healthcare environment involve focusing on areas of dissatisfaction, leading to inadvertently accentuating negative aspects and overlooking shared motivations. An alternative to the focus on the negative is Appreciative Inquiry (AI). AI challenges traditional negative-based approaches by instead focusing on the positive successes noted in an environment and working to promote those successes. This study assessed positive aspects of patient care (Discovery phase) from the viewpoint of Internal Medicine (IM) physicians at an academic medical center.

METHODS: A confidential online survey was emailed to all IM faculty at our institution. Study participants were voluntarily asked to think of a time when they were a part of providing exceptional patient care, who contributed to this care, and what, if any, contribution they had provided to this care. They were asked to describe what qualities and characteristics stood out about these contributors. Finally, participants were asked to describe three ideas for future improvement that would encourage a positive environment. Responses were qualitatively reviewed, and thematic areas were identified. Operational definitions for each theme were developed with responses falling into one or more categories in order to decrease subjectivity. Discrepancies were assigned final codes based on simple majority ratings.

RESULTS: 11 IM faculty physicians participated at the time of submission. When describing the contributors to a time of exceptional patient care, 64% of physicians mentioned nursing/clinic staff, 73% mentioned physicians, 9% mentioned patients, and 45% mentioned other hospital staff. Regarding their own contribution to the experience, faculty gave three themes: coordinating care (45%), making an important decision (36%), and being accommodating to patients' needs (55%). They described four common themes regarding the qualities and characteristics of contributors: personalized care (45%), professionalism (36%), communication (45%), and were caring (82%). Finally, when asked what three improvements would lead to a more positive environment, responses were categorized into four common themes: positive attitude (73%), scheduling (36%), administrative resources (55%), and communication (36%).

CONCLUSIONS: IM faculty valued caring as an important characteristic contributing to a time of exceptional care. The majority of members in the clinical practice were included as contributors to the experiences. Having a positive attitude was the most common improvement suggested to create a more positive environment. With appropriate progression to the latter stages of AI, this method creates an avenue for innovative changes to delivering exceptional care. Our intervention may help to begin to change the typical negative nature of such conversations to include the rewarding aspects of practice. Future objectives are to encompass physicians in family medicine and obstetrics/gynecology.

POST-TRANSPLANT LYMPHOPROLIFERATIVE DISORDER AFTER HEART TRANSPLANT- A DESCRIPTIVE STUDY OF THE UNITED NETWORK OF ORGAN SHARING DATABASE Jai D. Parekh[1]; Shweta P. Kukrety[1]; Ryan Walters[1]; Mahesh Anantha Narayanan[2]; Renuga Vivekanandan[1]. [1]Creighton University Medical Center, Omaha, NE; [2]University of Minnesota, Minneapolis, MN. (Control ID #2692906)

BACKGROUND: Post-transplantation lymphoproliferative disorder (PTLD) is the second most common malignancy in adults who receive solid organ transplants. Thoracic organ transplant recipients have the highest incidence rates of PTLD due to higher level of immunosuppression needed with these transplants. Despite this there is paucity of data describing the incidence and characteristics of PTLD in heart transplant recipients. We sought to determine the incidence, time to diagnosis, risk factors and mortality associated with PTLD in a large nationwide database of heart transplant recipients. Characterisation of these factors can help guide the timing and intensity of post heart transplant PTLD surveillance.

METHODS: We conducted a retrospective analysis of the United Network for Organ sharing (UNOS) database to determine the incidence, median time to PTLD diagnosis and mortality associated with PTLD amongst heart transplant recipients. We also evaluated the association between the incidence of PTLD and age, gender, recipient Ebstein-Barr virus(EBV) and Cytomegalovirus(CMV) status at the time of transplant. Categorical variables are presented as percentages and analysed using the Fischer's exact test.

RESULTS: Among 9,777 heart transplant recipients, 876 (9%) developed PTLD. Median time to PTLD diagnosis was 105.9 months (95% Confidence interval 97.7 to 111.1). Mortality rate in patients who developed PTLD was 73.7%. Increased incidence of PTLD was seen in recipients < 55 years vs recipients > 55 years (12.3% vs 7%; $p < 0.001$) and in recipient with EBV seronegative vs EBV seropositive status at transplant (14.3% vs 7%; $p < 0.001$). The gender and CMV serostatus of the recipient at the time of transplant did not affect the incidence of PTLD (Table 1).

CONCLUSIONS: We conclude the following- 1) Incidence of PTLD amongst heart transplant recipients is 9 and mortality associated with PTLD after heart transplant is very high (73.7%) 2) Heart transplant recipients present with late onset PTLD (>1 year after transplant) 3) Recipient EBV seronegative status is associated with a statistically significant increased incidence of PTLD. Pre-transplant determination of recipient EBV serostatus can help identify a subgroup of patients who have increased risk of post-transplant PTLD and may benefit from increased surveillance.

Table 1

Variable	PTLD incidence (percentage)	*p*
Age < 55 vs. Age ≥ 55	12.3 vs. 7	<.001
Female vs. Male	9.9 vs. 8.8	0.176
Recipient EBV seronegative vs seropositive at time of transplant	14.3 vs. 7	<.001
Recipient CMV seronegative vs seropositive at time of transplant	8.9 vs 7.6	0.154

POSTPARTUM HIV CARE AMONG HIV-INFECTED WOMEN IN ATLANTA, GEORGIA, 2011–2016 Christina M. Meade[1]; Martina Badell[1, 2]; Lisa Haddad[1, 2]; Andres Camacho-Gonzalez[1, 2]; Susan A. Davis[3]; Jessica L. Tarleton[4]; Emily Grossniklaus[5]; Stephanie Hackett[2]; Joy Ford[2]; Jeronia Blue[2]; Cyra C. Mehta[6]; Ryan Quigley[6]; Gabriel Vece[6]; Anandi Sheth[1, 2]. [1]Emory University School of Medicine, Atlanta, GA; [2]Grady Health System, Atlanta, GA; [3]University of Texas Austin, Austin, TX; [4]University of Pittsburgh, Pittsburgh, PA; [5]University of Washington, Seattle, WA; [6]Emory University, Rollins School of Public Health, Atlanta, GA. (Control ID #2702253)

BACKGROUND: Pregnancy provides a unique opportunity for HIV treatment, with increased health care engagement and motivation for adherence to antiretroviral therapy (ART) to prevent perinatal transmission. Continuity in HIV care after the immediate postpartum period generally requires transition

from obstetrical to HIV primary care, and though critical for maternal health, has been reported to be suboptimal in many populations. We characterized factors associated with long-term postpartum HIV care outcomes in a large urban health system in the Southern US, the region where most new HIV infections occur.

METHODS: We reviewed medical records of HIV-infected women who delivered at Grady Memorial Hospital in Atlanta, Georgia from 2011–2016 to estimate retention in HIV care (two HIV care visits or viral load measurements separated by >90 days) and viral suppression (<200 copies/mL) at 12 and 24 months postpartum. Multivariate logistic regression models assessed factors associated with 12 and 24 month retention and viral suppression. In cases of multiple deliveries per woman, only the first delivery was included in analysis.

RESULTS: Among 207 HIV-infected women, the mean age was 28.1 years (SD 6.2). 78.3% were African-American, 22.7% were diagnosed with HIV during pregnancy, and 63.2% were off ART at the time of pregnancy diagnosis. The women attended a mean 8.1 ± 3.7 prenatal care visits. 71.0% had HIV RNA <200 copies/mL at delivery, and 76.5% attended their postpartum obstetric visit. A HIV primary care visit was attended in 157 (79.7%) in a mean 130 days (SD 111) after delivery. Retention in care at 12 and 24 months postpartum occurred in 86 (46.5%) and 52 (34.0%) women, and viral suppression in 76 (41.3%) and 46 (30.1%) respectively. In multivariable analysis attending an HIV care visit within 90 days postpartum (aOR 3.90, CI 1.85-8.19; aOR 4.89, CI 2.10–11.38) was associated with 12 and 24 month retention, and having fewer previous live births (aOR 0.73, 95% CI 0.56–0.95) and older age (aOR 1.08, 95% CI 1.005–1.15) were associated with 12 month retention. Viral suppression at 12 months was associated with taking ART at pregnancy diagnosis (aOR 2.25, CI 1.09–4.63), viral suppression at delivery (aOR 3.52, CI 1.43–8.67), and attending an HIV care visit within 90 days postpartum (aOR 2.26, CI 1.8–4.72). Viral suppression at 24 months did not have significant predictors on multivariable analysis.

CONCLUSIONS: Despite high healthcare engagement during pregnancy, long-term postpartum retention in HIV care and viral suppression were low in this population of HIV-infected women. Prompt transition to HIV primary care in the postpartum period was associated with improved 12 and 24-month outcomes, suggesting that the postpartum transition from obstetric to HIV primary care may be a critical window for cross-disciplinary intervention between obstetrical and HIV primary care providers to improve long-term HIV care outcomes

POSTTRAUMATIC STRESS SYMPTOMS AND TOBACCO OR CANNABIS USE AMONG A SAMPLE OF URBAN WOMEN

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BACKGROUND: Blacks and women are disproportionately affected by posttraumatic stress disorder (PTSD) with higher rates than Whites and men, respectively. PTSD symptoms are associated with comorbid health problems, including substance use. The aim of this analysis was to investigate associations between PTSD symptoms and tobacco or cannabis use among predominantly Black women in a mid-Atlantic city.

METHODS: Women were recruited from 5 urban social services centers through the PERMSS Project: Promoting Education and Research on Mood, Stress, and Substances. Women were eligible to participate if they were 21–65 years old and English speaking, and were excluded if pregnant or currently enrolled in substance use treatment. Participants completed an Audio Computer-Assisted Self-Interview (ACASI) survey which included the National Institute on Drug Abuse (NIDA)-modified Alcohol, Smoking and Substance Involvement Screening Test (ASSIST) and the Posttraumatic Stress Disorder Checklist (PCL-5). Frequencies, means and standard errors were used to describe the sample. Cannabis use was dichotomized as any use in the past 3 months (current) vs. no use. Tobacco use was assessed using two dichotomized variables: daily/almost daily use vs. non-daily use and current (any use in the past 3 months) vs. no use. Mann–Whitney U tests were used to analyze the association between PCL scores and tobacco or cannabis use. A PCL score ≥ 33 classified women as having probable PTSD. We analyzed the relationship between probable PTSD and tobacco or cannabis use using Pearson Chi-Square tests.

RESULTS: The sample consisted of 204 women with a mean age of 45.8 (SD: 11.8) years. The majority of the sample was Black (84.8%) and over half (51.2%) reported annual household incomes of less than $10,000. The mean PCL score was 15.8 (SD: 17.0). Mann–Whitney U tests found a significant association between higher PCL scores and past 3-month cannabis use (Md*n* = 9.00 (IQR = 1.50–22.00) vs. 16.50 (IQR = 4.25–31.25); U = 3051.00, $P = 0.022$); past 3-month tobacco use (Md*n* = 7.00 (IQR = 1.00–17.00) vs. 19.00 (IQR = 10.50–34.00); U = 2644.50, $P = 0.000$); and daily tobacco use (Md*n* = 8.50 (IQR = 1.00–19.75) vs. 18.00 (IQR = 10.00–35.50; U = 2523.00, $P = 0.001$). Probable PTSD was significantly associated with past 3-month tobacco use ($\chi^2 = 4.122$, df = 1, $P = 0.042$). There was no significance between probable PTSD and ever using cannabis ($\chi^2 = 1.274$, df = 1, $P = 0.259$) or daily tobacco ($\chi^2 = 3.275$, df = 1, $P = 0.070$).

CONCLUSIONS: Higher scores on the PCL, reflecting greater PTSD symptom severity, were associated with current cannabis use and daily tobacco use in predominantly Black women recruited from urban community settings. Probable PTSD was also associated with current tobacco use. Further research is needed to investigate the possibility of cannabis and tobacco use for self-medication of PTSD symptoms as well as the effectiveness of interventions that combine tobacco cessation and posttraumatic stress management.

POTENTIAL COST SAVINGS IN PE PATIENTS WITH LOW SPESI SCORES

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BACKGROUND: Risk stratification tools have been validated to determine the risk of mortality with acute pulmonary embolism (PE) and low risk patients may be candidates for outpatient treatment. The Pulmonary Embolism Severity Index (PESI) and shorter simplified (sPESI) form are commonly used models. We sought to identify the proportion of low risk sPESI scores that were admitted and the potential cost savings if they were treated as outpatients.

METHODS: Retrospective review of 385 patients presenting with acute PE from May 2015 to May 2016. The sPESI score (age, history of chronic lung disease or cancer, heart rate, systolic blood pressure, and oxygen saturation) was calculated and the proportion of low risk patients (score of 0) that were admitted was determined. Published estimates that analyzed hospital room, board and inpatient nursing costs associated with inpatient treatment of pulmonary embolism of $5101 were used to evaluate potential cost savings.

RESULTS: Of the 385 patients identified with acute PE, 139 (36.1%) had low risk sPESI scores. Of those 139 patients, 133 (95.6%) were admitted for inpatient treatment. Low risk patients that were admitted had a median hospitalization of 4 days, mean inpatient hospitalization of 4.7 days with a standard deviation of 3.8 days and accounted for 641 total days of hospitalization. Treating these low risk patients as outpatients, thereby eliminating nursing costs, could be associated with approximately $678,443 in potential savings during our study period.
CONCLUSIONS: Patients with a low risk sPESI score at our institution are commonly admitted for treatment of acute PE. This accounts for a substantial economic burden that could be alleviated by use of risk stratification to determine appropriate candidates for outpatient management. The proportion of PE patients at low risk for mortality that are capable of outpatient treatment using tools like the Hestia criteria are needed to estimate the true potential cost savings.

PRE-EXPOSURE PROPHYLAXIS (PREP) FOR HIV PREVENTION: ATTITUDES, BEHAVIORS AND KNOWLEDGE AMONG PRIMARY CARE PROVIDERS FOLLOWING AN EDUCATIONAL INTERVENTION Susan Maya[1]; Keith M. Sigel[2]; Sabrina J. Gard[1]; Antonio Urbina[1]. [1]Mount Sinai Hospital, New York, NY; [2]Mount Sinai School of Medicine, New York, NY. (Control ID #2704237)

BACKGROUND: Daily oral tenofovir/emtricitabine has been shown to be effective for prevention of HIV transmission among men who have sex with men (MSM), IV drug users, and heterosexual couples, among others. To reach all at-risk populations, PrEP must be made available in a variety of clinical settings, including general primary care clinics. A number of studies have assessed the baseline attitudes, knowledge and behaviors of primary care providers with regards to PrEP. However no studies to-date have demonstrated successful improvement in knowledge of PrEP and comfort with prescribing it. We conducted an assessment of attitudes, behaviors and knowledge relating to PrEP among a group of internal medicine residents at a single academic institution following a brief educational intervention.
METHODS: We administered a 15 item questionnaire before and after a 50 min lecture given in small group sessions to all second and third year residents within the Mount Sinai Hospital Internal Medicine training program. Survey items included 5 knowledge based questions, current PrEP prescribing practices, perceived barriers to PrEP prescribing, and comfort with prescribing PrEP. Survey items were adapted from recently published surveys, and were reviewed by current PrEP prescribers in a Mount Sinai affiliated HIV clinic. The educational intervention was case based, interactive and involved practical applications such as how to order appropriate tests in the Electronic Medical Record (EMR), screenshots of a note template and a review of taking a relevant sexual history and appropriate HIV testing guidelines. We then compared pre- and post- test responses using the Wilcoxon signed-rank test.
RESULTS: Of eligible second and third year residents, 35 completed both the before and after surveys. At baseline, 1 respondent reported previously prescribing PrEP (3%). Following the educational intervention, knowledge scores improved on items including correct identification of recommended time-frame for follow up (94% vs 43%, $p < 0.001$), time to therapeutic levels (86% vs 31%, $p < 0.001$), and contraindications to PrEP (100% vs 74%, $p = 0.001$). Comfort level with prescribing PrEP increased (median 8 vs 5 on a 10 point Likert scale, p <0.001) and respondents were more likely to feel PrEP could be easily integrated into existing primary care (median 7.5 vs 5 on a 10 point Likert scale, $p < 0.001$).
CONCLUSIONS: Our educational intervention resulted in improved knowledge scores and comfort levels with prescribing PrEP. A majority of residents in general internal medicine felt that PrEP can be integrated into existing primary care delivery systems. Taken together, these results suggest that there is a willingness among general internist trainees to provide PrEP and that the necessary skills can be easily taught. Further research is needed to understand the best mechanisms for implementing this vital tool throughout resident-based primary care clinics.

PREDICTING HEPATITIS B VIRUS INFECTION AMONG PATIENTS WITH CANCER UNDERGOING SYSTEMIC ANTI-CANCER THERAPY: A PROSPECTIVE COHORT STUDY Jessica P. Hwang[1]; Anna S. Lok[3]; Michael J. Fisch[4]; Scott B. Cantor[1]; Andrea Gabriela Barbo[2]; Heather Y. Lin[2]; Jessica T. Foreman[1]; John M. Vierling[5]; Harrys Torres[1]; Bruno Granwehr[2, 1]; Ethan Miller[1]; Maria Suarez-Almazor[1]. [1]The University of Texas MD Anderson Cancer Center, Houston, TX; [2]UT MD Anderson Cancer Center, Houston, TX; [3]University of Michigan, Ann Arbor, MI; [4]Aim Specialty Health, Chicago, IL; [5]Baylor College of Medicine, Houston, TX. (Control ID #2697543)

BACKGROUND: Most patients with cancer are not screened for HBV infection prior to anti-cancer therapy, and optimal screening strategies have not been determined. We sought to identify and compare selective HBV screening strategies using predictors of HBV infection in a cohort of patients with cancer who had universal testing at the onset of anti-cancer therapy.
METHODS: We conducted a prospective study of cancer patients >18 years old at MD Anderson Cancer Center (7/2013 - 12/2014). Patients had hepatitis B surface antigen (HBsAg), hepatitis B core antibody (anti-HBc total Ig), and hepatitis B surface antibody (anti-HBs) testing and completed a CDC-based questionnaire of 19 HBV risk factors. We considered HBsAg+/anti-HBc + patients to have chronic infection and HBsAg-/anti-HBc + patients to have past infection. A multivariate logistic regression model predicting chronic or past HBV infection which was developed and validated using bootstrapping methods with 500 samples to calculate a bias-corrected area under the curve (AUC). We generated several models from which we selected a final model of 7 questions. From this final model, we selected subsets of having at least one affirmative response to any of the predictors and compared their false negative rate (FNR).
RESULTS: Of 3534 eligible patients approached, we enrolled 2206 patients (response rate 62.4%). Of these, 2124 completed both the HBV risk survey and screening tests and constituted our final study cohort. Mean age was 58 ± 13 years (SD), and 54% were women. The study population was 77% non-Hispanic white, 11% Hispanic, 8% black, and 4% Asian. Nearly 20% had a hematologic malignancy, and 79% had a solid tumor other than liver cancer. Over 12% of patients were born outside the US. The prevalence of chronic HBV infection was 0.3% ($n = 7$ patients), and that of past HBV infection was 6% ($n = 128$). Stepwise variable selection method showed 7 predictors (odds ratio [OR]; 95% CI) of a positive HBsAg or anti-HBc test: men who had sex with men (27; 6–136), black race (5; 3–9) or Asian race (3; 2–6), birthplace outside US (2; 1–5), parents' birthplace outside US (2; 1–5), household HBV contact (2; 1–4), age >50-64 (2; 1.1–3) or >65 (3; 2–5), and history of injection drug use (10; 5–22). The AUC of the model was 0.79 (95% CI: 0.73, 0.82). The FNR for the CDC-based 19 questions survey was 0% while strategies involving 6–7 questions had FNR of 0%-1.5% (Table).
CONCLUSIONS: Selective screening models based on HBV risk factors and demographics performed as well as the 19-questions CDC-based survey. These

brief tools may be used in clinical practice to identify patients at risk of HBV reactivation due to anti-cancer therapy.

Table 1.

	STRATEGY 1 19-question CDC-based survey Screen patients who answered Yes to ≥1 of the questions				STRATEGY 2 7-questions final model Screen patients who answered Yes to ≥1 of the questions				STRATEGY 3 Screen patients who answered Yes to ≥1 of the questions			
HBV risk factors	See footnote[1] below				Age ≥50				Age ≥50			
					Asian or Black race				Asian or Black race			
					Birthplace outside US				Birthplace outside US			
					Injection drug				Injection drug			
					HBV household contact				HBV household contact			
					Man who has sex with men				Male sex			
					Parent's birthplace outside US							
Response to risk factors vs. test results	Response	HBV test result			Response	HBV test result			Response	HBV test result		
		Pos	Neg	Total		Pos	Neg	Total		Pos	Neg	Total
	Yes	135	1842	1977	Yes	133	1684	1817	Yes	135	1775	1910
	No	0	147	147	No	2	305	307	No	0	214	214
	Total	135	1989	2124	Total	135	1989	2124	Total	135	1989	2124
FNR				0.0				1.5				0.0
Specificity				7.4				15.3				10.8

[1]https://www.cdc.gov/hepatitis/riskassessment/

PREDICTION OF FUTURE CHRONIC OPIOID USE AMONG HOSPITALIZED PATIENTS: A MACHINE LEARNING APPROACH

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BACKGROUND: Opioids are commonly prescribed in the hospital yet little is known about which patients will continue on to chronic opioid use following discharge. Predictive tools to identify hospitalized patients at risk for future chronic opioid use could have clinical utility to improve patient education and prescribing behaviors. Logistic regression analyses are the standard method used to develop prediction models. Machine learning methods examine all potential predictors simultaneously in an unbiased manner to provides a data-driven method to identify useful predictors for health-related outcomes. We developed and compared various machine learning algorithms to predict future chronic opioid use one year following hospital discharge.

METHODS: This was a retrospective cohort study of all hospital discharges from January 2008 to December 2014. The study outcome was chronic opioid use one year following hospital discharge. We defined chronic opioid use as an opioid episode lasting >90 days or >10 opioid prescriptions dispensed over one year. Key exclusion criteria included the use of chronic opioid therapy for pain or opioid replacement therapy for addiction. We constructed a logistic regression model using variables identified by clinical expertise and informed by the literature. We compared the logistic regression model to three machine learning algorithms including the adaptive least absolute shrinkage and selection operator algorithm (LASSO), a random forest algorithm and a balanced random forest algorithm. Models predictive performance was measured using area under the receiver operator curve (AUC), accuracy, sensitivity and specificity.

RESULTS: We identified 159,574 discharges. After applying our exclusions, 27,705 patients remained. Of these, 1,457 were using chronic opioid therapy one year following discharge. All models predicted future chronic opioid use with an AUC of > 0.70. The balanced random forest model predicted chronic opioid use with the highest sensitivity (0.700), specificity (0.700) and accuracy (0.750). The logistic regression model had a poor sensitivity (0.014) and a high specificity (0.999). The balanced random forest algorithm ranked variables of importance to predict future chronic opioid use. Of the twenty variables tested, age range 40–60 years old ranked as the most important predictor with a one year probability of chronic opioid use of 1.5%. Other high ranking variables were receipt of non-opioid analgesics one year preceding the discharge (NSAIDS, neuropathic agents), opioid receipt at discharge, longer length of hospital stay and higher Charlson Comorbidity Index.

CONCLUSIONS: A machine learning approach could be used to predict future chronic opioid therapy among patients and outperformed the traditional logistic regression predictive model. Applications for such predictive models among patients discharged from the hospital include decision support tools to prompt hospital staff to provide additional education or to modify prescribing, when appropriate.

PREDICTION OF SPONTANEOUS REMISSION BY 18 F-FDG PET OR PET/CT IN CLASSIC FEVER OF UNKNOWN ORIGIN

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BACKGROUND: Despite recent advances in diagnostic technologies, classic fever of unknown origin (FUO) is still a diagnostic challenge. Because not a few patients in whom FUO remains undiagnosed after intensive work-up have a possibility to resolve spontaneously, reliable predictive factors of a spontaneous regression could avoid unnecessary diagnostic tests or empiric treatment. Recently, studies of ^{18}F-FDG PET or PET/CT (PET or PET/CT) have reported a good diagnostic yield in identifying a source of fever in undiagnosed FUO cases. In this study, we systematically reviewed the ability of negative results in PET or PET/CT to predict a spontaneous remission in patients with classic FUO.

METHODS: This systematic review was performed as extended part of a broader review conducted by our team. We searched PubMed and Scopus through Oct 31, 2016 with no language restrictions. We included studies that evaluated PET or PET/CT in at least 10 adult patients (>18 years of age) with classic FUO, and followed up undiagnosed cases for at least 3 months after PET or PET/CT. Two independent reviewers screened abstracts, perused full-text publications for eligibility, and performed data extraction. We extracted the reported scan results (as positive or negative), and the number of spontaneous remissions. We contacted the study authors for unpublished data when the relevant information was not reported. We performed the Knapp-Hartung-corrected REML random-effects meta-analysis to calculate summary risk ratios and their 95% confidence intervals.

RESULTS: We included 8 studies of PET/CT (391 patients) and 4 studies of PET (128 patients). No studies were designed for evaluating prognostic ability of these imaging tests. After the evaluation with PET/CT or PET scan, 108 (28%) or 46 (36%), respectively, remained undiagnosed. Except for two prospective studies, studies retrospectively reviewed data derived from clinical practice, and failed to employ prespecified work-up strategies or follow-up protocols. Studies of PET/CT observed significantly more spontaneous remissions in patients with a negative scan than in those with a positive scan (76/144 vs. 21/247; summary RR = 5.36; 95% CI: 3.20–8.98; $p < 0.001$; $I^2 = 0\%$). In contrast, studies of PET found no evidence that either a positive or a negative scan was associated with more spontaneous regressions (8/46 vs. 18/82; summary RR = 0.83 favoring a positive scan; 95% CI: 0.14-4.98; $p = 0.77$; $I^2 = 32\%$).

CONCLUSIONS: Limited evidence suggests that a negative PET/CT can be predictive of spontaneous remission in classic FUO after a routine fever work-

up. Given the limitations in the primary studies and its high cost, future PET/CT studies should use a multivariable approach taking account of other important factors to validate these promising results.

PREDICTIVE VALUE OF THE PRESENT-ON-ADMISSION INDICATOR FOR HOSPITAL-ACQUIRED BLEEDING EVENTS

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BACKGROUND: Hemorrhage is both an important reason for admission to the hospital and a complication of hospitalization; thus, distinguishing when a hemorrhage occurred is important to quality improvement. The present-on-admission (POA) indicator could be useful in distinguishing hospital-acquired bleeding from bleeding precipitating admission; however, its accuracy for hemorrhage diagnoses codes is unknown. We aimed to determine the predictive value of POA indicators for hemorrhage among hospitalized patients.

METHODS: We used administrative data from the Vizient database to identify all adult non-pregnant patients at our academic medical center with at least 1 secondary diagnosis of intracranial hemorrhage (ICH) or gastrointestinal bleed (GIB) based on ICD-10 diagnosis codes over a period of 9 months. We then obtained a stratified sample of patients with ICH and GIB diagnosis codes, with and without POA flags, and reviewed their medical records. The positive predictive value of the POA flag for bleeding was calculated as the number of events with a particular POA flag (Yes vs. No) divided by whether or not the event occurred as determined by chart review.

RESULTS: From January 1 to September 30 of 2016, we identified 397 charts with at least one secondary diagnosis code for GIB (79% POA = Y) and 147 for ICH (80% POA = Y). We sampled a total of 40 charts in each category except ICH POA = N, where we included all 29 available cases. After reviewing the charts, 11 of the sampled GIB cases (5 POA = Y, 7 POA = N) were excluded for inaccurate coding. We found that of the 35 patients with a GIB code flagged POA = Y, 31 were found on chart review to have GIB preceding the hospitalization (PPV = 89%). Of 33 patients with a GIB flagged POA = N, 27 were found on chart review to have a hospital-acquired GIB (PPV = 82%). For ICH, of 40 patients flagged POA = Y, 34 were found to have ICH on or preceding hospitalization (PPV = 85%). Finally for the 29 patients with ICH flagged POA = N, 28 were found to have a hospital acquired hemorrhage (PPV = 97%) (Table 1).

CONCLUSIONS: At our institution, the POA indicator was reasonably accurate in differentiating between hemorrhages that occurred prior to hospitalization and those that were hospital-acquired, suggesting that these indicators could be useful for quality improvement and research purposes.

Table 1. Overall PPV for each diagnosis code group and POA flag.

Diagnosis/POA combination	Total number	Sampled	Accurate upon chart review	PPV
GI Hemorrhage; POA = Y	313	35	31	89%
GI Hemorrhage; POA = N	84	33	27	82%
IC Hemorrhage; POA = Y	118	40	34	85%
IC Hemorrhage; POA = N	29	29	28	97%

PREDICTORS OF HOSPITAL LENGTH OF STAY AMONG PATIENTS WITH LOW-RISK PULMONARY EMBOLISM

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BACKGROUND: Increased hospital length of stay (LOS) is an important driver of costs in hospitalized patients. Low-risk PE (LRPE) patients can benefit from abbreviated hospital stays or outpatient therapy, which could substantially reduce health care costs. We sought to measure the predictors associated with LOS among LRPE patients within the Veterans Health Administration (VHA).

METHODS: Adult patients with ≥1 inpatient diagnosis for PE (index date) between October 2011 and June 2015 and continuous enrollment in the VHA health plan for ≥12 months pre- and 3 months post-index date were included. PE risk stratification was performed using the simplified Pulmonary Embolism Stratification Index (sPESI). Patients scoring 0 points on the sPESI were considered at low risk and all others were defined as high risk. LRPE patients were further stratified, based on their LOS, into short (≤2 days) and long (>2 days) LOS cohorts. Logistic regression was used to identify the predictors of LOS among LRPE patients.

RESULTS: Of 6,746 PE patients, 95.4% were men, 67.7% were white, 22.0% were African American, and 1,918 were LRPE. Of LRPE patients, 688 (35.9%) had a short and 1230 (64.1%) had a long LOS. LRPE patients with computed tomography angiography (OR: 4.8, 95% CI: 3.8–6.0), ventilation perfusion scan (OR: 3.8, 95% CI: 1.9-7.8), and venous ultrasound (OR: 1.4, 95% CI: 1.1–1.9) in the pre-index period had an increased probability of having a short LOS. LRPE patients with troponin I (OR: 0.7, 95% CI: 0.6–0.9) or B natriuretic peptide (OR: 0.6, 95% CI: 0.5–0.8) obtained during the index hospitalization had a decreased probability of having a short LOS. Additionally, LRPE patients with left ventricular dysfunction (OR: 0.2, 95% CI: 0.1–0.6), hospitalization for deep vein thrombosis (OR: 0.7, 95% CI: 0.6–0.9), or peptic ulcer disease (OR: 0.3, 95% CI: 0.1–1.0) had a decreased probability of having a short LOS. Demographics including sex, race, and body mass index did not have any significant effect on the hospital LOS in LRPE patients.

CONCLUSIONS: Understanding the predictors of LOS can help providers to deliver efficient treatment and reduce the LOS for LRPE patients, which may reduce the overall burden of PE.

PREDICTORS OF INSULIN INITIATION IN PATIENTS WITH TYPE 2 DIABETES

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BACKGROUND: The decision to initiate insulin therapy in patients with type 2 diabetes is complex and requires an individualized approach, yet the drivers of this decision are not known. We sought to identify patient sociodemographic and clinical factors that were independent predictors of insulin initiation.

METHODS: We retrospectively examined 1,943 participants from the Look AHEAD (Action for Health in Diabetes) clinical trial of overweight and obese adults with type 2 diabetes who were not using insulin at baseline and were

randomized to the Diabetes Support and Education (control) arm. We used data from enrolment beginning in 2001 through 10 years of follow-up. Participants' personal physicians managed their medications during the study period. The Cox proportional hazards model was used to estimate the association between participant characteristics and initiation of insulin therapy which was assessed yearly. We performed time-varying adjustment for HbA1c measured 8 times over 10 years, as well as for clinical and socioeconomic factors including age, sex, race, diabetes duration, medical comorbidities, insurance status, and source of medical care. The results of the fully adjusted model are presented here.

RESULTS: During a median follow-up of 7.4 years, 632 participants initiated insulin for an incidence rate of 4.80 events/100 person-years, and 9.54 events/100 person-years in those with baseline HbA1c > 8.5%. We found a lower risk of insulin initiation in black (HR 0.57, 95% CI 0.44–0.74) and Hispanic (HR 0.54, 95% CI 0.41–0.73) relative to white participants, global $P < 0.001$. Older age was associated with a lower risk of insulin initiation (HR 0.83 per 10 years, 95% CI 0.72–0.96), and BMI with a higher risk (HR 1.12 per 5 kg/m^2, 95% CI 1.05–1.19). Comorbid conditions that were independently associated with a higher risk of insulin initiation were tobacco use ($P = 0.021$), hypertension ($P = 0.010$) and cardiovascular disease ($P = 0.006$). Source of medical care was associated with insulin initiation (global $P = 0.008$), with those receiving care at a hospital affiliated clinic at higher risk relative to care at a private office (HR 1.50, 95% CI 1.17–1.92).

CONCLUSIONS: We identified multiple independent predictors of insulin initiation in patients with type 2 diabetes, suggesting that the decision to initiate insulin is influenced by factors including patient age, race, comorbidities, and source of medical care. This study used rigorously collected clinical trial data which allowed adjustment for potential confounders including HbA1c with a high degree of granularity. These findings highlight the need for further research to inform evidence-based guidelines for individualized use of insulin that is targeted to a patient's characteristics and needs. The finding of a lower risk of insulin initiation in black and Hispanic participants requires further study to determine the drivers of this disparity.

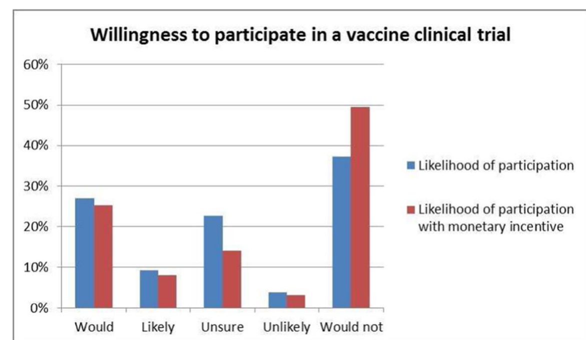
PREDICTORS OF PARTICIPATION IN PRIMARY CARE-BASED VACCINE CLINICAL TRIAL IN A PRIMARILY ELDERLY HISPANIC POPULATION Sharon Rikin; Philip LaRussa; Steven Shea; Melissa Stockwell. Columbia University, New York, NY. (Control ID #2697985)

BACKGROUND: Minorities and the elderly are underrepresented in clinical research. Motivations to participate in preventive clinical trials are not as evident as for disease-specific trials. Population-specific barriers to recruitment are also not fully understood. This study aimed to understand a) how knowledge of and previous participation in clinical trials are associated with willingness to participate in vaccine clinical trials; b) how incentives affect willingness to participate.

METHODS: A survey on participation in an influenza vaccine clinical trial was administered to a convenience sample of 200 patients ≥65 years in an academic general internal medicine clinic (88% participation rate). The study was IRB approved and consent obtained. Logistic regression evaluated associations, adjusted for age, gender, and language. Wilcoxon signed rank sum test compared 5-point Likert scale on willingness to participate with and without monetary incentives.

RESULTS: Mean age was 74 years (SD 6.7), 73% female, 93% Spanish speaking, and 86% had high school education or less. Approximately half (54.4%) responded *yes* to previously hearing about clinical trials; 17.6% reported previous participation in a trial. Those with previous knowledge were more likely to report they would/would likely participate vs. those without prior knowledge (aOR 2.18, 95% CI (1.09, 4.38)). Those who had previously participated were also more likely to report they would/would likely participate vs. those without participation, although not significant after adjusting (aOR 1.24, 95% CI (0.53, 2.88)). When asked about willingness to participate if there was monetary compensation, there was a 12.2% absolute increase in those who reported they would *not* participate (Figure), with a significant difference in distribution of responses before and after mention of monetary incentive (Wilcoxon signed rank test, $p = 0.001$).

CONCLUSIONS: Increased willingness to participate in clinical trials for those with prior knowledge or participation suggests increased public information on clinical research could improve recruitment in this population. Offering incentives unexpectedly reduced participants' willingness to participate, warranting further investigation. The study highlights the importance of pre-testing recruitment materials and incentives in key group populations prior to implementing a primary care interventional study.



PREDICTORS OF PERIOPERATIVE OPIOID PRESCRIBING AND CONSUMPTION Christopher W. Shanahan[1]; Olivia Gamble[4]; Inga Holmdhal[4]; Julia Keosaian[4, 5]; Ziming Xuan[5]; Marc Larochelle[3]; Jane M. Liebschutz[2]. [1]Boston University/Boston Medical Center, Boston, MA; [2]Boston University School of Medicine, Boston, MA; [3]Boston University School of Medicine and Boston Medical Center, Boston, MA; [4]Boston Medical Center, Boston, MA; [5]Boston University School of Public Health, Boston, MA. (Control ID #2704968)

BACKGROUND: Overprescribing of opioids for post-operative pain may lead to diversion and misuse. We analyzed data from a prospective observational study of patients undergoing elective ambulatory surgery to assess predictors of surgeons' prescribing and patients' use of opioid analgesic medications.

METHODS: We surveyed patients one week prior to and 10–14 days after ambulatory surgery at an academic safety-net hospital. Seven surgical specialties performed the procedures. We excluded cancer-related surgeries and procedures not expected to require post-operative pain management (e.g. endoscopies). Baseline data included socio-demographics (age, gender, race/ethnicity), chronic pain severity and function in the past three months (Graded Chronic Pain Scale), and high-risk alcohol and drug use (AUDIT and DUDIT). Primary outcomes were total opioids prescribed and consumed (morphine milligram equivalents (MMEs)), and percent of unused opioids. We used multivariable linear

regression, adjusted for surgical specialty, to analyze associations of socio-demographics, chronic pain, and high-risk substance use with all outcomes. We calculated intra-class correlations to partition variance in each outcome attributable to surgical specialties.

RESULTS: Eighteen surgeons performed surgery on 150 patients (54% female, 44% white, 34% black; mean age: 49 years). Surgeons prescribed opioids for post-operative pain to 95% of patients, 85% of whom received oxycodone. Surgeons prescribed a mean of 242 MMEs per patient; however, patients reported using a mean of 116 MMEs per patient (48%). On average, a 10-year increase in patient age was associated with 12 MMEs fewer prescribed opioids ($p < 0.01$). Intra-class correlations attributed for 19% of the variance in opioid prescribing to surgical specialty with significant differences between specialties ($F = 5.8$, $p < 0.001$). Surgical specialty accounted for 4.1 and 4.5% of the variance in the amount of opioids consumed and percent unused, respectively. Each one-point increase in the pre-operative Graded Chronic Pain scale was associated, on average, with an 18 MME increase in opioid consumption ($p < 0.01$), and 5% fewer unused opioids ($p = 0.03$). Prior opioid prescription was associated with a 55 MME increase in opioid consumption ($p = 0.03$), and 19% fewer unused opioids ($p = 0.03$). High-risk drug use, on average, trended towards 9% fewer unused opioids ($p = 0.05$).

CONCLUSIONS: Patients use less than 50% of opioid analgesic medications prescribed for post-operative pain control. Patient age predicts post-operative opioid prescribing. Chronic pain, risky drug use, and prior opioid prescription predict higher post-operative opioid consumption. Surgical specialty accounts for a substantial portion of variance in post-operative opioid prescribing when compared to other variables. Opportunities to improve post-operative opioid prescribing include system changes among surgical specialties, and targeted patient education and monitoring.

PREDICTORS OF SOCIAL SUPPORT AMONG NEWLY DIAGNOSED BREAST CANCER PATIENTS SEEKING CARE AT AN URBAN SAFETY NET ACADEMIC MEDICAL CENTER Naomi Y. Ko[1, 2]; Christine Gunn[1]; Sharon Bak[1]; Na Wang[3]; Kerrie Nelson[3]; JoHanna Flacks[4]; Samantha Morton[4]; Tracy A. Battaglia[1, 2]. [1]Boston University School of Medicine, Boston, MA; [2]Boston Medical Center, Boston, MA; [3]Boston University School of Public Health, Boston, MA; [4]Medical Legal Partnership Boston, Boston, MA. (Control ID #2705996)

BACKGROUND: Disparities in breast cancer care are a worsening problem, requiring effective interventions that seek to address the delivery of high quality cancer care. Evidence from interventions designed to improve timeliness of care routinely identify lack of social support as one of the biggest barriers to care. And, the presence of social support is associated with adherence to treatment and survival. This study explores predictors of social support in a diverse population of newly diagnosed cancer patients seeking care at an urban safety net medical center.

METHODS: This is a descriptive analysis of baseline preliminary data from participants enrolled in Project SUPPORT, a randomized controlled comparative effectiveness trial designed to evaluate the impact of patient navigation with or without legal support and services, among women diagnosed with Stages 0–4 breast cancer between 2014–2016. Upon enrollment (within one month of a cancer diagnosis) we administered the Medical Outcomes Survey (MOS) of social support to all participants. This validated survey measures functional support, including an overall score (range 0–95) and 4 distinct domains: Emotional/Informational, Tangible, Affectionate and Positive Social Interaction. Using chi-squared and t-tests we compared MOS scores across socio-demographic variables: age, race, language, insurance, health literacy and marital status.

RESULTS: Of the 139 participants, mean age is 54.5 (SD = 10.6); 54% Black, 23% White, 21% Hispanic, and 2% identified as other; the majority had public insurance 76%; 65% speak English, 21% Spanish and 14% Haitian Creole. Only 35% have adequate health literacy as measured by the BRIEF. Only 32% are currently partnered. The overall mean total score for social support is 75.3 (+/− 25), median of 81.6 (range 60.5 - 98.7). Participants scored lowest in tangible support (mean score 67.4 +/− 34.1) and highest in affective support (mean score 82.7 +/− 26.3). Non-White participants scored lower across all domains (mean overall MOS score 73.5 +/− 2.4) when compared with Whites (mean overall MOS score 81.4 +/− 4.4). There were no significant differences in MOS scores by language, insurance, literacy or marital status.

CONCLUSIONS: This is the first study to describe social support scores (overall and specific domains) from the validated MOS survey tool among a racially diverse, low income urban cancer patient population. Preliminary findings suggest non-white women are most at risk for low social support, and can thus benefit from targeted interventions.

PREECLAMPSIA: A CRUCIAL BUT UNDER-RECOGNIZED RISK FACTOR FOR CARDIOVASCULAR DISEASE AMONG INTERNISTS Jennifer Mackinnon; Alina Brener; Irene Lewnard; Cresta Jones; Jacquelyn Kulinski. Medical College of Wisconsin, Milwaukee, WI. (Control ID #2687131)

BACKGROUND: Cardiovascular disease (CVD) is the number one killer of American women. Numerous population-based cohort studies have concluded that women with a history of preeclampsia have increased future CVD risk compared to women with uncomplicated pregnancies. Since 2011, the American Heart Association has recognized that women with preeclampsia have an increased risk for CVD equal to diabetics and smokers. Since 2013, the American College of Obstetricians and Gynecologists (ACOG) has recommended early screening for these patients. Unfortunately, there are no guidelines in the internal medicine literature for CVD screening in women with prior preeclampsia, leading to missed opportunities to identify these women and optimize primary prevention strategies. Our aim was to determine whether internists at our institution inquire about preeclampsia during the medical interview.

METHODS: We performed a retrospective chart review of 89 women ages 18 to 48 with at least one prior delivery who presented for a well-woman visit after 2013, when the ACOG guidelines were released. We assessed documentation of preeclampsia versus traditional risk factors for CVD (smoking, diabetes, and hypertension).

RESULTS: The mean age of our cohort was 35.4 years +/− 6.4. 23.6% of women were asked about preeclampsia while 98.9% were asked about diabetes or smoking and 100% were asked about hypertension. Our data was analyzed using a test of two proportions to compare how often providers asked about preeclampsia versus smoking, diabetes, and hypertension. The P value was statistically significant at 0.0002 in each individual comparison group. The mean age of patients who were asked about preeclampsia was 34.6 +/− 4.8 and the mean age of patients who were not asked was 35.6 +/− 5.3 ($p = .093$). Interestingly, a sub-analysis revealed that there was no gender difference among providers who inquired about preeclampsia during the medical interview (50% of female providers and 54.5% of male providers, $p = .80$).

CONCLUSIONS: We identified a screening gap at our institution among internists regarding preeclampsia as an important risk factor for CVD when compared to traditional risk factors. Further research is needed to identify causes for this screening gap, including education of providers and alterations to the electronic medical record and patient history collection processes. While there are currently no screening guidelines in internal medicine, it is vital to identify these at-risk patients early in order to optimize primary prevention strategies, including lifestyle modification. Furthermore, research is needed to determine appropriate blood pressure goals for women with prior preeclampsia. We hope that our research will encourage specialties to collaborate on creating screening guidelines reflective of current research progress in cardiovascular disease.

PRELIMINARY ANALYSIS OF LIFE EXPECTANCY AND COMMON CAUSES OF DEATH AMONG VETERANS WITH MENTAL ILLNESSES Ranak Trivedi[3]; Edward P. Post[2]; Rebecca I. Piegari[6]; Joseph A. Simonetti[7]; Edward J. Boyko[4]; Steven Asch[5]; Alaina M. Mori[6]; Bruce A. Arnow[5]; Stephan D. Fihn[6]; Karin M. Nelson[6, 1]; Charles Maynard[6, 1]. [1]University of Washington, Seattle, WA; [2]VA Ann Arbor Healthcare System and University of Michigan, Ann Arbor, MI; [3]VA Palo Alto Health Care System/Stanford University, Menlo Park, CA; [4]VA Puget Sound, Seattle, WA; [5]VA/Stanford, Menlo Park, CA; [6]Department of Veterans Affairs, Seattle, WA; [7]Department of Veterans Affairs, Denver, CO. (Control ID #2700411)

BACKGROUND: Veterans Health Administration (VHA) is the largest primary care and mental health care provider in the US, and Veterans enrolled in VHA primary care have a high burden of both mental and physical illnesses. We sought to assess life expectancy and common causes of death among Veterans with mental illness, compare life expectancy among Veterans with and without mental illness, and examine patterns of healthcare utilization.

METHODS: Veterans who received primary care in VHA between 2000 and 2011 were included. Patient records from Corporate Data Warehouse (CDW) were merged with cause and date of death information from the National Death Index. Patients were determined to have depression, post-traumatic stress disorder (PTSD), an anxiety disorder, or serious mental illness (SMI; bipolar disorder, schizophrenia) if they had at least 1 inpatient or 2 outpatient visits coded with the respective diagnosis during the prior year. Patients were determined to have a substance use disorder (SUD) if they had at least 1 inpatient or outpatient visit in the prior year. We used the direct standardization method to calculate gender and cause-specific death for patients with depression, anxiety, PTSD, SUD, SMI, any mental illness (at least one of the 5), or no mental illness (none of the 5).

RESULTS: 1,763,982 death records were matched to VHA files. Of these, 556,489 listed at least one of the 5 categories of mental illness. In unadjusted analyses, patients without mental illness age at death was approximately 7 years greater than those with one (78 ± 10 y vs.71 ± 13 y). Patients with SUD had the lowest mean age at time of death at 64 ± 12 y, followed by SMI (66 ± 13 y), PTSD (67 ± 13 y), depression (72 ± 13 y), and anxiety (72 ± 13 y). The most common cause of death across all groups was ischemic heart disease (IHD), with 15-18% of patients with mental illness dying of IHD. The most common mental illness among those who died of IHD was anxiety (18%); for lung cancer, SUD (9.2%), for diabetes, PTSD (3.7%), and for suicide, SMI (3.2%). Among the 13,881 who completed suicide with firearms, 52% ($N = 7263$) did not have a diagnosis of mental illness. Compared with Veterans without mental illnesses, a greater proportion of those with mental illness had made an outpatient visit for primary care (68.5 vs. 77%), specialty medical care (41.2% vs. 60.9%), specialty mental health care (5.3% vs. 38.6%), an emergency (9.7% vs, 22.9%), or had been hospitalized in VA (17.2% vs, 35.8%) during the 1 year prior to death. The number of mental illness diagnoses was strongly associated with a higher age adjusted death rate among both men and women.

CONCLUSIONS: As has been observed in other populations, mental illness among Veteran receiving care from VA was strongly associated with use of health care resources as well as a higher risk of mortality which increased sharply with the number of mental health diagnoses.

PREP PRESCRIBING IN PRIMARY CARE CENTERS IN A LARGE URBAN HEALTH CARE SYSTEM IN THE BRONX, NEW YORK Cedric Bien-Gund[2]; Viraj V. Patel[1]; Oni J. Blackstock[3]; Uriel Felsen[4]. [1]Albert Einstein College of Medicine, Bronx, NY; [2]Montefiore Medical Center, New York, NY; [3]Montefiore Medical Center/AECOM, New York, NY; [4]Montefiore Medical Center, Bronx, NY. (Control ID #2707265)

BACKGROUND: HIV pre-exposure prophylaxis (PrEP) has been recently established as an effective tool for HIV prevention. However, existing studies have been limited to demonstration projects and specialized PrEP programs, and little is known about PrEP prescribing in primary care settings where a significant amount of HIV preventative health care occurs. We sought to describe individuals prescribed PrEP in primary care centers in the largest health care system in the Bronx, a racially diverse borough in New York City that has one of the largest HIV epidemics in the United States.

METHODS: We used an integrated electronic medical record database to identify adult individuals who had a negative HIV test and were prescribed Emtricitabine-Tenofovir (FTC-TDF) between January 2011 and November 2015. We excluded all patients prescribed FTC-TDF as HIV post-exposure prophylaxis or as Hepatitis B treatment, and conducted a chart review to confirm that individuals received FTC-TDF for PrEP, and then extracted socio-demographic and clinical information. We included all individuals prescribed PrEP at primary care sites, which included adolescent medicine, family medicine, internal medicine, and women's health centers. We categorized clinic sites as either teaching sites, where care was provided by resident physicians and other trainees with attending physician oversight, or non-teaching sites.

RESULTS: 108 individuals were prescribed PrEP between January 2011 and November 2015, of whom 64 (59%) were prescribed at primary care sites. Out of a total of 32 primary care sites in the health care system, 14 had ever prescribed PrEP. Five of those sites were teaching clinic sites, which comprised almost two thirds (60%) of all prescriptions in primary care. The median age of patients prescribed PrEP was 28 (IQR 23–32), over half (52%) had an HIV positive partner, 36% were Hispanic, and 25% were non-Hispanic Black. Sixty-three percent were men, of whom 80% were MSM, 32% were cisgender women, and 5% were male-to-female transgender women.

CONCLUSIONS: Within a large urban health care system in an area with high HIV burden, we found that PrEP prescribing in primary care settings appears feasible in reaching key populations with diverse risk factors. However, most prescriptions were clustered among a handful of primary care centers, and less than half of all clinics had ever prescribed PrEP. Teaching clinic sites offering a majority of PrEP prescriptions. In order to expand PrEP adoption among primary care providers, efforts should be made to increase provider knowledge, experience, and comfort with PrEP prescribing.

PRESCRIBING MUSEUMS FOR PSYCHOSOCIAL STRESSORS: A SYSTEMATIC REVIEW OF APPROACHES AND EFFECTIVENESS

Kevin Liou[1]; Rebecca Boas[1]; Drew Wright[2]; Ramin Asgary[1]. [1]Weill Cornell Medicine/NewYork-Presbyterian Hospital, New York, NY; [2]Weill Cornell Medicine, New York, NY. (Control ID #2703676)

BACKGROUND: The prevalence of psychosocial stressors in primary care is high. Time and resources to address psychosocial issues are typically limited in routine office visits. Physicians have explored "social prescribing" as complementary options. Social prescribing refers to the practice in which patients are referred to non-medical community organizations that may offer beneficial programs or classes. An increasing number of museums have developed programs in collaboration with medical providers to address the psychosocial needs of patients. This systematic review aims to identify the types of arts-based interventions being implemented in museums for patients with psychosocial stressors and to synthesize the available evidence on the effectiveness of these interventions.

METHODS: A comprehensive search of PubMed, Scopus, CINAHL, SocINDEX,and PsycINFO electronic databases was conducted. Further articles were identified through cross-referencing and hand-searching. The inclusion criteria were English-language articles, research studies of any design, adult patients with any type of psychosocial stressor, and arts-based interventions implemented in museum settings. There were no date restrictions. Data extraction and quality appraisal was undertaken. Narrative synthesis was used to analyze data.

RESULTS: Eight studies satisfied the inclusion criteria: one quantitative, two qualitative, and five mixed. Study participants included patients with dementia, substance abuse, work-related stress, or mental health issues; some studies also included patients' caregivers. Most interventions involved art-viewing exercises and group discussions; some also incorporated art-making exercises. Measures used were scales, questionnaires, patients' artwork, salivary stress markers, observations and recordings of live museum sessions, and in-depth interviews of patients, patients' caregivers, and museum educators. Interventions generally received positive reviews from participants. Some studies reported that interventions were effective at improving participants' mood, self-confidence, resilience, social functioning, and other psychosocial measures. However, methodologic limitations make it difficult to evaluate these claims.

CONCLUSIONS: Health-related collaborations between medical and museum professions appear feasible. Art-based interventions are used in museum settings to address a wide range of psychosocial issues in primary care. Research in this area is still in its infancy. Control or comparison groups would allow for better assessment of clinical impact and cost-effectiveness. Additional research is needed to evaluate how the effectiveness of arts-based interventions may be influenced by the setting (clinical versus museum) and activity components (art-viewing versus art-making). It may also be worthwhile to further explore how similar arts-based interventions can be applied to physicians and other care providers to prevent burnout.

PRESCRIPTION OF ANTIBIOTICS IN A PRIMARY CARE TELEMEDICINE SERVICE: ASSOCIATION WITH PATIENT SATISFACTION AND VISIT LENGTH

Mark N. Rood[2]; Kathryn A. Martinez[1]; Nikhyl Jhangiani[1]; Adrienne Boissy[1]; Michael B. Rothberg[1]. [1]Cleveland Clinic, Cleveland, OH; [2]Cleveland Clinic Foundation, Chagrin Falls, OH. (Control ID #2702058)

BACKGROUND: Many physicians believe that prescribing antibiotics for upper respiratory infections (URI) requires less time and increases patient satisfaction, but data supporting these beliefs is lacking. The objective of this study was to evaluate antibiotic prescribing for URI, visit length and patient satisfaction in a large national cohort of telemedicine patients.

METHODS: We analyzed all completed primary care encounters between January 2013 and August 2016 from the Online Care Group telemedicine service. Patient characteristics, including age, sex, and geographic region were provided by the patient. Encounter characteristics, including time of day, wait time, and visit length were recorded by the system. Patient diagnosis and antibiotic prescription were recorded by the provider. At encounter completion, users rated their satisfaction (on scales of 0 to 5 stars) with 1) the telemedicine system, and 2) their individual provider. We dichotomized satisfaction measures as 5 stars versus less than 5 stars. We used multivariable logistic regression to assess the association between antibiotic prescription and satisfaction with the 1) telemedicine system and 2) visit provider among URI patients. We then used multivariable linear regression to assess the difference in visit length by antibiotic prescription. Models adjusted for patient and encounter characteristics as noted above.

RESULTS: Of the 45,675 appointments during the study period with 381 providers, 31% ($n = 14{,}301$) resulted in a URI diagnosis (52% sinusitis, 16% pharyngitis, 10% bronchitis, and 22% other URI). Overall, 64% of URI patients received an antibiotic prescription, and the mean prescribing rate among individual providers was 49% (Interquartile Range: 11%-75%). Prescribing varied by URI type: 83% for sinusitis, 76% for pharyngitis, 68% for bronchitis, and 17% for other URI. Ninety-one percent of URI patients prescribed an antibiotic rated their provider 5 stars compared to 80% who were not ($p < 0.001$) and 84% prescribed an antibiotic rated the system 5 stars compared to 73% of those who were not ($p < 0.001$). Mean visit length was 6.6 min for those resulting in antibiotic prescriptions compared to 7.9 min for those which did not ($p < 0.001$). In the adjusted models, antibiotic prescription was significantly associated with rating the telemedicine service 5 stars (OR:1.89; 95%CI:1.65, 2.17), as well as rating the provider 5 stars (OR:2.47; 95%CI:2.10, 2.90). Appointments resulting in an antibiotic prescription were, on average, 0.45 min shorter (95%CI: −0.60, −0.30) compared to those which did not ($p < 0.001$).

CONCLUSIONS: Antibiotic prescription among URI patients was highly associated with satisfaction with both the telemedicine system and individual providers and was also associated with shorter visit length. Quality measures emphasizing evidence-based antibiotic prescribing may be needed to offset prescribing incentives resulting from patient satisfaction and productivity pressures.

PREVALENCE AND DETERMINANTS OF PHYSICIAN BURNOUT IN A LARGE HEALTH SYSTEM

Amy K. Windover[2]; Kathryn A. Martinez[1]; Mary Beth Mercer[2]; Katie Neuendorf[2]; Adrienne Boissy[2]; Julie Rish[2]; Michael B. Rothberg[1]. [1]Cleveland Clinic, Cleveland, OH; [2]The Cleveland Clinic, Cleveland, OH. (Control ID #2706176)

BACKGROUND: Physician burnout is associated with depression and suicide, and is a major challenge facing the physician workforce. Burnout also negatively impacts patient care. Our objective was to assess correlates of physician burnout in a large health system.

METHODS: We analyzed data from a communication skills course conducted at the Cleveland Clinic Health System between August 2013 and May 2014. Course participants included all physicians in all specialties except pathology. At the start of the course, physicians completed the Maslach Burnout Inventory- Human Services Survey (MBI-HSS), a validated measure of

work-related feelings and attitudes. Scores were dichotomized into burnout versus no burnout based on established methods. Participants also completed the Jefferson Scale of Empathy (JSE). Information on physician characteristics and employment factors was provided by the Office of Professional Staff Affairs. This included race/ethnicity, age, marital status, number of dependents under 18 years, FTE status, clinical FTE percentage, inpatient vs. outpatient practice, number of used vacation and meeting days (past year) and years in practice. We used multivariable logistic regression to assess the adjusted association between these factors and burnout. We also assessed the adjusted association between physician burnout and those who subsequently left the organization; and contemporary productivity based on RVU percentile; and patient satisfaction, as measured by the Consumer Assessment of Healthcare Providers and Systems (CAHPS).

RESULTS: The sample included 1,145 physicians; 32% were female, 21% were non-white, and the most common specialty was Internal Medicine (38%) followed by Surgery (13%). Thirty-five percent met criteria for burnout on the MBI-HSS. In the adjusted model of predictors of burnout, a greater percentage of clinical FTE (OR 2.99; 95%CI 1.63–5.48) was associated with higher odds of burnout, as was being Caucasian (OR 2.14; 95%CI 1.38–3.31) and identifying 2 or more race/ethnicities (OR 4.72; 95%CI 1.37–16.29) compared to being African American. Greater empathy was associated with lower odds of burnout (OR 0.986; 95%CI 0.975–0.997), as was older age (OR 0.982; 95%CI 0.967–0.997). Inpatient practice was associated with lower burnout, but the association did not reach statistical significance (OR 0.63; 95% CI 0.33–1.19). No other factors were significantly associated with burnout in this model. In adjusted analyses, burnout was associated with higher odds of leaving the organization (OR 2.24; 95%CI 1.20–4.19), but not with productivity or inpatient or outpatient satisfaction.

CONCLUSIONS: Burnout was less common in our physician population than reported by others and strongly related to clinical FTE and Caucasian race. Burnout was associated with leaving the organization but not with patient satisfaction or productivity. Greater levels of empathy and age were associated with lower odds of burnout.

PREVALENCE OF AVASCULAR NECROSIS, SUBSTANCE AND ALCOHOL ABUSE AND DEPRESSION DIAGNOSES IN SICKLE CELL CRISIS PATIENTS Keri Holmes-Maybank[1]; William P. Moran[1]; Kit N. Simpson[2]. [1]Medical University of South Carolina, Charleston, SC; [2]Medical Universityof South Carolina, Charleston, SC. (Control ID #2705733)

BACKGROUND: Sickle cell disease (SCD) affects 70,000 - 100,000 African Americans in the United States. Patients with SCD suffer from chronic pain and acute pain crises. Survival into adulthood has increased therefore, SCD patients are experiencing more complications including avascular necrosis (AVN). AVN is bone death from severe and prolonged ischemia. A study found significantly higher rates of pain crises/year in SCD patients with AVN. Our research revealed AVN in SCD doubles the number of hospitalizations, hospital days, and hospital cost per year. Pain is the number one reason for presentation to healthcare in SCD. Depression is the most common reaction to chronic pain in SCD. Rates of depression in SCD vary from 25.6 to 56.5%, greater than the national rate of 7.5% in African Americans. The 2013 National Survey on Drug Use and Health found higher rates of substance abuse (21%) and alcohol use (16.9%) in individuals with depression compared to those without (7.6 and 6.3% respectively). Few studies describe co-occurrence rates of AVN, depression, and substance abuse in SCD.

METHODS: We examined the 2011 Agency for Healthcare Research and Quality's Healthcare Cost and Utilization Project (HCUP) State-specific Inpatient Databases for New York, California, Mississippi, and Iowa. The HCUP contains administrative data with encounter-level information including all listed diagnoses and patient demographics regardless of payer. We describe the comorbidity rates of substance abuse (SA), alcohol abuse (AA), and depression in patients age 18 and over admitted with sickle cell crisis with and without AVN.

RESULTS: We found 4357 patients with at least one hospitalization for sickle cell crisis. The mean age was 33 years and 55% were female. Of these patients, 14.8% had an AVN diagnosis, 6.4% had a diagnosis of SA, 4.5% had depression, and 1.7% had a diagnosis of AA. Presence of an AVN diagnosis was associated with a higher rate of depression (6.8% vs. 4.1% $p = .0020$) and SA (8.5% vs. 6.5% $p = .0640$), but not with AA (2.3% vs. 1.6% $p = .1796$). However, the prevalence of SA and AA was much higher among all patients admitted with a comorbid diagnosis of depression with an SA rate 12.8% vs. 6.6% ($p = .0008$) and AA of 7.1% in depressed patients compared to 1.4% in those without a depression diagnosis ($p < .0001$).

CONCLUSIONS: AVN was present in approximately 15% of the sample population. AVN in sickle cell crisis patients had a significant impact on observed depression diagnoses. SCD patients with AVN experienced an increased rate of SA but not of AA. However, both AVN and depression diagnoses were predictors of increased risk for SA and AA. Thus, individuals experiencing sickle cell crisis should undergo screening for depression, SA, and AA. Further study should characterize the interactive effects between AVN and depression and between depression and substance use in SCD.

PREVALENCE OF BURNOUT AND PSYCHOLOGICAL DISTRESS IN AN INTERNAL MEDICINE RESIDENCY PROGRAM Julia Loewenthal[2]; Jacob Mirsky[2]; Douglas Mata[2]; Barbara Gottlieb[1]; Darshan Mehta[3]. [1]Brigham and Women's Hospital, Jamaica Plain, MA; [2]Brigham and Women's Hospital, Boston, MA; [3]Massachusetts General Hospital, Boston, MA. (Control ID #2706272)

BACKGROUND: The prevalence of depressive symptoms in resident physicians is elevated compared to that in similarly aged individuals in the general population. Depression is intertwined with burnout, a work-related syndrome involving emotional exhaustion, depersonalization, and a sense of reduced personal accomplishment. Notably, 51.5% of internal medicine trainees met criteria for burnout in a national study. We measured the prevalence of symptoms of depression, anxiety, and burnout in the Brigham and Women's internal medicine residency program to develop programs to address this important problem.

METHODS: We performed a cross-sectional study with an e-mail survey, which included the PHQ-4, a validated 4-item screen for anxiety and depression, and the 2-item Maslach Burnout Inventory (MBI), a validated instrument for measuring burnout in physicians. Burnout was scored on a scale of 1, indicating a frequency of "never," to 7, indicating a frequency of "every day," with a total maximum score of 14. The PHQ-4 total score is determined by adding together the scores for each of the four items and using reported cutoffs of 3 for mild, 6 for moderate, and 12 for severe psychological distress.

RESULTS: Overall, 67 of 135 individuals (49.6%) screened positive for symptoms of anxiety, depression, or burnout with a survey response rate of over 80%. The prevalence of burnout was 40.8%, with an average score of 7.5 (SD 3.0), and 37.7% of residents scored greater than 6 on the PHQ-4, indicating at least a

moderate degree of psychological distress. Seven residents (5.2%) screened positive for burnout, depression, and anxiety concurrently. Although interns had an average MBI score of 7.7 (SD 3.2), this was not significantly greater than upper level residents, who scored 7.2 on average ($p = 0.31$). However, interns did have a significantly higher degree of psychological distress as compared to upper level residents (7.1 vs 6.1, $p = 0.02$). Males reported a higher degree of both burnout and psychological distress (8.2 vs 6.8, $p = 0.007$; 7.2 vs 6.0, $p = 0.006$). Residents who were rotating on an inpatient rotation at the time of the survey were more likely to screen positive for burnout (8.2 vs 6.8, $p = 0.008$) and have a higher degree of psychological distress (7.2 vs 6.0, $p = 0.007$) as compared to residents on non-inpatient rotations.

CONCLUSIONS: Our study demonstrates that residents in this program have a lower prevalence of burnout as compared to national averages. To our knowledge, it is the only study to report concurrent rates of burnout and symptoms of depression and anxiety. Interestingly, males had higher rates of burnout and psychological distress than females, which is contrary to national trends. On average, residents on inpatient rotations had higher levels of burnout and psychological distress than residents on non-inpatient rotations, which is similar to trends in other studies. We plan to use these data to inform program design for residents at our institution.

PREVALENCE OF CELIAC DISEASE IN FIBROMYALGIA PATIENTS: THE MAYO CLINIC EXPERIENCE Timothy McKenna; Ayra Mohabbat; Bradley Salonen; David Raslau; Connie Luedtke. Mayo Clinic, Rochester, MN. (Control ID #2683256)

BACKGROUND: Fibromyalgia is a centralized pain sensitivity syndrome characterized by chronic musculoskeletal pain, fatigue, and sleep disturbance. Studies have demonstrated that gastrointestinal (GI) symptoms are common in this population. Celiac disease is an autoimmune disease characterized by small bowel inflammation due to antibody formation in response to gluten. It is known that the prevalence of celiac disease in the general population is around 1%. It has been found that individuals with celiac disease frequently present with symptoms similar to fibromyalgia, suggesting a link between the two. To determine the extent for which concomitant screening should be undertaken, we sought to better delineate the concomitant prevalence rate of celiac disease in our fibromyalgia cohort.

METHODS: This study was a retrospective chart review comprised of all patients evaluated at our tertiary referral Fibromyalgia clinic from 11/22/2014 until 12/31/2015. Patient records were assessed for a validated diagnosis of fibromyalgia (as defined by the 1990 and/or 2010 American College of Rheumatology Fibromyalgia Classification Criteria). Patients who met the criteria were then assessed for celiac disease. Patients were considered positive for celiac disease if findings on small bowel biopsy were consistent with celiac disease, if our institution's celiac disease serology cascade was positive, or if the diagnosis was previously given at an outside institution along with corresponding clinical features. The prevalence of celiac disease was computed using a ratio of the total number of fibromyalgia patients with celiac disease as the numerator and the number of total fibromyalgia patients with available information about celiac disease as the denominator. A two sided chi square test was used to determine statistical significance.

RESULTS: In total 1,133 charts were reviewed. Of these, 955 met the diagnostic criteria for fibromyalgia and 542 had information regarding celiac disease. Sixteen patients were found to have celiac disease. The prevalence of celiac disease in our fibromyalgia cohort was 3%; 3-times higher than previously reported within the general population (*P*-value <0.0001).

CONCLUSIONS: We found a threefold increase in the comorbid prevalence rate of celiac disease in our fibromyalgia cohort compared to the general population. To our knowledge, this is the first study to show an increased prevalence of celiac disease in individuals with concomitant fibromyalgia. Celiac disease serologic tests are readily available and provide high sensitivity and specificity. With the demonstrated increased prevalence of celiac disease in patients with fibromyalgia and their respective though vastly different treatment strategies, screening for celiac disease in the fibromyalgia population is not only feasible, but more so, necessary.

PREVALENCE OF SPIN IN RANDOMIZED CONTROLLED TRIALS
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BACKGROUND: Randomized controlled trials (RCT) are the gold standard for evaluating drug safety and efficacy of results. Thus, accurate representation of trial results in the published literature has important implications for practice and the health and safety of patients. Spin, defined as reporting that distorts results or misleads the reader, threatens appropriate evidence interpretation and application by clinicians. We examined the prevalence of spin in abstracts.

METHODS: We examined the prevalence of spin in abstracts from a sample of RCTs of drug efficacy. We randomly selected 496 papers of which 190 were drug efficacy trials and met inclusion criteria. Two reviewers independently abstracted the following trial characteristics from each paper: source of trial funding, financial ties of principal investigators (PI) related to the study drug, specialty focus of trial, sample size, trial design (superiority analysis, comparator, phase, blinding), author country of origin, and trial primary efficacy outcome as reported in the Results section (positive or negative). Two clinician reviewers blinded to trial outcomes reviewed the abstracts of all 190 papers and determined whether the abstract suggested positive, negative, or mixed results. We defined the presence of spin as a mixed or positive abstract rating by clinician reviewers for a paper that had a negative primary efficacy outcome. We also examined the prevalence of spin by RCT characteristics.

RESULTS: Among the 190 papers meeting inclusion criteria, 59 RCTs had a negative outcome. Thirty-six (61.0%) were funded by industry and 29 (49.1%) had at least one PI with a financial tie with the manufacturer of the drug of interest. The majority of these trials had less than 400 patients enrolled (43, 72.9%). Most first authors were from North America (27, 45.8%) and Europe (22, 37.3%). Most were double-blinded (46, 78.0%), placebo-controlled (49, 83.1%), superiority analysis (58, 98.3%), and examined clinical outcomes (45, 76.3%). Phase III (26, 44.1%) and Phase II (21, 35.6%) trials were most common. Cardiology (9, 15.3%) and Oncology (9, 11.9%) were the specialties most represented in this sample. Among abstracts from the 59 negative papers, 25 (42.4%) had evidence of spin. Of the 25 abstracts where spin was present, 8 (32.0%) were categorized as positive and 17 (68.0%) were categorized as mixed by the clinician reviewers. Of the papers with spin, 15 (60.0%) were industry funded and 10 (40.0%) had no industry funding. There was no

association between spin and industry funding (p-value = 0.89) or between spin and PI financial ties (p-value = 0.08).

CONCLUSIONS: The prevalence of spin among RCTs is high. Spin is not associated with industry funding or PI financial ties. Given that many clinicians may obtain information from the abstract of a published trial, more scrutiny of abstracts prior to study acceptance is needed.

PREVALENCE, SEVERITY, AND FACTORS ASSOCIATED WITH MULTI-DIMENSIONAL SYMPTOMS IN OLDER HOMELESS ADULTS: RESULTS FROM THE HOPE HOME STUDY Maria Y. Patanwala[1]; Lina Tieu[2, 1]; Claudia Ponath[2]; David Guzman[2, 1]; Christine Ritchie[1]; Margot Kushel[2, 1]. [1]University of California, San Francisco (UCSF), San Francisco, CA; [2]Zuckerberg San Francisco General Hospital (ZSFGH), San Francisco, CA. (Control ID #2692932)

BACKGROUND: The homeless population is aging. As people age, their symptom burden often increases. Higher symptom burden is associated with functional impairment, healthcare utilization, and mortality. We describe the prevalence of symptoms in older homeless adults, analyze factors associated with higher somatic symptom burden, and identify symptom clusters.

METHODS: HOPE HOME is a 3-year prospective cohort study of 350 homeless adults aged 50 and older, recruited using population-based sampling. Trained interviewers asked about demographic information, physical and mental health, and health-related behaviors. At the 18-month or, if missed, next-attended follow-up interview, we administered the Patient Health Questionnaire 15 (PHQ-15) to measure somatic symptoms and the Center for Epidemiologic Studies Depression Screening (CES-D), Primary Care Post-Traumatic Stress Disorder Screen (PC-PTSD), and the Addiction Severity Index (ASI) to measure psychological symptoms. We determined loneliness or social symptoms using the 3-item Loneliness Scale and regret or existential symptoms using a 6-item regret scale. We examined symptom prevalence and severity, determined factors associated with moderate-high somatic symptom burden (PHQ-15 ≥ 10) using multivariate logistic analysis, and identified symptom clusters using cluster analyses.

RESULTS: 283 participants completed symptom interviews; 24.4% were female, 82.3% were African American, 41.3% were homeless at time of follow-up interview, and 49.5% had 2 or more chronic conditions (multi-morbidity). Over a third (34.0%) of participants had moderate-high symptom burden. The most prevalent somatic symptoms were joint pain (65.4%), fatigue (65.2%), back pain (59.0%), and sleep trouble (46.5%). Over half (57.6%) of participants had psychological symptoms; 47.0% reported depression and 36.0% reported anxiety. Over a third (38.2%) of participants were lonely and a quarter (24.7%) had high regret scores. In a multivariate model, anxiety (AOR 5.86, 95% CI 3.02–11.39), cannabis use (AOR 2.94, 95% CI 1.51–5.75), multi-morbidity (AOR 2.86, 95% CI 1.52–5.38), female sex (AOR 2.32, 95% CI 1.13–4.75), childhood abuse (AOR 2.09, 95% CI 1.09–4.00), recent abuse (AOR 1.98, 95% CI 1.05–3.72), and inadequate health literacy (AOR 1.38, 95% CI 1.08–1.77) were associated with moderate-high somatic symptom burden. We identified 4 symptom clusters: minimal overall symptoms, moderate overall symptoms, high somatic and high psychological symptoms, and high somatic and low psychological symptoms. There was no cluster with psychological symptoms only.

CONCLUSIONS: Older homeless adults have a higher prevalence of symptomatology than general population adults aged 20 years older. High somatic symptom burden is associated with physical, mental, and behavioral health factors. Understanding symptom burden may help in designing appropriate, multi-disciplinary health interventions for older homeless populations.

PREVENTABILITY OF ADMISSIONS TO SAFETY-NET HOSPITALS IN THE ERA OF HEALTH REFORM: THE MASSACHUSETTS EXPERIENCE. Danny McCormick[3]; Lisa Quintiliani[1]; Nancy R. Kressin[2]. [1]Boston University, Bostin, MA; [2]Dept of Veterans Affairs and Boston University, West Roxbury, MA; [3]Harvard Medical School/Cambridge Health Alliance, Cambridge, MA. (Control ID #2706929)

BACKGROUND: A lack of health insurance compromising access to outpatient care has been identified as a key reason for preventable hospitalizations. Long after Massachusetts' health insurance reform (expansion), we assessed the preventability of hospitalizations and patient perspectives on factors leading to hospitalization at Massachusetts' 2 largest safety net hospital systems.

METHODS: We identified a random sample of 803 patients, age 18–64, admitted to general medical wards in 2013–2014. We conducted a face to face standardized survey to measure patient demographics and socioeconomic disadvantage as well as an open-ended interview about the events and circumstances leading to the hospitalization. Board certified hospitalist physicians determined the preventability of (and factors that could have prevented) hospitalization by reviewing the interview transcript and admission/discharge notes using a pre-specified coding rubric. We assessed whether socio-demographic and social disadvantage were independently associated with preventability using multivariable logistic regression models. Then, using a sequential mixed methods approach, we conducted a qualitative analysis of the transcripts from patients deemed to have a highly preventable admission and for whom a patient-level factor (defined as non-adherence or delays in seeking care) was implicated ($n = 48$). Two coders systematically coded emerging themes and applied the coding scheme to all transcripts.

RESULTS: Most patients were insured (98%), male (55%), not currently married/partnered (75%), unemployed (68%), non-white (54%), and 41% had incomes < $10,000/year. Alcohol or substance abuse was determined to be a primary or contributing cause of 27.8% of all admissions. 12.1% of admissions were determined to be highly preventable, 35.7% somewhat preventable and 52.2% not preventable. Among hospitalizations deemed preventable, patient factors were most commonly responsible (59.1%), followed by health care system (27.1%), financial (7.7%) and clinician (6.1%) factors. Factors independently associated with having a highly preventable hospitalization included income (<$10 k/yr. vs > $50 K/yr.) (odds ratio [OR], 95% CI; 3.1 [1.1–9.1]), being worried about the safety and condition of housing (OR, 95% CI; 2.5 [1.3–4.9]) or meeting basic needs (OR, 95% CI; 2.1 [1.1–3.9]. Qualitative analyses revealed that contextual issues often underlie patient non-adherence and delays in seeking care, including: life chaos (addiction, e.g.), unstable housing, transportation issues, and mental health.

CONCLUSIONS: Preventable hospitalizations remain common in safety net hospitals after reform. Although most were due to patient non-adherence or delays in seeking care, patients' self-care behaviors were often constrained by social circumstances. Safety net hospitals providing care under "shared-risk" insurance arrangements may be financially vulnerable if social complexity of patients is not considered in reimbursement schemes.

PRIMARY CARE AND THE QUALITY OF OUTPATIENT CARE AMONG ADULTS IN THE UNITED STATES, 2002–2014 David M. Levine[2]; Bruce E. Landon[3]; Jeffrey A. Linder[1]. [1]Brigham and Women's Hospital, Boston, MA; [2]Brigham and Women's Hospital and Harvard Medical School, Boston, MA; [3]Harvard Medical School, Boston, MA. (Control ID #2706874)

BACKGROUND: Primary care is foundational to health systems and individual health, but it is unknown the degree to which having primary care is associated with receiving high-value care, avoiding low-value care, and improving patient experience.

METHODS: We analyzed 2002 to 2014 data from the Medical Expenditure Panel Survey, a nationally representative annual survey of Americans and their respective clinicians, hospitals, pharmacies, and employers. Participants were non-institutionalized US adults 18 years or older (annual sample: 20,679-26,509; annual response rate: 49%-65%). We examined previously published composites based on 46 individual quality measures: 5 "high-value" care composites; 4 "low-value" care composites; an overall patient experience rating; a physician communication composite; and an access-to-care composite. We compared participants with (annual range, 15,042-19,504) and without (annual range, 5,637-8,370) primary care. Participants self-reported having primary care by naming a specific clinician's name who was not based in an emergency department to which "you usually go if you are sick or need advice about your health." In a preliminary sensitivity analysis not shown, we did not observe important differences when adjusting for PCP specialty, utilization, and sociodemographics.

RESULTS: In each year (2014 values as example), Americans with primary care were older (50 years vs 39 years), more likely to be white (69% vs 52%), female (55% vs 43%), and privately insured (72% vs 57%; all $p < 0.05$). Over the study period, Americans with primary care received consistently more high-value care. In 2014, compared to those without primary care, Americans with primary care had higher rates of recommended cancer screening (78% vs 64%); diagnostic and preventive testing (82% vs 64%); diabetes care (58% vs 42%); counseling (53% vs 32%); and medical treatments (43% vs 31%; all $p < 0.05$). Over the study period, Americans with and without primary care had similar rates of low-value imaging (in 2014, 10% vs 15%) and low-value antibiotic use (in 2014, 59% vs 47%; both $p > 0.05$). In contrast, Americans with primary care had more low-value cancer screening, although this gap narrowed over time (in 2002, 54% vs 32% [$p < 0.05$]; in 2014, 47% vs 37% [$p > 0.05$]). Americans with primary care had more low-value medical treatments over the entire study period (in 2014, 11% vs 7%; $p < 0.05$). Over the study period, Americans with primary care rated their care experience highly more than those without primary care. In 2014, those with primary care reported better overall care (82% vs 70%), physician communication (66% vs 59%), and access to care (61% vs 51%; all $p < 0.05$).

CONCLUSIONS: From 2002–2014 Americans with primary care received more high-value care and better patient experience, the same low-value imaging and low-value antibiotic use, but more low-value medical treatments and low-value cancer screening, although the gap in low-value cancer screening narrowed over time.

PRIMARY CARE CLINIC AND WALK-IN CLINICS: UNDERSTANDING THE DIFFERENCE IN VISIT CHARACTERISTICS Parth Parikh; Aditi Patel; Xiaobo Liu; Michael B. Rothberg. Cleveland Clinic, Cleveland, OH. (Control ID #2706407)

BACKGROUND: Urgent care/walk in clinics offer patients convenience and may decrease ED visits, at a lower cost than primary care offices. Many primary care offices also offer same day/walk-in appointments. Providing urgent care services in the primary care setting could improve continuity and address additional problems, thereby justifying higher costs. Previous comparisons of these settings have focused on treatment of specific acute problems, but have not assessed the visit as a whole. Our objective was to compare the patient and visit characteristics of urgent visits in both settings.

METHODS: We performed a retrospective analysis of adult patients with same day office visits to either a primary care center or an urgent/walk in clinic. Of the 19,864 patients screened, we randomly chose 600 primary care visits and 600 urgent care visits for manual chart review. Patient demographics (age, sex, race, insurance type) were extracted electronically. Two team members extracted the following visit-related variables addressing complexity: visit complexity (simple problems that may be addressed by following algorithms or complex problems requiring diagnostic acumen), duration of complaint (acute vs. chronic), number of additional problems addressed, number of prescription and non-prescription medications prior to the visit and groups requiring extra attention (i.e. patients on insulin, opiates, warfarin and oral hypoglycemics). Two sample t-test or the Wilcoxon rank sum test was used to evaluate the relationship between continuous measures and setting (described as Median, IQR). Pearson's chi-square or Fisher's exact test was used for categorical measures.

RESULTS: After excluding 9 repeat visits within the study period, our sample contained 1191 unique visits. Patients coming to urgent care were more likely to be under 45 years of age (46.9% vs 39.3% $p = 0.017$), and have non-commercial insurance (63.9% vs 65.4% $p < 0.001$). Compared to urgent care, primary care visits were less likely to be classified as simple (53.7% vs, 73.3%, $p < 0.001$) to be focused on an acute problem (74.2% vs. 98.0%, $p < 0.001$) and have a medication prescribed (Median of 1, IQR 0–1 vs 1, IQR 0–2 $p < 0.001$), but addressed more problems (Median 0 additional problems, IQR 0–1 vs 0, IQR 0–0 $p < 0.001$). Compared to patients seeking urgent care, those coming to primary care took more medications (Median of 6, IQR 3–9 vs 4, IQR 1–7 P value <0.001) and were more likely to be on opiate medications (14.3% vs 10.3% $p = 0.035$).

CONCLUSIONS: The patients seen for urgent appointments at primary care centers appear to be more complex and to have more complex problems addressed, suggesting the need for a higher level of skill. Future studies may address the impact of care setting on patient outcomes.

PRIMARY CARE PHYSICIAN PERSPECTIVE ON CURRENT ADULT PNEUMOCOCCAL VACCINE RECOMMENDATIONS Laura P. Hurley[3, 8]; Mandy Allison[6]; Tamara Pilishvili[1]; Sean T. O'Leary[4]; Lori A. Crane[4]; Michaela Brtnikova[2]; Brenda Beaty[7]; Megan C. Lindley[1]; Allison Kempe[5]. [1]Centers for Disease Control and Prevention, Atlanta, GA; [2]Children's Outcomes Research Program, Aurora, CO; [3]Denver Health, Denver, CO; [4]University of Colorado Anschutz Medical Campus, Aurora, CO; [5]University of Colorado and Children's Hospital Colorado, Aurora, CO; [6]University of Colorado, Anschutz Medical Campus, Aurora, CO; [7]Unviersity of Colorado, Aurora, CO; [8]University of Colorado, Aurora, CO. (Control ID #2699792)

BACKGROUND: In 2012, the Advisory Committee on Immunization Practices recommended 13-valent pneumococcal conjugate vaccine (PCV13) in a series with 23-valent pneumococcal polysaccharide vaccine (PPSV23) for certain adults ≥19 years-old at increased risk for pneumococcal disease, and, in 2014, expanded this recommendation to all adults ≥65 years old. Our objective

was to assess primary care physicians' practices, knowledge, attitudes and beliefs regarding current adult pneumococcal vaccine recommendations.

METHODS: We administered an Internet and mail survey from 12/2015 to 1/2016 to a national network of general internists (GIM) and family physicians (FP). Multivariable analysis was conducted with the dependent variable being respondents who answered six to eight out of eight (the top quartile of respondents) knowledge questions pertaining to current ACIP adult pneumococcal vaccine recommendations correctly. Independent variables included physician characteristics and practice characteristics and whether the practice had a computer-based way to identify patients under 65 who need either PCV13 and/or PPSV23.

RESULTS: The overall response rate was 66% (617/935). Over 95% of respondents routinely assessed their adult patients' vaccination status and recommended both vaccines. Eighty-eight percent stocked PCV13 and 92% stocked PPSV23. A majority of physicians found the current ACIP recommendations to be clear (50% 'very clear', 38% 'somewhat clear') and easy to implement (48% 'very easy', 34% 'somewhat easy'). Approximately 1/5 of physicians found the upfront cost of purchasing PCV13, patient's insurance not covering the vaccines, inadequate reimbursement and difficulty determining pneumococcal vaccination history to be 'major barriers' to giving PCV13 and PPSV23 in series. Knowledge of recommendations was quite variable with 83% correctly identifying the PCV13 recommendation for seniors and only 21% correctly identifying the recommended interval between PCV13 and PPSV23 vaccination in an individual under 65 at increased risk. Characteristics associated with greater knowledge of the recommendations included GIM vs. FP specialty (adjusted RR = 1.45; 95% CI 1.09–1.88), younger vs. older provider age (adjusted RR = 1.41; 95% CI 1.04–1.88), and perceiving the recommendations to be 'very clear' vs, other perceptions (adjusted RR = 1.50; 95% CI = 1.15–1.96).

CONCLUSIONS: While it is encouraging that almost all primary care physicians reported recommending and stocking both pneumococcal vaccines for their patients, a disconnect exists between perceived clarity of the recommendations and knowledge of the recommendations. Optimal implementation of adult pneumococcal vaccine recommendations will require addressing reported barriers and knowledge gaps, particularly for FP and older physicians.

PRIMARY CARE PHYSICIANS' ATTITUDES ON THE IMPACT OF MEDICAL SCRIBES ON PATIENT-DOCTOR RELATIONSHIP, PHYSICIAN SATISFACTION AND PATIENT EXPERIENCE

Lauren D. Feld[2]; Neda Laiteerapong[1]; Anna Volerman[1]; Felipe Fernandez del Castillo[2]; Wei Wei Lee[1]. [1]University of Chicago, Chicago, IL; [2]University of Chicago Medicine, Chicago, IL. (Control ID #2703248)

BACKGROUND: A novel approach to address issues of electronic health record (EHR) utilization interfering with the doctor-patient relationship and contributing to physician burnout is to utilize medical scribes to complete EHR documentation. This study assesses attitudes of primary care physicians (PCPs) towards using scribes.

METHODS: We developed a 35-item survey with Likert-scale and multiple-choice questions to explore faculty perceptions of medical scribes in the faculty primary care clinic at the University of Chicago. The survey included questions related to burnout, time spent on EHR documentation outside of clinic hours, and the impact of scribes on workflow, satisfaction, and patient interactions. Those interested in working with scribes answered additional questions on duties they wanted scribes to perform. Analysis PCP's perspectives was performed on how scribes may affect workflow, satisfaction, and patient interactions. Likert responses at the high end of the scale were grouped to dichotomize data (i.e. agree/strongly agree); data was summarized using descriptive statistics.

RESULTS: Thirty-five (35/39, 90%) GIM faculty responded to the survey. 66% of respondents were female and 54% completed training over 15 years ago. One-quarter reported active symptoms of burnout. The majority (79%) of respondents reported insufficient time for EHR documentation and 36% reported that clinic was chaotic. Only 33% of physicians were satisfied with the EHR. Physicians were divided in their attitudes about scribes. About half of respondents (58%) were interested in piloting scribes in clinic and agreed that scribes would decrease their stress at work (57%) and at home (49%), allow them to be better focused (48%), increase work satisfaction (49%), and make the clinic less hectic (48%). Many respondents thought that scribes would add value to their interactions (46%) and allow them to be better connect with patients (49%). Some physicians reported concern about documentation accuracy (44%) and patient privacy (38%). Only 32% of physicians who were interested in scribes were willing to see an additional patient per clinic session to work with a scribe. Among physicians interested in working with scribes, the top five activities faculty wanted scribes to perform were allergy review (91%), reconcile medications (86%), remind them about medications refills (86%), review best practice alerts (77%), and navigate the patient through clinic (82%). Providers in practice for ≤15 years had a 5.5 greater odds (95% CI 1.1-28.4) of being interested in working with a scribe.

CONCLUSIONS: Faculty had mixed perceptions of scribe use. About half of respondents were interested in working with scribes and reported potential for scribes to decrease stress at work and improve workplace satisfaction, which can potentially decrease physician burnout. A pilot program targeting interested primary care faculty should be explored to better understand the impact of scribes on primary care physician satisfaction and burnout.

PRIMARY CARE PROVIDERS PREFER THE PEG TO COMPETITOR PAIN SCREENING MEASURES

Karleen Giannitrapani[3]; Roger T. Day[2]; Matthew McCaa[2]; Sangeeta Ahluwalia[4]; Steven Dobscha[1]; Karl Lorenz[2]. [1]Portland VAMC, Portland, OR; [2]VA Palo Alto Healthcare System, Menlo Park, CA; [3]Veterans Health Administration, Menlo Park, CA; [4]Rand, Santa Monica, CA. (Control ID #2707125)

BACKGROUND: In VA primary care, there are various measures used for screening patients for chronic pain including: 1) the numeric rating scale (NRS), a 0–10 one item assessment of pain intensity 2) the PEG a three item assessment of pain intensity, pain interference with function, and pain interference with enjoyment in life, and 3) the Defense and Veterans pain rating scale (DVPRS) a 5 item assessment including pain intensity and pain interference with sleep, mood, stress, and general activity. Our study aims to understand providers' perceptions of the PEG, now recommended by the Surgeon General, when compared to the other pain screening tools.

METHODS: We conducted nine multidisciplinary focus groups (60 providers) using a semi-structured interview guide. Using content analysis methods, we coded transcripts and compared codes across transcripts to understand provider perceptions of pain screening methods. We conducted an additional 15 phone interviews with VA providers using a semi-structured guide and asked the providers to compare screening measures.

RESULTS: Overwhelmingly, providers indicated that capturing pain intensity alone, as in the NRS, is not enough. Arguments for PEG over NRS centered around PEG including additional pertinent information: "I'd rather the patient tell me how it's [pain's] interfering with their general activity and enjoyment than me trying to figure out." Arguments for NRS over PEG included 1) parsimony/use of provider time: "*another piece of my reaction*, *though*, *is who's going to do this* [*PEG*] *and when*" and 2) interference has less meaning specific patients populations i.e. those who have already modified their activities to accommodate their pain: "'Well, I can do everything that I do because I've already modified my life.' So what's the answer [to the how does pain interfere question]? I mean, compared to if they had no pain? If they had no pain they could do a ton more things."Arguments for PEG (3-item) over DVPRS (5-item) typically centered around parsimony. "*shorter is better*, *so PEG is shorter- I like it better*." Arguments for DVPRS over PEG include the comparative abstractness of the specific items: "*They* [*patients*] *can answer question one* [*of the PEG*} *but they really stumble over two and three*." The DVPRS domains include comparatively similar constructs: "*I suspect how does pain interfere with sleep is easier for patients to understand than how does pain interfere with enjoyment in life*."
CONCLUSIONS: Most providers endorse use of the PEG for pain screening for its added information over NRS and shorter length than DVPRS. Limitations of the PEG as a screening tool do include the time it takes to complete and the abstractness of the concepts included in items (ie enjoyment in life instead of stress or mood). When using the PEG it should be understood that asking about interference with function is nuanced and may not be appropriately captured via a screening tool for all chronic pain patients.

PROMOTING WALKING AMONG AFRICAN AMERICANS WITH PERIPHERAL ARTERY DISEASE Tracie C. Collins[1]; Kelsey Lu[2]; Jianghua He[3]. [1]KU School of Medicine - Wichita, Wichita, MN; [2]University of Kansas School of Medicine, Wichita, KS; [3]University of Kansas Medical Center, Kansas City, KS. (Control ID #2706401)

BACKGROUND: African Americans are two times more likely than non-Hispanic whites to have peripheral artery disease (PAD). Walking therapy improves walking distance in patients with PAD but patients require motivation to adhere to therapy. We sought to determine the efficacy of motivational interviewing (MI) versus a scripted counseling approach (Patient-centered Assessment and Counseling for Exercise [PACE]) versus control to improve walking distance among African Americans with PAD.
METHODS: We completed a 5-year NIH funded clinical trial, one-year trial. Trial eligibility included self-identifying as African American and screening positive for PAD as defined by an ankle-brachial index (ABI) < 0.99 Participants were excluded if they had undergone lower extremity amputation, leg revascularization (open or endovascular) within the preceding 3 months, or had contraindications to walking for exercise. Participants completed a baseline visit and two follow-up visits at 6- and 12 months. All participants received a handout about PAD. The two counseling interventions were delivered bi-weekly for 3 months and monthly for 3 months followed by a 6-month maintenance in which there was no intervention. Control participants received a mailing at 3 and 9 months. We assessed baseline characteristics using the Lifestyle and Clinical Survey. Walking distance was assessed based on the 6-min walking test. We used linear regression modeling for the analysis.
RESULTS: Among the 174 African Americans enrolled, 74% were women and the mean age of the cohort was 63.7 years (SD 11.1). The prevalence of major atherosclerotic risk factors was as follows: hypertension 84.5% diabetes mellitus 63.9% (36.1%), and current/past history of smoking 60.9%. There were no differences between the three groups in baseline characteristics. Mean walking distance by group, measured in feet, was as follows: MI 1203.16 (SD 31.12), PACE 1148.80 (SD 31.12), and control 1167.50 (SD 30.33). At 6 months, mean walking distance by group was as follows: MI 1188.91 (SD 32.47), PACE 1157.51 (SD 32.33) and control 1170.05 (SD 31.68). At 12 months, mean walking distance by group was as follows: MI 1175.08 (SD 33.45), PACE 1192.27 (SD 34.62), and control 1168.05 (33.87). For within group changes, there was a statistically significant increase in mean walking distance at 6 months among participants randomized to PACE with a change of 43.47 (SD 20.59), $P = 0.038$. For between group changes, there was a statistically significant decline in walking distance at 12 months among participants randomized to MI versus PACE (−66.13 [SD 27.69]), $P = 0.019$. There was a trend towards a statistically significant improvement in walking distance at 12 months comparing PACE to control at 41.06 (SD 29.57), $P = 0.170$.
CONCLUSIONS: In a cohort of African Americans with PAD, a scripted counseling approach, PACE was efficacious to improve walking distance at 6- and 12 months. Efforts are needed to assess the implementation of this intervention in clinical practice.

PROVIDER ATTITUDES TOWARDS BREAST CANCER SCREENING IN OLDER WOMEN: RESULTS FROM A NATIONAL SURVEY Archana Radhakrishnan[1]; Sarah Nowak[4]; Andrew M. Parker[3]; Kala Visvanathan[2]; Craig E. Pollack[1]. [1]Johns Hopkins University School of Medicine, Baltimore, MD; [2]Johns Hopkins Bloomberg School of Public Health, Baltimore, MD; [3]RAND Corporation, Pittsburgh, PA; [4]RAND Corporation, Santa Monica, CA. (Control ID #2704765)

BACKGROUND: Various organizational guidelines disagree on whether to screen women 75 years and older for breast cancer. The benefit from screening in this age group may be limited compared to the risk for potential harms. However, many older women continue to have routine breast cancer screening. Drawing upon a national survey of providers, we sought to describe provider attitudes towards breast cancer screening in women ages 75+.
METHODS: We performed a mailed survey of PCPs (including internists (IM), family and general practioners (FM/GP) and gynecologists). Providers were asked whether they recommended routine mammography to average-risk women ages 75+. Providers rated their agreement with a series of statements on screening older women using a 5-point Likert scale. We used exploratory factor analysis to identify underlying themes among items and to construct summary scores of provider attitudes. Bivariate and multivariable linear regression analyses were used to evaluate provider attitudes by specialty. We then performed multivariable logistic regression analysis to determine associations between provider attitudes and screening older women.
RESULTS: Our adjusted response rate was 52.3% (871/1665). Overall, 66.7% of providers recommended mammography screening to women ages 75+; gynecologists were the most likely to recommend screening compared to IM and FM/GP (81% vs. 65% vs. 59% respectively). Factor analyses revealed four provider attitudes towards screening older women: dread, concern for adverse effects, structural limitations and uncertainty, and rationing care (Table 1). Compared to internists, FM/GP had lower dread scores (−0.17, $p = 0.02$) whereas gynecologists had higher dread scores (0.37, $p < 0.001$). FM/GP had lower concern for structural limitations and uncertainty compared to IM

(−0.16, $p = 0.04$). In adjusted analysis, providers who had increasing levels of dread were more likely to recommend mammography to older women (Odds Ratio 4.71; 95% Confidence Interval 3.52-6.30) as compared to providers who did not recommend screening. Contrastingly, increasing concern for adverse effects was associated with decreased odds of recommending screening mammography to older women (OR 0.67; 95% CI 0.55-0.80) in adjusted models.

CONCLUSIONS: Providers endorsing high levels of dread towards screening women 75+ years for breast cancer were more likely to recommend mammography. Addressing provider fears of missing cancer diagnoses and malpractice may be an important opportunity in future approaches to reduce over-screening among older women.

Description of provider attitudes based on factor analysis results

Provider attitudes (factor)	Items comprising factor	Mean scores (SD)
Dread	-fear of malpractice -fear of missing lethal cancer -patient expectations for mammograms -lack of guidelines concordance	3.5 (0.9)
Concern for adverse effects	-need for additional, unnecessary testing -overdiagnosis of cancers	2.3 (0.9)
Structural limitations and uncertainty	-lack of time to discuss with patient during visit -previous provider's recommendation for screening and difficulty going against their recommendation -personal uncertainty about whether to screen	3.1 (1.1)
Rationing care	-not ordering mammogram to be cost efficient -not ordering mammogram due to 'giving up' on patient	2.4 (1.2)

PROVIDER COMFORT AND PATIENT ACCESS TO PREP IN INTERNAL MEDICINE PARTH KUMAR1, KARA TANAKA1, LESLIE SHEU, MD2, BRENT KOBASHI, MD2 Parth Kumar[2]; Kara Tanaka[2]; Brent Kobashi[1]; Leslie Sheu[2]. [1]UCSF, San Francisco, CA; [2]University of California, San Francisco, San Francisco, CA. (Control ID #2708812)

BACKGROUND: There are approximately 14,700 people in San Francisco living with HIV, with an estimate of 255 new HIV infections in San Francisco in 2015. Pre-exposure prophylaxis (PrEP), was approved by the FDA in 2012. However, at the University of California, San Francisco (UCSF), there are still no systematic protocols for PrEP management. In addition, there is no standardized protocol for documenting "high-risk" sexual behaviors in the electronic health record (EHR), so there is no easy way to identify patients who might benefit from PrEP. Only 109 of DGIM's 25,000 adult patients currently take PrEP, indicating that a large portion of patients may not be well informed of the drug's health benefits for high-risk populations.

METHODS: We conducted an anonymous online survey inviting all UCSF Division of General Internal Medicine (DGIM) providers (attending physicians, residents, nurse practitioners, and medical students). Participants were asked general questions about their role in clinic, and asked specific Likert-scaled questions about their comfort level and interactions with patients in regards to sexual history and PrEP. In addition, providers were asked an open-ended question about barriers to discussing PrEP.

RESULTS: Fifty-six providers (42%) completed the survey, comprised of 26 (46%) attendings and 26 (36%) residents. Thirty-four (61%) had engaged in a discussion about starting PrEP with a patient. Fifty seven percent of providers were comfortable discussing starting PrEP with patients. However, only 25% "always" or "most of the time" discussed sexual health during office visits. When comparing attendings to residents, 96% of residents learned about PrEP in medical school and/or residency, while only 23% of attending physicians learned about PrEP in medical school and/or residency. However, only 46% of DGIM residents reported being comfortable talking about starting PrEP, while 73% of attending physicians reported being comfortable. Some barriers that were mentioned in open-ended questions include: lack of knowledge, lack of comfort, patient's own hesitancy, and lack of a screening tool that depends on the provider.

CONCLUSIONS: Our findings suggest that there is still significant provider discomfort around discussing PrEP with patients, particularly among residents. This may be due to the relative lack of emphasis providers place on discussing sexual health during patient visits, thus limiting opportunities to discuss PrEP. Some DGIM providers were previously educated about PrEP, however the survey suggests that their education was not adequate in building the confidence or skills to have open discussions about discussing PrEP. Future work should be two-pronged, with 1) a focus on exploring ways to increase patient-provider discussions about sexual health, such as through accessible tools in an EHR, and 2) equipping providers with skills to identify patients who are appropriate candidates for PrEP and to discuss initiating PrEP.

PROVIDER INTEREST IN LIFESTYLE TRACKING WITHIN THE EHR: DATA FROM THE MAINTAIN-PC STUDY Jonathan Arnold[2]; Dana L. Tudorascu[1]; Kathleen M. McTigue[1]; Cindy L. Bryce[4]; Kimberly A. Huber[1]; Laurey R. Simkin-Silverman[1]; Rachel Hess[3]; Gary Fischer[1]; Molly B. Conroy[1]. [1]University of Pittsburgh, Pittsburgh, PA; [2]University of Pittsburgh Medical Center, Pittsburgh, PA; [3]University of Utah, Salt Lake City, UT; [4]University of Pittsburgh Graduate School of Public Health, Pittsburgh, PA. (Control ID #2700926)

BACKGROUND: Primary care providers (PCPs) can play a critical role in supporting patients' ongoing weight maintenance. PCPs may lack time and resources to support patients, many of whom use wearable devices and/or smartphone apps to monitor their progress toward lifestyle goals. There is increasing capability to integrate patient-collected lifestyle data into the electronic health record (EHR), but less understanding of PCP interest in and potential use of these data.

METHODS: Maintaining Activity and Nutrition through Technology-Assisted Innovation in Primary Care (MAINTAIN-pc) is an RCT of an EHR-based intervention for weight loss maintenance. Referring PCPs have access to flowsheets with patient-reported lifestyle data (i.e. weight, nutrition, physical activity) and received periodic reports on patient progress. We solicited feedback from PCPs with participating patients via an anonymous web-based survey asking about their use of and interest in continuing to use the study tools and their interest in other patient lifestyle data sources. Survey links were emailed in December 2016, after all subjects had completed at least 21 study months. Survey respondents were not paid but could choose to enter a prize drawing.

RESULTS: To date we have received 18 responses to 65 surveys sent (28% response rate) across 6 different outpatient medicine practices; data collection continues through January 2017. Respondents are 59% female and 94% white. Most (93%) have completed training over 10 years prior. 50% are full time

clinicians, 44% clinician educators, and 6% clinician researchers. 72% of respondents "agree" or "strongly agree" that they are satisfied with MAINTAIN-pc. Most express interest in continuing to use the EHR-based tools with patients in MAINTAIN-pc after the study has completed (61% "yes," 33% "maybe") and will consider using them with new patients (11% "yes," 67% "maybe"). 76% will refer patients to a similar weight management program again. Most PCPs are interested in the EHR integration of patient-collected lifestyle data from other devices and/or apps (50% "yes," 33% "maybe"), specifically for physical activity (83%), weight (67%), and nutrition (61%). PCPs prefer to view summary reports of these data (56%) rather than reviewing all patient-collected data personally (22%) or by ancillary staff (6%). Few want to receive regularly scheduled reports (11%); most want to review reports on demand, prior to or during patient appointments (78%).

CONCLUSIONS: PCPs are largely satisfied with the MAINTAIN-pc EHR-based weight management intervention and tools. They are interested in integrating patient-collected lifestyle data into the EHR and prefer to review summary reports around the time of patient appointments, which is likely less time consuming than raw data review. This survey provides insight into how PCPs with experience using EHR-based tools for lifestyle management value the experience and their interest in future developments to support their patients' lifestyle efforts.

PROVIDER USE OF THE AFTER VISIT SUMMARY IN ACADEMIC CLINICAL PRACTICES Angela M. Sanchez Munoz[2]; Alex Federman[2]; Mary Gover[1]; Joseph Deluca[1]; Joseph Kannry[2]; Lina Jandorf[2]. [1]Montefiore, Brooklyn, NY; [2]Icahn School of Medicine at Mount Sinai, New York, NY. (Control ID #2706706)

BACKGROUND: The after visit summary (AVS) was designed as an EHR tool to promote patient-centered care. Although physician perspectives on AVS design have been explored, little is known about physician use of the summary and integration in patient care.

METHODS: We surveyed physicians ($n = 136$) in two academic adult primary care practices in New York City, NY (one hospital- and one community-based) serving socioeconomically disadvantaged communities to learn about their use and preferences regarding the after visit summary. Physicians were recruited during faculty/staff meetings and via emails sent by practice leadership. In meetings, Research Assistants provided clinicians with a study information sheet and asked them to complete a short one-time self-administered questionnaire, if interested in participating. They were given the option to complete the anonymous survey on paper or online. Physicians were asked how often they 1) give a copy of the AVS to patients, 2) review the AVS with patients, and 3) add typed/written information to the AVS. Additionally, physicians rated the AVS on clarity of information and overall quality of the document on a 7-point Likert scale (ranging from very poor to exceptional). Responses were dichotomized as good/fair/poor/very poor (low ratings) to very good/excellent/exceptional (high ratings). We also did bivariate associations of a chi-squared test.

RESULTS: We enrolled 103 (76%) physicians from the hospital-based practice and 33 (24%) from the community-based practice; 59% of physicians were male; 25% were attendings and 75% were residents. Most physicians rated the clarity of information on the AVS and the overall quality of the AVS as good/fair/poor (80 and 88%, respectively; $p < 0.0001$), as opposed to very good/excellent/exceptional. 80% of physicians reported that they always/usually print out the document, 79% give patients a copy of the document, 71% reported reviewing the document with the patient and 61% of physicians include additional typed or handwritten information on the AVS. Physicians who rated the quality of the AVS highly were not more or less likely to provide it to patients than were those who rated it poorly ($p = 0.31$) when adjusted for site, gender, and training level in a bivariate analysis.

CONCLUSIONS: Most physicians in two academic primary care practices believed that the AVS they provided to patients was of poor quality, yet the majority of them continue to provide it to patients. These findings indicate that physicians value these documents and improvements in their design are warranted.

PUBLIC SERVICE LOAN FORGIVENESS PARTICIPATION AND FINANCIAL OUTCOMES AMONG US MEDICAL GRADUATES PURSUING A CAREER IN HOSPITAL MEDICINE Justin Grischkan[3, 1]; Benjamin P. George[2]; E. Ray Dorsey[2]. [1]University of Rochester School of Medicine and Dentistry, Rochester, NY; [2]University of Rochester Medical Center, Rochester, NY; [3]Penn Medicine Center for Health Care Innovation, Philadelphia, PA. (Control ID #2707465)

BACKGROUND: The field of hospital medicine has experienced tremendous growth over the past twenty years, increasing from a few hundred hospitalists in the early 1990s to more than 50,000 by 2016. Approximately 75% of hospitals in the United States now have hospitalists caring for patients. Although hospital medicine is now the largest subspecialty field in internal medicine, little is known about the indebtedness and loan forgiveness participation plans among medical school graduates who intend to enter this field of medicine. We sought to analyze future hospitalists planned participation in Public Service Loan Forgiveness (PSLF), a program which offers physicians complete loan forgiveness after 120 qualifying monthly payments while employed at a public or non profit medical institution, including payments made during residency. We also examined the financial implications of utilizing this program, which is particularly important given recent policy proposals to limit the PSLF program.

METHODS: We assessed trends in planned participation in the PSLF program using de-identified individual level data from the Association of American Medical Colleges Graduation Questionnaire. Data regarding medical education debt, plans to enter hospital medicine, and intended loan forgiveness program participation were available for medical school graduates from the classes of 2015 and 2016. Missing data were excluded from our analysis. We estimated the average hospitalist's loan repayment and forgiveness amounts under PSLF using financial modeling based on reported starting salary, residency length and income, and average debt among survey respondents ($205,000). Financial data were adjusted to 2016 dollars.

RESULTS: Among graduates from the classes of 2015 and 2016 responding to the Graduation Questionnaire, 20%($n = 5532$) of US medical gradates were identified as pursing a career in internal medicine and 31%($n = 1711$) of these graduates subsequently identified hospital medicine as their intended specialty. Among future hospitalists providing loan forgiveness plans, 27%($n = 193$) and 33%($n = 215$) of graduates from the classes of 2015 and 2016, respectively, intended to utilize the PSLF program. For a 2016 graduate pursuing hospital medicine as an employee of a non-profit hospital for at least ten years, the

federally funded PSLF program will forgive an estimated $143,000 after making $181,000 in repayment.

CONCLUSIONS: Graduates from US Medical Schools pursuing a career in hospital medicine are becoming increasingly and substantially reliant on the PSLF program for relief of educational debt. Since most academic medical centers are non-profit entities, the generous forgiveness amounts available to PSLF participants may provide a financial incentive to pursue a career in academia. However, recent policy proposals suggest capping the level of forgiveness at $57,500. Given the uncertain future of this program, policymakers should provide guidance due to the strong interest among young physicians.

PURSUING INCIDENTAL PULMONARY NODULES IN A SAFETY-NET COHORT: LOST TO FOLLOW-UP

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BACKGROUND: Completing guideline-recommended follow-up of incidental pulmonary nodules is important for timely and accurate diagnosis. However, appropriate follow-up requires longitudinal care and tracking. Our objectives were to describe pulmonary nodule follow-up and to identify targets for intervention in a safety-net setting.

METHODS: This was a retrospective cohort study of 699 adults (≥35 years) with incidental 5–8 mm pulmonary nodules requiring radiographic follow-up by Fleischner Society guidelines at San Francisco General Hospital between 9/2008 and 12/2014. We included patients with at least one primary care, specialty care, or non-trauma ED visit within 24 months after the index CT scan. We abstracted subsequent nodule evaluation until stability, a final diagnosis or a decision to stop follow-up was documented. We also abstracted documentation of nodule management in primary care visit notes. We categorized overall follow-up as complete if all successive recommended testing was performed and evaluated differences in follow-up by demographics and engagement in care.

RESULTS: Patient mean age was 59, 370 (53%) were current or former smokers, 159 (23%) had a history of homelessness, and 245 (35%) had a history of substance abuse. Over half of patients (394, 56%) saw a primary care physician within 24 months of the index CT, and nodules were documented in clinic notes in 190 (48%) of these patients. Overall, 369 (53%) patients completed follow-up, 111 (16%) had incomplete partial follow-up and 219 (31%) had no follow-up. Amongst patients completing follow-up, 8 (2%) were diagnosed with lung cancer. Only 64-70% of patients needing follow-up completed each successive follow-up step (Figure). Follow-up completion was highest amongst patients with primary care visits and lower amongst those with only specialty care visits or only ED visits (73% vs 35% vs 18%, $p < .0001$) and did not differ by patient demographics.

CONCLUSIONS: Nearly half of patients with higher risk incidental pulmonary nodules did not complete follow-up; nearly one-third had no follow-up at all, despite ongoing visits in the health system. These findings suggest that in a safety-net population, access to primary care alone is not sufficient to meet recommended follow-up guidelines for incidental pulmonary nodules. Specific interventions for tracking/monitoring these patients should be developed and tested.

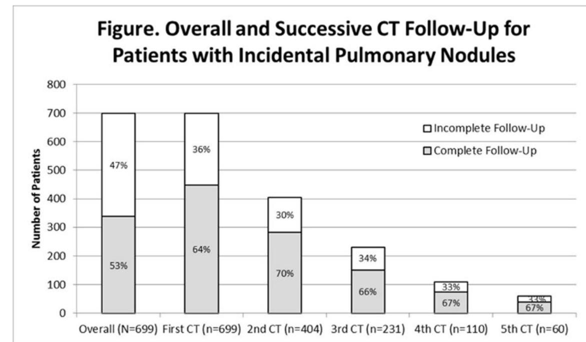


Figure. Overall and Successive CT Follow-Up for Patients with Incidental Pulmonary Nodules

PUTTING OUT THE FLAME: OUR TRAINEES NEED TO LEARN PATIENT ACTIVATION SKILLS

Amanda Watsula-Morley[1]; Colleen Gillespie[1]; Lisa Altshuler[1]; Kathleen Hanley[1, 3]; Adina Kalet[1]; Barbara Porter[2, 3]; Andrew B. Wallach[2, 3]; Sondra Zabar[1]. [1]NYU School of Medicine, New York, NY; [2]Bellevue Hospital, New York, NY; [3]Gouverneur Healthcare Services, New York, NY. (Control ID #2705438)

BACKGROUND: Effective smoking cessation counseling improves smokers' health and quality of life. As part of our assessment program, an Unannounced Standardized Patient (USP) case was developed to measure residents' performance in a routine visit with a smoker.

METHODS: The USP was a 40 year-old male new patient presenting with heartburn. He began smoking up to two packs/day at 22 years old; at the time of the visit, he reports having cut down to one pack/day and quitting cold turkey twice in the past only to return to smoking. If the resident engages him, he discusses his relationship with smoking and the possibility of quitting. The USP received 6 hours of character and checklist training to ensure standardized portrayal and evaluation. Data was collected using 2 forms of assessment: a post-visit USP checklist and a systematic review of the EMR (lab orders, prescriptions, and referrals). The 170-item USP checklist measured communication, patient education, assessment skills, and case-specific items. Each response option included descriptive behavioral anchors and was rated as not done, partly done, or well done.

RESULTS: Data was examined from 73 USP visits from 2009–2015. Mean visit length = 37 min, SD = 15 min (range: 15 to 95 min). Overall communication scores ranged from 17 to 100% with an average of 62% (Cronbach's alpha = 0.75). All residents documented History of Tobacco Use or Tobacco Use Disorder in the EMR, and the majority (82%) prescribed smoking cessation medication. There was variation in the sophistication of smoking cessation-counseling approach. While most residents (78%) discussed the risks of smoking and/or the benefits to quitting, significantly fewer (48%) explored the patient's view of the pros and cons of his smoking ($p = 0.00$). Residents who prescribed smoking cessation medication and discussed risks/benefits to smoking/quitting ($N = 31$) were compared to residents who did the same but also invited the patient to discuss his personal pros and cons of smoking ($N = 29$). Groups were not significantly different by PGY or gender. Patients who were asked to discuss their pros/cons rated the resident higher on patient activation questions (0–2 point scale), including "Helped you understand the importance of quitting smoking" (1.38 vs 0.90, $p = 0.00$), "Made you want to change your smoking" (1.10 vs 0.52, $p = 0.00$), and "Made you feel like you would be able to quit smoking" (1.07 vs 0.35, $p = 0.00$). There were no significant differences in labs ordered, referrals to a smoking cessation program, or quality of documentation.

CONCLUSIONS: While all residents ask about tobacco use and most appropriately prescribe medication, fewer than half demonstrate the skills known to motivate patients to quit smoking. Curricula needs to reinforce the importance of a patient discussing their personal relationship with smoking in order to feel activated and willing to engage in cessation.

QUALITY AND OUTCOMES AT A STUDENT-RUN PRIMARY CARE CLINIC: SHIFTING THE DISCUSSION TOWARDS VALUE-BASED HEALTHCARE Anjali Thakkar[2]; Rachael Williams[3]; Jonathan R. Abraham[4]; Steven Atlas[4]; Marya J. Cohen[3]; Bonnie B. Blanchfield[1]. [1]Brigham & Womens Hospital, Weston, MA; [2]Harvard Medical School, Cambridge, MA; [3]MGH, Boston, MA; [4]Massachusetts General Hospital, Boston, MA. (Control ID #2701704)

BACKGROUND: While the number of student run clinics (SRC) has increased rapidly, a key concern involves the quality of care they provide. Given the vulnerability of the population served by SRCs and the shift towards value-based care, SRCs must be held to the same standard of care as traditional clinics. Yet, few have published quality and outcomes data. To address this gap, we will study the quality of care at the Crimson Care Collaborative (CCC), a network of six student-faculty primary care clinics in Massachusetts. Because many CCC patients come to clinic with a chief complaint, preventative care screenings are frequently foregone. As a result, we hypothesize that CCC provides high quality care for chronic disease management, but may fall short on preventative and screening measures.
METHODS: A retrospective analysis will compare quality and outcome measures of patients at two CCC clinic sites affiliated with Massachusetts General Hospital (MGH) ($n = 1{,}120$) to their respective host clinics (MGH-Chelsea and MGH-Internal Medicine Associates) ($n = 49{,}035$) on breast, colorectal, and cervical cancer screening, and diabetes and coronary artery disease (CAD) risk management and control. Data from the MGH Primary Care Practice-Based Research Network, which biannually reports each physician's clinical performance at 18 hospital-affiliated primary care practices, will be used. We will assess statistically significant differences in quality and outcome measures attained at the CCC clinics as compared to the host clinics using aggregate sample t-tests.
RESULTS: Average age, racial, and language composition between cohorts was similar; the CCC cohort had more patients insured by Medicaid (62.41% vs 60.39%) and commercial insurers (17.5% vs 11.17%), and fewer patients insured by Medicare (15.63% vs 24.94%). Preliminary results show that CCC-Chelsea generally underperformed on cancer screenings, diabetes and CAD disease management testing, and diabetes control (defined as HbA1c <9% on most recent clinic visit) as compared to its host site. However, CCC-Chelsea outperformed on CAD control (defined as LDL < 100 mg/dL on most recent clinic visit.) CCC-IMA performed comparably on cancer screenings and chronic disease management testing, while CCC-IMA underperformed on diabetes and CAD control.
CONCLUSIONS: Understanding quality of care at SRCs is critical to support the validity of the clinic model and to drive targeted quality improvement initiatives. Preliminary results suggest the need for initiatives to improve rates of cancer screening and diabetes control at CCC-Chelsea, and to improve diabetes and CAD control at CCC-IMA. Contrary to our hypothesis, results did not suggest that CCC performs better on chronic disease management compared to preventative screening. As healthcare delivery shifts towards value-based care, measurement along quality outcomes will be imperative; holding SRCs accountable to quality can a foster a quality-driven mentality early on among future health professionals.

QUALITY IMPROVEMENT INTERVENTION ON INTERNAL MEDICINE HIGH UTILIZER INPATIENTS Marc Heincelman[2]; Samuel O. Schumann[2]; Patrick D. Mauldin[2]; Jingwen Zhang[1]; Justin Marsden[2]; Don Rockey[2]; William P. Moran[2]. [1]MUSC, Charleston, SC; [2]Medical University of South Carolina, Charleston, SC. (Control ID #2705976)

BACKGROUND: The value based care movement places considerable pressure on healthcare systems to deliver high quality medical care while decreasing costs. Studies have demonstrated that the top 10% high cost patients, labeled high utilizers (HU), disproportionately consume an exceedingly large amount of resources. For unclear reasons, the attrition rate for patients meeting HU status is high (>70% at one year) and an individual HU patient's extreme resource utilization is likely to be short lived. Thus, efforts to reduce utilization based on intensive case management of a fixed population may not impact the majority of high utilizer patients who access a health system. Using predictive modeling, inpatients at risk for a high utilizer hospitalization can be identified early based on admission variables. Historically nursing charges, a surrogate for length of stay (LOS), has been the most costly resource during a high utilizer admission. The objective of this study is to develop a quality improvement (QI) guideline intervention aimed at decreasing length of stay and the unnecessary utilization of other inpatient resources for patients identified at risk for a high utilizer admission.
METHODS: A QI guideline intervention study was performed on all patients admitted to internal medicine services from October 2015 - April 2016. An established predictive model (AUROC = 0.80) was used to analyze admission variables and identify patients at risk for a HU admission. A predictive model estimator score of ≥ 0.15 was used to define patients at risk for a high utilizer admission, giving the model a specificity of 84%. All patients with a predictive model estimator score of ≥ 0.15 were considered to be at risk for a high utilizer admission. On a daily basis, patients with the top two highest estimator scores that did not have a pre-specified exclusion criteria were enrolled in our study arm. The remaining patients with a HU estimator score ≥ 0.15 were placed in our control arm. Patients enrolled in the study arm received intervention in three areas: early palliative care consultation, early pharmD medication reconciliation, and recommendations to follow Choosing Wisely guidelines for lab tests. Primary outcome was a reduction in length of stay. Secondary outcomes included total hospital costs, pharmaceutical charges, and laboratory charges.
RESULTS: 373 met criteria for being at risk for a HU admission. 130 patients were enrolled in the QI guideline intervention study arm and received all 3 areas of intervention. 243 patients were included in the control arm. The mean LOS for HU patients enrolled in the guideline intervention was 10 days compared to a mean LOS of 14 days in the control ($p = .01$). The median LOS for HU patients enrolled in the guideline intervention was 6 days, compared to 8 days in the control.
CONCLUSIONS: Patients at risk for a HU admission can be identified in real-time based on admission variables. Guideline based interventions can then be deployed early to decrease length of stay.

QUALITY OF PHARMACOLOGIC CARE BY PHYSICIANS, NURSE PRACTITIONERS AND PHYSICIAN ASSISTANTS IN THE UNITED STATES Shiyin Jiao[2]; Irene Murimi[2]; Randall S. Stafford[1]; Ramin Mojtabai[2]; G. Caleb Alexander[2]. [1]Stanford, Stanford, CA; [2]Johns Hopkins Bloomberg School of Public Health, Baltimore, MD. (Control ID #2705737)

BACKGROUND: Nurse practitioners (NPs) and physician assistants (PAs) have increasingly broad prescribing authority in the United States, yet little is known regarding whether they deliver the same quality of pharmacologic care as physicians. We compared the quality of ambulatory pharmacologic care provided by NPs, PAs and physicians

METHODS: The design was a serial cross-sectional analysis of the 2006–2012 National Ambulatory Medical Care Survey (NAMCS) and National Hospital Ambulatory Medical Care Survey (NHAMCS). Analyses included ambulatory care services in physician offices, hospital emergency departments and outpatient departments among a nationally representative sample of patient visits to physicians, NPs and PAs. Main outcome measures were thirteen validated outpatient quality indicators focused on pharmacological management of chronic diseases and appropriate medication use.

RESULTS: A total of 701,499 sampled patient visits were included during the study period, which represented an estimated 8.33 billion visits nationwide. Physicians were the primary provider for 96.8% of all outpatient visits examined, while NPs and PAs each accounted for 1.6% of these visits. The proportion of eligible visits where quality standards were met ranged from 34.1% (angiotensin converting enzyme [ACE]-inhibitor use for congestive heart failure) to 89.5% (avoidance of inappropriate medications among elderly). The median overall performance across all indicators was 58.7%. On unadjusted analyses, there were statistically significant differences in quality of care between non-physicians and physicians for each indicator. After adjustment for potentially confounding patient and provider characteristics, the quality of pharmacologic care delivered by non-physician providers was similar to the care delivered by physicians for ten of the thirteen indicators evaluated, and there was no consistent directional association between provider type and indicator fulfillment for the remaining measures.

CONCLUSIONS: While there were significant shortfalls in the quality of ambulatory pharmacologic care among these visits, the quality of care delivered by non-physicians and physicians was generally comparable.

QUANTIFYING THE PHYSICALLY ENHANCING EFFECTS OF ANABOLIC-ANDROGENIC STEROIDS IN ATHLETES: A SYSTEMATIC REVIEW AND META-ANALYSIS Mary A. Andrews[1]; Charles D. Magee[1]; Travis Combest[2]; Rhonda Allard[1]; Kevin M. Douglas[1]. [1]Uniformed Services University of the Health Sciences, Bethesda, MD; [2]Walter Reed National Military Medical Center, Bethesda, MD. (Control ID #2690021)

BACKGROUND: Athletes and others who routinely exercise may use anabolic androgenic steroids (AAS) for physical enhancement. While the physiology underlying the physically enhancing properties of AAS is well-described, the magnitude of such effects is not. The purpose of this study is to synthesize the available literature to quantify the physically enhancing effects of AAS in healthy exercising adults.

METHODS: Primary outcomes were changes in muscle strength, cardiovascular endurance, power, lean mass, and fat mass. Secondary outcomes were adverse effects. A medical librarian comprehensively searched MEDLINE, EMBASE, Cochrane CENTRAL, SPORTDiscus, and PsychINFO for randomized controlled trials reporting the effect of AAS on athletic performance and body composition in healthy exercising adults. After confirming adequate interrater agreement, two authors screened titles and abstracts for eligibility. If screening suggested eligibility, full text articles were reviewed. If studies met inclusion criteria after full text review, data were extracted independently and in duplicate to minimize bias and error. If at least ten studies were available, data were pooled using random effects models according to the method of DerSimonian and Laird. Heterogeneity was assessed visually and with the I-squared statistic. Publication bias was assessed by Egger's method.

RESULTS: The search yielded 7179 studies, of which 25 met criteria for inclusion in the review. Muscle strength was assessed in 21 studies, cardiovascular endurance in six, power in five, lean mass in 14, and fat mass in 13. Compared with placebo, AAS increased both muscle strength [standardized mean difference (SMD) = 0.27; 95% CI, 0.07-0.47, I-squared = 12.7%, 21 studies] and lean body mass (SMD = 0.39; 95% CI, 0.17-0.61, I-squared = 26%, 14 studies) while decreasing fat mass (SMD = −0.29; 95% CI, −0.63 to 0.05, I- squared = 50.7%, 12 studies), although the latter was not statistically significant. The pooled increase in strength in the AAS group was 52% greater than in the placebo group. Egger's tests for publication bias were not significant for any outcomes. Seven studies reported adverse effects, most commonly decreased HDL, muscle cramps, acne, and mood changes.

CONCLUSIONS: In our review, AAS increased both muscle strength and lean mass in healthy exercising adults with small absolute effects and large relative effects when compared to placebo. Adverse outcomes were reported infrequently. Our review indicates that AAS may provide benefits to exercising adults in terms of increased strength and lean mass; however, we were limited by short duration of the studies and inconsistent methods of monitoring for adverse effects. Nevertheless, this study offers important information for physicians, public health professionals, athletic governing bodies, and others who counsel patients and shape policy regarding the use of AAS.

RACE AND OPIOID DOSE ARE ASSOCIATED WITH TAPERING AMONG PATIENTS ON CHRONIC OPIOID THERAPY Michele J. Buonora[1]; Joanna L. Starrels[1]; Yuming Ning[2]; Hector R. Perez[1]. [1]Albert Einstein College of Medicine & Montefiore Medical Center, Bronx, NY; [2]Montefiore Medical Cneter, New York, NY. (Control ID #2706504)

BACKGROUND: To address the epidemic of opioid overdose, guidelines recommend that prescribers taper chronic opioid therapy (COT) when the risks of continued COT exceed the benefits. However, little is known about the likelihood and predictors of opioid tapering, and there is potential for provider bias in which patients get tapered, for example, by race. We sought to identify patient factors associated with tapering in a cohort of patients prescribed COT for chronic non-cancer pain.

METHODS: Using electronic medical record data from January 2009 to June 2015, we conducted a retrospective cohort study of COT patients in an urban academic medical healthcare system in Bronx, New York. To be eligible, patients had: 1) COT, defined as ≥ 3 opioid prescriptions in 2 consecutive 6-month periods from July 2009 to July 2010; 2) a stable opiate dose, defined by <20% change in average morphine equivalent daily dose (MEDD) between 2009 and 2010; and 3) no ICD code for cancer. To identify tapering, an average MEDD for each of the eleven 6-month periods was calculated and compared to

a baseline period [January-June 2010]. Patients were categorized into 3 groups: (1) "tapered" patients had a 30-90% dose-reduction in 2 consecutive 6-month periods from 2010 to 2015; (2) "discontinued or lost" patients received no opioids in 2014 and 2015; and (3) "continued" patients were neither tapered nor discontinued or lost. Bivariate analyses were used to compare characteristics between groups using chi-square tests for categorical variables (race/ethnicity, sex, language) and ANOVA or Kruskal-Wallis tests for continuous variables (age, baseline dose).

RESULTS: Of the 702 COT patients who met eligibility criteria, 202 (28.8%) were tapered, 226 (32.2%) were discontinued or lost, and 274 (39.0%) were continued. Compared to black and Hispanic patients, white non-Hispanic patients were less likely to be tapered (OR 0.90), but more likely to be discontinued or lost (OR 2.27) ($p < 0.001$). Patients who were continued had a higher median baseline dose (81.0 MEDD) than patients who were tapered (49.2 MEDD) or discontinued or lost (60.0 MEDD) ($p = 0.02$). Patients with high baseline dose (≥100 MEDD) were less likely to be tapered than those with baseline dose <100 MEDD (OR 0.69, $p = 0.058$), although this was not statistically significant. No significant differences between groups were observed in age, sex, or language spoken.

CONCLUSIONS: In this cohort, white non-Hispanic COT patients were less likely than black or Hispanic patients to be tapered, but more likely to have an abrupt discontinuation and/or be lost to follow-up. These findings may reflect provider bias in deciding to taper or racial differences in continuity of care; more research is needed. The finding that patients with higher dose COT were less likely to be tapered is contrary to current recommendations and requires further study.

RACE, VIGILANT COPING STRATEGY, AND HYPERTENSION IN AN INTEGRATED COMMUNITY Anika L. Hines[1]; Craig E. Pollack[2]; Thomas A. LaVeist[3]; Roland J. Thorpe[4]. [1]Johns Hopkins School of Medicine, Baltimore, MD; [2]Johns Hopkins University School of Medicine, Baltimore, MD; [3]George Washington University, Washington, DC; [4]Johns Hopkins Bloomberg School of Public Health, Baltimore, MD. (Control ID #2707750)

BACKGROUND: Vigilant coping refers to individuals who, potentially as a result of experiencing discrimination in the past, proactively prepare for the possibility that they will be discriminated against or mistreated because of their race. The extent to which vigilant coping is linked with hypertension, a highly prevalent condition with well-documented racial/ethnic disparities, remains largely unknown. We sought to examine the association between race, vigilant coping strategy, and hypertension in a racially *integrated* community, which allows us to hold constant a number of physical and social attributes of neighborhoods that may confound these relationships.

METHODS: We performed a cross-sectional analysis of data from the EHDIC (Exploring Health Disparities in Integrated Communities) study. EDHIC is a multisite study of race disparities within communities where African-Americans and non-Hispanic whites live in integrated communities without racial differences in socioeconomic status (SES) as measured by median income. Hypertension was defined as: having an average SBP ≥140 mm/Hg and DBP ≥ 90 mm/Hg as measured at three points of the survey via a trained observer using a standardized protocol; reporting taking hypertension medication; or reporting being told by a doctor that they had high blood pressure in the past 5 years. Experiences with vigilant coping were measured using a modified 1995 Detroit Area Study vigilance anticipatory coping scale. We used a series of multivariable logistic regression models to evaluate vigilance as a potential mediator or, separately, moderator of the association of race with hypertension.

RESULTS: We included 715 EDHIC respondents—440 African-Americans and 275 whites. Although high for both groups, there was no difference in prevalence of hypertension between African-Americans and whites in this sample (68.6 versus 68.7; $p = 0.98$). Overall, a higher proportion of African-Americans reported experiences with discrimination (41.1 versus 22.9; $p < .0001$) and vigilance (67.3 versus 46.9; $p < .0001$) compared to whites. In this racially integrated community, neither vigilance (OR: 1.00, 95% CI: 0.91, 1.10) nor discrimination (OR: 1.22, 95% CI: 0.60, 2.46) was associated with hypertension. Vigilance served as neither a mediator nor a moderator in the association between race and hypertension.

CONCLUSIONS: African-Americans experienced more vigilance and discrimination compared to whites; however, within the context of this integrated community, these measures were not associated with hypertension. More research is needed to understand how structural inequalities impact the health of African-Americans and whites in integrated communities.

RACIAL AND ETHNIC DISPARITIES IN CHRONIC ILLNESS DIAGNOSIS AND ROUTINE HEALTH CARE Eun Ji Kim[1, 3]; Taekyu Kim[4]; Jane M. Liebschutz[2]; Michael Paasche-Orlow[1]; Amresh D. Hanchate[2]. [1]Boston University, Boston, MA; [2]Boston University School of Medicine, Boston, MA; [3]Bedford VA, Bedford, MA; [4]Massachusetts General Hospital, Boston, MA. (Control ID #2701435)

BACKGROUND: Asian Americans (AA) have higher rates of risk-adjusted inpatient mortality following acute myocardial infarction and stroke compared to Hispanics, non-Hispanic Whites, and non-Hispanic Blacks. A plausible explanation is higher prevalence of undiagnosed disease burden among AA. Using national data we estimated adjusted rates of prevalence of undiagnosed hypertension (HTN) and diabetes (DM) by race/ethnicity.

METHODS: From the 2011–2014 National Health and Nutrition Examination Surveys (NHANES) we obtained data on self-reported provider-diagnosed conditions and results of laboratory tests and physical examination. We included survey respondents 18 years or older with complete covariate data. The outcomes were undiagnosed HTN (SBP ≥ 140 or DBP ≥ 90 on physical examination with report of no prior diagnosis of HTN) and undiagnosed DM (Hgba1c ≥ 6.5 with report of no prior diagnosis). Using logistic regression, we obtained prevalence of undiagnosed HTN or DM by race/ethnicity, and among subgroups based on self-reported receipt of routine healthcare. We also estimated rates adjusted for socioeconomic status (education, income, insurance) and acculturation (limited English proficiency, not US citizen, and born outside of the US) to examine potential mediators.

RESULTS: The study sample of 10,488 included 40.1% Whites, 23.1% Blacks, 21.5% Hispanics, 12.4% Asians, and 3.0% Others. Significantly lower proportions of Hispanics (71.8%) and Asians (79.0%) reported receipt of routine healthcare compared to Whites (87.2%), Blacks (87.0%), and Others (85.8%) ($p < 0.01$). Among those who reported routine healthcare, more Hispanics (27.1%) and Asians (20.1%) reported having no healthcare visits in the prior year. The prevalence of undiagnosed HTN and DM were the highest among Asians ($p < 0.01$) (Table 1), including among those with routine healthcare ($p < 0.01$). After adjusting for age and gender, the odds ratio of having undiagnosed hypertension or diabetes was the highest for Asians (OR = 1.91, $p < 0.01$) compared to non-Hispanic Whites. This finding

persisted even after adjusting for socio-demographic, health care utilization, and acculturation-related covariates (OR = 2.14, $p < 0.01$).

CONCLUSIONS: Compared to other groups, Asian Americans had the highest rates of undiagnosed HTN and DM. This finding was evident among those who received routine healthcare and was independent of socio-demographic and acculturation-related covariates. Future studies should examine the potential sources of these disparities, including lack of patient-provider communications or perceptions that Asians are less likely to have HTN and DM.

Prevalence (weighted %) of undiagnosed HTN and DM

	White, non-Hispanic	Black, non-Hispanic	Hispanic	Asian	Other
Survey participants ($n = 10{,}488$)					
Undiagnosed HTN	5.0	5.9	4.0	6.0	5.8
Undiagnosed DM	1.4	3.4	2.5	4.1	3.1
Survey participants with routine care ($n = 8{,}769$)					
Undiagnosed HTN	5.2	8.2	6.0	9.6	6.0
Undiagnosed DM	1.4	3.4	2.7	3.6	3.2

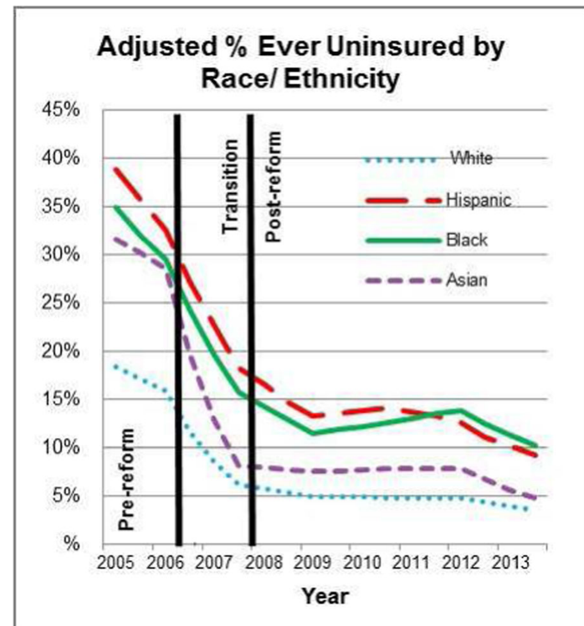
RACIAL DIFFERENCES IN INSURANCE STABILITY AFTER HEALTH INSURANCE REFORM Karen M. Freund[4]; Amy LeClair[3]; Norma Terrin[3]; Alejandro Moreno-Koehler[3]; Amresh D. Hanchate[1]; Jillian Suzukida[3]; Sucharita R. Kher[3]; Elena Byhoff[3]; Nancy R. Kressin[2]. [1]Boston University School of Medicine, Boston, MA; [2]Dept of Veterans Affairs and Boston University, West Roxbury, MA; [3]Tufts Medical Center, Boston, MA; [4]Tufts University School of Medicine, Boston, MA. (Control ID #2704997)

BACKGROUND: A potential benefit of insurance reform and broader access to health insurance is reduced disparities in insurance coverage and stability. We examined trends in insurance stability by racial/ethnic group across 2 health care systems, after state and national reform was implemented.

METHODS: We abstracted medical and billing records from 1/2005-12/2013, encompassing implementation of Massachusetts (MA) insurance reform, from 2 academic health centers and 5 community health centers that disproportionately care for underserved populations in MA. We included patients aged 21–64 who required regular care for hypertension, thus providing visit-level data on insurance coverage. We calculated insurance stability per person in 6-month intervals, defined as continuously insured vs some loss of insurance. We compared trends in stability by racial/ethnic group adjusting for age, sex, Charlson co-morbidity score, and census tract median income and high school graduation rates.

RESULTS: 41,859 unique patients and 272,289 6-month intervals were included: 54% were women, 28% non-Hispanic White, 7% Hispanic, 58% Black, and 6% Asian. In 2005 Whites had the lowest rates of being uninsured of all groups. For all groups, insurance coverage was greater in the transition and post-reform compared with the pre-reform period (all p <0.001). By 2013 adjusted rates of ever uninsured dropped to 4% for Whites, 9% for Hispanics, 10% for Blacks, and 5% for Asians. Adjusted incident rate ratios (IRRs) of insurance switches were higher for each group comparing post- to pre-reform (IRRs 1.3 (95% CI 1.2, 1.4) for Whites, 1.3 (1.1, 1.6) for Blacks, 1.3 (1.2, 1.3) for Hispanics, 2.1 (1.6, 2.7) for Asians, with a significant interaction by time period and race/ethnicity ($p = 0.002$).

CONCLUSIONS: Insurance reform improved rates of insurance coverage for all racial/ethnic groups. With higher rates of insurance coverage through reform also came higher rates of insurance switches.



RACIAL DISPARITIES IN THE REFERRAL TO CARDIOTHORACIC SURGERY FOR AORTIC STENOSIS Jose B. Cruz Rodriguez; Christopher Salazar-Fields; Priyanka Achayra; Aaron Horne. Methodist Dallas Medical Center, Dallas, TX. (Control ID #2675380)

BACKGROUND: Access to transcatheter aortic valve replacement (TAVR) in minority populations has been limited by lower rates of inclusion in trials and relatively short time since commercial approval of TAVR. It has been suggested that this underrepresentation might reflect racial differences in the prevalence of severe aortic valve stenosis or in the intervention rate of those with severe aortic stenosis. TAVR is growing in availability, but not all community-based centers have access to it. Therefore, our objective was to evaluate health disparities in the referral to cardiothoracic surgery (CTS) for aortic stenosis in African Americans (AA) and Hispanics compared to Caucasians in our community.

METHODS: Using a retrospective cohort design, we identified all patients >40 years old, who had been captured in the inpatient electronic medical record of Methodist Health System with AS from January 2011 to June 2016. Clinical and echocardiographic data were collected manually. We excluded Asian and Native American patients. Data was analyzed with an available case approach. Exposure was race/ethnicity; outcome was referral to CTS. Multivariable logistic regression analysis was conducted with variables that had significance to $p < 0.20$ in univariate model.

RESULTS: A total of 952 patients were included in the final analysis (423 Caucasian, 376 AA and 153 Hispanic). Compared to Caucasians, AA subjects were significantly younger, had more advanced degrees of kidney disease, were more likely to have Medicaid as payer, diabetes, hypertension, active smoking, obesity, systolic and diastolic heart failure. There was no statistical difference by race in sex, use of beta-blockers, hyperlipidemia and bicuspid aortic valves. AA patients had significantly higher aortic valve area indexed for body surface area, more aortic insufficiency, lower peak velocities, lower transvalvular gradients, less calcified valves and fewer patients in aortic stenosis stage D. After adjusting for the aforementioned variables, the odds ratio of

getting CTS referral was 0.48 for AAs ($p < 0.001$, 95% CI 0.33–0.70) and 0.92 for Hispanics ($p = 0.73$, 95% CI 0.60–1.44) compared to Caucasians.
CONCLUSIONS: Holding clinical and echocardiographic variables constant, AA patients were less likely to be referred to CTS for treatment of severe aortic stenosis. In our sample, AA patients had less severe hemodynamics of aortic stenosis; nonetheless, this was considered in the regression model. We found no difference in the referral pattern of Hispanics compared to Caucasians. Further research is needed in this topic to identify the reasons of this racial disparity in order to develop strategies to reach health equity across minorities.

RACIAL VARIATIONS IN MEDICAL CARE SPENDING PATTERNS AMONG HIGH-RISK PRIMARY CARE PATIENTS: RESULTS FROM THE STOP-DKD STUDY Leah Machen; Clementina Davenport; Megan Oakes; Uptal Patel; Clarissa J. Diamantidis. Duke, Durham, NC. (Control ID #2706607)

BACKGROUND: Individuals with chronic disease incur greater medical care expenditure than those without significant co-morbidity. Little is known about how socioeconomic status (SES) relates to prioritization of medical care spending over personal expenditures in multi-morbid individuals, and whether this relation differs between African Americans (AA) and non-AAs.
METHODS: The STOP-DKD study is an ongoing randomized controlled trial of active Duke Primary Care patient with diabetes, hypertension, and chronic kidney disease designed to examine the effect of a multi-factorial telehealth intervention on health outcomes. At the baseline exam (2014–2015), STOP-DKD participants underwent survey assessments inclusive of measures of socio-demographics and medication adherence. Measures of SES included annual household income (<\$30 K versus ≥ \$30 K), highest educational level (high school [HS] diploma vs. other), and employment status (full-time vs. other). The primary outcomes were based on 4 questions related to spending: "Have you reduced spending on basics like food or clothing in order to pay for your medical care or prescription drugs?", "Have you reduced spending on leisure activities like vacations, eating out, or movies in order to pay for your medical care or prescription drugs?", "Have you used all or a portion of your savings to pay for your medical care or prescription drugs?", and "Have you ever skipped any medication doses or taken less medicine than prescribed to make a medicine last longer?" Multifactorial logistic regression stratified by race and adjusted for age, sex, health insurance status, and household chaos, was used to determine the independent effect of SES on spending.
RESULTS: Of 281 baseline STOP-DKD participants 156 (55%) were AA. Compared with non-AA's, AA's had similar levels of income, education and employment, but were more likely to reduce spending on basic needs (28.2% vs. 13.6%) and leisure activities (34.6% vs. 19%), and to skip medications (25.5% vs. 15.2%), all $p < 0.05$. After multivariate adjustment, AA race (vs. non-AA) was associated with increased odds of reduced basic spending (OR 2.49 [95% CI 1.28,4.82]), reduced leisure spending (OR 2.27 [1.25,4.12]), and skipping medications (OR 2.07 [1.1,3.89]). Among AAs, full-time employment was associated with lower odds of reduced basic spending (OR 0.28 [0.09, 0.85]); HS diploma was associated with lower odds of reduced leisure spending (OR 0.34 [0.16,0.72]); income was not associated with any outcome. Non-AA's with higher income had lower odds of reduced basic spending, leisure spending, or use of savings (OR 0.24 [0.06,0.89]; OR 0.20 [0.06,0.65]; OR 0.24 [0.06,0.89], respectively). Non-AAs with HS education had lower odds of reduced basic spending (OR 0.23 [0.07,0.77]).
CONCLUSIONS: High-risk AAs in primary care are more likely to reduce spending on basics and leisure activities to afford their medical care than non-AAs of equivalent SES. Reasons behind these differential patterns warrant further study.

RATES AND COSTS OF GUIDELINE-CONCORDANT PREOPERATIVE STRESS TESTING Matt Pappas[2, 2]; Preethi Patel[2]; Michael B. Rothberg[1, 2]. [1]Cleveland Clinic, Cleveland, OH; [2]Cleveland Clinic, Medicine Institute, Cleveland, OH. (Control ID #2706259)

BACKGROUND: Operative interventions have long been recognized as associated with elevated risk of adverse cardiac events. The American College of Cardiology/American Heart Association (ACC/AHA) guidelines recommend cardiac stress testing for patients whose risk of a perioperative cardiac event is 1% or greater and who are unable to perform 4 metabolic equivalents (METs) of activity. However, those thresholds are arbitrary, and multiple risk stratification tools exist. Moreover, while value-based care initiatives have focused on overuse of cardiac stress testing among low-risk patients, little is known about the rates of guideline-concordant stress testing, or resultant costs. Different risk stratification tools may result in discordant recommendations, and the inclusion of patients at 1% risk or greater may result in large numbers of patients referred for preoperative stress testing. We set out to estimate the rates of preoperative stress testing recommended by current ACC/AHA guidelines, to investigate how the recommendation for or against stress testing varies between recommended risk stratification tools, and to estimate costs of guideline-concordant testing in the United States.
METHODS: The American College of Surgeons-National Surgical Quality Improvement Program (ACS-NSQIP) samples data from surgical patients at participating hospitals. Using ACS-NSQIP public use data, we first estimated Revised Cardiac Risk Index (RCRI) scores and complication rates predicted by the Gupta Myocardial Infarction/Cardiac Arrest (MICA) equation. We then calculated the agreement between those two prediction tools. To estimate costs of testing, we used previously-published data on relative frequency of different cardiac stress-testing strategies and the costs of each modality. We then extrapolated costs to the US adult population.
RESULTS: Using MICA, approximately 5% of surgical patients would be referred for preoperative stress testing. Using RCRI, between 5% (including an estimate of METs achieved) and 14.6% (RCRI alone) of patients would be referred for preoperative cardiac stress testing. Agreement between the two stratification tools was poor (kappa 0.24). An estimated 8.4% (and potentially up to 16.8%, depending on availability of peak MET data) of patients could be referred for preoperative cardiac stress testing under current guidelines. Current guidelines likely result in between \$2.6 and \$2.9 billion dollars spent on preoperative stress testing annually in the United States, not including downstream interventions such as coronary angiography or revascularization.
CONCLUSIONS: Current guidelines recommend considerable spending on preoperative stress testing, using a risk threshold without empiric support. Considering downstream procedures, such as revascularization, would further increase estimated expenditures. Because revascularization has not been shown to reduce perioperative complications, the value of this large source of medical expenditures remains unclear.

REAL-TIME FEEDBACK IN PAY-FOR-PERFORMANCE: DOES MORE INFORMATION LEAD TO IMPROVEMENT? Amelia Bond; Amanda Hodlofski; Kristen Caldarella; Jingsan Zhu; Andrea B. Troxel; Kevin G. Volpp; Ezekiel J. Emanuel; Amol S. Navathe. University of Pennsylvania, Philadelphia, PA. (Control ID #2706662)

BACKGROUND: Pay for performance (P4P) has thus far had mixed results influencing quality of care despite substantial investment. P4P may work in two ways - first by providing information to physicians on quality; and second by providing monetary incentives. This study investigates how the presentation of quality measure information to providers affects their response when monetary incentives remain unchanged. On January 1, 2014 Advocate Physician Partners, a clinically integrated hospital network with an existing P4P program, implemented a Cerner registry allowing physicians real-time access to their quality scores. We explore whether this information shock - from lagged and infrequent to real-time - increased physician performance.
METHODS: We used detailed physician and quality measure level registry data from four years prior to the registry implementation (2010–2013) and two years after implementation (2014–2015). We also linked physician-level data including age, gender and board certification; group-level data including EHR implementation date and registry click rates; and patient panel data including chronic conditions. Our final population included all consistently Advocate affiliated physicians between 2010 and 2015 representing 673 physicians and 270 million patient-measures. We used a predictive piecewise model to examine whether the registry introduction was associated with a change in the underlying trend in performance along specified quality metrics. This approach relies on historic trends to predict what scores would have been without the registry system introduction and compares predicted to actual scores. To address potential confounding from secular trends, we utilized out of sample HEDIS data to restrict to measures in which Advocate's trend is parallel to that of HEDIS Illinois and national scores.
RESULTS: We found no average performance increase associated with the introduction of the registry ($P > 0.18$ for all measures), which physician groups used on average five times per week. However, top quartile performers used the registry 26% more frequently ($P = 0.05$) and saw twice as many chronic disease patients ($P = 0.001$) and almost 170% more Medicare patients ($P < 0.001$) than bottom quartile performers, but did not experience significant improvements as their performance was already at the top of the distribution (average score for top/bottom performers was 95/68%). Physicians who improved most did not use the registry significantly more ($P = 0.32$) or have significantly different types of patients (Medicare $P = 0.53$, chronic disease $P = 0.15$) than those physicians who improved least (average score of most/least improved was 76/84%).
CONCLUSIONS: Information provision, even in real-time, is insufficient to improve performance. Change in performance is not well correlated with registry use as consistently high performers tended to use the registry more frequently than low performers. Future work should consider how to pair information provision with financial incentives.

REDUCING PRESCRIPTION DRUG SPENDING: A REVIEW OF POLICY OPTIONS G. Caleb Alexander[1]; Jeromie Ballreich[1]; Mariana Socal[1]; Taruja Karmarkar[1]; Antonio Trujillo[1]; Jeremy Greene[2]; Joshua Sharfstein[1]; Gerard F. Anderson[1, 1]. [1]Johns Hopkins Bloomberg School of Public Health, Baltimore, MD; [2]Johns Hopkins School of Medicine, Baltimore, MD. (Control ID #2705688)

BACKGROUND: High prices for pharmaceuticals have restricted access to branded drugs because some public programs are rationing care and many private insurers, including Medicare drug plans, are placing specialty drugs on high cost sharing tiers. Ongoing concerns over high prices and limited access to pharmaceuticals have generated a wide range of proposed solutions.
METHODS: We convened a small group of experts in the field and had them identify policy options that are available to reduce either branded drug costs or spending. Their discussion identified seminal articles. Based on these seminal articles, we constructed a preliminary list of policy options and key words that served as a format for conducting a structured literature review to identify additional policy options.
RESULTS: We identified forty-one solutions in the peer reviewed literature that can be classified into five broad categories: revising the patent system; encouraging research to increase development of new drugs; altering pharmaceutical regulation; decreasing market demand; and developing innovative pricing strategies. We discuss the rationale for these five approaches and summarize the proposed solutions. We also discuss four unresolved empirical issues are particularly important in any discussion of policy options.
CONCLUSIONS: Many have argued that the high levels of spending for branded prescription drugs are unsustainable. Others are more concerned about the problems many people have accessing the drugs they need or the impact on the health status of the population. Given the interest in the topic, it is likely that one or more of the policy proposals will be implemented in the coming months and years. However, it is likely that no single policy alternative will be a clear "winner". Resolution of specific empirical issues that we identify may assist policymakers to select policies that are most likely to achieve their stated aims while minimizing the likelihood of unintended consequences.

REFERRING COMPLEX PATIENTS FOR CARE MANAGEMENT: WHICH PATIENTS? Maria E. Garcia[2]; Richard W. Grant[1]; Connie S. Uratsu[1]. [1]Kaiser Permanente Northern California, Oakland, CA; [2]University of California, San Francisco, San Francisco, CA. (Control ID #2706158)

BACKGROUND: A large and increasing proportion of health care costs are spent caring for a small segment of medically and socially complex patients. To date, it has been difficult to identify which patients are best served by intensive care management. The objective of this study was to characterize factors that identify which complex patients are most suited for intensive care management.
METHODS: We conducted a mixed-methods study involving 35 care managers (CMs; 10 licensed social workers and 25 registered nurses) working in intensive care management programs within Kaiser Permanente Northern California (KPNC) outpatient medical centers. CMs reviewed a randomly selected list of ≤ 50 patients referred to them in the prior year and categorized patients as, 1) "good candidates" for care management, 2) patients "not needing" intensive care management, and 3) patients "needing more" than current care management could provide. After categorizing patients, researchers conducted semi-structured interviews to understand how CMs separated patients into the 3 groups.
RESULTS: Of the 1178 patients reviewed by CMs, less than two-thirds (62%) of referred patients were considered "good candidates", with 18% were categorized as "not needing" care management, and 19% "needs more." Patients considered "Good Candidates" for referral were older (76.2 years vs. 73.2 for "Not Needing" and 69.8 for "Needs More", $p < 0.001$); and these patients ($n = 736$) tended to be intermediate between "Not Needing" ($n = 216$) and "Needs More" ($n = 226$) in prior year utilization, costs, and admissions ($p < 0.001$). In qualitative analyses,

CMs discussed 346 unique, representative patients (176 “Good Candidates”, 76 “Not Needing”, and “94 “Needs More”). Four major themes emerged regarding appropriate referral: 1) Availability of social support, 2) Trajectory of medical condition, 3) Patient motivation, and 4) Psychiatric or Substance Use issues.

CONCLUSIONS: Current electronic medical records and intakes may not be capturing characteristics that indicate appropriateness for care management. To improve referral processes, measures of patient agency, motivation and availability of adequate social support need to be developed.

RELATIONSHIP BETWEEN ANXIETY AND SELF-MANAGEMENT BEHAVIORS OF PATIENTS WITH CHRONIC OBSTRUCTIVE LUNG DISEASE Esperanza Morales-Raveendran[1]; Ayerim Pichardo[1]; Kimberly A. Muellers[1]; Li Chen[1]; Rachel O'Conor[2]; Michael S. Wolf[2]; Alex Federman[1]; Juan Wisnivesky[1]. [1]Icahn School of Medicine at Mount Sinai, New York, NY; [2]Northwestern University, Chicago, IL. (Control ID #2705577)

BACKGROUND: Chronic obstructive pulmonary disease (COPD) is a debilitating respiratory disease that requires adherence to self-management tasks, like routine visits, consistent medication use, and acceptance of influenza vaccines, to maintain disease stability. Comorbid conditions may complicate a person's ability to manage their COPD. Comorbid anxiety has a detrimental impact on self-management among patients with some chronic diseases, however, there is limited knowledge regarding the impact of this mental health condition on COPD self-management behaviors.

METHODS: Our study enrolled current or prior smokers with a physician diagnosis of COPD. Participants were recruited from outpatient and inpatient settings of the Mount Sinai Hospital (New York, NY) and Northwestern University Hospital (Chicago, IL). Research assistants administered a survey in English or Spanish. Routine care was assessed by self-report and included questions regarding routine checkups for COPD and whether a healthcare provider was in charge of their COPD care. The Medication Adherence Rating Scale (MARS) was used to assess medication adherence (a score ≥4.5 was considered good adherence). Influenza vaccination was collected via self-report using validated items. Participants were administered the PROMIS Emotional Distress/Anxiety scale to ascertain for symptoms of anxiety. PROMIS measure responses were summed to form raw scores and converted into T-scores (standardized score); clinically significant anxiety was defined as a T-score 1 SD above the population mean (i.e., >60). We conducted chi-square analyses to assess the relationship between anxiety and COPD self-management outcomes.

RESULTS: The study included 140 COPD participants (mean age 68 ± 8.6 years, 60% female, 36% Black, 20% Hispanic); 14% had anxiety. COPD patients with anxiety were less likely than those without anxiety to have routine checkups for COPD (53% vs. 83%, $p = 0.002$) and less likely to have a healthcare provider in charge of their disease (63% vs. 88%, $p = 0.004$). There were no significant relationships between anxiety and COPD medication adherence (58% vs. 42%, $p = 0.19$) or routine influenza vaccination in the past 12 months (79% vs. 87%, $p = 0.37$).

CONCLUSIONS: In this sample of patients with COPD, those with above average symptoms of anxiety were significantly less likely to have routine care for COPD. However, medication adherence or influenza vaccinations were not related to level of anxiety. Further research is needed to assess if anxiety symptoms are related to other self-management behaviors among COPD patients and explore whether targeting anxiety symptoms can help improve COPD outcomes.

RELATIONSHIP BETWEEN PSYCHOLOGICAL WELL-BEING AND PATIENT SATISFACTION WITH PHYSICIANS DURING HOSPITALIZATION. Muhammad Mubbashir Sheikh[3]; Mukta Panda[1]; Rehan Qayyum[2, 4]. [1]University of Tennessee, Chattanooga, TN; [2]University of Tennessee College of Medicine, Chattanooga, TN; [3]University of Tennessee College of Medicine, Chattanooga, Chattanooga, TN; [4]Virginia Commonwealth University, Richmond, VA. (Control ID #2687882)

BACKGROUND: While studies in the ambulatory care setting have found that patients with high level of psychological well-being have high satisfaction with their physicians, no study has evaluated the relationship between psychological well-being and satisfaction with physicians in hospitalized patients. Therefore, we examined the relationship between a patient's psychological well-being and patient's satisfaction with physicians during hospitalization.

METHODS: Hospitalized patients older than 18 years and who provided consent were asked to complete a questionnaire. The questionnaire collected information on patient's age, gender, and race and included the following two validated tools: Brief Inventory of Thriving (BIT) for psychological well-being and TAISCH for measuring satisfaction with physicians in hospitalized patients (TAISCH). Patient satisfaction was further assessed using an internally developed 5-question satisfaction tool. The scores on three tools were rescaled such that the change in satisfaction scores represented the percentage change in in BIT score. The effect of psychological well-being on patient satisfaction was examined using mixed linear models to account for correlation in observations due to patients seen by the same physician. All analyses were performed in R 3.1.1 using 'lme4' package.

RESULTS: Of the 357 patients, 199 (55%) were females and 47 (13.1%) were African Americans. Mean (SD) age of the patients was 54.5 (19) years. These patients were seen by 122 physicians (range = 1 to 13 patients per physician). In unadjusted analysis, we found a robust and positive association of patient satisfaction with BIT score. A high BIT score correlates with high psychological well-being. After adjusting for patient's age, sex, and race mean BIT score remained significantly associated with patient satisfaction on both questionnaires. Each one percent increase in BIT score was associated with 0.26% (95% CI = 0.17 to 0.35%; $P < 0.001$) increase in TAISCH score and 0.31% (95% CI = 0.19 to 0.42%; $P < 0.001$) increase in internally developed 5-question satisfaction tool.

CONCLUSIONS: We found a statistically significant direct association between psychological well-being as measured by BIT score and patient satisfaction with physicians during hospitalization. Our findings suggest that methods to improve patients' psychological well-being may also improve patient satisfaction with their physicians.

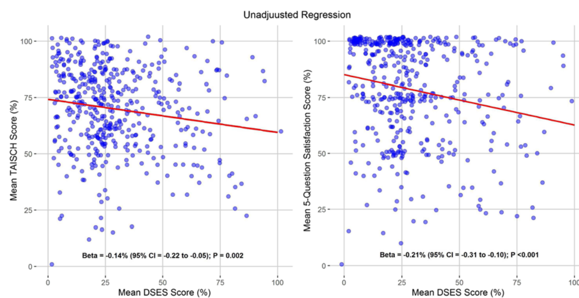
RELATIONSHIP BETWEEN SPIRITUALITY AND PATIENT SATISFACTION WITH PHYSICIANS DURING HOSPITALIZATION: RESULTS FROM THE SPIRITUALITY AND HOSPITALIZATION EXPERIENCE OF PATIENTS STUDY (SHEPS) Anna-Carson R. Uhelski[2]; Mukta Panda[1]; Rehan Qayyum[2]; Muhammad Mubbashir Sheikh[1]. [1]University of Tennessee, Chattanooga, TN; [2]University of Tennessee College of Medicine, Memphis, TN. (Control ID #2671538)

BACKGROUND: Studies have shown a direct relationship between patient satisfaction and patient adherence with favorable patient outcomes. While several physician and patient characteristics show an association with patient satisfaction, the effect of patient's spirituality on patient satisfaction has not been examined.

METHODS: Hospitalized patients older than 18 years, who provided consent, were asked to complete a questionnaire. The questionnaire collected patient age, gender, and race and included two validated tools: Daily Spiritual Experience Survey (DSES) and a validated patient satisfaction tool for hospitalized patients (TAISCH). Patient satisfaction was further assessed using an internally developed 5-question satisfaction tool. The scores on three tools were rescaled such that the change in satisfaction scores represented percentage change in scores for one percentage change in DSES score. Mixed linear regression models were created to examine the effect of spirituality on patient satisfaction to account for correlation in observation due to groups of patients seen by the same physician. All analyses were performed in R 3.1.1 using 'lme4' package.

RESULTS: We surveyed 469 patients: 260 (55%) females, 55 (11.7%) African Americans. Mean age of the patients was 52.3 years. Patients were seen by 170 physicians (range = 1 to 16 patients per physician). In unadjusted analysis, we found a strong, negative association of patient satisfaction with DSES score. A low DSES score correlates with high spirituality. After adjusting for patient's age, sex, and race, mean DSES score remained significantly associated with patient satisfaction on both questionnaires. Each one percent increase in DSES score was associated with −0.13% (95% CI = −0.22 to −0.04%; $P = 0.005$) decrease in TAISCH score and −0.20% (95% CI = −0.31 to −0.10%; $P < 0.001$) decrease in internally developed 5-question satisfaction tool.

CONCLUSIONS: We found a statistically significant inverse association between DSES score and patient satisfaction with physicians during hospitalization. These findings will add to current research developing methods of training physicians in confronting spiritualty. Our results suggest that addressing spiritual needs of patients during hospitalization may improve satisfaction with their physicians.



Scatter plots showing relationship between mean DSES scores and Patient satisfaction using TAISCH questionnaire (A) and five-domain questionnaire (B) with superimposed regression lines.

RELATIONSHIP OF PROCESS MEASURES TO SYSTEM OUTCOMES AND SAVINGS IN ACCOUNTABLE CARE ORGANIZATIONS

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BACKGROUND: Medicare started the Accountable Care Organizations (ACOs) program to control healthcare spending and improve quality through the incentive of shared savings. Early results have demonstrated modest cost savings and quality improvements from ACOs thus far. While process-oriented quality measures are more actionable targets than outcome measures and spending and count equally toward overall quality and shared savings eligibility, it is unclear if better performance on process measures is associated with system level quality outcomes and overall cost.

METHODS: Our objective was to evaluate how performance on ACO process measures relates to other measures of performance using a national sample of ACOs that have completed their third performance year (PY3) in the Medicare Shared Savings Program (MSSP). We used latent class analysis-based clustering (LCA) on the thirteen PY3 process-oriented measures to derive groups with high, intermediate, and low performance. We then analyzed the association between these groups and subsequent system outcome measures and spending.

RESULTS: 191 MSSP ACOs with 3,837,939 attributed beneficiaries had complete PY3 data for 2015 and were clustered by LCA into high ($n = 84$), intermediate ($n = 46$), and low ($n = 61$) performance groups that were significantly different across all 13 process measures (e.g., rate of pneumococcal vaccination 79.31 vs. 57.23 vs. 56.02, $P < 0.001$). Between the three clusters there were no significant differences in number of beneficiaries, sex, beneficiaries over 85 years old, or number of primary or specialist physicians per beneficiary, but ACOs in the high performing group had lower HCC risk scores (1.06 vs. 1.11 vs. 1.09, $P = 0.01$). Inclusion in the high performing group was associated with better performance in terms of system outcomes (risk adjusted all condition readmission 14.73 vs. 15.19 vs. 14.90 percent, $P = 0.002$; rate of unexpected COPD or asthma admissions 1.06 vs. 1.22 vs. 1.14 percent, $P = 0.03$; admissions for diabetic beneficiaries 51.98 vs. 56.38 vs. 56.51, $P = 0.002$). However, when evaluating changes in performance over the entire program period, the high performance process measure group did not have significantly improved system outcomes (e.g., change in all condition readmissions 0.09 vs. -0.03 vs. -0.12, $P = 0.17$). Moreover, the association between process measures and performance did not hold true for ACO spending in PY3 (percent spending above benchmark 1.47 vs. 1.78 vs. 1.28, $P = 0.93$) or across the program period (change in percent spending over benchmark 0.27 vs. 2.59 and 0.64, $P = 0.14$).

CONCLUSIONS: ACOs that performed highly on process measures also performed better on system level outcome measures. However, ACOs in the highest performing cluster did not experience significant changes in performance relative to their peers in system level quality metrics or spending over the program period.

RELATIONSHIP-AMONG PERCEPTIONS OF TEAM DYNAMICS SAFETY CULTURE AND CARE COORDINATION IN PRIMARY CARE

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BACKGROUND: The safety of primary care needs improving, especially with increasing numbers of safety events and malpractice claims stemming from primary care. Studies have demonstrated that creating high-performing teams can improve patient safety and encourage a culture of safety within hospital settings, but few studies have examined this relationship in primary care. The objective of this study was to examine how team dynamics relate to perceptions of safety culture in primary care and whether care coordination, which in theory enables safer care through improved communication, plays an intervening role

METHODS: We conducted a cross sectional study using survey data from all patient-facing staff working at 19 Harvard Medical School affiliated primary care practices participating in the Harvard Academic Innovations Collaborative. The

survey included 3 domains: Team Dynamics (using a 33-item validated instrument), Care Coordination (5-items), and Perceptions of Safety Culture (4-items). All items were measured on a 5-point Likert scale (1 = strongly disagree, 5 = strongly agree). We used linear regression clustered by practice site to assess the relationship between team dynamics and perceptions of safety culture first without and then with care coordination in the model. We used a Sobel test to determine whether the reduction in the effect of team dynamics on perceptions of safety culture by care coordination was significant.

RESULTS: We received 1082 responses (63% response rate) from 256 attendings, 253 residents, and 573 other patient-facing providers. While mean (SD) ratings of team dynamics and of perceptions of safety culture were both moderately positive (3.79 [0.60] and 3.85 [0.72], respectively), care coordination ratings were more neutral and more varied (3.53 [0.89]). In regression models without care coordination, every one point increase in team dynamics was associated with a 0.75-point increase in positive perceptions of safety culture ($p < 0.001$). After adding care coordination to the base model, every one point increase in team dynamics was associated with a 0.73-point increase in perception of safety culture ($p < 0.001$). The decrement in the effect of team dynamics on perceptions of safety culture when care coordination was added to the model was significant (Sobel test $p < 0.001$), suggesting that the association between team dynamics and perceptions of safety culture is partially mediated by care coordination.

CONCLUSIONS: We found a significant and positive relationship between team dynamics and primary care staff perceptions of safety culture; this positive relationship was partially mediated by care coordination. These findings support the notion that investing in teamwork in the primary care setting can have a positive effect on safety culture. Future work should examine the relationship between team dynamics and patient safety outcomes in primary care and clarify the role of care coordination can play in achieving patient safety goals.

RELATIONSHIPS BETWEEN LUNG CANCER MORTALITY AND SMOKING, EDUCATION AND POVERTY IN A RURAL STATE

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BACKGROUND: Lung cancer is the leading cause of cancer-related mortality. In rural states, services aimed at lung cancer prevention such as smoking cessation may not be available to the areas at highest risk. We sought to describe regional differences in lung cancer mortality and the relationship between lung cancer mortality, smoking, education and poverty across small geographic regions to inform local outreach for prevention and screening.

METHODS: We conducted a population-based cross-sectional analysis of: 1) lung cancer deaths in Maine from 2010–2014, ascertained by the state death registry; 2) smoking prevalence 3) education and (4) income, all ascertained by the Behavioral Risk Factor Surveillance System (BRFSS). Analyses examined small-area geographic variation in and association between all of these factors at the Hospital Service Area (HSA) Level, focusing on identifying predictors of lung cancer mortality. We defined low education as not having completed high school, and poverty as household income less than $15,000 annually.

RESULTS: Among 784,873 adults aged 35+ in Maine HSAs, 4635 died of lung cancer between 2010–2014. Lung cancer mortality rates (age and sex adjusted) varied markedly by HSA, ranging from 61.3 to 165.7 deaths per 100,000 person-years. There were marked differences across the 32 Maine HSAs in rates of smoking (range 12.4 to 28.6%), low education (4.7%-17.0%) and poverty (4.4 to 21.1%). We observed strong correlations between regional prevalence of smoking, poverty, low education, and lung cancer mortality (Table).

CONCLUSIONS: There is substantial small-area geographic variation in lung cancer mortality, smoking, and sociodemographic characteristics, which are all strongly correlated with one other. Efforts to improve prevention and screening for lung cancer should include targeting high risk areas with innovative engagement strategies that address social determinants of health.

Table: Correlation Matrix for Lung Cancer Mortality, Smoking, Poverty, and Education

Lung cancer mortality			
0.63	Smoking		
0.61	0.76	Poverty	
0.49	0.67	0.73	Low Education

RESIDENT EXPERIENCES WITH A PROGRAM TO SUPPORT ACADEMIC SCHOLARSHIP DURING INTERNAL MEDICINE RESIDENCY TRAINING

Andrea Carter[1]; Timothy Anderson[5]; Keri L. Rodriguez[2]; Kristina L. Hruska[2]; Shanta M. Zimmer[4]; Carla Spagnoletti[1]; Alison Morris[3]; Wishwa N. Kapoor[1]; Michael J. Fine[1, 2]. [1]University of Pittsburgh, Pittsburgh, PA; [2]VA Pittsburgh Healthcare System, Pittsburgh, PA; [3]University of Pittsburgh School of Medicine, Pittsburgh, PA; [4]University of Colorado School of Medicine, Denver, CO; [5]University of California San Francisco School of Medicine, San Francisco, CA. (Control ID #2701959)

BACKGROUND: Scholarship is an essential component of residency training required by the Accreditation Council for Graduate Medical Education and identified by residents as influencing career choices and satisfaction. Leadership and Discovery (LEAD) is a program developed in 2012 as a component of the University of Pittsburgh Medical Center Internal Medicine (IM) Residency Program that requires all categorical residents to engage in mentored scholarship, generally carried out as a research project. The aims of this study were to compare the perceived value of LEAD among current and former participants and to identify facilitators and barriers to participation in the program.

METHODS: Our study sought information from the first 4 classes of IM residents participating in LEAD, including former graduates (started residency in 2012 & 2013) and current residents (started residency in 2014 & 2015). We surveyed all participants and conducted qualitative focus groups of purposeful samples from each class. The emailed survey contained 5-point Likert-scale questions (from 1 = very dissatisfied to 5 = very satisfied) regarding overall satisfaction with LEAD and its influence on future research plans. A qualitative methods expert led 6, 60-min focus groups (2 with graduates and 4 with current residents) to identify facilitators and barriers to participation and suggestions for improvement. Survey data were analyzed using Wilcoxon rank-sum and chi-square tests. Audiotaped focus groups were transcribed, then analyzed by 2 coders using the grounded theory approach of constant comparison.

RESULTS: Of 106 eligible residents, 78 (74%) completed the survey (40/52 graduates and 38/54 current residents). Graduates reported higher overall satisfaction with LEAD than current residents (median 3.5 vs 3.0, $p = 0.001$). Graduates agreed more frequently than current residents that participating in LEAD increased their likelihood of conducting future research (19/40 [48%] vs 7/38 [18%], $p = 0.008$). The 35 focus group participants (5–7 per group)

discussed common themes across groups ($n = \#$ of focus groups where we identified the theme). The most common facilitators were the desire for research experience to increase fellowship competitiveness ($n = 6$), using the residency advisor to identify a mentor ($n = 6$), and the aid of advice from an experienced mentor ($n = 6$). The most common barriers were time constraints from clinical duties ($n = 6$) and unclear expectations ($n = 5$). Suggestions for improvement were providing lists of available projects ($n = 5$) and mentors ($n = 5$) and clearly defining expectations ($n = 4$).

CONCLUSIONS: Compared to current residents, graduates reported higher overall satisfaction with LEAD and were more likely to agree that participating increased their likelihood of doing future research. Programs to support resident scholarship within IM residency should provide clear expectations and lists of "shovel-ready" projects and mentors for residents who face time constraints during clinical training.

RESIDENT OUTPATIENT INBOX MANAGEMENT IN A SINGLE ELECTRONIC HEALTH RECORD SYSTEM Anand D. Jagannath[4, 1]; Rosemarie Conigliaro[1]; William Southern[3]; Sheira Schlair[2]. [1]Albert Einstein College of Medicine, Bronx, NY; [2]Albert Einstein College of Medicine/ Montefiore Medical Center, Bronx, NY; [3]Montefiore, Bronx, NY; [4]Montefiore Medical Center, New York, NY. (Control ID #2702706)

BACKGROUND: Internal medicine residency training is weighted heavily towards inpatient care despite ACGME mandates for ambulatory exposure. Despite this imbalance, residents are expected to deliver effective primary care even when rotating on inpatient services. Electronic health records (EHR) brought hope of increased efficiency and quality of care; however its adoption has increased resident workload, duty hour violations, and led to decreased job satisfaction. It is unclear whether having separate EHR systems for inpatient and outpatient affects resident outpatient "inbox" management. This study aims to examine the impact of our institution's transition to a single EHR system on outpatient inbox management.

METHODS: 146 internal medicine residents at a large urban academic medical center were surveyed 6 months before and after transition to a single EHR system (previously separate EHRs). Residents self-reported their outpatient inbox practices (frequency of response to patient requests, mode of communication, note completion) and gave qualitative feedback as well. Student t-tests and Chi-squared tests were used to detect the statistical significance of observed differences. Logistic regression models were used to adjust for year in residency.

RESULTS: 66 (45.20%) and 77 (52.73%) of surveyed residents completed the pre-transition and post-transition surveys, respectively. PGY-1 residents accounted for the majority of responses (33.3 and 41.8%). Residents checked their outpatient inboxes and responded to patient needs more frequently while on inpatient rotations with a single EHR (25.6% vs 10.4%, $p = 0.019$). Outpatient note completion within two days of a patient visit increased (88.5% vs 70.2%, $p = 0.006$) as did the use of letters to communicate normal laboratory or imaging results to outpatients (67.9% vs 34.3%, $p < 0.001$). These tasks were completed during work hours more often (66.7% vs 38.81%, $p = 0.001$) with the single EHR. Adjustment by post-graduate year did not change any significant associations found. Residents who infrequently checked their inboxes on non-ambulatory rotations prior to the single EHR cited the need to open an extra EHR as a barrier; after transition, most residents stated that the barrier to inbox management was time constraints of inpatient rotations.

CONCLUSIONS: Outpatient inbox management improved with the use of a single EHR. Outpatient tasks were completed more often during work hours which may suggest an improvement in both duty hour compliance and quality of life. Further studies are needed to better characterize quality of life, job satisfaction, and a more optimal balance between inpatient and outpatient training.

RESIDENT PERCEPTIONS OF COST-EFFECTIVE CARE AFTER INTERNATIONAL HEALTH ELECTIVES: A QUALITATIVE STUDY. Hannah C. Nordhues; M. U. Bashir; Adam P. Sawatsky; Stephen P. Merry. Mayo Clinic, Rochester, MN. (Control ID #2703883)

BACKGROUND: The US spends more money per capita on health care than any other country. Most experts agree that the rising costs are unsustainable. One solution to this problem is teaching cost-effective care to physicians in training. Multiple studies have identified cost-effectiveness as an educational benefit of international health electives (IHE), but no study has analyzed residents' perspectives on cost-effective care after participation in IHEs. We aimed to explore residents' perceptions regarding cost-effective care after participation in an IHE.

METHODS: We conducted a thematic analysis of resident post-rotation reports to explore their perceptions of cost-effective care. The Mayo International Health Program provides residents an opportunity to participate in IHEs during training. Upon completion of their IHE, each participant is required to submit a reflective essay describing the experience and its personal and professional impact. We included all reflective reports between 2001 and 2014 ($n = 377$). We created a codebook *a priori* from the ACGME core competencies. Within the code of system-based practice, we identified a unique code of cost-effective care. Within this code, we analyzed the quotations to identify major themes.

RESULTS: We analyzed 377 reports by residents and fellows training in 40 medical and surgical specialties who visited 56 countries. The necessity of cost restraint in low-resource environments was a stimulus for reflection on cost-effectiveness. Within reflections, we identified 4 themes regarding residents' perceptions on cost-effective care: judicious use of resources; transparency of healthcare costs; step-wise approaches to treatment; and less fear of litigation. Residents experienced more judicious use of resources, and their decisions on testing and treatment were scrutinized. With this approach, they perceived less medical waste and residents relied more on clinical skills. Costs of tests were posted and discussed freely, and extra testing was seen as "food off the patient's table." They saw the lack transparency or "cost-awareness" in the US as a barrier to cost-effectiveness. Residents experienced more step-wise approaches to treatment, starting with empiric treatments for common diseases, with further testing only if the patient did not improve. Residents felt this approach was possible due to less fear of litigation driving "just in case" testing.

CONCLUSIONS: IHEs provide an opportunity for residents to reflect upon cost-effective care. While limited resources can lead to inadequate health care, residents identified benefits from the necessity of cost restraint. Given the unsustainable health care costs in the US, physicians need to adopt a similar urgency in using and teaching cost-restraint. Emphasizing judicious use of resources, ensuring transparency of costs, encouraging step-wise, empiric approaches to treatment, and reducing fear of litigation may help frame future education on cost-effective care.

RESIDENT PERSPECTIVES OF FIRM ROUNDS: A QUALITATIVE STUDY OF A NOVEL APPROACH TO THE TRANSITION OF PATIENT CARE FROM NIGHT TEAMS TO DAY TEAMS Jeremy I. Schwartz[1]; Allen Shih[1]; Nicola Hawley[2]; Andre N. Sofair[1]. [1]Yale School of Medicine, New Haven, CT; [2]Yale School of Public Health, New Haven, CT. (Control ID #2671291)

BACKGROUND: Transitioning the care of patients admitted to the hospital overnight between teams of medical residents often takes place without patient involvement. Attention to quality and safety as well as resident education is also highly variable during such handoffs. We introduced a new method of rounds to transition patients admitted by the night teams to the day teams. 'Firm Rounds' includes the members of one night team and two day teams and embodies three pillars: a patient-centered presentation of the history and physical at the bedside, a 'warm handoff' which includes introductions of the accepting day team by name and role, and the discussion of teaching points presented by one of the night team house officers. After implementing Firm Rounds for a year, we conducted the present study to assess its perceived impact on patient care, education, and quality and safety.
METHODS: We invited all residents in the Yale Primary Care Program to participate in this cross sectional, qualitative study. Twenty residents and recent graduates completed a semi-structured interview that was conducted by one of two student research assistants. Interviews were audio recorded and transcribed. Initial codes for the analysis were developed after an initial reading of all transcripts and were based on the interview guide questions and emergent themes from the data. Three reviewers each independently reviewed multiple transcripts, refining and discussing the codes until a final codebook was agreed upon and consensus reached on coding. A thematic analysis was conducted to identify salient themes in the data.
RESULTS: Residents felt that Firm Rounds improved the doctor-patient relationship since patients witness and participate in the transition of their care and have the opportunity to ask questions and make corrections. However, residents did express concerns about the large number of providers at the bedside, patient privacy in double rooms, and patients' ability to refuse having these rounds at the bedside. Residents felt that Firm Rounds enhanced their learning, given the frequent sharing of multiple clinical perspectives and the discussion of teaching points, though factors such as the night resident's dedication to teaching, quality of attending input, and clinical distractions led to variability of their learning. Finally, residents perceived distinct positive impacts from Firm Rounds on quality of care and patient safety, specifically in the domains of improved continuity of care, warm handoffs, and greater number of providers aware of each patient's clinical status.
CONCLUSIONS: This study identified perceived strengths and limitations of Firm Rounds by residents in our teaching program. Firm Rounds is generally appreciated by trainees and is seen as positively impacting education and patient care. Our findings will be further informed by a concomitant study of patient perspectives of Firm Rounds. Firm Rounds serves as a model that can be adopted and implemented by other residency programs.

RESIDENT PHYSICIANS' PERSONAL HEALTH CARE BEHAVIORS AND RESIDENT-IDENTIFIED BARRIERS TO HEALTH CARE ACCESS Ashley H. Snyder[2]; Katelin Mirkin[2]; Melissa B. Linskey[2]; Jennifer McCall-Hosenfeld[1]. [1]Penn State College of Medicine, Hershey, PA; [2]Penn State Milton S. Hershey Medical Center, Hershey, PA. (Control ID #2706891)

BACKGROUND: Resident physicians face demanding work schedules, financial constraints, and relationships of power imbalance with colleagues which may present barriers to accessing health care and affect well-being. The Accreditation Council for Graduate Medical Education emphasizes the importance of resident well-being, including psychological, emotional and physical health, and specifies that residents must be given the opportunity to attend to their health, even during scheduled work hours. However, little is known about resident health care behaviors and perceived barriers to health care access. We aim to address the knowledge gap in this area.
METHODS: A survey was distributed to 486 residents at a single, tertiary-care, academic medical center. Residents were asked to rate how high they prioritize caring for their own health. Barriers to care were based on prior publications and were measured in three ways: residents were asked (1) to rate how difficult it is to find time to access preventive and acute health care, (2) if there was a time in the past year when they needed to see a physician but could not, (3) rate a list of barriers to accessing care. We report frequencies for demographics and binary items and mean rating for scale-based items. Differences between specialties were compared using Chi-square test.
RESULTS: There were 110 survey responses (response rate 23%) of whom 64% were married 77% white, and 52% female. Residents placed low priority on caring for their own health (mean 4, scale: 1 = low, 10 = high). Residents reported difficulty accessing care for preventive health (mean 7.5) and acute illness (mean 7.1, scale: 1 = easy, 10 = very difficult). Nearly half of residents (46%) reported a time in the past 12 months when they needed to see a doctor but were unable. Residents often used self-diagnosis/treatment due to barriers accessing care (mean 7.3, scale: 1 = never, 10 = very often). Residents perceived "finding time" (mean 9.3) and "cost of lost work time" (mean 6.7, scale: 1 = minor, 10 = major) to be the largest barriers to accessing routine care for all specialty types. Medicine/other residents were significantly more likely to consider "I may have to see someone I know from work" (mean 5.3, $p = .03$) a barrier compared to surgery and anesthesia residents. Residents rated that rapid referral access (mean 8.6) and rapid/walk-in access to preventive care (mean 8.3, scale: 1 = not useful, 10 = very useful) would be most helpful in eliminating perceived barriers.
CONCLUSIONS: Resident physicians find it difficult to access health care when needed. Our findings demonstrate that residents place low priority on their personal health needs. This may be due to a misaligned culture in residency training in which resilience is perceived as prioritizing patient care and work obligations over personal well-being. Future studies further exploring the culture of residency training will be important in order to reduce barriers to health care access for residents.

RESIDENTIAL SOCIOECONOMIC, FOOD AND BUILT ENVIRONMENTAL CHARACTERISTICS ARE ASSOCIATED WITH GLYCEMIC CONTROL AMONG ADULTS WITH DIABETES IN NEW YORK CITY Bahman Tabaei[4]; Andrew Rundle[2]; Winfred Y. Wu[4]; Carol R. Horowitz[3]; Victoria L. Mayer[1]; Daniel Sheehan[2]; Shadi Chamany[4]. [1]Icahn School of Medicine at Mount Sinai, Brooklyn, NY; [2]Mailman School of Public Health, New York, NY; [3]Mount Sinai School of Medicine, New York, NY; [4]New York City Department of Health and Mental Hygeine, NYC, NY. (Control ID #2703104)

BACKGROUND: Residential environment may be related to diabetes incidence and prevalence, but it is unclear whether it directly contributes to diabetes control. There is little, if any prospective evaluation of whether cumulative

exposures to specific residential features are associated with glycemic control in persons with diabetes in a large multiracial, multiethnic cohort. We aimed to determine whether residential environment factors are associated with glycemic control in individuals with diabetes, and whether residential resources supporting high quality environments are associated with better glycemic control.

METHODS: The team conducted a longitudinal analysis of data from 182,756 adult residents of New York City with diabetes (at least two hemoglobin A1c tests ≥6.5%), and defined glycemic control as hemoglobin A1c (A1C) <7%. We utilized 7 years of data from the NYC Department of Health and Mental Hygiene's A1c registry, which contains the A1C test results from all NYC residents, These are reported to the Department under the local health code. After constructing measures of NYC residential environments, we performed factor analysis to formulate a residential composite score that divided residential areas into quintiles with the lowest and highest quintile areas reflecting the least advantaged and most advantaged environments respectively.

RESULTS: Several residential-level environment characteristics were positively associated with glycemic control. These included more advantaged socioeconomic conditions (lowest poverty rates, homicides and linguistic isolation, highest median income, education levels and % White), greater ratio of healthy and neutral food outlets to unhealthy food outlets, and greater residential walkability. Individuals who lived continuously in the most advantaged residential areas had significantly higher odds of glycemic control (OR = 2.59) and shorter time to achieve glycemic control (HR = 1.14) compared to the individuals who lived continuously in the least advantaged residential areas. Moving from less advantaged residential areas to more advantaged residential areas was related to improved diabetes control (0.38% decrease in A1C), while moving from more advantaged residential areas to less advantaged residential areas was related to worsening diabetes control (0.34% increase in A1C).

CONCLUSIONS: This analysis found an association between socioeconomic, food and built environments, and glycemic control, after controlling for environmental and individual level covariates. These results are consistent with the hypothesis that residential areas with greater resources to support healthy food, residential walkability and high socioeconomic environments are associated with glycemic control in persons with diabetes. Further research is needed to increase the confidence of the associations observed in the current study, as such findings have important implications for urban policy and population health improvement efforts.

RESILIENCE AMONG LGBT HEALTHCARE PROFESSIONALS

Carl G. Streed[1]; Michele Eliason[2]. [1]Brigham & Women's Hospital, Boston, MA; [2]San Francisco State University, San Francisco, CA. (Control ID #2670822)

BACKGROUND: Much has been written about the challenges of adopting a minority sexual or gender identity, from the stresses of disclosing to parents and family, to dealing with bullying in schools, and to coming out in the workplace. One area that has been neglected to date is how individuals deal with the stress of being lesbian, gay, bisexual or transgender as a healthcare professional. This pilot study was the first to study stress and resilience among lesbian, gay, bisexual, and transgender (LGBT) healthcare professionals, who must learn and work in environments that are often unfriendly or ignorant about LGBT issues.

METHODS: An online survey was distributed among professional networks of LGBT healthcare professionals.

RESULTS: Among 277 healthcare providers from diverse disciplines, fewer negative events are occurring in the workplace than previously reported. However, most settings still lack any training on LGBT issues and their nondiscrimination policies do not include gender identity. Approximately a quarter respondents had low levels of resilience; they reported more stress, greater frequency of consequences of stress on mental health, physical health, job satisfaction, and burnout. However, their work environments were similar to resilient respondents in terms of welcoming and inclusive policies. Despite similar overall levels of support to manage stress, low resilient respondents reported less support from coworkers and bosses/supervisors than resilient respondents.

CONCLUSIONS: Positive events, such as pro-LGBT comments and appropriate treatment of LGBT patients and families were much more common than negative events. However, we found that there are still unacceptably high levels of discriminatory policies and workplace harassment and differential treatment that can adversely affect LGBT healthcare professionals. This study identifies opportunities for increasing the joy in medicine and well-being of LGBT healthcare providers, including support from supervisors, updating institutional policies to include sexual orientation and gender identity, and providing support to attend LGBT organizations.

RESILIENCE AND GRIT IN THE MICROBIAL WORLD: STREPTOCOCCUS PYOGENES BACTEREMIA IN ADULTS IN THE 21ST CENTURY. REVIEW OF 68 EPISODES OVER A 10-YEAR PERIOD IN A LARGE COMMUNITY TEACHING HOSPITAL.

Jacob Hupp[2]; Joseph P. Myers[1]. [1]Summa Health System, Barberton, OH; [2]Summa Health System, Ravenna, OH. (Control ID #2694618)

BACKGROUND: *Streptococcus pyogenes* causes pharyngitis, tonsillitis, cellulitis and less frequently other clinical syndromes. It is infrequently included in the differential diagnosis of other infectious illnesses. *S. pyogenes* is also an organism without a vaccine. As physicians encounter fewer illnesses caused by vaccine-preventable organisms such as *Streptococcus pneumoniae* and *Haemophilus influenzae*, the void may be filled by *S. pyogenes*.

METHODS: To determine the frequency of bacteremic *S. pyogenes* infection at our teaching hospital, we reviewed the medical records of all adult patients (16 years of age and older) with *S. pyogenes* bacteremia (SPB) admitted to our institution during the almost 10-year period from January 1, 2007 to November 30, 2016. We report the epidemiology, source of infection, comorbid conditions, treatment and mortality for these patients.

RESULTS: There were 68 cases of SPB during the study period with a bimodal distribution of cases with peaks in spring and early winter. There were 26 episodes (38.2%) in the first five years and 42 episodes (61.8%) in the final five years of the study, suggesting an increasing incidence of the disease. There were 27 episodes in men (39.7%) and 41 episodes in women (60.3%). The patients' ages ranged from 17 to 91 years with a mean of 58.1 years and a median of 59.5 years. The seventh decade had the highest occurrence of SPB (13 cases, 19.1%). Skin and soft tissue infections with or without necrotizing fasciitis were the most common presentation (29 cases. 42.6%), followed by primary bacteremia (10 cases, 14.7%), pneumonia (7 cases, 10.3%), septic bursitis/arthritis (7 cases, 10.3%), obstetric/gynecologic (5 cases, 7.3%) and head/neck infections (5 cases, 7.3%). Many patients presented to the hospital in septic shock. All patients received appropriate initial

antimicrobial therapy because of the exquisite sensitivity of *S. pyogenes* to various empiric antimicrobial regimens. All strains of *S. pyognes* tested during the study period maintained sensitivity to penicillin G. Diabetes mellitus was the most common comorbid condition. Despite rapid initiation of appropriate antimicrobial and surgical therapy, seven of 68 patients died for a mortality rate of 10.3%.

CONCLUSIONS: Bacteremic *S. pyogenes* infections appear to be increasing in frequency. Adult hospitalists should be keenly aware of this information and understand the potential consequences of unrecognized, rapidly progressive group A streptococcal infection including necrotizing fasciitis, meningitis, septic arthritis, pneumonia and puerperal/ gynecologic infection. Emergent surgical intervention remains essential to the survival of many of these patients.

RESILIENCE AND TOLERANCE OF UNCERTAINTY AMONG DEPRESSED AND BURNT OUT RESIDENTS: CROSS-SECTIONAL STUDY Arabella L. Simpkin[1, 2]; Alisa Khan[3]; Daniel West[4, 5]; Briana Garcia[3]; Theodore Sectish[3, 2]; Nancy D. Spector[6]; Christopher Landrigan[3, 2]. [1]Massachusetts General Hospital, Boston, MA; [2]Harvard Medical School, Boston, MA; [3]Boston Children's Hospital, Boston, MA; [4]University of California, San Francisco, San Francisco, CA; [5]Benioff Children's Hospital, San Francisco, CA; [6]Drexel University College of Medicine, Philadelphia, PA. (Control ID #2706109)

BACKGROUND: Depression and burnout are highly prevalent among residents, but little is known about modifiable personality traits—such as resilience and tolerance of uncertainty—that may predispose to these conditions which have profoundly negative implications for physicians, patients, and the healthcare system. How to stem the rise of burnout in healthcare professionals is an important unanswered question with a growing need for targeted interventions in medical education. This study aims to determine how tolerance of uncertainty is related to resilience among residents and whether these attributes are associated with depression and burnout.

METHODS: The authors surveyed 86 residents from four urban freestanding children's hospitals in North America in 2015. Tolerance of uncertainty was measured using the Physicians' Reaction to Uncertainty Scale, resilience using the 14-item Resilience Scale, depression using the Harvard national depression screening scale, and burnout using single item measures of emotional exhaustion and depersonalization from the Maslach Burnout Inventory.

RESULTS: 50/86 residents responded to the survey (58.1%). Higher levels of stress from uncertainty were correlated with lower resilience ($r = -.60$; $p < 0.001$) (FIgure 1). 5 residents (10%) met depression criteria and 15 residents (31%) met criteria for burnout. Depressed residents had higher mean levels of stress due to uncertainty (51.6[9.1] vs. 38.7[6.7]; $p < 0.001$) and lower mean levels of resilience (56.6[10.7] vs. 85.4[8.0]; $p < 0.001$) compared to residents who were not depressed. Burnt out residents also had higher mean levels of stress due to uncertainty (44.0[8.5] vs. 38.3[7.1]; $p = 0.02$) and lower mean levels of resilience (76.7[14.8] vs. 85.0[9.77]; $p = 0.02$) compared to residents who were not burnt out.

CONCLUSIONS: We found strong correlations between tolerance of uncertainty, resilience, depression, and burnout. Evidence suggests that these attributes are states, not traits, and thus are amenable to change through educational and experiential processes. Efforts to enhance tolerance of uncertainty and resilience may provide opportunities to mitigate resident depression and burnout.

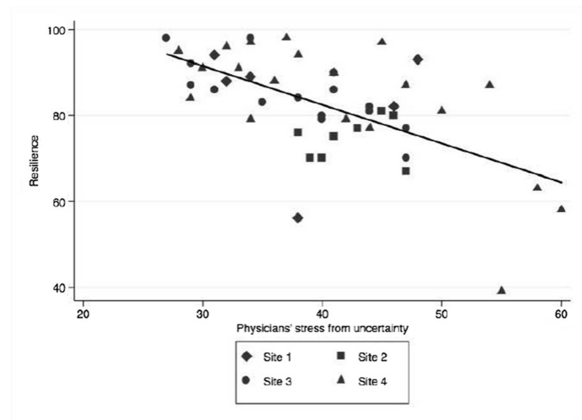


Figure 1 | **Correlation between resilience and physicians' stress from uncertainty.**

RESPONDING TO A NATIONAL READMISSIONS REDUCTION PENALTY PROGRAM FOR CHRONIC OBSTRUCTIVE PULMONARY DISEASE Valerie G. Press[1]; Tina Shah[1]; Ashley M. Snyder[1]; John Kim[1]; Michael Miller[1]; Edward Kim[1]; Samira Qadir[2]; Matthew M. Churpek[1]; Michael Howell[1, 2]; Steven R. White[1]. [1]University of Chicago, Chicago, IL; [2]University of Chicago Medicine, Chicago, IL. (Control ID #2702096)

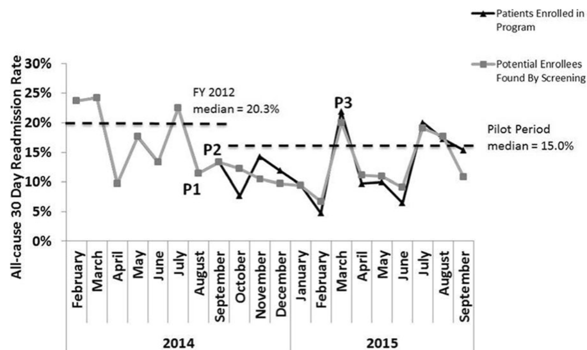
BACKGROUND: Hospitals now face penalties for excess readmissions for acute exacerbations of Chronic Obstructive Pulmonary Disease (AECOPD) under the Medicare Hospital Readmissions Reduction Program (HRRP) policy. To address this new policy, hospitals were required to implement programs despite limited evidence for guidance on effective interventions. We tested the feasibility of a hospital-based, comprehensive COPD integrated disease management program (IDMP) to reduce readmissions at our urban, academic hospital.

METHODS: Thirty-day readmissions were analyzed with run charts to study the program-level analysis among patients receiving the IDMP and with interrupted time series for the policy-level analysis for all COPD discharged patients. Participants were prospectively identified as likely hospitalized for COPD using a novel screening algorithm (program-level analysis) and retrospectively identified by administrative discharge codes for COPD (policy-level analysis). The inter-professional IDMP was delivered with components including: an inpatient COPD care pathway implemented by high-level providers, patient education that included self-management and inhaler technique, follow-up within 7 days of discharge, and a 24-hour access line for patients and emergency department providers post-discharge.

RESULTS: Of 592 patients identified for enrollment into the IDMP, 397 received the program. A run chart analysis demonstrated a decrease in the readmission rate with a seven-month shift below the median. When comparing all enrolled patients to a historical control population, there was no significant effect immediately or over time (OR 0.99, $p = 0.91$; OR 1.00, $p = 0.58$, respectively) on reduction of 30-day all-cause readmissions.

CONCLUSIONS: Our IDMP intervention targeting reduced readmissions among COPD patients demonstrates promise in evaluating the QI methods that show program effectiveness. Significant reductions in readmissions could

be demonstrated by QI measures (run chart analysis) but not when using adjusted analyses. Further, from a policy standpoint, a significant reduction could not be demonstrated using the IDMP. These results illustrate the potential danger of the Medicare HRRP penalty on national hospital readmissions policy, as moving the bar on readmissions will be effective only if these readmissions are preventable.



RETAINING RESIDENTS IN PRIMARY CARE FOR THE UNDERSERVED: PRIMARY CARING, RIGOR, AND COMMUNITY

Jasmine A. Ross[1]; Natasha Rastogi[2]; Lisa Altshuler[2]; Jennifer Adams[2]; Kathleen Hanley[4]; Richard E. Greene[2]; Les Chuang[2]; Sondra Zabar[2]; Mack Lipkin[3]. [1]NYU, Brooklyn, NY; [2]NYU School of Medicine, New York, NY; [3]New York University School of Medicine, New York, NY; [4]NYU, New York, NY. (Control ID #2705635)

BACKGROUND: As healthcare increases demands, primary care physicians need evidenced-based, patient-centered care coordination, effective use of information technology, interdisciplinary team functioning and shared decision-making skills more so in underserved areas. In 2008, we documented 20 years of the NYU/Bellevue Primary Care Internal Medicine Residency Program (NYUBPC) on readiness for practice[1]. In light of the recent primary care changes we assessed our recent training of Primary Care Residents in high quality, person-centered, systems-savvy, team-based care for the underserved. Specifically we aimed to: 1. Assess the NYUBPCP impact on graduate career choices, values and style 2. Elicit reflections that illustrate complexities in educating primary care physicians

METHODS: We surveyed 56 graduates of the NYUBPCP from 2007–2014. The 44 question survey included 12 open-ended questions about career path, current practice, preparedness for practice and specifics about how aspects of training provided necessary skills and knowledge. Responses were unidentified. We received 37 responses, (66%).

RESULTS: 36 respondents currently provide clinical care, with about 40% of their time spent in a primary care setting (S.D. 32%). On a 4-point scale 85% either agreed or strongly agreed with Primary Care as a career choice. 74% felt prepared for the challenges of a primary care practice, rating clinical experiences with underserved communities, and the psychosocial, clinical epidemiology and health policy focus as essential aspects of training. All but 4 provide care to medically underserved populations. They valued the community of peers and colleagues that the NYUBPCP provided. While 53% rated their clinical site as hectic/chaotic (4 or 5 on a 5 point scale), only 6% reported persistently feeling burnout. 19% reported at least one symptom of burnout. Qualitative analyses revealed overlapping themes in alumni perceptions of how residency influenced current practice, aspects of training that were difficult to implement and expectations for the future directions of primary care. Responses demonstrated a mismatch between the "purity" of primary care practice graduates strove to achieve after residency and the actuality of a practice influenced by external factors (e.g. time pressures, reimbursement issues and metric achievements). Some found it difficult to be involved with research or advocacy while in full-time clinical practice. Graduates believed the future of primary care lies in a team-based approach.

CONCLUSIONS: A training program emphasizing rigorous curriculum, committed role modeling, care of the underserved, and strong residency community for support continues to document high rates of retention in primary care. They are well adapted entering physicians with the skills and attitudes necessary to succeed in primary care and become educators of the next generation.

RETHINKING CERVICAL CANCER SCREENING QUALITY MEASURES: INCORPORATING FLEXIBILITY AND EFFICIENCY

Natasha Parekh; Julie M. Donohue; Jennifer Corbelli; Aiju Men; Marian Jarlenski. University of Pittsburgh, Pittsburgh, PA. (Control ID #2706240)

BACKGROUND: Monitoring cervical cancer screening quality measures is a priority for state Medicaid programs given that low-income women face increased risk for cervical cancer. The Healthcare Effectiveness Data and Information Set (HEDIS®) cervical cancer screening quality measure is defined as at least one cytology screen in 3 years among women 24–64 years or at least one cytology screen and HPV test in 5 years among women 35–64 years. There are potential flaws with current measures. First, they lack flexibility to allow for brief delays in screening. Second, they fail to recognize over-screening, which can lead to unnecessary procedures and treatment. Our objectives were to assess how adherence to 2009 cervical cancer screening guidelines changed based on a) adding window periods to intervals that define appropriate screening, and b) differentiating between appropriate and over-screening.

METHODS: Using Pennsylvania Medicaid claims data from 2007–2013 for women ages 18–64, we analyzed data stratified by age (<30 and ≥30 years) due to age-specific screening guidelines. We evaluated women who had pap exams (paps) between 11/1/09-4/30/10 and defined adherence by comparing time intervals between paps with guideline-based intervals. We defined adherence to current measures as under-screening and appropriate screening if the interval between paps was longer than and within guideline-based intervals, respectively, and adherence to alternative measures as under-screening, appropriate screening, and over-screening if the interval between paps was longer, within, or shorter than guideline-based intervals that included ±0, ±3, and ±6-month windows, respectively.

RESULTS: Our sample included 27,076 paps performed in 14,786 women. Based on current measures that do not include windows and that do not distinguish between over-screening and appropriate screening, 71% of women <30 and 65% of women ≥30 were appropriately screened and 29% of women <30 and 35% of women ≥30 were under-screened. With alternative measures that incorporate 0, 3 and 6-month windows and that differentiate between appropriate and over-screening, appropriate screening changed from 71 to 0

to 6 to 11% in <30-year-olds, and from 65 to 0 to 3 to 7% in ≥30-year-olds. Over-screening represented the majority (61-71%) of screening.

CONCLUSIONS: We observed up to an 11% increase in appropriate cervical cancer screening when including windows in performance measure definitions and up to a 71% decrease in appropriate screening when it was distinguished from over-screening. Because performance measures currently classify both appropriate screening and over-screening as measure compliance and are based on strict cutoffs without flexibility, they can incentivize providers to over-screen. A more comprehensive cervical cancer screening performance measure is needed to align with clinical guidelines, reduce unnecessary procedures, and reflect quality of women's health care.

REVISITING THE RESIDENT PRIMARY CARE PHYSICIAN PANEL: AN IMPORTANT CONSIDERATION IN PREVENTING BURNOUT IN GIM Utibe R. Essien; Jonathan R. Abraham; Kerri Palamara; Wei He; Steven J. Atlas. Massachusetts General Hospital, Boston, MA. (Control ID #2702639)

BACKGROUND: Ambulatory education for internal medicine (IM) residents is vital to training. Despite changes in continuity clinic models and increased time by residents in outpatient settings concern remains that their clinic experiences and panels do not reflect that of staff primary care physicians, creating additional stressors, burnout and negative attitudes toward primary care. We compared the characteristics of patients followed by resident and staff primary care physicians (PCPs) to determine if differences may identify potential targets for preventing burnout in residency.

METHODS: We used retrospective data from patients receiving care from IM residents and staff PCPs at 16 outpatient clinics affiliated with Massachusetts General Hospital from 2005–2015. A validated algorithm was used to attribute patients to resident and staff PCPs in 2015. Patient sociodemographic characteristics and comorbid conditions including age, gender, race/ethnicity, language, insurance status, health center status, area-based median household income and poverty level, education, practice site, physician complexity score and Charlson Index score were assessed.

RESULTS: Among all primary care patients, 10,538 (7.5%) were attributed to resident and 130,706 to staff PCPs. Compared to staff patients, resident patients were more likely to be male, African-American or Hispanic, receive Medicaid or be uninsured. Resident patients were more likely to live in low-income/poverty areas, less likely to speak English and less likely to have a college education. Resident patients also had higher comorbidity scores (*p*-values all < .0001) (Table 1).

CONCLUSIONS: Major differences in sociodemographic factors and comorbid conditions exist between resident and staff PCP patients, consistent with previous data. Compared to staff patients, resident patients were more ethnically diverse, medically complex and have a lower socioeconomic status. The impact of these sociodemographic factors along with the systematic limitations of caring for medically complex patients in the outpatient setting during residency may increase physician stress and burnout and ultimately result in poor patient outcomes. Further research is needed to explore the disparities in the characteristics of resident and staff PCP panels and the impact this may have on resident physician burnout.

Characteristics of Resident and Staff PCP Patients

Demographic Characteristics	Resident PCP Pateints *n* = 10,538	Staff PCP Patients *n* = 130,706	*p*-value
Age (mean)	48.2	52.7	<.0001
Gender (female)	48.8%	58.3%	<.0001
Race/Ethnicity	59.6%	77.5%	<.0001
Caucasian	12.4%	5.3%	
African American	2.8%	1.5%	
Hispanic	7.4%	6.2%	
Asian	15.5%	7.5%	
Other			
Language (English)	80.6%	91.7%	<.0001
Insurance	60.7%	70.7%	<.0001
Commercial	20.4%	21.6%	
Medicare	15.4%	5.9%	
Medicaid	3.5%	3.5%	
Un- or self-insured			
Median household	10.3%	5.3%	<.0001
income	63.0%	47.3%	
Low	26.7%	47.4%	
Medium			
High			
Education	43.6%	63.2%	<.0001
College/Postgrad	32.2%	20.3%	
High School/GED	18.1%	12.5%	
Under HS diploma	6.1%	4.0%	
Unknown			
Mean Charlson Index Score	1.7	1.9	<.0001

RIDESHARE-BASED MEDICAL TRANSPORTATION IMPROVES PRIMARY CARE SHOW RATES: A DIFFERENCE-IN-DIFFERENCE ANALYSIS OF A PILOT PROGRAM Krisda H. Chaiyachati[2]; Rebecca Hubbard[3]; Alyssa Yeager[4]; Brian M. Mugo[4]; Judy A. Shea[4]; Roy Rosin[1]; David Grande[4]. [1]Penn Medicine, Wayne, PA; [2]The University of Pennsylvania, Philadelphia, PA; [3]University of Pennsylvania, Philadelphia, PA; [4]Perelman School of Medicine at the University of Pennsylvania, Philadelphia, PA. (Control ID #2705269)

BACKGROUND: Transportation to primary care is a major barrier for Medicaid patients despite access to non-emergency medical transportation (NEMT) insurance benefits. Rideshare services provided by Uber and Lyft have been proposed as potential NEMT alternatives because they are convenient and low cost. As part of a pilot-program, we designed a rideshare-based transportation intervention for Medicaid patients and tested whether primary care show rates improved.

METHODS: Our study population included adults living in West Philadelphia, and were Medicaid patients at one of two Penn internal medicine practices—an intervention and control clinic—within the same building. Intervention clinic patients with a scheduled appointment received a telephone reminder 2 days before and were offered free transportation to-and-from clinic using Lyft. Up to 3 attempts were made to contact the patient. For those who accepted, staff pre-scheduled a Lyft ride using a web-based dispatch tool, circumventing the need for patients to have a smartphone or app. To return home, patients called staff to dispatch a Lyft ride after their clinic visits. Control clinic patients received an appointment reminder 2 days before appointments as part of usual care. For both clinics, we collected appointment attendance data from a period before (Aug 4 - Sep 16, 2016) and during (Oct 12–21, 2016) the intervention. The primary outcome was appointment show rate—the proportion who attended among those called. We employed a difference-in-difference analytic approach using logistic regression with robust standard

errors to compare show rate changes at the two clinics between the two data collection periods. We adjusted for patient demographics, zip code, and provider types (resident, attending, or mid-level). Our approach accounts for the influence of secular trends in the intervention clinic and time-invariant differences between clinics.

RESULTS: The 60 individuals called in the intervention group had a median age of 52 years (IQR 41–58), and were female (70%), non-Hispanic (98%), and black (92%). Out of 45 who answered, 18 (40%) had a ride scheduled, among those 13 (72%) used the service. At the control clinic, the show rate declined from 60% (143/240) to 51% (34/67). At the intervention clinic, the show rate improved from 55% (72/132) to 68% (41/60). In the adjusted model, those called to receive the intervention had a 2.51 (95% CI: 1.08-5.81, $p = 0.032$) higher odds ratio of attending clinic. The average cost of per ride was $8.10.

CONCLUSIONS: Results of this pilot program suggest that a ride-share service can increase show rates to primary care appointments for Medicaid patients. These findings are not generalizable to non-urban environments and pre-appointment reminders with multiple follow-up attempts may explain these results, but patients received at least one reminder in both arms. Our findings have implications for payers and providers hoping to improve primary care show rates for low-income populations.

RISK FACTORS ASSOCIATED WITH 30 DAY READMISSION IN PATIENTS WITH DIABETIC FOOT INFECTIONS Marshall Miller; Heather Young; Bryan Knepper. Denver Health Medical Center, Denver, CO. (Control ID #2690262)

BACKGROUND: Diabetic foot infections (DFI) are the most common cause of hospitalization for patients with diabetes and the leading cause of amputations in developed countries. Previous studies have shown that diabetic patients have higher readmission rates than non-diabetics. It is important to identify variables that may be contributing to readmission. Our study aims to investigate which clinical variables are associated with 30 day hospital readmission in patients with DFI; this information could improve the practice of hospitalists.

METHODS: We conducted a retrospective cohort study of adult patients admitted to an academic safety net hospital in Denver, Colorado for diabetic foot infections between July 1, 2012 to July 1, 2015. We identified patients by ICD9 codes and randomly selected 35% of charts for review. Patients were excluded if they did not have a DFI by chart review, were pregnant, or incarcerated. The primary outcome was 30 day readmission. Data collected included baseline demographics, medical comorbidities, active substance abuse, homelessness, tobacco use, laboratory data, and surgical pathology data. Additional variables are the presence of gangrene, length of stay, time to surgery (day of admission to day of surgery), lack of a primary care provider, and type of surgery. Univariate and multivariable logistic regression models utilizing backwards selection were used to identify independent predictors.

RESULTS: A total of 140 patients were included in the study. The majority was male ($n = 106$, 76%). Median age was 55 years (IQR 49–61) and length of stay was 7 days (IQR 4–10). Thirty-one patients (22%) were readmitted in the 30 days following index hospitalization. Factors associated with readmission included treatment failure, elevated C-reactive protein, and hospital length of stay ($p < 0.05$). In multivariate analyses, length of stay and treatment failure were independent factors that predicted readmission; and homelessness showed a nonsignificant trend.

CONCLUSIONS: The 30-day readmission rate for patients with DFI is high. Factors such as treatment failure, C-reactive protein, and length of stay are independently associated with readmission. It is unclear if treatment failure is the cause of readmission or it is the result of readmission. More work is needed to determine the reason for readmission so that appropriate measures can be taken prior to discharge.

Multivariate model of risk factors for readmission within 30 days.

Risk Factor	Odds Ratio	95% confidence Interval	P-value
Length of Stay	1.08	1.01-1.16	0.03
Treatment Failure	2.67	1.15-6.21	0.02
Homelessness	2.01	0.76-5.33	0.16

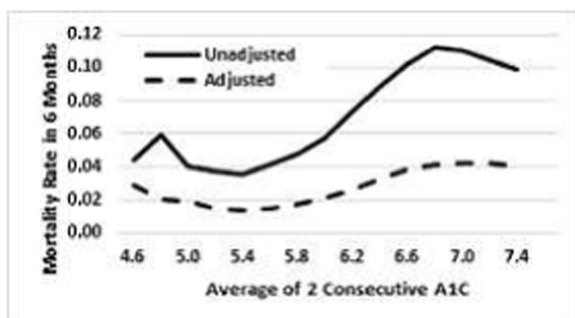
RISK OF MORTALITY AMONG VETERANS DEPENDS MORE ON COMORBIDITIES THAN ON GLYCOSYLATED HEMOGLOBIN LEVELS Sanja Avramovic[2]; Farrokh Alemi[2]; Richard B. Hayes[1]; Esther Levy[1]; Jordan Davis[1]; Mark D. Schwartz[1]. [1]NYU School of Medicine, New York, NY; [2]George Mason University, Fairfax, VA. (Control ID #2703999)

BACKGROUND: Prior studies of the mortality risk associated with glycosylated hemoglobin (A1c) have systematically excluded patients with key comorbidities, and thus may not reflect the true association of A1C with mortality. The objective of the study is to determine mortality risk after accounting for all comorbidities. Design: Retrospective, secondary data analysis from all 168 VA Medical Centers and 1,053 VA Community Based Outpatient Clinics; All patients who from 1/2008 to 12/2015 had >2 primary care visits, not more than 2 years apart, to a VA facility, who had no prevalent diabetes diagnosis before 1/2008, and who had at least 2 A1c measurements

METHODS: The A1c level for each patient was defined as the max of the average of two consecutive A1c test results during the study period. The primary outcome was mortality within 6 months of the date of the latter of two consecutive A1c tests. Stratified covariate balancing was used to measure unconfounded impact of A1c on mortality rate, adjusting for the impact of comorbidities.

RESULTS: 2,672,558 patients met the entry criteria. Average age was 62 (standard deviation$n = 14.6$), 93% were male, and 71% White. 48% had 1 comorbidity; 19% had 2; 11% had 3; 7% had 4; and 15% had 5 or more. 0.7% had low A1c (<5.0%), 69.7% had normal A1c (5.0 to 5.7%); 26.7% had prediabetic A1C (5.7 to 6.4%), and 2.9% had A1c levels in diabetic range (A1c > 6.5%). The solid line in the Figure shows the 6-month mortality risk associated with unadjusted A1c levels; note that the Figure has deleted A1c levels with less than 1,000 unique patients. All diseases (e.g. cancer) affected both A1c levels and mortality rates. After stratification removed the impact of comorbidities (dashed line), risk of mortality associated with A1c levels dropped. The comorbidity-adjusted risk (e.g. risk at A1c of 4.6%) was lower than unadjusted normal levels (e.g. risk at A1c levels of 5.4%). Prior to adjustment, a change from normal (A1c = 5.4%) to diabetic (A1c = 7%) was associated with 8% higher mortality, while afterwards the same A1C was associated with only 3% higher mortality.

CONCLUSIONS: A1c level is associated with mortality across the full range, with risk greatest for those with A1c >6.5% but most of the increase is accounted for by patients' comorbidities, so clinicians should focus on the progression of the underlying diseases and not simply on A1c test results among their patients at risk for diabetes.



ROLE OF MAGNESIUM IN THE TREATMENT OF DEPRESSION

Emily Tarleton; Benjamin Littenberg; Charles D. MacLean; Amanda G. Kennedy; Christopher Daley. University of Vermont, Burlington, VT. (Control ID #2703129)

BACKGROUND: Depression affects 350 million people worldwide and is predicted to be the leading cause of disease burden by 2030. Current treatment options are limited by cost, availability, side effects, and acceptability to patients. Several studies have looked at the association between magnesium and depression, yet its role in symptom management is unclear. The objective of this trial was to test whether supplementation with over-the-counter magnesium chloride improves symptoms of depression.

METHODS: A randomized cross-over trial was conducted in outpatient Primary Care Clinics and included 126 adults (mean age 52; 38% male) diagnosed with depression by their primary care provider and currently experiencing mild-to-moderate symptoms with Patient Health Questionnaire-9 (PHQ-9) scores of 5–19. The intervention consisted of six weeks of active treatment (magnesium chloride supplementation) compared to six weeks of control (no treatment). The main outcomes and measures included assessments of depression and anxiety symptoms at bi-weekly phone calls during both the 6-week treatment period and 6-week control period. The primary outcome was the difference in the change in depression symptoms during baseline and the end of each treatment period. Secondary outcomes included changes in anxiety symptoms as well as adherence to the supplement regimen, appearance of adverse effects, and intention to use magnesium supplements in the future.

RESULTS: Consumption of 248 mg elemental magnesium chloride for 6 weeks resulted in a clinically significant net improvement in PHQ-9 scores of −6.1 points (CI −7.92, −4.21; $P < 0.001$) and net improvement in Generalized Anxiety Disorders-7 scores of −4.5 points (CI −6.57, −2.34; $P < 0.001$). Average adherence was 83% by pill count. The supplements were well tolerated and 61% of participants reported they would use magnesium in the future. Similar effects were observed regardless of age, gender, baseline severity of depression, baseline magnesium level, or use of antidepressant medications. Treatment effects were observed within two weeks.

CONCLUSIONS: Magnesium is effective for mild-to-moderate depression in adults. It works quickly and is well tolerated without the need for close monitoring for toxicity. Magnesium supplements may be a safe and easily accessible alternative, or adjunct, to starting or increasing the dose of antidepressant medications.

RURAL RESIDENCE STATUS IS ASSOCIATED WITH PREVENTABLE HOSPITALIZATIONS AMONG ELDERLY DUAL VHA/MEDICARE USERS WITH TYPE II DIABETES MELLITUS

Drew Helmer[1, 2]; Mazhgan Rowneki[1]; Dennis Fried[1]; Chin-lin Tseng[1]; Danielle Rose[3]; Orysya Soroka[1]; Usha Sambamoorthi[4]. [1]VA-NJHCS, East Orange, NJ; [2]Rutgers University-New Jersey Medical School, Newark, NJ; [3]VA GLA Healthcare System, Sepulveda, CA; [4]University of West Virginia, Morgantown, WV. (Control ID #2706788)

BACKGROUND: Rural residence has been associated with poorer health outcomes. Preventable hospitalizations are inpatient stays potentially avoidable with timely access to high quality ambulatory care. We explored the association between rural residence and preventable hospitalizations for veterans with diabetes, given the complex and chronic nature of the disease and its prevalence among veterans (25%).

METHODS: We used a retrospective cohort (baseline years 2008–2009, outcome year 2010) of Veterans with type II diabetes mellitus, aged >65 years, dually enrolled in VHA and Medicare part A and B, and with no use of hospice or long term care facilities using inpatient and outpatient data derived from a VHA and Medicare. We classified Veterans' residence as urban, rural, or highly rural using ZIP code-based Rural Urban Commuting Area codes according to the VHA Office of Rural Health. We applied the Prevention Quality Indicators (PQI) definition of preventable hospitalizations to inpatient care experienced in 2010. We measured the association between preventable hospitalizations and rural residence using a multivariate logistic regression model controlling for age, sex, race, marital status, Medicaid enrollment status, Diabetes Complications Severity index, HbA1c levels, lipid levels, mental health conditions, cancer, chronic obstructive pulmonary disease, asthma, arthritis, Body Mass Index, anti-diabetes drug use, insulin use, tobacco/alcohol/drug use, VHA priority status, and census divisions.

RESULTS: Our cohort was 572,360 Veterans with mean age 76 years, who were 86.84% white and 98.36% male. Most (62.31%) of our cohort resided in urban areas, 35.92% in rural areas, and 1.77% in highly rural areas. Approximately 8% experienced a PQI during 2010. In bivariate analysis, there were differences by rurality of residence in obesity (urban 25.56%, rural 29.17%, highly rural 31.14%), presence of diabetes-related complications (urban 85.14%, rural 82.77%, highly rural 81.67%), poverty (urban 3.83%, rural 5.66%, highly rural 7.99%), and moderate or severe disability (urban veterans 30.05%, rural 26.27%, highly rural veterans 24.02%). Compared to urban veterans, rural veterans (OR = 1.087; CI = 1.063–1.110) and highly rural veterans (OR = 1.186; CI = 1.102–1.277) had a greater odds of experiencing a PQI.

CONCLUSIONS: Veterans with diabetes who resided in rural or highly rural areas were more likely than urban residents to experience a preventable hospitalization controlling for disease severity, comorbid illness, and sociodemographic status. Our analysis, utilizing data from both VHA and Medicare, captures the totality of preventable hospitalizations and demonstrates a disparity in access to and/or quality of ambulatory care based on rural residence. Further analysis might identify potential source(s) of this disparity including geographic barriers to accessing care, care coordination differences, unmeasured residual disease severity, or patient preference.

SATISFACTION, CHANGE IN KNOWLEDGE AND ADHERENCE TO DIABETES PREVENTION AFTER A PHARMACIST LED PREDIABETES SHARED DECISION MAKING VISIT: THE PREDIABETES INFORMED DECISION AND EDUCATION (PRIDE) STUDY. O. Kenrik Duru[2, 1]; Jacqueline Martin[1, 2]; Jonathan Grotts[1, 2]; Tannaz Moin[3]; Jeffery Y. Fu[1, 2]; Chi-Hong Tseng[1, 2]; Richard Maranon[1, 2]; Gerardo Moreno[2, 1]; Keith Norris[1, 2]; Susan Ettner[1, 2]; Carol Mangione[1, 2]. [1]David Geffen School of Medicine at UCLA, Los Angeles, CA; [2]UCLA, Los Angeles, CA; [3]UCLA/VA Greater Los Angeles, Los Angeles, CA. (Control ID #2707085)

BACKGROUND: Approximately 1 in 3 Americans have prediabetes (pre-DM) and 11% are predicted to develop diabetes over a 3-year period. Our goals are to describe patients' satisfaction with a pharmacist led pre-DM Shared Decision Making (SDM) visit; change in knowledge about pre-DM; and to assess whether participant characteristics are associated with adherence to the Diabetes Prevention Program (DPP) 4 months after the SDM visit.

METHODS: All subjects are from the intervention arm of a primary care practice level cluster-randomized trial of SDM designed to evaluate uptake of diabetes prevention. We included 236 of 356 subjects who had reached the 4 month follow interview by 11/30/16. Eligible participants were between 18 and 65 years of age with a body mass index (BMI) > 24 m/kg^2 (>22 m/kg^2 if Asian) and an A1c between 5.7-6.4%. During the SDM visit, subjects selected 1 of 4 treatments: DPP, Metformin (MF), DPP + MF, or no treatment. In a follow-up interview, we asked: "Did the appointment with the pharmacist meet your expectations?" and "Do you have a better understanding of prediabetes as a result of meeting with the pharmacist?" Also, at 4 months follow-up, we assessed DPP adherence defined as attending 9 or more sessions based on records from the DPP sites and self-reported adherence to MF. We assessed variation in DPP adherence by age, race/ethnicity, gender, BMI and A1c with a multivariate logistic regression model.

RESULTS: Among the 236 SDM participants who had completed the 4-month interview, the mean (SD) age was 56.3 years (11.2), BMI was 30.3 kg/m2 (5.1), and A1c was 6.0%. The sample included 43.6% White, 20.3% Asian, 18.2% Hispanic, and 12.7% African American participants, as well as 58.9% women. At 4 months follow-up, 93.1% reported that the visit met their expectations and 90.2% reported that they had a better understanding of pre-DM. Additionally, at 4 months follow-up, 41% who chose the DPP attended at least one class. For the 27% subjects who chose the DPP and completed 9 or more classes, significant correlates of adherence included age, with those between ages 50–59 (OR = 2.64) and > to 60 years (OR = 2.47) more likely to be adherent than those less than 50 years of age ($p = .04$), and female (OR = 1.89) as compared to male gender ($p = .04$). Seventy percent of those who selected metformin reported that they were currently using the medication at 4 months follow-up.

CONCLUSIONS: Persons with pre-DM who participate in a pharmacist led SDM visit overwhelmingly report that the visit met their expectations and that participation increased their preDM knowledge. However, for those who selected the DPP, participation in 9 or more visits was low at 27%, whereas those who chose metformin reported higher rates of adherence. These findings support the importance of providing patients with the needed information to select one or both prevention treatments to stem the increasing incidence of diabetes.

SCHEDULED OUTPATIENT APPOINTMENTS AT HOSPITAL DISCHARGE ARE NOT ASSOCIATED WITH READMISSION Sachin J. Shah[3]; Alexander Grunfeld[4]; Daniel E. Lage[2]; Roger B. Davis[1]; Joshua Metlay[3]. [1]Beth Israel Deaconess Medical Center, Brookline, MA; [2]Harvard Medical School, Cambridge, MA; [3]Massachusetts General Hospital, Boston, MA; [4]University of Manitoba, Winnipeg, MB, Canada. (Control ID #2705323)

BACKGROUND: Scheduled outpatient follow up at the time of hospital discharge is a quality measure. There are few data to support this; studies that have examined this question are mixed. We examined if those who have and complete an appointment are less likely to be readmitted.

METHODS: We conducted a retrospective cohort study at the Massachusetts General Hospital (MGH). Eligible patients were adults (age > = 50 years) linked to an MGH primary care physician, admitted to the hospital with a medical diagnosis and discharged alive between August 2014 and September 2015. Sociodemographic, ADL impairment, clinical, discharge, and appointment data were extracted from the electronic medical record. Education and income data were obtained from zip code linked Census data. We measured the effect of two exposures: (1) the presence of a primary care follow-up appointment within 30 days at the time of discharge and (2) the completion of an appointment within 30 days of discharge. The outcome was measured as all-cause readmission to MGH within 30 days of discharge. We utilized a multivariable, extended Cox proportional hazard model to determine if having or completing an appointment were each associated with the risk of readmission. Completing an appointment was modeled as a time-varying covariate.

RESULTS: Of the 3024 eligible patients, 35.5% had an appointment to be seen within 30 days of discharge. Patients with an appointment scheduled at discharge were more likely to be eligible for Medicare and Medicaid (18.4% vs. 15.5%, $p < 0.01$), have 1 or more impairments in activities of daily living (28.8% vs. 24.1%, $p < 0.01$), be sicker (Elixhauser score 3.8 vs 3.6, $p < 0.01$), and have a longer length of stay (5.0 vs. 4.6, $p < 0.01$). Patients who had an appointment scheduled at discharge completed an appointment sooner (median days to first completed appointment, 7 vs 12, $p < 0.01$). Patients with an appointment scheduled at the time of discharge were no more likely to be readmitted compared to patients without scheduled appointments (15.3% vs. 14.0%, $p = 0.35$). After adjusting for age, sex, race, functional status, admission diagnosis, comorbidities and length of stay, patients who had an appointment at the time of discharge were no more likely to be readmitted (hazard ratio 1.06, 95% CI 0.87–1.29, $p = 0.56$). After the same multivariable adjustment, completing an appointment was not associated with subsequent risk of readmission (HR 0.90, 95%CI 0.72–1.13, $p = 0.34$).

CONCLUSIONS: There is no apparent association with scheduled or completed appointments and subsequent readmission. Patients with an appointment at discharge appeared sicker at baseline and were seen sooner. The fact that high risk patients were more likely to be scheduled and seen sooner may have masked the true risk reduction attributable to follow up appointments. Future work will determine which patients and clinical conditions may benefit from a primary care appointment following hospital discharge.

SCREENING FOR HOMELESSNESS: VA PROVIDER REFLECTIONS ON ADDRESSING A SOCIAL DETERMINANT OF HEALTH

Manik Chhabra[1]; Meagan Cusack[3]; Melissa Dichter[2]; Ann E. Montgomery[3]; Gala True[3]. [1]Veterans Affairs Medical Center, Philadelphia, PA; [2]Center for Health Equity Research and Promotion, Philadelphia, PA; [3]U.S. Department of Veterans Affairs, Phildelphia, PA. (Control ID #2705724)

BACKGROUND: As health systems begin to address social determinants of health as a routine component of care, they face implementation challenges for screening and referring patients to meet these needs. The U.S. Department of Veterans Affairs (VA) has a long history of addressing social determinants, including housing. To end homelessness among Veterans, the VA has allocated significant resources towards prevention and housing initiatives. This includes the integration of a two-question homelessness screening clinical reminder (HSCR) into the electronic medical record (EMR). The HSCR is administered to patients in outpatient clinics in order to identify Veterans experiencing homelessness or risk, and ensure referral to appropriate services. This study explores perspectives of VA clinical providers on administering the HSCR and addressing Veteran's responses.

METHODS: We conducted semi-structured qualitative interviews at the Philadelphia VA Medical Center with physicians and nurse practitioners who had administered the HSCR and documented at least 5 positive screens in the past two years. The study employed a modified grounded theory approach and constant comparative method for analyzing qualitative data. Interviews concluded once thematic saturation was reached.

RESULTS: Twenty-two providers were interviewed (20 physicians and two nurse practitioners). Overall, providers found the HSCR easy to administer, though most adapted the language from its original form. The HSCR served to prompt the providers to incorporate patient housing situation into routine assessment, which they typically did not do prior to this implementation. Providers felt that housing insecurity affected patients' overall health, and knowing housing status affected clinical decision-making. Patients typically responded positively to screening, and providers found the referral process easy. However, unlike with other consults, providers often didn't know what happened to patients after referral. While providers viewed the health-system as having an important role in addressing housing concerns, there were mixed opinions on whether it was the role of physicians to directly administer the screening reminder.

CONCLUSIONS: Previous literature highlights challenges providers face in asking about housing status and addressing housing insecurity. Our study finds that incorporation of a HSCR into the EMR increased awareness of housing insecurity as a risk factor for patients, and altered plans of care. Provider views on addressing housing were likely impacted by the availability of resources on site at the VA. The implementation of screening tools and services for housing insecurity remain a challenge for health systems with limited resources. Lessons from the VA will be important to inform and refine the current set of policies and practices that identify, refer, and intervene on patients experiencing homelessness, and serve as a model for addressing other social determinants of health.

SCREENING FOR MILITARY SEXUAL TRAUMA IS ASSOCIATED WITH IMPROVED HIV SCREENING IN WOMEN VETERANS

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BACKGROUND: The Veterans Health Administration (VHA) has adopted a policy of routine HIV screening for all adults. In a 2014 nationwide VHA study, women veterans were more likely to be screened for HIV than male veterans (30% versus 20%, respectively). In this study, we examine factors associated with HIV screening in women veterans, specifically examining the association of military sexual trauma (MST) screening and positive MST history with testing for HIV. MST screening is another mandatory screen in the VA and may promote other required screenings. Additionally, a history of MST is associated with high risk behaviors and sexually transmitted infections, which are also risk factors for HIV infection. We hypothesize that women who have been screened for MST or have a positive history of MST are more likely to undergo HIV testing.

METHODS: This is a cross-sectional study using data from the Women Veteran's Cohort Study, a population of veterans of obtained from the OEF/OIF/OND roster merged with VHA Corporate Data Warehouse (electronic health record data). The outcome of HIV testing is defined as a laboratory test having been performed at least once over this time frame. The predictor MST screening is defined as a completed decision support reminder, while MST history was defined by answer to the screening question. Covariates include demographic characteristics, risk factors for HIV (sexually transmitted infections, hepatitis B, hepatitis C, substance abuse, and homelessness), mental health diagnoses (depression, post-traumatic stress disorder, bipolar disorder, and schizophrenia), and any receipt of care in a women's health clinic (WHC). Descriptive and bivariate statistics were performed comparing predictor values for patients with and without an HIV lab test. T-tests were performed for continuous variables and chi-squared tests for categorical variables.

RESULTS: We identified 129,469 women veterans within the VHA system between September 2001 and September 2014. Nearly 12% of women veterans had a lab test indicating HIV screening. In our bivariate analysis, women veterans screened for HIV were more likely to be younger, unmarried, Black or Hispanic, have a risk factor for HIV, or carry a mental health diagnosis. ($p < 0.001$ for all). Among women who were screened for HIV, 97.6% were screened for MST, compared with 73.7% for women without an HIV screen ($p < 0.001$). MST screening occurred before or concurrently with HIV screening approximately 90% of the time. Women veterans with any visit to a WHC were more likely to receive HIV screening (82.8% vs. 44.8%; $X^2 = 7815$, $p < 0.001$). Women veterans screened for HIV were more likely to have a history of MST compared with unscreened women, though the absolute difference was small (17.4% vs. 16.3%, $X^2 = 9.71$, $p < 0.001$).

CONCLUSIONS: Screening for MST—mandatory in the VA—is associated with improved testing for HIV, which is also required. Comprehensive screening for military sexual trauma may promote guideline recommended screening for HIV.

SCREENING FOR SEXUALLY TRANSMITTED INFECTIONS AFTER MEDICAID ELIGIBLITY AND CERVICAL CANCER SCREENING GUIDELINE CHANGES

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BACKGROUND: Chlamydia and gonorrhea are the most commonly reported sexually transmitted infections (STIs) in the United States. STI screening is important to prevent complications like pelvic inflammatory disease and infertility, and is cost-effective. Therefore, major organizations recommend

annual screening in sexually active women <25 years old and older women at increased risk. From 2007–2013, Pennsylvania (PA) Medicaid began a family planning waiver which covered women's health services (including STI testing) for uninsured women with an income ≤185% of federal poverty level. Expectations were for STI screening to increase due to the program. However, national cervical cancer (CC) screening guideline changes in 2009 and 2012 recommended less frequent CC screening, causing concern that STI testing rates would decrease because the two screenings were typically performed concurrently. It is unclear how rates of STI testing changed in PA Medicaid in response to these countervailing forces. We therefore assessed STI testing rates among PA Medicaid-enrolled women from 2007 to 2013.

METHODS: We performed an observational study evaluating medical claims for PA Medicaid-enrolled women 16–30 years of age from 2007–2013. We divided our population into 3 cohorts: 2007 (reflecting 2003 CC screening guidelines and start of the waiver program), 2010 (reflecting 2009 CC screening guidelines), and 2013 (reflecting 2012 CC screening guidelines). We required women to be continuously enrolled in Medicaid during their respective 1-year study periods. Women were excluded if they were dually enrolled in Medicare and/or had HIV/AIDS (warrants alternate screening). Our primary outcome was receipt of at least one STI test in the 1-year study period. We performed logistic regression to assess covariates associated with annual STI testing.

RESULTS: Among 506,520 women, 58% were White, 29% were Black, 12% were Hispanic, and 90% were urban. Mean age was 22 years. Between 2007–2010, STI testing increased from 31 to 45%, and stabilized at 45% in 2013. In multivariable analyses, odds for annual STI testing were significantly higher among Blacks compared with Whites (AOR 1.42, 95% CI 1.39–1.46); Hispanics compared with non-Hispanics (AOR 2.56, 95% CI 2.56–2.56); and urban compared with rural residents (AOR 1.06, 95% CI 1.04–1.08).

CONCLUSIONS: We observed a dramatic increase in STI testing between 2007–2010. Potential reasons are the waiver program (15% of our cohort was enrolled by 2013), increased use of urine and vaginal (rather than cervical) STI testing, and improvements in laboratory reporting. It is reassuring that despite clinician concerns, changes in cervical cancer screening guidelines did not affect STI testing rates. Between 2010–2013, testing rates stabilized at only 45%, and disparities existed overall, suggesting opportunities for improvement.

SCREENING RATES FOR GENETIC COUNSELING REFERRAL ARE LOW AMONG A NATIONAL SAMPLE OF WOMEN AT RISK FOR A BRCA MUTATION

Leland Hull[2]; Jennifer Haas[1]; Steven R. Simon[2]. [1]Brigham and Women's Hospital, Boston, MA; [2]VA Boston Healthcare System, Boston, MA. (Control ID #2699685)

BACKGROUND: The US Preventive Services Task Force recommends that primary care providers screen women at risk for a *BRCA* mutation for referral to genetic counseling services. Our study objectives are to determine the national rates of screening for genetic counseling referral, genetic counseling, and genetic testing among women at increased risk for a *BRCA* mutation and to identify the characteristics associated with screening.

METHODS: This is a cross-sectional analysis of the 2015 National Health Interview Survey. The FHS-7, a validated screening tool, was used to identify women *at risk* for hereditary breast cancer syndromes, including women with a 1st-degree relative with breast or ovarian cancer, at least two 1st- or 2nd-degree relatives with breast cancer and ovarian or colorectal cancer, or a relative with breast cancer diagnosed at age <50. We also created a *higher risk* subgroup including women with a 1st-degree relative with male breast cancer, 1st-degree relative with breast cancer diagnosed at age <50, or two 1st-degree relatives with breast or ovarian cancer. The primary outcome was *screening* for genetic counseling referral, defined as a positive response to: "Have you ever discussed the possibility of getting a genetic test with a doctor or other health professional?" Secondary outcomes were use of genetic counseling or testing for increased cancer risk. Unadjusted associations between family history or covariates and the outcomes were assessed using chi-squared tests; multivariable regression was used to determine associations adjusted for possible confounders (odds ratios [OR] with 95% confidence intervals [CI]). SAS 9.4 was used for all analyses incorporating sample weights.

RESULTS: Of 18,601 women, a minority ($n = 4{,}261$; weighted population estimate of 28 million; 22.3%) were *at risk* for hereditary breast cancer; 20% of this group ($n = 855$) met *higher risk* criteria. Screening rates were low in both the *at risk* group (11.2%) and *higher risk* (19.7%) subgroup. Family history was positively associated with the outcomes; *at risk* women were about 5 times more likely and *higher risk* women were about 11 times more likely to report screening than women without a family history. A positive family history was also associated with increased odds of counseling and testing (data not shown). *At risk* women age ≥60 were less likely to be screened than women age 18–39 (OR 0.54, 95% CI 0.39–0.76). Screening was also more likely among *at risk* black women compared to white women (OR 1.42, 95% CI 1.03–1.95) and women with annual family income ≥ $75,000 compared to income of < $35,000 (OR 1.62, 95% CI 1.24–2.11). A personal history of breast or ovarian cancer was associated with all outcomes in both the *at risk* and *higher risk* groups (data not shown).

CONCLUSIONS: Despite a recommendation in place for over a decade, fewer than 20% of women at risk for the *BRCA* mutation reported being screened. Further research is needed to develop strategies to close this gap, with emphasis on those with lower incomes.

SELF-REPORTED PHYSICIAN NON-ENGLISH LANGUAGE ABILITY BY SPECIALTY AND REGION IN CALIFORNIA

Maria E. Garcia[2]; Andrew B. Bindman[1]; Margaret Fix[3]; Denis Hulett[3]; Janet Coffman[3]. [1]University of California San Francisco, San Francisco, CA; [2]University of California, San Francisco, San Francisco, CA; [3]Philip R. Lee Institute for Health Policy Studies, San Francisco, CA. (Control ID #2706098)

BACKGROUND: In 2011, 44% of the population in California spoke a language at home other than English and 25% reported speaking English 'not well' or 'not at all.' The number of Californians with limited English proficiency is expected to grow in coming years. Few studies have assessed physician fluency in non-English languages. We examined physician self-reported fluency in four languages by medical specialty.

METHODS: We performed cross-sectional analyses of data from a survey the California Medical Board Survey administered to physicians whose licenses were due for renewal between September 2013 and August 2015. Measures examined were physician demographics, practice characteristics (including ZIP code), specialty, and self-reported physician language proficiency in the four most commonly spoken languages in California other than English (Spanish, Cantonese, Mandarin, and Tagalog).

RESULTS: Of the 66,496 physicians included in the survey, 25% reported proficiency in Spanish; compared to 2%, 6 and 3% for Cantonese, Mandarin, and Tagalog, respectively. Younger physicians were more likely to report

speaking Spanish and Mandarin (with 40 and 42% of physicians who report proficiency being <46 years old, respectively). In contrast, Cantonese and Tagalog-speaking physicians tended to be older (33 and 42%, respectively, were >60 years old). While most Cantonese, Mandarin and Tagalog-speaking physicians self-identified as Asian Pacific Islander (94, 93, and 94%, respectively), physicians of many ethnic/racial backgrounds reported Spanish proficiency. 37% of Spanish-speaking physicians self-identified as non-Hispanic white, 23% as Asian Pacific Islander, and 21% as Latino. 10% of respondents declined to state race/ethnicity. A large proportion of physicians reporting proficiency in a target language practiced in primary care specialties; 36, 37, 31 and 56% of physicians reporting Spanish, Cantonese, Mandarin or Tagalog ability. In contrast, among physicians working in hospital settings, higher percentages of physicians in specialties with low patient contact (such as radiology, anesthesiology and pathology) spoke a target language compared to those in specialties with high patient contact (such as emergency medicine). The lowest percentages of physicians reporting proficiency in a target language were psychiatrists (4, 3, 3 and 9% respectively among Spanish, Cantonese, Mandarin, and Tagalog speakers).

CONCLUSIONS: One quarter of California physicians report that they speak Spanish and smaller percentages speak Cantonese, Mandarin, or Tagalog. Large proportions of physicians who speak these languages provide primary care. The age differences in languages spoken may reflect changes in medical school curricula and admissions criteria, hiring preferences, as well as changing immigration policies over the past few decades. An important limitation of our study is the reliance on self-reported physician language ability. No objective measure of language fluency is available.

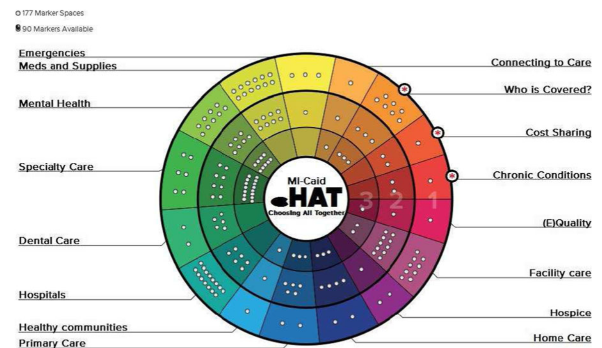
SETTING PRIORITIES FOR MEDICAID: THE VIEWS OF MINORITY AND UNDERSERVED COMMUNITIES Susan D. Goold[2]; Lisa Szymecko[2]; Hyungjin M. Kim[2]; Cengiz Salman[2]; A. M. Fendrick[2]; Edith C. Kieffer[2]; Marion Danis[1]; Zachary Rowe[3]. [1]National Institutes of Health, Bethesda, MD; [2]University of Michigan, Ann Arbor, MI; [3]Friends of Parkside, Detroit, MI. (Control ID #2705844)

BACKGROUND: Decisions about who should be eligible and what benefits covered by state Medicaid programs challenges policy makers. Engaging those most affected by such tradeoffs could make allocations more just, and more sensitive to their needs and values.

METHODS: Academic-community partnerships in Michigan adapted the simulation exercise CHAT (CHoosing All Together) to engage community members in deliberations about Medicaid priorities. After an informational video about Medicaid, individuals and deliberating groups choose from a menu of spending options constrained by limited resources (Fig. 1). We randomly assigned low-income participants to participate in CHAT with ($n = 209$) or without group deliberations ($n = 181$) in English, Spanish or Arabic. Data collection included pre- and post-CHAT individual priorities and deliberating groups' priorities. Within-participant changes in priorities from pre- to post-deliberation used a mixed-effect logistic regression model accounting for within-participant repeated assessment nested within groups.

RESULTS: Participants ranged from 18 to 81 years old (Mea$n = 48$); 62% were women. Over half (57%) self-identified as white, 31% African-American, 17% Hispanic, 9% Native American, and 12% Arab/Arab-American/Chaldean. Most (78%) had incomes < $35,000/year, 30% reported poor or fair health status and 66% had at least one chronic condition. Both deliberating and control participants prioritized eligibility consistent with Medicaid expansion. They also prioritized coverage for a broad range of services, including dental care (93.5% deliberators and 91.7% control participants) and enhanced coverage for chronic conditions (69.7% deliberators and 65.7% of control participants). Most accepted daily copays for elective hospitalization (71.6% deliberators and 67.9% of control participants) and more restricted access to specialists (60.2% of deliberators and 57.4% of control participants). Deliberators were more likely than controls to increase what they allocated to mental health care (between arm difference in allocatio$n = 0.22$, $p = .03$) and eligibility (between arm difference in allocatio$n = 0.18$, $p = .04$) after deliberations.

CONCLUSIONS: Low-income community members in Michigan put a high priority on Medicaid expansion and broad coverage. When given the opportunity to deliberate about priorities, individuals increase allocations to mental health and eligibility.



SEVERELY ELEVATED BLOOD PRESSURE IN THE EMERGENCY DEPARTMENT IS AN INDEPENDENT PREDICTOR OF 6 AND 12 MONTH CARDIOVASCULAR EVENTS Patrick Brown; Ahmed AbdulHamid; Anita Eapen; Ahmed Elbanna; Bradley J. Greib; Amit Vahia; Joseph Miller. Henry Ford Health System, Detroit, MI. (Control ID #2702876)

BACKGROUND: Severely elevated blood pressure (BP) absent acute target organ damage is common in emergency department (ED) patients but the 6 and 12-month risk for such patients is not well described. We tested the hypothesis that severely elevated BP, independent of known cardiovascular risk factors, is associated with 6 and 12 month cardiovascular events.

METHODS: We performed a retrospective cohort study using a registry at 8 affiliated hospitals and free-standing EDs. We included all unique adult encounters with recorded BP. We excluded patients that required hospital admission or had an ED systolic BP (SBP) < 110 mmHg. Data extraction included the first recorded ED BP and clinical information with a focus on cardiovascular risk factors. Composite outcomes were obtained from diagnostic coding over a 1-year period following the index visit and included death, myocardial infarction (MI), stroke and acute heart failure (AHF). Logistic and Cox proportional hazards modeling analyzed the association between composite outcomes and increments of HTN above a reference SBP 110–140 mmHg. The model adjusted for age, sex, race, a history of HTN, insurance, and 7 core cardiovascular comorbidities.

RESULTS: Analysis included 196,244 unique patients over a one year period. The mean age was 46.5 (±19) years, and 56.9% were female. There were 14,887 patients with ED SBP ≥180 mmHg, including 4,379 with a SBP ≥ 200 mmHg.

Adjusting for age, sex, race, HTN, insurance and multiple cardiovascular comorbidities, SBP 180–200 mmHg remained an independent predictor of cardiovascular events (OR 1.15, 95% CI 1.1–1.2), as did SBP 200–220 mmHg (OR 1.3, 95% CI 1.2–1.4) and SBP > 220 mmHg (OR 1.7, 95% CI 1.5–2.0).

CONCLUSIONS: Among patients discharged from the ED, severely elevated BP is an independent predictor of 6 and 12 month cardiovascular events, and the magnitude of association increases with higher BP. Further study is needed to evaluate population health strategies that address cardiovascular risks among patients with recent ED visits with extremes of BP elevation.

SHOPPING AT HEALTH OR ORGANIC SPECIALTY STORES IS ASSOCIATED WITH FRUIT AND VEGETABLE CONSUMPTION IN A BI-ETHNIC AND UNDER-RESOURCED COMMUNITY IN SOUTH LOS ANGELES Peter Capone-Newton[4]; Sitaram Vangala[3]; Ibrahima Sankare[1]; Rachelle Bross[2]; Felica U. Jones[5]; Stefanie D. Vassar[1]; Arleen F. Brown[1]. [1]UCLA, Los Angeles, CA; [2]UCLA Clinical and Translational Science Institute, Harbor-UCLA Medical Center and Los Angeles Biomedical Research Institute, Torrance, CA; [3]University of California, Los Angeles, Los Angeles, CA; [4]Veterans Affairs West Los Angeles Medical Center, Los Angeles, CA; [5]Healthy African American Families, Los Angeles, CA. (Control ID #2706315)

BACKGROUND: Obesity and other adverse health outcomes are influenced by individual and community-level risk factors, including the food environment. This neighborhood-based study examined the association between food store types and fruit and vegetable consumption.

METHODS: The Healthy Community Neighborhood Initiative is a community partnered participatory study to understand and reduce health care disparities in a bi-ethnic, under-resourced community in South Los Angeles. The main outcome was daily fruit and vegetable (f/v) frequency. Participants ($n = 192$) were asked to list information on the stores where they shopped most frequently, including store type defined as specialty stores (with emphasis on healthy and organic foods), versus other store types (discount, convenience, full service supermarkets), and travel mode to the store (car, public transit, rideshare). A linear regression model of daily f/v frequency was adjusted for age, sex, race/ethnicity, education, store preferences, mode of transport, store distance, and store type. Effects are summarized in terms of estimated differences, standard errors and p-values.

RESULTS: In adjusted models, specialty store shopping (0.75 (0.31), $p = 0.015$) and college graduation (0.55 (0.29), $p = 0.056$) were associated with higher daily f/v frequency. Age group 18–29 (−1.01 (0.38), $p = 0.009$) was associated with less frequent daily consumption compared with the >65 group. A total of 30 participants (16%) ever shopped at a specialty food store. Most participants (89%) reported shopping at a full-service supermarket at least once. The next most frequented store types were Spanish-language (28%) and discount (16%). Specialty store shoppers travelled the farthest, an average of 4.2 miles (SD 2.3), followed by full-service, 2.2 miles (SD 1.7) and discount 2.0 miles (SD 1.3).

CONCLUSIONS: Residents who shopped at specialty stores had a healthier diet than those who shopped at any other store type. In this community, only specialty store shopping was associated with improved diet, yet most participants shopped in stores likely to sell fruits and vegetables. This regression analysis can be interpreted as a mediation model. In this causal framework, bivariate associations (not shown) between college graduation and specialty store shopping show a weak association, education is more strongly associated with f/v consumption, and specialty store shopping is associated with f/v consumption. In the multivariate analysis, the association between college graduation becomes statistically insignificant, and the coefficient is decreased. Thus, specialty store shopping only partially mediates the association between college graduation and f/v consumption. If food stores are partial or not mediators at all, then factors like education, income, and others may be more important for dietary change than access to food stores. To improve dietary quality in this community approaches beyond availability of healthy food options are needed.

SMOKEFREETXT FOR HOMELESS SMOKERS: A PILOT RCT WITH A MIXED-METHODS ANALYSIS Claire McGlave[2]; Gina R. Kruse[2]; Awesta Yaqubi[2]; Yuchiao Chang[1, 2]; Nancy A. Rigotti[2]; Travis P. Baggett[2]. [1]Harvard Medical School, Boston, MA; [2]Massachusetts General Hospital, Boston, MA. (Control ID #2707515)

BACKGROUND: Homeless smokers want to quit smoking but face numerous barriers to doing so, including a lack of social support and pervasive smoking in the setting of homelessness. Mobile phone possession is common among homeless people, and a short message service (SMS) could address challenges to smoking cessation in this population by providing homeless smokers with virtual support to manage ubiquitous social triggers to smoke. Our objective was to evaluate the effect of a freely available but underused stop-smoking SMS program on smoking abstinence among homeless smokers.

METHODS: In 10/2015-06/2016, we conducted a pilot randomized controlled trial (RCT) with a sequential mixed-methods design that used qualitative interviews to explain the quantitative results. Eligibility criteria included age ≥18 years, current homelessness, current smoking (≥5 cigarettes/day), and desire to quit smoking in the next month. Control arm ($N = 25$) and SMS arm ($N = 25$) participants were offered nicotine patches, weekly in-person counseling, and a mobile phone. SMS arm participants additionally received help with enrolling in SmokefreeTXT, a free service administered by the National Cancer Institute (NCI) that sends 1–5 SMS messages daily and offers on-demand tips for managing cravings, mood symptoms, and slips. The primary outcome was smoking abstinence, defined as an exhaled carbon monoxide <8 parts per million, assessed 14 times over 8 weeks of follow-up and analyzed using repeated-measures logistic regression with generalized estimating equations. The secondary outcomes were use of SmokefreeTXT, assessed by data obtained from NCI; satisfaction with and appropriateness of SmokefreeTXT, assessed by surveys and in-depth interviews; and mobile phone retention, assessed by self-report.

RESULTS: 67% of eligible individuals agreed to participate. Smoking abstinence did not differ significantly between arms at the end of treatment (SMS 16% vs. control 8%; $p = 0.67$) or averaged across all time points (SMS vs. control OR 0.92, 95% CI 0.30–2.84). 88% of SMS arm participants enrolled in SmokefreeTXT; of these, 32% responded to ≥1 interactive prompts sent by the program. Among SmokefreeTXT enrollees who completed exit surveys ($N = 15$), 67% were very or extremely satisfied with the program. However, qualitative interviews revealed that some participants felt the messages were “impersonal, like a robot.” Several found the number of messages “overwhelming” and wanted “less texts a day.” Others noted practical barriers to

receiving the SMS messages, including limited phone battery life and lost or stolen phones. 40% of SMS arm participants retained their study-supplied mobile phone for the 8-week duration of the trial.

CONCLUSIONS: SmokefreeTXT, when added to nicotine patch therapy and in-person counseling, did not improve smoking abstinence in this RCT of homeless smokers. SMS interventions for homeless smokers may need to be better tailored to their unique needs and combined with efforts to promote mobile phone retention.

SMOKING CESSATION BEHAVIORS AMONG ADULT SMOKERS WITH CHRONIC MEDICAL CONDITIONS IN THE UNITED STATES

Sara Kalkhoran[1, 2]; Gina R. Kruse[1, 2]; Nancy A. Rigotti[1, 2]. [1]Massachusetts General Hospital, Boston, MA; [2]Harvard Medical School, Boston, MA. (Control ID #2699191)

BACKGROUND: General internists care for many patients with chronic diseases whose symptoms or progression is worsened by tobacco use, including COPD, asthma, cardiovascular disease, and cancer. Little is known about how their efforts to stop smoking and use of resources differ from smokers without comorbidities. Using data from the nationally-representative Population Assessment of Tobacco and Health (PATH) Study, we compared US smokers with medical comorbidities to smokers without comorbidities in their quit attempts and use of cessation aids.

METHODS: We used data from 32,320 adults aged 18+ from Wave 1 of the PATH study (Sept 2013 to Dec 2014). We included past-year cigarette smokers and excluded adults using other tobacco products in the past 12 months. Participants self-reported medical comorbidities. We calculated the population-weighted prevalence of smoking cessation behaviors and e-cigarette use by medical comorbidity and used logistic regression to assess the association between each comorbidity and cessation behaviors, controlling for demographic characteristics, insurance, education, region, having seen a medical doctor in the past 12 months and cigarettes per day.

RESULTS: Past-12 month cigarette smoking prevalence ranged from 12% in cancer to 30% in COPD. Smokers with 1 or more comorbidity had higher odds of a quit attempt in the past 12 months compared those with no comorbidity (aOR 1.37, 95% CI 1.20-1.56), as were all individual comorbidities. Among smokers who tried to quit, those with hypertension, high cholesterol, COPD, asthma, and diabetes had increased odds of using evidence-based smoking cessation methods compared to those with no comorbidities (Table). No comorbidity was associated with using e-cigarettes to quit in the past year. Smokers with COPD and asthma who tried to quit cigarettes had decreased odds of successfully quitting compared to those without comorbidities.

CONCLUSIONS: Adult smokers with medical comorbidities, compared to those without, try to quit cigarettes at higher rates and use more evidence-based treatments but not more e-cigarettes to quit. Despite this, those with comorbidities were not more likely to quit successfully, and COPD and asthma were associated with less quitting. This highlights the importance of addressing tobacco use among adults with comorbidities at every visit, as these individuals may require additional assistance to reduce their risk of further harm for tobacco use.

Past-12 month cessation behaviors in smokers who attempted to quit by medical comorbidity

	Used evidence-based medication or counseling aOR (95% CI)	Used e-cigarettes to quit aOR (95% CI)	Successfully quit smoking aOR (95% CI)
No comorbidity	ref	ref	ref
Any comorbidity	1.58 (1.25-1.99)*	0.92 (0.74-1.15)	0.85 (0.67-1.07)
Hypertension	1.69 (1.25-2.30)*	0.87 (0.64-1.18)	0.90 (0.68-1.18)
High cholesterol	1.47 (1.08-1.99)*	0.94 (0.65-1.35)	0.85 (0.62-1.17)
COPD	1.68 (1.18-2.41)*	0.95 (0.69-1.31)	0.65 (0.44-0.96)*
Asthma	1.79 (1.35-2.39)*	1.16 (0.83-1.61)	0.71 (0.50-0.99)*
Cancer	1.14 (0.75-1.73)	0.98 (0.63-1.54)	1.34 (0.76-2.36)
Diabetes/ prediabetes	1.62 (1.17-2.24)*	0.81 (0.55-1.20)	0.84 (0.59-1.19)

*Denotes statistical significance

SOCIAL DYNAMICS OF A PRODUCE PRESCRIPTION PROGRAM FOR HYPERTENSION AT SAFETY NET CLINICS

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BACKGROUND: Several studies have shown improvements in fruit and vegetable (FV) intake with produce prescription programs, yet little is known regarding participant experiences with these interventions. We conducted a qualitative study to explore social dynamics of providers and patients in a produce prescription program for hypertension (PRx HTN). PRx HTN was offered at 3 safety net clinics in partnership with 20 local Farmers Markets (FMs) in 2015.

METHODS: We conducted in-person, semi-structured interviews with 5 providers (at least one from each clinic) and 23 patients (6–8 patients from each clinic). Project staff recruited interviewees via a mail-in response card sent to all program participants and e-mail to program providers. Patient interviews focused on three areas: 1) beliefs about food, healthy eating, and farmer's markets; 2) experiences of clinic-based program activities; and 3) experiences at farmer's markets. Provider interviews focused on their experience providing the program. All interviews were audio-recorded, transcribed, and analyzed using NVIVO qualitative data analysis software. We conducted analyses of *a priori* themes related to program processes and emergent themes related to participant experiences. Two investigators independently coded 10% of the interviews, achieving 80% inter-coder reliability.

RESULTS: Patients interviewed were mainly middle-aged (mean age 62 years), African American (100%) women (78%) with a mean hypertension duration of 12 years (similar to the overall participant population). Providers were mainly middle-aged men and women of diverse race/ethnicities. Several themes emerged related to social dynamics.

First, both providers and patients reported increased positive social interaction through program activities. Patients reported the belief that providers "care" for them when they discuss nutrition, and providers viewed nutritional education as a positive tool to use beyond medications. Second, patients described FMs as positive spaces in which to engage with others. This experience was particularly common among older adults with limited venues for social interaction. Third, patient families provided social support by engaging with the program formally (e.g., as husband and wife participants) or informally (e.g., attending FMs with the participant). Finally, patients frequently understood program education, such as healthy eating patterns, in relation to their personal histories growing their own FVs within their families or communities.

CONCLUSIONS: Social aspects increased patient enthusiasm for the program and should be leveraged in future efforts by incorporating family and friends when available. Positive social interactions could enhance resilience among program providers by reducing burnout, and among their food insecure patients by providing additional support for them to better manage their diet.

SOCIOECONOMIC DETERMINANTS OF DELAYED SYMPTOM-ONSET-TO-PRESENTATION TIME IN ASCENDING AORTIC DISSECTION PATIENTS Tanya Doctorian. Kaiser Permanente Fontana Medical Center, Fontana, CA. (Control ID #2705747)

BACKGROUND: Ascending aortic dissection (AoD) is the most lethal condition involving the aorta. Despite increasing awareness of AoD among clinicians and improvements in diagnostic imaging, the mortality and morbidity rates of this condition remain high. In an effort to further optimize outcomes, symptom onset and its impact on presentation is needed. The onset of symptoms to hospital presentation, or pre-hospital delay, is a known cause for increased morbidity and mortality. Historically, ethnicity and insurance status were considered to be factors associated with delayed presentation to the emergency department in patients with ascending AoD. The objective of this study was to determine whether ethnicity, insurance status, marital status and gender function as barriers to presentation in patients with ascending AoD.

METHODS: 235 patients presenting with ascending AoD from 2007 to 2016 to a tertiary hospital with a diverse patient population were retrospectively studied. 145 patients with complete data were included in this analysis. Patients without complete data were excluded. Symptom-onset-to-hospital-arrival time was analyzed for the following factors: gender, ethnicity (White, Black, Hispanic/Latino, Asian, other), type of insurance (private insurance, uninsured, Medicare/Medicaid), and marital status. Symptom onset time was identified by review of medical records and emergency services data. Non-parametric univariate and multivariate analyses were carried out to compare differences in time to presentation between groups.

RESULTS: See table

CONCLUSIONS: In this cohort, ethnicity, insurance status, gender, and marital status were associated with significant barriers to presentation in patients with ascending AoD. In particular, ascending AoD patients who were female, Hispanic/Latino, uninsured, and widowed presented significantly later than the other patient groups. Enhanced public awareness and targeted education to these vulnerable patient groups are necessary to decrease pre-hospital delays, reduce barriers to presentation, and further improve clinical outcomes in ascending AoD patients.

	Percentage of Population	Symptom onset to Presentation time {median (min – max)} in hours	P-value
Gender			
Male	82%	2 (0.5 – 168)	Reference
Female	28%	4 (0.5 – 168)	0.004
Ethnicity			
White/Caucasian	34%	2 (0.5 – 48)	Reference
Black	35%	4 (0.5 – 168)	0.026
Hispanic/Latino	19.80%	8 (0.5 – 168)	0.004
Asian	12.6%	6 (0.5 – 168)	0.054
Other	3.60%	2 (0.5 – 5)	0.305
Insurance Status			
Private insurance	53%	2 (0.5 – 168)	Reference
Uninsured	4.5%	8 (4 – 168)	0.001
Medicare/Medicaid	38.7%	3 (1 – 44)	0.413
Marital status			
Married	59.46%	2 (0.05 – 168)	Reference
Divorced	9.90%	3 (0.05 – 24)	0.219
Widowed	8.11%	24 (1 – 168)	<0.001
Single/Never Married	22.53%	4 (0.5 – 168)	0.029

SPECIALTY REFERRALS: BLAME IT ON THE SCHEDULING? Andrew Schreiner[2]; William P. Moran[2]; Jingwen Zhang[1]; Justin Marsden[2]; Patrick D. Mauldin[2]. [1]MUSC, Charleston, SC; [2]Medical University of South Carolina, Charleston, SC. (Control ID #2707637)

BACKGROUND: Referrals from primary care practitioners to specialty providers occur with great frequency in the U.S. and are rapidly increasing. In 2009, 105 million ambulatory office visits resulted in referral, with the proportion of ambulatory visits resulting in specialty referral nearly doubling (4.8 to 9.3%) over the previous decade (1999 to 2009). Estimated costs for these specialty visits approach $98 billion annually. Specialty referrals contribute to clinical volume, the cost of services, and the fragmentation of care. While many factors may contribute to the decision to refer, this study looks at the execution of specialty referrals from the perspective of scheduling.

METHODS: We searched the electronic health record of an academic, internal medicine, patient-centered medical home (PCMH) at the Medical University of South Carolina (MUSC) for ambulatory referral orders to specialty providers during a six month period between July and December 2014. These referrals were then randomly selected and reviewed with a data abstraction tool. Data abstraction elements included the referral specialty, the date of the scheduled specialty appointment, the date of the attended specialty visit, the number of times scheduled, and the ordering provider. With this data, we compared the rates of scheduling and attendance of specialty visits based upon the number of times an initial specialty encounter was scheduled. Univariate analysis (Chi squared test) was used for proportions.

RESULTS: Primary care providers ordered 2,757 referrals for specialty consultation. After random selection, 1,080 charts underwent review with the exclusion of 33 podiatry referrals (due to an inability to confirm scheduling or attendance). Forty-one different specialties appeared in the referral order destinations with referrals to gastroenterology (151, 14.0%), ophthalmology (107, 9.9%), and dermatology (86, 8.0%) occurring most frequently. Of the 1,047 specialty referrals, 851 (81.3%) were scheduled, and 684 (80.4%) of those scheduled were attended. In total, patients attended 65.3% of specialty referrals ordered by general internists. With regards to scheduling, 196 referrals were never scheduled, 628 were scheduled once, and 223 were scheduled on more than one occasion. There was a statistically significant difference in the proportion referral visits attended between those scheduled once (83.0%) and those scheduled more than once (74%, $p = 0.004$).

CONCLUSIONS: Many patients receiving orders for specialty referral never get an appointment scheduled with the intended specialty provider. Further, patients with multiple scheduled visits to a specialty provider attended less often than those patients with only one scheduled visit. Both of these observations identify opportunities for clinics and health systems to improve the tracking and completion of specialty referrals. Future questions need to address any potential impact on this referral scheduling in relation to clinically relevant outcomes.

SPILLOVER EFFECTS OF ADULT MEDICAID EXPANSIONS ON CHILDREN'S USE OF PREVENTIVE VISITS Maya S. Venkataramani[1]; Craig E. Pollack[1]; Eric Roberts[2]. [1]Johns Hopkins University School of Medicine, Baltimore, MD; [2]Harvard Medical School, Boston, MA. (Control ID #2703084)

BACKGROUND: With the implementation of the Affordable Care Act, 32 states have expanded Medicaid eligibility for adults. While research has demonstrated substantial benefits for the adults who gain Medicaid eligibility, the potential spillover effects on other groups have been less well evaluated. One potentially important, but little studied, consequence of expanding health insurance access for parents is its impact on well child visit (WCV) utilization. We leverage a national experiment, specifically state-level policy variation in adult Medicaid eligibility, to estimate the relationship between parents' Medicaid coverage and children's receipt of annual WCVs.

METHODS: We analyzed data from the Medical Expenditure Panel Survey (MEPS) from 2001–2013, linked to state Medicaid eligibility criteria and county-level characteristics. Our primary analytic sample consisted of children ages 2 through 17 linked to their parent or guardian (ages 20 to 64 years) living in households with incomes <200% of the Federal Poverty Level. The main outcome was whether a child received at least one WCV in the year. We controlled for relevant parental, family, child and county-level characteristics as well as state and year fixed effects. We first conducted an intention-to-treat (ITT) analysis to examine the relationship between within-state changes in adult Medicaid eligibility and WCVs, modeling the probability of WCV receipt with parental Medicaid eligibility as the main independent variable. We then performed an instrumental variable (IV) analysis to model the relationship between parental Medicaid enrollment and WCV utilization, using within-state Medicaid eligibility changes as an instrument for parental Medicaid enrollment.

RESULTS: Our primary analytic sample consisted of 50,622 parent–child dyads (representing 266,557,804 weighted pairs) across the 13 study years. The percentage of children receiving an annual WCV increased from 32.7% in 2001 to 47.9% in 2013. In the ITT analysis, a 10 point increase in a state's adult Medicaid eligibility (measured relative to the FPL) was associated with a 0.28% increase in the probability that a low-income child received an annual WCV (95% confidence interval (CI): 0.11 to 0.44%, $p < 0.001$). Our IV analysis revealed that parents' Medicaid enrollment was associated with a 29% increase in the probability of having a WCV (95% CI: 12 to 47%, $p =$ 0.001). We observed similar results in sensitivity analyses that controlled for child Medicaid enrollment.

CONCLUSIONS: Our study highlights that Medicaid eligibility expansions targeted at low-income adults can result in beneficial effects for their children by increasing their receipt of recommended pediatric care. We illustrate an important spillover effect of adult insurance coverage that should be considered in future policy decisions.

SPONSORSHIP AS A PATH TO LEADERSHIP: VIEWS OF SPONSORS AND PROTéGéS AT ONE ACADEMIC HEALTH CENTER Rachel Levine[2]; Manasa Ayyala[2]; Joann Bodurtha[1]; Kimberly Skarupski[1]; Marlis Gonzalez Fernandez[1]; Lisa Ishii[1]; Barbara Fivush[1]. [1]JHUSOM, Baltimore, MD; [2]Johns Hopkins University School of Medicine, Baltimore, MD. (Control ID #2694212)

BACKGROUND: Lack of diversity in top leadership positions remains an ongoing problem in academic medicine (AM), despite initiatives to address this. In business, the focus has shifted from mentorship to sponsorship and structured sponsorship programs have been used to successfully propel women and minorities into leadership. Sponsorship increases the visibility of talented individuals (protégés) by providing access to career- advancing opportunities and influential networks. In this study, we used qualitative methods to explore the relationship between sponsorship and advancement in AM.

METHODS: In 2016, we conducted semi-structured, one on one interviews with 23 Johns Hopkins School of Medicine (SOM) faculty. We used purposeful sampling to recruit study informants including 12 sponsors and 11 protégés. Faculty in positions of influence and power who are able to promote the careers of other faculty were considered sponsors. Thus, we targeted all SOM clinical department chairs to participate as sponsors. We defined a protégé as a faculty who had been recognized for leadership potential. To identify protégés, we contacted faculty who participated in the Johns Hopkins Medicine Leadership Development Program from 2009 to 2014. Interviews were audiotaped and transcribed. Data analysis was iterative, and an editing analysis style was used to identify themes related to sponsorship.

RESULTS: We identified the following themes: 1) Faster and further: sponsorship is critical for advancement; 2) Opening doors: sponsorship activities provide opportunities but credibility is key; 3) Benefits of sponsorship go beyond the advancement of a particular protégé; 4) Risks for sponsors and protégés are real; 5) Sponsorship may undermine transparency and perceptions of meritocracy in AM. Informants describe sponsorship as critical for rapid, high level advancement especially for "nontraditional" leadership candidates such as women and UIM faculty. Some sponsorship activities include nominating protégés for local and national committees, high profile speaking opportunities, prestigious awards, and leadership roles. Credibility (explicit backing from the sponsor) is viewed as fundamental for successful sponsorship. Sponsorship increases the overall talent and success of an organization. Sponsors risk their reputation when promoting a protégé. Protégés risk being pushed toward opportunities for which they may be under-prepared and/or being seen simply as an extension of their sponsor. Informants describe a tension between sponsorship and a belief that advancement in AM is transparent and solely merit- based. They also acknowledge that unconscious bias may influence who gets selected for sponsorship.

CONCLUSIONS: Informants view sponsorship as key to achieving high level leadership. It remains unclear if structured sponsorship programs can help to address the lack of diversity in leadership in AM. However, increased awareness of how sponsorship works may encourage women and UIM faculty to seek out and benefit from it.

STEPPING UP OR SCALING BACK? AN EXAMINATION OF (DE)INTENSIFICATION RECOMMENDATIONS IN CLINICAL PRACTICE GUIDELINES. Adam A. Markovitz[2, 1]; TImothy Hofer[2, 1]; Whit Froehlich[2, 1]; Shannon E. Lohman[1]; Tanner Caverly[2, 1]; Jeremy Sussman[2, 1]; Eve A. Kerr[2, 1]. [1]VA Center for Clinical Management Research, Ann Arbor, MI; [2]University of Michigan Medical School, Ann Arbor, MI. (Control ID #2705017)

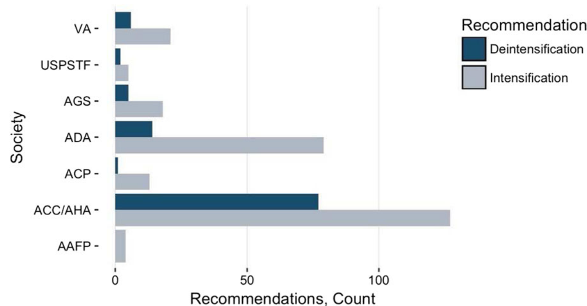
BACKGROUND: While initiatives like the Choosing Wisely campaign have focused on reducing one-time, discrete services (e.g., avoid antibiotics for upper respiratory infections), clinical guidelines rarely seem to address when to reduce long-term use of routine services for ongoing or chronic conditions. We quantified how frequently guidelines recommend *deintensification* - stopping or scaling back the intensity or frequency of routine services currently part of a patient's ongoing care.

METHODS: We identified all current guidelines for diabetes and cardiovascular disease across 7 major professional and federal organizations between January 1 2012 and April 30 2016. Recommendations were included if they pertained to services performed in the ambulatory setting, for the same patient over time, and under a primary care physician's discretion. Recommendations were categorized as intensification or deintensification and tabulated across: (1) societies; (2) testing or treatment; and (3) suggestive (e.g., "is reasonable," "should be considered") or prescriptive (e.g., "is indicated," "should be given").

RESULTS: We identified 372 recommendations across 22 guidelines that met inclusion criteria. We categorized 105 (28%) recommendations as deintensification and 267 (72%) as intensification. We found that only two organizations had more than 25% of recommendations categorized as deintensification (Figure). Only 25% of treatment recommendations were categorized as deintensification, while 36% of testing recommendations were deintensification. Among deintensification recommendations, 34% were suggestive and 66% were prescriptive; among intensification recommendations, 38% were suggestive, and 63% prescriptive.

CONCLUSIONS: Current guidelines make substantially more recommendations for intensification of routine services for cardiovascular disease and diabetes than deintensification. There is considerable inconsistency in how often organizations develop and publish deintensification recommendations. If we are to decrease overtreatment and overtesting, guideline developers need to pay more consistent attention to recommending when clinicians should stop or scale back routine services.

Note: VA = Veterans Affairs; USPSTF = US Preventive Services Task Force;



AGS = American Geriatric Society; ADA = American Diabetes Association; AC*P* = American College of Physicians; ACC/AHA = American College of Cardiology/American Heart Association; AAF*P* = American Academy of Family Practitioners

STORIES FOR CHANGE: PILOT FEASIBILITY PROJECT OF A DIABETES DIGITAL STORYTELLING INTERVENTION FOR REFUGEE AND IMMIGRANT ADULTS WITH TYPE 2 DIABETES Mark L. Wieland[1]; Jane W. Njeru[1]; Marcelo M. Hanza[1]; Deborah Boehm[7]; Davinder Singh[2]; Barbara Yawn[3]; Christi A. Patten[1]; Matthew M. Clark[1]; Jennifer A. Weis[1]; Ahmed Osman[4]; Miriam Goodson[5]; Graciella Porraz-Capetillo[1]; Abdulla Hared[4]; Rachel Hasley[6]; Laura M. Guzman-Corrales[7]; Rachel Sandler[7]; Valentina Hernadez[2]; Paul J. Novotny[1]; Jeff A. Sloan[1]; Irene G. Sia[1]. [1]Mayo Clinic, Rochester, MN; [2]Mountain Park Health Center, Phoenix, AZ; [3]Olmsted Medical Center, Rochester, MN; [4]Somali Community Resettlement Services, Rochester, MN; [5]Alliance of Chicanos, Hispanics, and Latin Americans, Rochester, MN; [6]Community Health Services, Inc, Rochester, MN; [7]Minneapolis Medical Research Foundation, Minneapolis, MN. (Control ID #2704272)

BACKGROUND: There exists a need for the development of effective type 2 diabetes (T2DM) interventions for underserved adults that can be widely disseminated. One promising type of intervention are culturally tailored interventions that incorporate health technology to help reduce T2DM-related health disparities that affect immigrant groups to the US. Digital storytelling interventions are narrative based videos elicited through a community based participatory research (CBPR) approach that highlights the authentic voices of participants overcoming obstacles to healthy behaviors. The purpose of this pilot project was to examine the potential effectiveness of a digital storytelling intervention designed through a CBPR approach for Latino and Somali immigrants with T2DM.

METHODS: *Study design*: A pilot feasibility cohort study of a 12-min culturally and linguistically tailored digital storytelling intervention consisting of an introduction, 4 stories of managing T2DM, and a concluding educational message. *Setting*: Five primary care clinics in Minnesota and Arizona. *Population*: 25 Somali and Latino patients with T2DM received the digital storytelling intervention. Control patients with T2DM ($n = 25$) were matched to the intervention arm by site, race/ethnicity and baseline hemoglobin A1C (HbA1C). *Measures*: Acceptability of the intervention, confidence and motivation about managing diabetes as a result of watching the video were assessed by structured interviews. HbA1C was assessed at baseline and up to six months follow-up. *Data analysis*: Interview and HbA1C data were reported using descriptive statistics. A paired samples t-test was used to assess changes in HbA1C among intervention participants from baseline to the first follow-u *P* value. An independent samples t-test was used to compare the change in HbA1C between intervention participants and controls.

RESULTS: All participants in the intervention arm reported that the digital story telling intervention got their attention, was interesting, and useful; 96% reported more confidence about managing their T2DM after watching the video; 92% felt the video motivated them to change a specific behavior related to T2DM self-management. Mean baseline HbA1C for the intervention participants was 9.3%; change from baseline to first follow-up was −0.8% ($p = 0$ .02). Baseline characteristics were similar between the two arms. This effect size was attenuated when comparing intervention participants with controls (−0.8% vs. -0.4%, $p = 0.31$).

CONCLUSIONS: Implementation of a digital storytelling intervention for T2DM among immigrant populations in primary care settings is feasible and

resulted in self-rated improvement in psychosocial constructs that are associated with healthy T2DM self-management behaviors, and there was some evidence of improvement in glycemic control. A large scale efficacy trial of the intervention is warranted.

STRESS MANAGEMENT AND RESILIENCY TRAINING FOR HEALTHCARE PROVIDERS Michelle L. Dossett[1, 2]; Darshan Mehta[1, 2]. [1]Massachusetts General Hospital, Boston, MA; [2]Harvard Medical School, Boston, MA. (Control ID #2705610)

BACKGROUND: Burnout is epidemic among healthcare providers. Prior studies have suggested that resiliency training programs incorporating mind-body skills may reduce provider burnout. We examined the effects of a stress management and resiliency training (SMART) program developed for clinical populations and adapted it to healthcare providers.

METHODS: Seventeen physicians and nurse practitioners participated in our 8-session SMART Program. Fifteen clinicians completed pre- and post-program measures which included the perceived stress scale-10 (PSS-10), global physical and mental health and job satisfaction questionnaires, and previously validated single item measures of emotional exhaustion and depersonalization (burnout). We also asked participants to rate the relevancy of the program to their life and work, the helpfulness of the skills taught, and to comment on how the program affected them personally and professionally.

RESULTS: Participants attended an average of 6 of 8 sessions. We observed a trend toward improvement in all factors examined (Table 1). All participants agreed that the program was relevant to their life and work (81% strongly agreed) and the skills taught were found to be helpful (88% strongly agreed). Qualitative analysis of free text responses revealed that participants developed greater awareness, presence with patients and loved ones, appreciation for life, and empowerment to make positive life changes.

CONCLUSIONS: Our results suggest that delivering the SMART Program to healthcare providers is feasible and may serve as a useful tool for increasing provider resilience and reducing burnout. A second cohort is currently underway.

Table 1: Pre-Post Changes in Stress, Health, Job Satisfaction and Burnout

	Pre Mean (SD) or %	Post Mean (SD) or %	p	Cohen's d
Perceived Stress Scale	15.7 (5.5)	13.3 (3.9)	0.105	0.45
Global Physical Health	16.7 (1.4)	17.3 (1.4)	0.072	0.50
Global Mental Health	14.2 (3.3)	15.3 (3.1)	0.084	0.48
Global Job Satisfaction	18.3 (2.8)	19.4 (3.4)	0.129	0.42
Emotional Exhaustion	26.7%	20%	0.582	0.15
Depersonalization	20%	6.7%	0.164	0.38

STUDENT-RUN FREE CLINIC VOLUNTEER PERSPECTIVES ON INTERPROFESSIONAL CARE AND LEARNING Madhurima Baliga[3]; Tuong Phan[3]; Jacqueline To[3]; Samuel Gordon[3]; Andrew Stahly[2]; Daniel Hecht[2]; Caitlin Felder-Heim[2]; Kari Mader[1]; Joseph Johnson[4]; Lynn Vanderweilen[3]. [1]University of Colorado, Denver, CO; [2]University of Colorado School of Public Health, Denver, CO; [3]University of Colorado School of Medicine, Denver, CO; [4]The DAWN Clinic, Aurora, CO. (Control ID #2706353)

BACKGROUND: Student run free clinics (SRFCs) offer health services to underserved communities and unique education opportunities to students. While the literature suggests that SRFCs are a good setting for interprofessional and clinical learning, more reseach is needed to fully understand the impact of volunteering at an SRFC on student attitudes. We aimed to evaluate student volunteers' attitudes towards interprofessionalism, underserved healthcare, and primary care at our local SRFC, the DAWN (Dedicated to Aurora's Wellness and Needs) Clinic in Aurora, CO. This clinic operates two evenings per week, staffed by graduate and undergraduate students of various health professions, and supervised by practicing preceptors. Students work together in mixed-profession teams to serve patients that are typically uninsured (93%) and of minority racial or ethnic background (86.2%).

METHODS: Student volunteers were surveyed before volunteering at DAWN and surveyed again after having volunteered for 1 year, from March 2015 to August 2016. Participation in the study was voluntary. In order to maintain privacy, subjects created their own unique identifier and responses were collected via RedCap, an online survey management database. Survey questions were adapted from the Readiness for Interprofessional Learning Scale (RIPLS), Student Perceptions of Interprofessional Clinical Education Revised (SPICE-R), and Medical Student Attitudes Toward the Underserved (MSATU) surveys. Survey data was analyzed using paired t-tests to detect changes in attitudes after volunteering at the DAWN Clinic.

RESULTS: A total of 26 volunteers participated in both the pre- and post-survey. Due to low retention rate in the post-survey, while most attitudes tended to be more positive following a year of service at DAWN, only a few questions demonstrated statistically significant improvement. Volunteers agreed or strongly agreed that learning with other students and professionals would make them a more effective member of a health and social care team ($p = 0.04$). Volunteers also agreed or strongly agreed that trust and respect are required for successful small-group learning ($p = 0.02$).

CONCLUSIONS: SRFCs positively impact student attitudes towards other professions and towards interprofessional care. Attitudes towards underserved healthcare and primary care are more difficult to elucidate, a limitation being that these participants have self-selected to volunteer at a free clinic. Future work includes assessing the attitudes of all volunteers who have volunteered at DAWN, controlling for number of times they have volunteered, and also assess their attitudes on underserved care and primary care.

SUBSISTENCE DIFFICULTIES PREDICT WORSE ABSTINENCE OUTCOMES AMONG HOMELESS SMOKERS: SECONDARY ANALYSIS OF A RANDOMIZED SMOKING CESSATION TRIAL Awesta Yaqubi[2]; Yuchiao Chang[2, 1]; Seth A. Berkowitz[2, 1]; Claire McGlave[2]; Nancy A. Rigotti[2, 1]; Travis P. Baggett[2, 1]. [1]Harvard Medical School, Boston, MA; [2]Massachusetts General Hospital, Boston, MA. (Control ID #2698807)

BACKGROUND: Three-quarters of homeless adults smoke cigarettes. Although most homeless smokers want to stop smoking, cessation rates in this population are generally low. Competing priorities for shelter, food, clothing, and other subsistence needs may be one explanation for this. We assessed the impact of subsistence difficulties on smoking abstinence among participants in a randomized controlled trial (RCT) for homeless smokers.

METHODS: We conducted a secondary analysis of data from a 3-arm smoking cessation pilot RCT of nicotine patch therapy and behavioral counseling alone or in combination with financial incentives or text messaging. All study activities occurred at Boston Health Care for the Homeless Program from 10/2015 to 6/2016. Participants were homeless adult smokers (≥5 cigarettes/day) who were ready to quit smoking within the next month. We assessed past-month subsistence difficulties at baseline using a 5-item scale originally developed for the RAND Course of Homelessness Study and subsequently shown to have good internal consistency ($\alpha = 0.80$) in homeless smokers. Scale items assessed the frequency (0 = never, 3 = usually) of difficulty finding shelter, food, clothing, a place to wash, and a place to use the bathroom. The primary outcome was a repeated measure of smoking abstinence, defined as an exhaled carbon monoxide <8 parts per million and assessed 14 times over 8 weeks of follow-up. Secondary outcomes included attendance of weekly counseling and days of nicotine patch use in the past week, each assessed 8 times over 8 weeks of follow-up. We examined the associations between baseline subsistence difficulties and each outcome using repeated-measures logistic or linear regression with generalized estimating equations, adjusting for age, gender, race, drug and alcohol use severity, psychiatric symptom severity, nicotine dependence, and treatment assignment.

RESULTS: Among randomized participants ($N = 75$), considerable proportions reported any past-month difficulty finding shelter (56%), food (33%), clothing (51%), somewhere to wash (29%), and somewhere to use the bathroom (33%). In the multivariable model, greater baseline subsistence difficulties predicted lower odds of smoking abstinence during follow-up (OR 0.90, 95% CI 0.82–0.99, per 1 point increase in subsistence difficulty score). Compared with participants in the lowest tertile of subsistence difficulties, those in the highest tertile had one-third the odds of being abstinent during follow-up (OR 0.33, 95% CI 0.11–0.93). Subsistence difficulty score was not significantly associated with counseling attendance (OR 1.04, 95% CI 0.95–1.15) or days of nicotine patch use (0 days difference, 95% CI −0.13, 0.13).

CONCLUSIONS: Homeless smokers with greater subsistence difficulties were less likely to be abstinent of smoking during follow-up despite similar use of counseling and nicotine patch therapy. Interventions for homeless smokers should assist with identifying resources to help address competing subsistence priorities.

SUBSTANCE USE DISORDER INITIATIVE IMPACT ON INTERNIST PREPAREDNESS, ATTITUDE, AND PRACTICE

Sarah E. Wakeman[2]; Genevieve Pham-Kanter[1]; Karen Donelan[3]. [1]Drexel University, Philadelphia, PA; [2]Massachusetts General Hospital, Charlestown, MA; [3]Massachusetts General Hospital, Boston, MA. (Control ID #2705835)

BACKGROUND: Alcohol and drug use disorders are frequently seen within general medical settings. Despite the prevalence, our previous research found that the majority of general internists do not feel very prepared to care for patients with SUD and few frequently provide treatment themselves.

METHODS: Pre- post- intervention web-based survey assessing general internists' attitudes, clinical practice, and preparedness to care for patients with SUD before and after the rollout of a hospital wide SUD initiative. The initiative included an inpatient addiction consult team, a post-discharge addiction clinic, recovery coaches, and integrated SUD treatment within primary care with bimonthly case conferences with addiction specialists.

RESULTS: The sampling frame consisted of all general internal medicine physicians at Massachusetts General Hospital in Boston Massachusetts in September 2014 ($n = 290$) and 2015 ($n = 296$). There were 149 respondents for the baseline and 143 respondents for the follow-up survey, response rates of 51 and 48%. There were no significant differences between groups with respect to gender, time spent providing clinical care, years since medical school graduation, having a family member with SUD, practice setting, or frequency seeing patients with SUD. Physicians who had a patient receive care from the consult team, discharge clinic, recovery coaches, or the integrated health center teams were significantly more likely to find caring for patients with SUD as satisfying as other clinical activities (44% vs 9%) and to disagree with the statement "using medications like methadone and buprenorphine for opioid use disorder is simply replacing one addiction with another" (91% vs 72%). These physicians were also significantly more likely to feel very prepared to screen for SUD (27% vs 9%), diagnose SUD (23% vs 9%), deliver a brief intervention (16% vs 5%), refer a patient to treatment (36% vs 14%), discuss medication treatments (22% vs 5%), discuss overdose prevention and naloxone (33% vs 5%), and discuss harm reduction with a patient (22% vs 7%). Physicians who had a patient receive care were also significantly more likely to frequently refer a patient to treatment (28% vs 2%), prescribe naloxone (11% vs 0%), prescribe addiction pharmacotherapy (15% vs 2%), and provide addiction treatment directly rather than referring to another caregiver (18% vs 5%).

CONCLUSIONS: Access to clinical care for SUD across a hospital system including an inpatient addiction consult team, integrated SUD treatment in primary care with addiction specialist support, recovery coaches, and a post discharge clinic significantly improved general internists' attitudes, preparedness, and clinical practice related to SUD.

SUBSTANCE USE SCREENING AND BRIEF INTERVENTION PATIENT CHARACTERISTICS AND SCREENING RESULTS: DIFFERENCES BETWEEN PRIMARY CARE AND EMERGENCY DEPARTMENTS

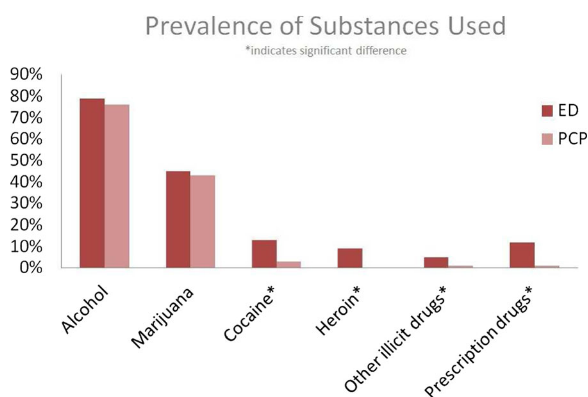
Jeanne Morley[1, 3]; Sandeep Kapoor[2, 3]; Kristen Pappacena[4]; Cherine Akkari[4]; Camila Bernal[4]; Charles Neighbors[4, 5]; Mark Auerbach[2, 3]; Nancy Kwon[2, 3]; Jonathan Morgenstern[1, 3]; Joseph Conigliaro[1, 3]; Megan O'Grady[4, 5]. [1]Northwell Health, Great Neck, NY; [2]Northwell Health, New Hyde Park, NY; [3]Hofstra Northwell School of Medicine, Hempstead, NY; [4]The National Center on Addiction and Substance Abuse, New York, NY; [5]Yale University, New Haven, CT. (Control ID #2704884)

BACKGROUND: Screening, Brief Intervention, and Referral to Treatment (SBIRT) for substance use has been cited as potentially valuable in current efforts to integrate care. However, it has not been widely implemented due to well-documented barriers. Two popular SBIRT settings are primary care practices (PCPs) and emergency departments (ED); however little research has examined their differences in terms of implementation needs. In order to better understand PCP and ED settings as part of SBIRT implementation, we examined whether patient characteristics and SBIRT screening results differed between them.

METHODS: Patients presenting to a PCP or ED were screened for risky substance use (SU) utilizing the AUDIT and DAST screening tools (n = 41,567) as part of an interdisciplinary SBIRT program and, if positive, were further assessed for psychosocial, health, and substance use problems (n = 1604). Demographic information was collected on all patients screened and data was analyzed using descriptive statistics, chi-square, t-test, and multilevel logistic regression analyses.

RESULTS: As compared to PCP patients, ED patients were 1) more severe in terms of substance use patterns and screening scores (Mean AUDIT scores ED 11.62; PCP 7.73; X2 = 8.66; $p < 0.05$); 2) more likely to use a variety of illicit drugs (cocaine (ED 13%; PCP 3% X2 = 34.51; $p < 0.05$), heroin (ED 9%; PC$P < 1$%; X2 = 40.8; $p < 0.05$); other illicit drugs (ED 5%; PCP 1%; X2 = 13.42; $p < 0.05$); prescription drugs (ED 12%; PCP 1%; X2 = 50.67; $p < 0.05$); 3) more likely to report psychosocial issues: unstable housing (ED 16%; PCP 1%, X2 = 16.37; $p < 0.05$), depression (ED 61%; PCP 39%; X2 = 18.48; $p < 0.05$), anxiety (ED 60%; PCP 49%; X2 = 4.34; $p < 0.05$); and 4) were more likely to screen into a higher risk category (Odds ratio = 2.64; 95% CI = 1.06, 6.55).

CONCLUSIONS: This study found important differences in patient characteristics and screening results between PCP and ED patients, with ED patients demonstrating more advanced levels of impairment, higher prevalence of multi-substance misuse, and more psychosocial comorbidities. To address this disparity, EDs implementing SBIRT may need to prepare for these more complex patients by providing additional resources and enhanced coordination with Primary Care.



Prevalence of Substances Used

SUBSTANTIAL VARIATION IN THE PRICES OF DRUGS USED IN COST-EFFECTIVENESS ANALYSES OF NOVEL ORAL ANTI-COAGULANTS Chana A. Sacks; Aaron Kesselheim; Michael Fralick. Brigham and Women's Hospital, Boston, MA. (Control ID #2705444)

BACKGROUND: Cost-effectiveness analyses (CEAs) are important tools to critically assess the value of medical interventions. However, in the US, the cost of a medication - a critical input to these analyses - is often difficult to determine. We conducted a systematic review of CEAs of novel oral anticoagulants (NOACs) to determine the sources of drug costs used in these assessments and to evaluate the variability in prices from these different sources.

METHODS: We identified CEAs for dabigatran, rivaroxaban, and apixaban using the Tufts Medical Center Cost-Effectiveness Analysis Registry, a database of more than 5,000 CEAs from 1976–2014. We searched MEDLINE and EMBASE from January 2014 - October 2016 to include CEAs published since the end of the registry. CEAs for the three drugs of interest based in the US health care system were included. We excluded review articles, editorials, and CEAs that did not use the US dollar. Two authors (CAS, MF) independently reviewed all identified CEAs and extracted the year, cost, and source of each cost for each NOAC and all comparator drugs. For the three NOACs, we then compared the cost trends in 1) wholesale acquisition cost, obtained from RedBook 2) average wholesale price, obtained from RedBook 3) and cash prices, obtained from GoodRx, which reports average prices from thousands of U.S. pharmacies from 2013–2015.

RESULTS: We identified 23 CEAs published between 2011–2016: 10 included dabigatran, 9 apixaban, and 10 rivaroxaban. Five studies analyzed multiple NOACs. Including both NOACs and comparators, a total of 58 medication costs were identified. Wholesale acquisition cost was used 13 times, more than any other measure. In 7 cases, the study cited Redbook, though did not specify whether the wholesale acquisition cost or the average wholesale price was used. Other sources included a previously published CEA (7), an estimate based on the cost of a related drug or the drug's European price (7), Analysource (7), Centers for Medicare and Medicaid (5), pharmacy cash prices (4), and "hospital costs" (4). In 4 cases, we could not determine the source of the price used. For all drugs, the average wholesale price was the highest, an average of $72.16/month more than the wholesale acquisition cost. In all but one case, the GoodRx price was between the two, an average of $17.80/month above the wholesale acquisition cost (range -$10.91 to $36.23). For all three drugs, all costs increased over time, with the wholesale acquisition cost increasing 44% for apixaban between 2013 and 2015, 44% for rivaroxaban between 2012 and 2015, and 53% for dabigatran between 2011 and 2015.

CONCLUSIONS: There is wide variation in the sources of prices used in CEAs, which leads to substantial differences in the cost inputs in these analyses. The costs of the three examined NOACs have also steadily increased since market entry. With greater attention to drug costs in upcoming years among payors and patients, a more consistent approach to the cost inputs of CEAs will be needed.

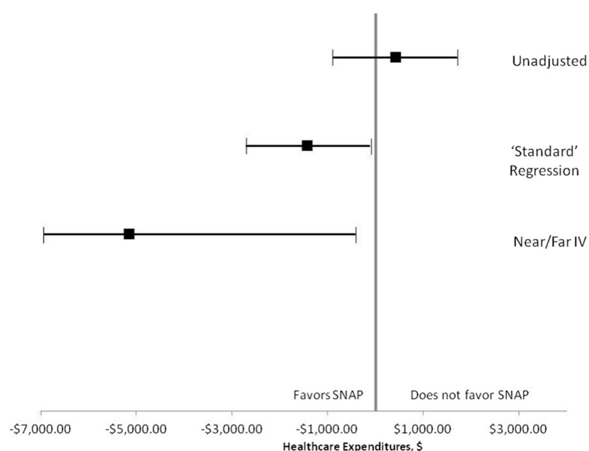
SUPPLEMENTAL NUTRITION ASSISTANCE PROGRAM (SNAP) PARTICIPATION AND HEALTHCARE EXPENDITURES AMONG LOW-INCOME ADULTS Seth A. Berkowitz[1]; Hilary Seligman[4]; James B. Meigs[2]; Sanjay Basu[3]. [1]MGH, Boston, MA; [2]Massachusetts General Hospital, Boston, MA; [3]Stanford University, Stanford, CA; [4]University of California, San Francisco, San Francisco, CA. (Control ID #2698891)

BACKGROUND: Food insecurity is associated with high healthcare expenditures. It is unknown whether the Supplemental Nutrition Assistance Program (SNAP), which addresses food insecurity, can reduce expenditures.

METHODS: Using linked data from the 2011 National Health Interview Survey and the 2012–13 Medical Expenditures Panel Survey ($N = 4447$ adults with income <200% of the federal poverty threshold), we tested the hypothesis that self-reported SNAP receipt in 2011 is associated with lower total healthcare expenditures (all paid claims and out-of-pocket costs) in 2012–13. We first used 'standard' generalized linear modeling (gamma distribution, log link, with survey design information), adjusting for demographics (age, sex, race/ethnicity), socioeconomic factors (income, education, SSDI disability, urban/rural), census region, health insurance, and self-reported medical conditions. Next, to address unobserved selection bias into SNAP, we used near/far matching, a type of instrumental variable (IV) analysis. SNAP eligibility is set federally, but states vary in SNAP enrollment policies (e.g., online applications or fingerprinting requirements), thus subtly 'encouraging' or 'discouraging' enrollment. This variation formed our IV. Near/far matching compares people similar in observed characteristics ('near'), but who differ in how easy or hard it is to enroll in SNAP in their state ('far'). The IV strongly predicted SNAP enrollment (first-stage partial F statistic = 42.5) and passed IV validity tests (Sargan and Basmann tests of overidentifying restrictions).

RESULTS: Compared with other low-income adults, SNAP recipients were younger, more likely to be racial/ethnic minorities, and had lower income ($p < .001$ for all). In 'standard' regression with covariate adjustment, SNAP was associated with lower estimated annual healthcare expenditures (−$1,409.44; 95%CI -$2,693.73 to -$125.15)(*Figure*). In the near/far matching analysis, SNAP receipt was associated with even lower subsequent expenditures (−$5,160.16; 95%CI -$6,923.70 to -$437.85).

CONCLUSIONS: SNAP enrollment is associated with reduced healthcare spending among low-income U.S. adults.



Forest plot comparing difference in healthcare expenditures between those who did and did not receive SNAP

SUPPLY AND DEMAND: ASSOCIATION BETWEEN OF NON-ENGLISH LANGUAGE SPEAKING FIRST YEAR RESIDENT PHYSICIANS AND AREAS OF NEED IN THE UNITED STATES

Lisa C. Diamond[2]; Erik Vickstrom[3]; Mohammed Imran Mujawar[2]; Margaux C. Genoff[1]; Francesca Gany[2]. [1]Memorial Sloan Kettering Cancer Center, New York City, NY; [2]Memorial Sloan-Kettering Cancer Center, New York, NY; [3]U.S. Census Bureau, Washington, DC. (Control ID #2705798)

BACKGROUND: Over 25 million US inhabitants are limited English proficient (LEP). It is unknown whether physicians fluent in non-English languages are training in geographic areas with the highest proportion of LEP people. We sought to assess the spatial alignment of non-English language-speaking resident physicians and the geographic areas where language skills are needed.

METHODS: We conducted a cross-sectional study of 2013–2014 data from the Association of American Medical College's (AAMC) Electronic Residency Application Service (ERAS) database, Graduate Medical Education Track (GMETrack) database, and American Community Survey data from the US Census. All applicants for post-graduate medical training in 2013–2014 were included ($n = 50{,}766$). The ERAS application includes socio-demographic questions (e.g. racial/ethnic identity and languages spoken). Residency program locations were assigned to Core Based Statistical Areas. We measured LEP people's exposure to non-English language-speaking resident physicians. We then calculated the spatial alignment of non-English language-speaking resident physicians relative to the distribution of the LEP-speaking population.

RESULTS: Thirty-seven percent of resident physicians in 2013–2014 spoke at least one non-English language. LEP speakers' exposure to non-English language-speaking residents varied. The resident physician to LEP ratios were 13.6 for Spanish, 52.9 for Chinese, 22.7 for Vietnamese, 38.5 for Korean, and 20.2 for Tagalog, the five most common languages spoken by LEP people in the US. There were differences across metropolitan areas by language. For Spanish, the resident physician to Spanish LEP ratio was 5.1 in Los Angeles (33% of the national ratio) but 23.7 in New York (153% of the national ratio) (Figure). The differences were most drastic for Tagalog, where the ratio was 70.4 in New York (349% of the national ratio) compared to 2.9 in San Francisco (14% of the national ratio) and 0 in San Diego, San Jose, and Seattle. Spatial alignment of Spanish-speaking residents is greatest in the Northeast and lowest in the Mid-West, Southeast, and Northwest regions of the US. Among the top five LEP languages in the US, Chinese-speaking resident physicians (.33) were the least spatially mismatched, followed by Spanish (.36), Vietnamese (.42), Korean (.43), and Tagalog (.63).

CONCLUSIONS: Diversity of language ability in the physician workforce is an important complement to language assistance services for providing quality care to patients with LEP. Residency programs in areas of high need must consider whether resident physician non-English language fluency would improve the service to their communities.

SYMPTOM PREDICTORS OF DELAYED ASCENDING AORTIC DISSECTION PRESENTATION Tanya Doctorian. Kaiser Permanente Fontana Medical Center, Fontana, CA. (Control ID #2705790)

BACKGROUND: Ascending aortic dissection (AoD) is the most lethal condition involving the aorta. Despite increasing awareness of AoD among clinicians and improvements in diagnostic imaging, the mortality and morbidity rates of this condition remain high. In an effort to further optimize outcomes, symptom onset and its impact on presentation is needed. Symptom-onset-to-hospital-presentation time delay, or pre-hospital delay, is a known cause for increased morbidity and mortality. In an effort to further optimize outcomes, by decreasing pre-hospital delays, symptom onset and its impact on presentation is needed. The objective of this study was to determine whether the type and nature of specific symptoms are associated with delays in presentation of ascending AoD patients.

METHODS: 235 patients presenting with ascending AoD from 2007 to 2016 to a tertiary hospital with a diverse patient population were retrospectively studied. 145 patients with complete data were included in this analysis. Patients without complete data were excluded. Symptom-onset-to-hospital-arrival time was analyzed for the following factors: type of symptoms (chest pain, back pain, abdominal pain, syncope/dizziness, other) and nature of symptoms (constant, intermittent). Symptom-onset time was identified by review of medical records and emergency services data. Non-parametric univariate and multivariate analyses were carried out to compare differences in time-to-presentation between groups.

RESULTS: See table

CONCLUSIONS: As expected, ascending AoD patients presenting with chest pain presented the fastest from among the groups. Patients with abdominal pain had a significantly longer delay than patients with the other presenting symptoms. As expected, patients with intermittent symptoms presented significantly later than patients with constant symptoms. Interestingly, symptom-onset-to-presentation time remains long even with the classical symptom of chest pain, which is the most common presenting symptom of ascending AoD. Thus, continued and enhanced population education and awareness is necessary to reduce pre-hospital delays and improve outcomes in ascending AoD patients.

Symptoms	Percentage of Population	Symptom onset-to-Presentation {Median (min – max)} in hours	P-value
Chest pain	69.37%	2.5 (0.5 – 168)	Reference
Back pain	10.81%	6 (1 – 120)	<0.001
Abdominal pain	3.50%	26.5 (5 – 72)	0.004
Syncope/Dizziness	5.41%	14.5 (2 – 144)	0.002
Other	7.00%	7 (4 – 168)	0.002
Constant	62.16%	2 (0.5 – 24)	Reference
Intermittent	37.84%	12 (2 – 168)	<0.001

SYSTEMATIC REVIEW OF EFFECTS OF MARIJUANA USE ON CARDIOVASCULAR RISK FACTORS AND OUTCOMES Divya Ravi[2]; Mehrnaz Ghasemiesfe[2]; Salomeh Keyhani[1]. [1]University of California at San Francisco, San Francisco, CA; [2]Northern California Institute for Research and Education, San Francisco, CA. (Control ID #2700211)

BACKGROUND: Marijuana is one of the most widely used illicit substances worldwide. While the number of users of marijuana is increasing, the perceived associated health risk seems to be declining. With more states legalizing recreational marijuana, a better understanding of the long-term health implications associated with the use of marijuana is necessary. In particular, a better understanding of the effect of marijuana on cardiovascular health is needed as it remains the number one cause of morbidity and mortality in the US and worldwide. We conducted a systematic review to examine the known effects of marijuana use on cardiovascular risk factor control and cardiovascular outcomes.

METHODS: We searched PubMed, Medline (1975–2016) for studies published in English that examined the association of marijuana use with cardiovascular risk factor control and outcomes. MeSH terms for search are outlined in the table. All titles and abstracts were independently reviewed for inclusion by two authors (DR, MG). Included articles again were independently reviewed by the same two authors. Conflict over the inclusion of a publication was resolved by a third reviewer (SK). We extracted data on study design, cannabis make up, route of exposure, dosage, physiological changes, cardiovascular risk factors and outcomes.

RESULTS: We screened 1608 titles and abstracts, kappa for inclusion was excellent (86.55%). 142 abstracts met the inclusion criteria. Of these papers, 31 of these were excluded on full text review leaving 111 included papers. Among the final sample, we identified 14 prospective cohort studies, 9 retrospective cohort studies,11 case control studies, 63 interventional studies, 9 crossover and 5 cross-sectional studies. Smoking was the predominant form of marijuana use studied. The majority of studies ($n = 77$, 69.3%) were focused on the acute hemodynamic changes following exposure to marijuana while studies reporting on the effect of marijuana on cardiovascular risk factor control ($n = 24$, 21.6%) and cardiovascular disease outcomes such as acute myocardial infarction, stroke, arrhythmia and cardiac arrest was more limited ($n = 21$, 18.9%). Multiple interventional studies reported increases in heart rate ($n =$ 71,63.9%) and drops in blood pressure ($n = 14$,12.6%) associated with use. Three studies reported on an association between marijuana use and acute myocardial infarction and 5 studies reported on an association between marijuana use and stroke, although study quality was variable.

CONCLUSIONS: Smoking marijuana causes acute hemodynamic changes. There is some evidence that marijuana is associated with adverse health outcomes. However, most available research in this realm is of poor quality. In the light of increasing social acceptance, a substantial investment in understanding the health effects of marijuana is warranted.

Marijuana OR Marihuana OR Tetrahydrocannabinol OR Cannabinoid	AND	Overweight OR Glucose OR Glucose Metabolism Disorder OR Hypertension OR Hypotension OR Dyslipidemia OR Myocardial Ischemia OR Cerebrovascular Disorders OR Arrhythmia OR Cardiac Arrest OR Heart Failure OR Hemodynamics OR Peripheral Vascular Disease OR Arterial Occlusive Diseases

TAILORING COMMUNICATION TO HEALTH NUMERACY IN THE BREAST CANCER TREATMENT CONSULTATION: FEASABILITY AND OUTCOMES OF A WEB BASED SCREENING TEST FOR USE IN THE CLINICAL SETTING Marilyn M. Schapira[4, 6]; Kathlyn Fletcher[2]; Pamela S. Ganschow[3]; Elizabeth Jacobs[5]; Cynthia Walker[7]; Alicia J. Smallwood[1]; Denisse Gil[3]; Arshia Faghri[4]; Joan Neuner[1]. [1]Medical College of Wisconsin, Milwaukee, WI; [2]Medical College of Wisconsin/ Milwaukee VAMC, Tbd, AL; [3]Stroger Hospital/Rush University Medical Center, Chicago, IL; [4]University of Pennsylvania, Philadelphia, PA; [5]University of Wisconsin School of Medicine and Public Health, Madison, WI; [6]CMC VA Medical Center, Philadelphia, PA; [7]Duquesne University, Pittsburgh, PA. (Control ID #2701548)

BACKGROUND: The breast cancer treatment consultation often includes complex numeric information on prognosis and treatment. Without objective measures of patient numeracy, clinicians may convey information that is too complex for a given patient. A screening test for health numeracy and numeracy specific communcation guidance for providers can guide the content and format of communication in the cancer consultation.

METHODS: A cohort study was conducted of English or Spanish speaking women with a diagnosis of stage 0 to 3 breast cancer. Prior to a consultation with a radiation oncologist, general surgeon, or medical oncologist, the subject completed the NUMiCAT, a computer adaptive test consisting of up to10 multiple choice questions, with scores categorized as low, medium, or hgh. A NUMiCAT report with communication guidance specific to numeracy levels (information on strategies to consider or avoid) was provided to the clinician prior to the visit. The consultation was audio-recorded, Spanish consultations translated, transcribed, and coded for complexity of numeric information and use of teach back techniques to confirm patient understanding. Post-consultation surveys assessed feasibility and usability of the intervention. Analysis of transcripts coded the use complex numeric constructs in the domain of statistics. The association of patient NUMiCAT scores with communication of statistics and the use of teach back technique were evaluated using chi-square tests.

RESULTS: We enrolled 46 subjects that were diverse in primary language (32 English and 14 Spanish), education, race/ethnicity, and numeracy (39% low, 33% medium, 28% high). Patients rated as excellent or very good the clarity of purpose of the NUMiCAT (75%), the computer experience and ease of navigation (71 and 80%, respectively), clarity of questions (59%) and the overall experience of taking the NUMiCAT (63%). Clinicians rated as excellent or very good the clarity of the NUMiCAT report (96%), helpfulness of the report (40%), and satisfaction integration into the visit (35%). Twenty-seven percent (27%) of clinicians modified their communication somewhat (22%) or quite a bit (5%) based on the NUMiCAT report. Qualitative analysis revealed that statistical concepts were conveyed in 35 and teach back technique used in 26% of consultations. A trend towards higher use of statistics with more numerate patients was found ($p < 0.09$) but no association between use of teach back technique and patient numeracy ($p = 0.11$).

CONCLUSIONS: The use of a web-based numeracy screening test in the clinical setting was acceptable to patients and clinicians. However, increased awareness of patient numeracy level had only a small to moderate impact on clinican communication. Future strategies for providing effective tailored communication may require more intensive clinician communication training to support numeracy specific communication salient to the clinical context.

TEACHING TO TEST? A COMPARISON OF LAB TESTING IN TEACHING VERSUS NON-TEACHING HOSPITALS FOR TWO COMMON MEDICAL CONDITIONS Victoria Valencia[1]; Vineet M. Arora[2]; Sumant Ranji[3]; Carlos Meza[4]; Christopher Moriates[1]. [1]Dell Medical School at The University of Texas at Austin, Austin, TX; [2]University of Chicago Medical Center, Chicago, IL; [3]Zuckerberg San Francisco General Hospital, San Francisco, CA; [4]University Medical Center Brackenridge, Austin, TX. (Control ID #2690134)

BACKGROUND: It is often assumed resident physicians at academic medical centers order more tests for inpatients due to different aspects of the clinical learning environment. Despite this prevailing notion, there is very little evidence to support this claim. We sought to quantify differences in ordering practices between teaching hospitals and non-teaching hospitals for two common medical conditions - bacterial pneumonia and cellulitis.

METHODS: We used the Texas Inpatient Public Use Data File, a billing level state-wide dataset, to analyze all inpatient encounters between January 2014-June 2015 with a principal diagnosis of bacterial pneumonia ($N = 31,948$) or cellulitis ($N = 24,303$), and calculated number of lab tests per hospital day by summing individual units billed for laboratory revenue codes and dividing by length of stay (LOS). Labs per day were adjusted individually by the illness severity of the encounter using DRG weight. We categorized hospitals with > 100 cases of each principal diagnosis into 3 types: major teaching (member of Council of Teaching Hospitals, $N = 14$), minor teaching ($N = 13$), and non-teaching ($N = 89$) and compared labs per day across hospital types. We excluded patients who were <18 years of age, had an ICU stay during the hospitalization, were transferred from another hospital, or had a LOS > =2SD of the condition's mean LOS. We used one-way ANOVA tests to determine if severity-adjusted labs per day varied by hospital type, and multilevel quasi Poisson regression models with hospital as a random effect to determine if hospital type was associated with the raw number of labs in an encounter.

RESULTS: Mean adjusted labs per day varied significantly by hospital type and was highest for major teaching hospitals for both pneumonia and cellulitis after adjusting for severity of illness (major/minor/non-teaching pneumonia: 6.23/4.86/4.26, $p < 0.001$; major/minor/non-teaching cellulitis: 6.12/4.84/4.21, $p < 0.001$). Variance in adjusted labs per day was highest for academic teaching hospitals. Correlation analysis indicated strong association of mean severity-adjusted labs per day at the hospital level with an $R^2 = 0.80$, indicating that hospitals that ordered more labs for one condition also ordered more labs for the other condition. Quasi Poisson regression analysis indicated an association between raw number of labs per encounter and major teaching hospital (relative risk (RR) cellulitis (95% CI) = 1.44 (1.27-1.62), $p < 0.001$; pneumonia RR = 1.48 (1.33-1.64), $p < 0.001$) when compared to non-teaching hospitals.

CONCLUSIONS: Patients admitted to hospitals with pneumonia or cellulitis in the state of Texas may receive 20-60% more laboratory tests if they go to a major teaching hospital versus a non-teaching hospital. This relationship holds for two common inpatient conditions and after multiple adjustments for illness severity, length of stay and patient demographics.

TEACHING TRAINEES HOW TO CARE: PROPOSING A NEW STANDARD FOR PATIENT CARE

David S. Burstein. George Washington University Hospital, Washington, DC. (Control ID #2670997)

BACKGROUND: Physicians must care for those who are sick and dying, yet expectations around this task are fundamentally missing in medical training. Written assessments predominantly test biomedical knowledge. Standardized patient exercises are criticized as superficial. The Institute of Medicine's *Dying in America* shows how there is little formal instruction in the skills physicians will need when dealing with complex chronic illness. Meanwhile, value-based medicine and patient experience measures are redefining quality in healthcare. For medical education to respond, the act of caring must be better characterized and assessed; however, trainees value patients' perspectives and emotions less as they move through training, and learned empathic behaviors have a risk of disingenuous use in practice. An approach to patient care that respects these caveats is needed to facilitate curricular initiatives, assessment, and authentic practice habits.

METHODS: A formative textual analysis of academic and popular literature was performed to identify the things physicians do that make patients feel cared for. 11 books were purposively sampled based on subject matter including relief of suffering, empathy and end-of-life care. PubMed was searched for descriptions and investigations of doctor-patient relationships in medical training and clinical practice. More than 140 articles met inclusion criteria. Various articles types were considered and non-reputable journals were excluded. Behaviors, traits and values associated with high quality, person-focused patient care were coded into meaning, referential and thematic units. Units were analyzed into categories of learnable "endpoints" intended to promote genuine practice behaviors. 39 novel units were identified before saturation was reached. Endpoints were checked for accuracy and completeness via thirty to 60 min discussions of findings during and after the study period with experienced colleagues across many disciplines.

RESULTS: Seven endpoints were identified: Find Meaning, Appreciate Suffering, Be Present, Facilitate Patient Ease, Take Care of Oneself, Understand Power, and Use the Team. Empathy and compassion are adjuncts.

CONCLUSIONS: Authentic patient care skills can be characterized. These findings honor the changes in empathy that occur during clinical training and discourage artificial interactions with patients. They may represent an alternative, and perhaps more specific, avenue for assessing interpersonal skills and professionalism. Further discussion is needed to ensure that they are not biased by single authorship. Such an approach to patient care offers common perspective on the artistic nature of clinical practice. Accountability to these tenants could have profound implications in professional development, patient and practitioner satisfaction, and end-of-life care. Acknowledgements: Thank you to Dr. Rudolf Kumapley, Division Chair of Hospital Medicine, Stroger Cook County Hospital of Chicago, IL for encouraging this endeavor.

TEAM-BASED PRIMARY CARE REDESIGN ON THE PRACTICE FRONTLINE: FIELD OBSERVATIONS OF PRIMARY CARE PRACTICES

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BACKGROUND: Primary care practice redesign with a shift to team-based care models is being implemented nationally to improve care delivery through the provision of high quality, efficient, accessible, and coordinated care. We evaluated a practice redesign effort in our integrated health system with an enhanced role of medical assistants (MAs) on care teams in primary care outpatient practices and focused on physician and team experience.

METHODS: Practice observations and informal interviews were conducted at 9 outpatient primary care practices in our health system, including urban, rural, and suburban settings. Each observation was conducted for a 4-hour session and included at least 1 physician and team participating in the new model. Field notes were recorded independently by 1 physician and 1 research nurse. Themes were identified using an editing style qualitative analysis. Notes were coded using NVivo software. Initial themes observed were discussed with primary care stakeholder panel participants including 8 patients and 4 primary care employees for feedback for factors important to practice environment.

RESULTS: We identified that MAs serve varied roles across practices. MA responsibilities were adapted to incorporate flexibility to respond to unique practice needs and were adjusted to unpredictable demands for patient needs or urgent messages during a clinic session. Analysis of field notes indicated variability in MA involvement in check-in and discharge processes. MA roles included 1) functioning as a scribe to document progress notes in the electronic medical record (EMR) for a portion of or the entire encounter, 2) maintaining clinical workflow with check-in or discharge or performing point of care testing, and 3) pre-visit and after-visit work such as managing paperwork, phone messages or order entry. Challenges to care delivery identified by teams included staffing changes, time pressure for physicians and non-physicians, lack of control of physician schedules- specifically access provided by team care models vs. usual care, the EMR, and after-visit work. Positive relationships between MAs and patients, MAs and physicians, and physicians and patients were observed and identified as key factors in successful implementation of team-based models. Feedback from patient stakeholders confirmed importance of organized check-in and discharge processes, appreciating team members' involvement in discharge and follow-up, need for appropriate scheduling, and value of a physician knowing a patient's history.

CONCLUSIONS: Effective transitions to team-based models of primary care delivery incorporated flexibility for practices to adapt responsibilities of added team members to fit the needs of the clinicians and practice. Focusing not only on optimizing practice workflow, but on developing positive relationships among team members and between all team members and patients was identified as a key factor to successfully implemented team-based models.

TELEHEALTH TRAINING IN MEDICAL EDUCATION: A SYSTEMATIC REVIEW

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BACKGROUND: Telehealth has transformed the way we care for millions of patients. Despite its increasing use, little is known about how we educate our medical students and residents in its use. Here we conduct a systematic review of the peer-reviewed literature to explore how telehealth training is provided and the attitudes/concerns that surround its use.

METHODS: We conducted systematic literature searches in Medline, Embase and Cochrane from their inception through November 2016. Major search

terms included telehealth, medical education, medical schools, and residency. In addition, reference and related article searches were conducted in Ovid and PubMed. We included English-language manuscripts that pertained to (1) medical students and residents in any year of training and from any specialty, and (2) telehealth modalities such as telephone medicine and video conferencing. Two researchers independently reviewed all retrieved articles to identify studies meeting eligibility criteria and abstract pertinent data. The kappa prior to reconciliation (0.82) suggests high interrater reliability. The Medical Education Research Study Quality Instrument (MERSQI), a validated tool on a scale of 6 to 18, was used to evaluate study quality for our quantitative studies. For our qualitative studies, we used Consolidated Criteria for Reporting Qualitative Research (COREQ), a 32-point scale, to assess study quality.

RESULTS: 25 out of 1873 studies met our inclusion criteria. The studies included were quantitative ($n = 21$; 18 observational and 3 pre-post intervention studies), qualitative ($n = 3$), or both ($n = 1$). Platforms studied included telephone consultations ($n = 13$), video-conferencing ($n = 3$), smart phone applications ($n = 1$), electronic asynchronous communication ($n = 2$), and multimodality approaches ($n = 6$). The mean MERSQI score was 9.3 (ranging from 6 to 15), while the mean COREQ score was 13.3 (ranging from 9 to 20). 9 (36%) articles evaluated telehealth training programs. The majority detailed methods that improved learners' technical skills and all noted device satisfaction. Another 5 (20%) articles discussed positive student attitudes towards the platforms' use and students' intent on future use. However, many felt unprepared to use them. Thirdly, 5 (20%) articles discussed international users' attitudes. Similar to their American counterparts, the majority recognized the utility of telehealth, however cited concerns about equity of the technology. Lastly, 6 (24%) articles focused on patient safety. Respondents largely saw improved access to providers, however there are mixed reviews about the quality of care provided.

CONCLUSIONS: Despite robust growth in telehealth, medical education in this area is lacking and there is no consensus on which method will yield the most favorable results. We believe that training is rare and in need. Moreover, there are still many questions about how these platforms will affect the quality of patient-physician relationship, patient safety, and equity in its use.

TELEPHONE VERSUS EMAIL TO IMPROVE COMMUNICATION BETWEEN INPATIENT AND PRIMARY CARE PROVIDERS

David Lawrence; Sara Keller; Sarah J. Conway; Elizabeth Lee; Mukund Ramkumar; William Queale; Elizabeth Biddison; Sanjay Desai; Daniel Brotman; Stephen Berry. Johns Hopkins University School of Medicine, Baltimore, MD. (Control ID #2698304)

BACKGROUND: Direct communication between inpatient and primary care providers (PCPs) during a hospitalization may improve patient outcomes, but is often hard to achieve. Email is asynchronous and may thus facilitate direct communication more effectively than telephone. This prospective, controlled trial compared the effects of telephone and email-based interventions on rates of direct communication.

METHODS: All patients discharged from four internal medicine teaching services at a large urban hospital between July 2015 and June 2016 were included. The primary outcome was direct communication with the PCP as reported by the discharging provider in a mandatory field of the electronic health record. The two services with the highest and lowest rates of direct communication during a nine-month pre-intervention period were assigned as controls. The remaining two services were randomly assigned to either the telephone or email intervention. At the start of the intervention period, medical residents were asked to communicate with every patient's PCP, either by telephone (phone arm) or encrypted email (email arm) if the PCP was outside the health system, or by the most convenient method if the PCP was within the system. Comparisons were made using a difference-in-differences analysis with repeated-measures multivariate logistic regression.

RESULTS: Of the 3,775 patients studied, 50% were female, 61% African-American, and 2% Hispanic, and the median age was 56 years [IQR 44–69]. Respective pre- and post-intervention rates of direct communication were 38 and 33% for the combined control services, 28 and 40% for the email arm, and 38 and 58% for the telephone arm (figure). After adjusting for demographics, length of stay and severity of illness score, both the telephone (AOR 3.09 [95% CI, 2.01–4.77]) and email arms (1.73 [1.13–2.67]) had increased communication rates relative to the combined control services, with the telephone arm experiencing a larger increase than the email arm (1.77 [1.07-2.94]).

CONCLUSIONS: Both telephone and email-based interventions increased rates of direct communication compared to controls, with telephone demonstrating a larger increase. Barriers to email may include unavailability of PCP email addresses and cumbersome encryption protocols necessary to protect patient information. Until new platforms for secure, asynchronous communication are readily available, telephone may remain the most effective method for direct communication between inpatient and primary care providers.

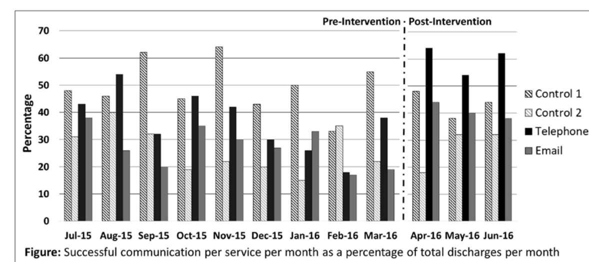

Figure: Successful communication per service per month as a percentage of total discharges per month

TEST RESULT MANAGEMENT APPROACHES AMONG CANADIAN INTERNAL MEDICINE ATTENDINGS AND TRAINEES

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BACKGROUND: Little is known about current methods used by physicians to manage test results on hospitalized patients and virtually none of the existing research comes from Canada. We conducted a survey of Internal Medicine attending physicians and trainees at 3 large University of Toronto academic health centers. We hypothesized that problems identified in older US studies would persist in present-day Canada.

METHODS: We administered a paper-based survey to internal medicine attending physicians and trainees between November and December 2016. The survey consisted of 39 individual questions including: 1) demographics and clinical experience; 2) test ordering practices; 3) methods used for managing test results; and 4) formal education relating to these topics. This analysis focuses on section 3 of the survey regarding managing test results (18 questions). Respondents were asked if they kept a record of the tests they ordered and if they had a system to detect if a patient failed to receive a test. Respondents were asked the number of times in the past two months they identified a result they "wish they had known about sooner". A 5-point Likert scale was used to determine respondent satisfaction with current methods for managing test results and level

of concern that an ordered test may not be performed (1 being not at all satisfied/ concerned and 5 being extremely satisfied/concerned). Likert scale responses were dichotomized into favorable responses (4 or 5) versus less favorable responses (1–3) for statistical analysis. We compared responses of attendings versus trainees using a two sided Chi-Squared test.

RESULTS: During our first of three anticipated rounds of survey administration, we received responses from 55.8% of attendings (29 of 52) and 88.9% of trainees (32 of 36). The average age of attendings was 42.8 years, 58.6% were male, and 51.7% had more than 10 years of practice experience. 34.3% of trainees were medical students and 65.7% were residents; mean age for trainees was 26.8 years and 46.9% were male. 44.8% of attendings and 43.8% of trainees reported keeping a record of tests they order, and 55.2% versus 62.5% respectively report having a system to detect if a patient fails to receive an ordered test. 73.9% of attending physicians and 96.9% of trainees reported at least one test result they "wish they had known about sooner" in the past 2 months with 13.8 and 25% respectively reporting more than 5 such results. 37.9% of attendings and 15.6% of trainees were concerned or very concerned (Likert response 4 or 5) that an ordered test may not be performed ($p = 0.05$). Attendings were more often satisfied or very satisfied (Likert response 4 or 5) than trainees with their current methods for managing test results (44.8% versus 12.5%, $p = 0.01$).

CONCLUSIONS: Canadian attending physicians and trainees identified many problems in test result management, similar to prior, older US studies. Our results suggest that there is still considerable need for improvement.

TEXT MESSAGING TO IMPROVE OUTCOMES IN PATIENTS WITH PAINFUL DIABETIC PERIPHERAL NEUROPATHY (PDPN) Victoria Bauer[1]; Chi-hsiung Wang[1]; Nancy Goodman[1]; Terri L. Craig[2]; Scott Glosner[2]; Mark Juhn[2]; Joseph C. Cappelleri[2]; Alesia Sadosky[2]; Camille Cooley[3]; Brittany Lapin[4]; Christopher Masi[1]. [1]NorthShore University HealthSystem, Evanston, IL; [2]Pfizer Inc, New York, NY; [3]Northwestern University, Evanston, IL; [4]Cleveland Clinic, Cleveland, OH. (Control ID #2701161)

BACKGROUND: Painful diabetic peripheral neuropathy (pDPN) affects over 20% of diabetics and is associated with foot ulceration and amputation. Research suggests that text messages can improve medication adherence and health outcomes among diabetics. To date, no studies have examined text messaging among patients with pDPN. The goal of this study was to determine the impact of twice daily diabetes self-management text messages on health outcomes in this population.

METHODS: We queried the electronic data warehouse of an integrated health-system to identify patients likely to have pDPN. Prospective subjects were contacted after obtaining consent from their physician, and were screened in person by a research nurse to confirm eligibility. Subjects were randomized to receive usual care or usual care plus twice daily one-way text messages regarding glucose monitoring, nutrition, exercise, living with a chronic disease, and foot care. Patients were surveyed at baseline and at six months using the Pain Numerical Rating Scale, Diabetes Self-Management Questionnaire, EuroQol EQ-5D Health Related Qualify of Life Questionnaire, and Diabetes Health Beliefs Questionnaire. Descriptive statistics, t-tests, and chi-square tests were used to assess results.

RESULTS: Of the 69 patients enrolled, baseline and six month data are available for 51 (28 intervention and 23 usual care). Of these, 51% are female and the mean age is 60.3 years. 68% are non-Hispanic White, 23% are African-American, and 6% are Asian American. The mean number of years with diabetes is 14.3. By six months, self-reported pain had declined in the intervention group from 6.3 to 5.5 out of 10 ($p = 0.1$) and in the control group from 6.3 to 5.9 ($p = 0.34$). The between-group difference was not statistically significant ($p = 0.48$). Compared with usual care, the intervention group had higher scores for total self-care (45.6 vs 39.6 out of 70, $p = 0.04$) and foot care (9.8 vs 7.9 out of 14, $p = 0.02$) at six months. In addition, a significant increase in blood glucose testing occurred in the intervention group (+26%, $p = 0.04$) but not the usual care group (−1%, $p = 0.89$). At six months, the intervention group reported fewer problems with self-care (1.2 vs. 1.4 out of 5, $p = 0.04$) and fewer symptoms of anxiety or depression (1.6 vs. 2.2 out of 5, $p = 0.01$). Self-rated health was also higher in the intervention group compared to the control group at six months (65.4 vs 57.9 out of 100, $p = 0.03$). Compared to the control group, the intervention group reported greater perceived benefits of medication adherence ($p < 0.01$), fewer perceived barriers ($p = 0.04$), and greater perceived diabetes control ($p = 0.03$) at six months. Hemoglobin A1c declined in both groups but the between-group difference at six months was not statistically significant.

CONCLUSIONS: Preliminary results suggest that patients with pDPN who receive twice daily text messages regarding diabetes management report improved self-care activities, self-rated health, and diabetes control.

THE ASSOCIATION BETWEEN DEPRESSION SEVERITY AND STIGMATIZED BELIEFS IN EMIRATI STUDENTS: PRELIMINARY FINDINGS OF A CROSS-SECTIONAL STUDY Danny Lee[2]; Arif Pendi[1]; Hajra Hussain[3]; Jahanzeb Ashraf[4]; David Baron[5]. [1]University of California, Irvine, Orange, CA; [2]Virginia Commonwealth University School of Medicine, Yorba Linda, CA; [3]Amity University, Dubai, United Arab Emirates; [4]American University of the Caribbean, Cupecoy, Sint Maarten (Dutch part); [5]University of Southern California, Los Angeles, CA. (Control ID #2687305)

BACKGROUND: It has been reported that the prevalence of depression has increased globally. Unfortunately, the social stigma surrounding mental illness has been known to discourage attempts to seek help for mental disorders. Depression, one of the most common mental illnesses in students, has been associated with a depression-specific social stigma. Given the critical role that general internists fill by prescribing medications and referring patients to psychiatrists, it is necessary to inform general practitioners of the prevalence of depression in university students and how depression severity may be linked to stigmatized beliefs. Thus, this study had the following objectives: (1) clarify the prevalence of depression in Emirati university students, (2) study the link between stigma and depression severity, and (3) identify predictors of stigmatized beliefs.

METHODS: An anonymous survey link was emailed to all students at a university in the United Arab Emirates. The survey contained a socio-demographic section, the Patient Health Questionnaire-9 (PHQ-9), and the Depression Stigma Scale (DSS). Students over the age of 18 were included; those below 18 were excluded. Based on PHQ-9 scores, respondents were classified as either moderately to severely depressed or mildly to not depressed. The two groups of respondents were compared in terms of scores on personal and perceived subscales of DSS via a *t*-test. To study potential confounders or socio-demographic predictors, a series of linear regressions was applied. According to the literature, PHQ-9 and DSS standardized scales have been reported to be valid and reliable.

RESULTS: In the sample, 39.5% Emirati respondents ($n = 129$; 70.5% female; aged 18 years and older) exhibited moderate to severe depression severity; this group displayed less personal stigma (16.1 ± 6.5 versus 17.0 ± 6.3, $p = 0.438$) and perceived stigma (19.8 ± 6.5 versus 22.2 ± 6.8, $p = 0.048$)

compared to other respondents. Additionally, heterosexuality ($p = 0.004$) and non-Indian ethnicity ($p = 0.007$) were predictors of personal stigma. No socio-demographic predictors of perceived stigma were detected.

CONCLUSIONS: Preliminary results of this cross-sectional study indicate a large burden of high depression severity in Emirati university students. More depressed students were associated with less personal and perceived stigma, though only the latter association was statistically significant. Because nearly 4 of 10 respondents exhibited moderate to severe depression, on-campus efforts to manage depression must be prioritized. Although there was less perceived stigma among students with greater depression severity, heterosexual and non-Indian students may benefit from targeted stigma reduction. For general internists, preliminary findings suggest that it is imperative to screen for depression in this population.

THE ASSOCIATION BETWEEN DEPRESSION SEVERITY AND STIGMATIZED BELIEFS IN GRADUATE STUDENTS: PRELIMINARY FINDINGS OF A CROSS-SECTIONAL STUDY

Danny Lee[2]; Arif Pendi[1]; Jahanzeb Ashraf[3]; Kate Basia Wolitzky-Taylor[4]; Jeffrey Sugar[5]; Kasim Pendi[6]; Joshua Lee[4]; David Baron[5]. [1]University of California, Irvine, Orange, CA; [2]Virginia Commonwealth University School of Medicine, Yorba Linda, CA; [3]American University of the Caribbean, Cupecoy, Sint Maarten (Dutch part); [4]University of California Los Angeles, Los Angeles, CA; [5]University of Southern California, Los Angeles, CA; [6]University of California Riverside, Riverside, CA. (Control ID #2687292)

BACKGROUND: The burden of depression may be increasing in graduate students, a distinct group from undergraduates or those in the workforce. Unfortunately, the ill-effects of social stigma have been reported to discourage treatment-seeking behavior. Often, it falls on primary care physicians to prescribe medication or to provide referrals to psychiatrists, requiring awareness to combat the increasing burden of depression in this population. There were three objectives: (1) establish the prevalence of depression in graduate students, (2) investigate the relationship between depression severity and stigmatized beliefs, and (3) identify predictors of depression stigma.

METHODS: A cross-sectional study design was used: an anonymous survey with a socio-demographic section, Patient Health Quesitonnaire-9 (PHQ-9), and Depression Stigma Scale (DSS) was posted online at a metropolitan university in the USA. Convenience sampling required posts to social media, e-bulletins, and emails forwarded by student organizations. Full-time graduate students over the age of 18 were included; students that were undergraduates, part-time, and/or under the age of 18 were excluded. Responses were divided into moderately to severely depressed or mildly to not depressed and compared in terms of continuous scores on the DSS subscales for personal and perceived stigma via *t*-test. A series of linear regressions were applied for socio-demographic predictors and confounding factors. The PHQ-9 and DSS scales have been associated with adequate reliability and validity.

RESULTS: 35.7% graduate student respondents ($n = 199$; 67% female; aged 19–23 years and above) screened positive for moderate to severe depression according to the PHQ-9 summed-item scoring method. More depressed students expressed more stigmatized personal beliefs (11.1 ± 5.9 versus 9.7 ± 6.4, $p = 0.106$) and perceived beliefs (23.7 ± 5.8 versus 21.8 ± 6.0, $p = 0.004$) compared to their less severely depressed counterparts. A non-Christian affiliation was predictive of depression severity ($p < 0.05$). Furthermore, male gender, heterosexuality, and lower class (1st-2nd year students) were identified as predictors of greater personal stigma ($p < 0.05$).

CONCLUSIONS: These preliminary findings suggest a large burden of depression in graduate students and a positive association between perceived stigmatized beliefs and depression severity. For universities, it is imperative to allocate substantial resources for depression management, cultivate a positive campus culture to combat perceived stigma, and potentially target males, heterosexual students, and lowerclassmen with stigma reduction efforts. For general internists, it may be necessary to aggressively screen for depression in this population particularly because more perceived stigma was exhibited by graduate students with greater depression severity.

THE ASSOCIATION BETWEEN DEPRESSION SEVERITY AND STIGMATIZED BELIEFS IN TAIWANESE STUDENTS: PRELIMINARY FINDINGS OF A CROSS-SECTIONAL STUDY

Danny Lee[2]; Arif Pendi[1]; Jahanzeb Ashraf[3]; Jean Feng-Jen Tsai[4]; Ciny Liu[4]; David Baron[5]. [1]University of California, Irvine, Orange, CA; [2]Virginia Commonwealth University School of Medicine, Yorba Linda, CA; [3]American University of the Caribbean, Cupecoy, Sint Maarten (Dutch part); [4]Taipei Medical University, Taipei, Taiwan; [5]University of Southern California, Los Angeles, CA. (Control ID #2687304)

BACKGROUND: Among university students worldwide, the burden of depression has been increasing. Unfortunately, the pervasive stigma surrounding depression has been known to inhibit help-seeking among those with diagnosable mental illness. Because it is often general internists that refer patients to psychiatrists or prescribe medication, primary care physicians must be aware of the burden of depression in university students and the relationship of depression severity to stigmatized beliefs. Thus, this study had the following objectives: (1) determine the prevalence of depression in Taiwanese university students (2) study the association between depression stigma and depression severity, and (3) find predictors of stigmatized beliefs.

METHODS: A cross-sectional study was conducted at a university in Taiwan. An anonymous, online survey was sent out by the institution registrar that consisted of a socio-demographic questionnaire Patient Health Questionnaire-9 (PHQ-9), and Depression Stigma Scale (DSS). Both undergraduate and graduate students at the age of 18 and over were included; those under the age of 18 were excluded. Responses were scored according to the PHQ-9 summed item scoring method and divided into severely depressed or mildly to not depressed groups. The groups' personal and perceived stigmatized beliefs were then compared as continuous scores on the DSS subscales by applying the *t*-test. A series of linear regressions was conducted in order to identify factors and socio-demographic predictors. The PHQ-9 and DSS scales have demonstrated acceptable reliability and validity in the literature.

RESULTS: Approximately 21.3% of respondents ($n = 207$; 75% female; aged 18 years and above) exhibited moderate to severe depression severity. Moreover, moderately to severely depressed students displayed more personal stigmatized beliefs (12.7 ± 5.4 versus 10.2 ± 4.9, $p = 0.006$) and perceived stigmatized beliefs (21.8 ± 5.7 versus 19.0 ± 5.9, $p = 0.006$) compared to their less severely depressed counterparts. A non-heterosexual orientation and alcohol use were identified as predictors of perceived stigma and personal stigma, respectively ($p < 0.05$)

CONCLUSIONS: Preliminary results of the study suggest a significant burden of depression among Taiwanese university students and a robust association between depression severity and depression stigma, personal and perceived. As a result, on-campus resources must be allocated to meet the need of depression management and stigma reduction, particularly student populations that have been identified as predictors. General internists must be aware of the burden of depression and the stigmatized beliefs exhibited by more depressed students so as to more effectively prevent and screen for depressive disorders in this demographic group.

THE ASSOCIATION BETWEEN HEALTH LITERACY AND MEDICATION SELF-MANAGEMENT AMONG PATIENTS WITH UNCONTROLLED HYPERTENSION IN COMMUNITY HEALTH CENTERS. Kunal N. Karmali[1]; Michael S. Wolf[1]; Ji Young Lee[1]; Danielle Lazar[2]; Stephen Persell[1]. [1]Northwestern University, Chicago, IL; [2]Access Community Health Network, Chicago, IL. (Control ID #2701453)

BACKGROUND: Hypertension (HTN) is a chronic condition often requiring complex regimens. Patients with limited health literacy can have difficulty performing self-management needed for HTN control. We sought to determine the association between health literacy and medication self-management behaviors in hypertensive adults.

METHODS: We performed a cross-sectional analysis of adults with uncontrolled HTN recruited for a randomized trial from 12 community health centers in Chicago, IL. Participants were eligible if they were ≥18 years of age with ≥ 3 chronic medications and suboptimal blood pressure control (≥130/≥80 mmHg if diabetic and ≥135/≥85 mmHg if non-diabetic). Baseline health literacy was measured by the Newest Vital Sign. We determined medication reconciliation by blinded physician review of electronic health record-derived medication lists and patient-reported lists for all chronic medications and HTN medications. We measured medication understanding of drug indications by structured questionnaire and adherence by 4-day recall. We determined the association between health literacy and medication reconciliation, medication understanding, and medication adherence using multivariable generalized linear models with clinic-level random effects.

RESULTS: Of the 919 participants, 47% were classified as likely limited health literacy (low), 33% as possibly limited health literacy (moderate), and 19% as adequate health literacy. Compared with participants with adequate health literacy, those with low health literacy were less likely to have all chronic medications reconciled (18.6% vs. 30.6%, $p = 0.005$) and more likely to not know the indication for one or more chronic medication (28.0% vs. 14.9%, $p = 0.003$). There was no difference in 4-day recall of adherence (56.2% vs. 46.0%, $p = 0.077$). In adjusted models, there was a step-wise association between degree of health literacy and medication reconciliation and medication understanding (Table). There was an inverse association between degree of health literacy and adherence (Table). Similar findings were observed for HTN medications but results were imprecise.

CONCLUSIONS: Limited health literacy is highly prevalent among patients with uncontrolled HTN in these safety-net settings. Limited health literacy was associated in a graded manner with medication reconciliation discrepancies and medication understanding but not with medication adherence. These results suggest that medication self-management interventions should be tailored to level of health literacy.

Associations between health literacy and medication self-management

	Likely limited health literacy, OR (95% CI)	Possibly limited health literacy, OR (95% CI)
Chronic medications		
Medication reconciliation	0.50 (0.28, 0.89)	0.61 (0.47, 0.80)
Medication understanding	0.52 (0.32, 0.85)	0.61 (0.43, 0.84)
Medication adherence	1.40 (1.04, 1.88)	1.28 (0.84, 1.95)
Antihypertensive medications		
Medication reconciliation	0.55 (0.40, 0.77)	0.84 (0.65, 1.07)
Medication understanding	0.74 (0.37, 1.49)	0.70 (0.43, 1.13)
Medication adherence	1.38 (1.07, 1.78)	1.28 (0.87, 1.90)

Adequate health literacy as reference. OR's adjusted for age, sex, #meds

THE ASSOCIATION BETWEEN PATIENT REPORTED AVOIDANCE OF CARE AND HEALTHCARE UTILIZATION Janet J. Ho[2]; Long H. Ngo[2]; Christina C. Wee[1]. [1]Beth Israel Deaconess Medical Center, Boston, MA; [2]Beth Israel Deaconess Medical Center, Brookline, MA. (Control ID #2706096)

BACKGROUND: Delays and avoidance of care are commonly used metrics that are thought to be undesirable because they may produce adverse outcomes. Delays, generally assessed by patient self-report, have been shown to increase hospital length of stay or prognosis for certain specific conditions (e.g. heart attack or stroke). It is unclear, however, whether patient reported predilections to avoid care result in delays that may lead to fewer outpatient visits but greater risk of being hospitalized.

METHODS: We analyzed the association between patient reported predilection to avoid healthcare among participants in the Medicare Current Beneficiary Survey (MCBS), a nationally representative, 4-year longitudinal survey of beneficiary health and healthcare experiences, with linkages to Medicare claims. We included community-dwelling adults 65 years and older with at least 2 full years of consecutive enrollment. Survey responses from the first year were matched with utilization claims from the following year. Those who responded "True" to the question "I would do almost anything to avoid going to the doctor" were classified as having a predilection to avoid care. Outpatient visits (OPV) and Inpatient hospitalizations (IPV) were extracted from claims. We analyzed the number of OPV using a two-step hurdle negative binomial approach and analyzed IPV as a dichotomous event using logistic regression. All models were adjusted for relevant confounders, and the complex sampling design of MCBS and repeated measures were further adjusted by MCBS sample weights.

RESULTS: Of 76,529 paired survey-utilization observations, 26.78% reported a predilection to avoid care. After adjustment for demographics (age, sex, race, income, insurance, education, geographical/rural location, marital status), illness burden (26 chronic comorbidities, smoking status, body mass index), and functional limitations (ADL, IADL, physical/mental limitations, self-rated health), older adults reporting care avoidance were less likely to have OPV (OR 0.8, $p < 0.0001$), had fewer number of visits among those with OPV (RR = 0.9, $p < .0001$), but were not more likely to have greater IPV (OR 0.96, $p = 0.07$).

CONCLUSIONS: Older adults who self-reported a predilection to avoid medical care had significantly fewer outpatient visits, but were not more likely to be hospitalized. Future research should seek to understand which patients would benefit from targeted engagement with primary outpatient care to more effectively modify potential adverse ramifications on downstream healthcare outcomes and costs.

THE ASSOCIATION BETWEEN POOR PATIENT PERCEPTIONS OF THEIR PRIMARY CARE PROVIDERS AND OUTPATIENT HEALTHCARE UTILIZATION Janet J. Ho[3]; Long H. Ngo[2]; Christina C. Wee[1]. [1]Beth Israel Deaconess Medical Center, Boston, MA; [2]Beth Israel Deaconess Medical Center, Brookline, MA; [3]Beth Israel Deaconess/Harvard Medical School, BROOKLINE, MA. (Control ID #2706542)

BACKGROUND: Patient experiences are increasingly incorporated as measures of healthcare access and quality, despite showing inconsistent associations with health outcomes. Prior work shows that patient perceptions of healthcare environments may affect the settings where patients choose to access healthcare. In this context, we explore whether poor patient perceptions of their individual primary care provider (PCP) are associated with reduced healthcare-seeking behavior and outpatient visits (OPV).

METHODS: We analyzed the association between patient perceptions of their PCP and annual utilization of OPV among participants in the Medicare Current Beneficiary Survey (MCBS), a nationally representative, 4-year longitudinal survey of beneficiary health and healthcare experiences, with linkages to Medicare claims. We included community-dwelling adults 65 years and older with an identified PCP and at least 2 full years of consecutive enrollment. Survey responses from the first year were matched with utilization claims from the following year. 12 MCBS survey items captured 3 domains: PCP's interpersonal manner (IM), Trust in PCP (TR), and PCP competence/knowledge (CK). We analyzed the association between respondents with overall negative (vs. neutral to positive) perceptions in each domain and annual OPV. We used a two-stage hurdle negative binomial model adjusted for relevant confounders, the complex sampling design, and repeated measures.

RESULTS: Of 76,529 paired survey-utilization observations, 9% reported poor perceptions in IM, 3% in TR, and 2% in CK. After adjustment for demographics (age, sex, race, income, insurance, education, geographical/rural location, marital status), illness burden (26 chronic comorbidities, smoking status, body mass index), and functional limitations (ADL, IADL, physical/mental limitations, self-rated health), poor perceptions did not decrease likelihood of OPV (see table). Among those with OPV, poor TR was significantly associated with a higher numbers of visits.

CONCLUSIONS: Among a nationally representative sample of older adults, poor patient perceptions of PCPs was not significantly associated with reduced outpatient utilization. Future research should seek to better understand other patient perceptions or patient-centered factors that may impact healthcare access or serve as metrics for downstream healthcare outcomes and costs.

Table. Poor Patient Perceptions of PCP and Outpatient Visits

Poor Perceptions of: (N=76, 529)	Annual Outpatient Visits Stage 1 Odds Ratio	Stage 2 Relative Risk
Interpersonal Manner (9%)		
1. adjusted for demographics, comorbidities	0.98	1.04
2. model 1 + functional status	0.95	1.02
Trust (3%)		
1. adjusted for demographics, comorbidities	1.09	**1.17****
2. model 1 + functional status	1.06	**1.13****
Competence/ Knowledge (2%)		
1. adjusted for demographics, comorbidities	1.05	**1.12***
2. model 1 + functional status	1.05	1.09

* p<0.05, **p<0.01

THE ASSOCIATION OF A COLORECTAL CANCER SCREENING PATIENT NAVIGATION PROGRAM WITH ADHERENCE TO RECOMMENDED FOLLOW-UP SURVEILLANCE COLONOSCOPY. Julian Mitton[4]; Janet J. Ho[1]; Wei He[3]; Imarhia Enogieru[5]; Sanja Percac-Lima[2]. [1]Beth Israel Deaconess/Harvard Medical School, BROOKLINE, MA; [2]Massachusetts General Hospital, Boston, MA; [3]MGH, Boston, MA; [4]Massachusetts General Hospital, Cambridge, MA; [5]Harvard Medical School, Boston, MA. (Control ID #2706583)

BACKGROUND: Colorectal cancer (CRC) can be prevented using colonoscopy to detect early invasive disease and remove precursor lesions. Patients who have had a polypectomy are at higher risk for developing CRC and often require follow-up surveillance colonoscopy (FSC). Disparities in CRC screening and outcomes exist in minority and non-English speaking populations. Patient navigation (PN) has been shown to increase CRC screening colonoscopy rates in these populations, however less is known about the impact of PN on adherence to FSC. Our objective is to evaluate the impact of PN at time of initial screening colonoscopy on adherence to FSC.

METHODS: We performed a retrospective matched-control cohort study in an urban academic primary care network. Patients 50–74 years old enrolled in a CRC screening PN program at a community health center who had an abnormal screening colonoscopy in 2010–2011 requiring FSC were matched by chart review in a 1:3 ratio by age, gender, race, language, and CRC risk category to patients at primary care practices without PN who also had abnormal screening colonoscopy requiring follow-up during the same time period. The main outcome is completion of FSC in the PN group compared to the matched controls. We conducted descriptive statistics and used a chi-square test for unadjusted comparison. We further analyzed FSC using multivariable logistic regression with adjustment for health insurance, education and prior number of annual clinic visits.

RESULTS: There were 62 patients enrolled in CRC screening PN with 157 matched controls. Mean age was 60 years (SD 7.27), 40% were women, 58% non-Latino white, 59% spoke English, 11% required FSC in one year, 42% in 3 years, and 46% in 5 years. 72% of patients with PN at initial screening underwent a timely FSC compared to 71% in the non-PN matched control group ($p = 0.850$). After full adjustment, patients with PN had similar odds of completing FSC (OR = 0.99, CI 0.49-2.00) compared to those without PN.

CONCLUSIONS: In our study, nearly 30% of patients with abnormal screening colonoscopies did not complete recommended FSC. PN at initial screening colonoscopy did not appear to improve the odds of FSC. Future research should seek to better understand if PN at the recommended time of FSC, rather than only at time of screening colonoscopy, would improve adherence to FSC and equity in CRC outcomes. These results have implications for primary care practices seeking to improve access and adherence to follow-up surveillance colonoscopy, especially those serving minority and non-English speaking patients.

THE ASSOCIATION OF A REGIONAL HEALTH IMPROVEMENT COLLABORATIVE WITH CHANGES IN AMBULATORY CARE SENSITIVE HOSPITALIZATIONS Joseph Tanenbaum[3]; Douglas Einstadter[4]; Mark E. Votruba[1]; Randall D. Cebul[2]. [1]Case Western Reserve University, Cleveland, OH; [2]Case Western Reserve University, Chagrin Falls, OH; [3]Metro Health Medical Center, Cleveland, OH; [4]MetroHealth Medical Center, Cleveland, OH. (Control ID #2704742)

BACKGROUND: Dramatic changes in healthcare financing and delivery have been motivated in part by the belief that improvements in primary care quality can reduce the incidence and costs of preventable hospitalizations. Primary care-centered regional health improvement collaboratives (RHIC) have emerged as a potentially transformational approach to improve primary care quality. However, the extent to which a RHIC can avert ambulatory care sensitive hospitalizations (ACSH) and associated costs is unknown.

METHODS: We conducted a difference-in-differences analysis of ACSH rates in Cuyahoga County, Ohio, before (2003–2008) and after (2009–2014) establishment of a RHIC. Two post periods were analyzed (2009–2011 and 2012–2014) to account for co-emerging healthcare delivery and payment innovations associated with the Affordable Care Act. Better Health Partnership (BHP) focused on improvements in quality for cardiovascular diseases (diabetes, hypertension, and heart failure). All adult residents in Ohio's six most populous counties hospitalized between 2003–2014 were included in this study. We used a population-based, all-payer database of all hospital discharges in Ohio to compare rates of ACSH in Cuyahoga County and the next five most populous Ohio counties. Secondary analyses to examine alternative explanations for our findings included differential changes in: 1) the use of hospital observations; 2) medical resources (hospital beds); 3) impact of the Great Recession, such as rates of uninsurance or unemployment; and 4) association of BHP on non-ambulatory care sensitive hospitalization rates. Cost savings were estimated by multiplying estimates of year-specific averted hospitalizations in Cuyahoga County by year-specific mean cost per hospitalization. All models used ordinary least squares linear regression and included county and year-specific fixed effects.

RESULTS: Trends in age-and sex-adjusted ACSH rates in Cuyahoga County were similar to Ohio's next five most populous counties during 2003–2008 but declined significantly more in 2009–2011 (106.0 fewer hospitalizations per 100,000 residents, $p < 0.01$) and 2012–2014 (90.8 fewer hospitalizations per 100,000 residents, $p < 0.05$). We estimated 5,748 averted ACSHs leading to cost savings of $39,669,432. Changes in hospitalization rates for non-ambulatory care conditions in Cuyahoga County were not significantly different ($p = 0.44$) than those in the comparator counties. Reductions in ACSH rates in Cuyahoga County likewise were not explained by differential observation rates, hospital bed supply, or impact of the Great Recession.

CONCLUSIONS: ACSH rates decreased more in Cuyahoga County than comparator Ohio counties following the establishment of a primary care-focused RHIC. This study supports increasing the prevalence of primary care-centered collaborative efforts. More widespread adoption of RHICs may lead to a reduction in ACSHs and associated costs.

THE ASSOCIATION OF BODY MASS INDEX AND HEALTH RELATED QUALITY OF LIFE

Rachel Apple[2]; Christianne Roumie[1]; Ken Wallston[1]; David Schlundt[1]; Shelagh Mulvaney[1]; Margaret Hargreaves[1]; Craig Bullington[1]; Russell L. Rothman[1]; William J. Heerman[2]. [1]Vanderbilt University, Nashville, TN; [2]Vanderbilt University Medical Center, Nashville, TN. (Control ID #2701165)

BACKGROUND: A patient-centered approach to improving weight-related outcomes requires an understanding of how overweight/obesity are related to both physical and mental aspects of quality of life (QOL) while accounting for comorbid chronic illness. Because these relationships are not well described, this study aimed to evaluate how body mass index (BMI) was associated with quality of life in a large, geographically diverse adult population.

METHODS: Participants were surveyed as part of a Patient-Centered Outcomes Research Institute (PCORI) funded evaluation of healthy weight across the Mid-South Common Data Research Network. We recruited participants from 12 medical clinics in 5 states. The primary exposure was BMI, calculated from self-reported height and weight. The primary outcome was self-reported quality of life, using the Patient-Reported Outcomes Measurement Information System (PROMIS) physical and mental QOL subscales. Each subscale contained 4 items with normalized scores ranging from 16.2-67.7 (Physical Health) and 21.2-67.6 (Mental Health). We conducted multivariable linear regressions between BMI and each QOL sub-scale, adjusting for age, gender, race/ethnicity, income, education, diabetes, hypertension, and hyperlipidemia. We hypothesized that the relationship between BMI and QOL may not be a linear, and tested this assumption using a smoothed polynomial regression.

RESULTS: The 11,776 respondents were predominantly female (71.7%) and White (83.6%), with a median age of 52.7 years (IQR 37.8–63.9). The median BMI was 27.9 (IQR 24.0–33.3). The median physical health score was 50.8 (IQR 42.3–54.1), and the median mental health score was 50.8 (IQR 45.8–56.0). Unadjusted polynomial regressions between BMI and QOL showed a non-linear relationship, whereby respondents who were underweight showed improved QOL scores as BMI increased to the normal range and then decreased. The average QOL score for underweight respondents was 50.4 (SD 9.5) for physical health and 50.5 (SD 9.3) for mental health, and the average QOL score for normal weight respondents was 52.2 (SD 8.2) for physical health and 52.0 (SD 8.2) for mental health. Excluding participants who were underweight due to the non-linear relationship, adjusted linear regression demonstrated that increased BMI was associated with decreases in both PROMIS physical health scores ($\beta = -0.30$, 95% CI −0.32, −0.27 $p < 0.001$) and PROMIS mental health scores ($\beta = -0.13$, 95% CI −0.16, −0.10 $p < 0.001$).

CONCLUSIONS: This evaluation demonstrates that there is an independent association between both underweight and overweight/obesity with worse mental health and physical health quality of life, even after controlling for comorbid chronic illness. This suggests that quality of life is an important metric for evaluation in obesity research, and further underscores the importance of addressing obesity at a population level to not only reduce long-term comorbidities, but also to improve quality of life.

THE ASSOCIATION OF HIGH PERFORMING MEDICAL HOMES WITH POPULATION HEALTH

Karin M. Nelson[3, 4]; Philip W. Sylling[1]; Leslie Taylor[1]; Danielle Rose[2]; Alaina M. Mori[1]; Stephan D. Fihn[1, 4]. [1]Department of Veterans Affairs, Seattle, WA; [2]VA GLA Healthcare System, Sepulveda, CA; [3]VA Puget Sound Health Care System, Seattle, WA; [4]University of Washington, Seattle, WA. (Control ID #2705465)

BACKGROUND: Despite widespread adoption of the patient centered medical home (PCMH), it is not clear which elements are essential to improving clinical quality and population health. We used national data from the Veterans Health Administration (VHA) Patient Aligned Care Team (PACT) program to assess this question.

METHODS: We conducted a patient-level, observational study to assess the association between the degree to which the PACT model had been implemented at 164 hospital-based clinics and 745 community-based VHA primary care clinics in 2012 and clinical quality measured during the period from 2012–2014. Patients were included if they received primary care from FY2012–2014 and had their chart abstracted by VA's External Peer Review Program (EPRP), a national performance evaluation program ($n = 422{,}125$). Clinical quality was measured using 48 preventive (e.g., receipt of guideline concordant vaccinations and screening tests) and chronic disease management indicators (e.g., annual retinal examinations in patients with diabetes). Clinic level PCMH implementation was measured by the PACT implementation Progress Index (PI^2), which provides a composite score for 8 core domains (access, continuity, care coordination, comprehensiveness, self-management support, patient-

centered care and communication, shared decision making and team-based care). Using logistic regression with multiple binary outcomes for each domain, we calculated the difference in predicted probability of meeting each quality indicator for clinics in the highest quartile domain scores compared to all other clinics. To estimate the projected overall effect on the entire VHA primary care population of over 5.4 million VHA primary care patients, we estimated the eligible cohort for each measure among all VHA primary care patients and calculated the number additional measures that would be expected to have met quality criteria had the lower performing clinics performed similarly to clinics in the highest quartile domain scores.

RESULTS: Clinics in the top quartile for care coordination, access, and continuity were significantly more likely to meet multiple quality indicators. Although clinic-level differences were relatively modest, when we projected the observed advantage of effectively implementing PACT to all clinics serving the entire population, 248,427 additional quality measures would have been met if all clinics had performance similar to the top quartile clinics in the access domain. We calculated similar broad potential effects on quality for the care coordination ($n = 305{,}929$) and continuity domains ($n = 259{,}078$).

CONCLUSIONS: Clinics with better care coordination, access, and continuity exhibited better performance on a broad range of clinical quality indicators. Although clinic-level differences in performance were modest, when extrapolated to the entire VA patient population, the accumulated, potential improvement in population health was sizable.

THE BENEFITS AND CHALLENGES OF CUSTOMISING A COMMERCIAL CPOE SYSTEM IN LARGE U.K. TEACHING HOSPITAL

Clare L. Brown[5, 6]; Neil W. Watson[4]; Andrew K. Husband[3]; David W. Bates[1]; Sarah P. Slight[2, 6]. [1]Brigham and Women, Boston, MA; [2]Durham University, Stockton on Tees, United Kingdom; [3]Durham University, Teesside, United Kingdom; [4]The Newcastle upon Tyne Hospitals NHS Foundation Trust, Newcastle upon Tyne, United Kingdom; [5]University of Durham, Sunderland, United Kingdom; [6]Newcastle Upon Tyne NHS Foundation Trust, Newcastle Upon Tyne, United Kingdom. (Control ID #2707415)

BACKGROUND: The Health Information Technology for Economic and Clinical Health (HITECH) Act in 2009 provided substantial financial incentives to organizations that could demonstrate 'meaningful use' of Electronic Health Records (EHRs) in the U.S. The National Health Service's (NHS) Integrated Digital Care Fund and the Safer Hospitals Safer Wards Fund in the U.K have also expanded the implementation of commercial Computerized Provider Order Entry systems (CPOE).[1] These systems are often customized according to the needs and expectations of the users and organization. The aim of this study was to explore how a commercial CPOE system had been customised after its implementation in a large UK teaching hospital, and what the benefits and challenges were.

METHODS: After obtaining the necessary ethical and institutional approvals, a range of ward staff (e.g., doctors, nurses, pharmacists) across four adult wards in a UK teaching hospital and members of the CPOE implementation team were recruited. One researcher conducted 32 semi-structured interviews between Mar 2015 and Aug 2016, lasting between 17–70 min and performed 35 hours of observations. All interviews were transcribed verbatim and the transcripts checked for accuracy. The data were analysed using the framework approach [2] with the aid of qualitative data analysis software NVivo version 10; a list of themes were developed inductively, and explanations for recurring patterns in these data were further refined and presented.

RESULTS: Participants highlighted a number of key benefits and challenges with CPOE customisation: 1) Some users described modifying the screen layout relatively easily in order to improve the visibility of important information (e.g., a medication's stop date). However, other users were unaware of how to do this, as the customisation button was 'not obvious'. 2) Users reported insufficient use of Clinical Decision Support (CDS) by the organization and actively requested more alerts e.g., drug-drug interactions to be switched on. 3) At an organizational level, order sentences and order sets were developed to improve the safety and efficiency of certain tasks. However, some users had difficulties remembering 'key trigger words' to identify them, which in turn limited their use. 4) The organization also modified the system to enable patient's blood glucose results to be reviewed and insulin to be prescribed electronically. However, if prescribing was performed remotely clinical decisions could be made in the absence of data not available on the system, e.g., whether the patient was fasting. 5) The organization developed a pharmacy task list, which helped users work more efficiently, but lacked the sensitivity to identify all 'high-risk' patients.

CONCLUSIONS: We identified five key areas in which users or the organisation had customised the system. We identified a range of barriers and facilitators to making such changes, which can be used to inform future development.

THE CHANGING MORTALITY AND COMPOSITION OF OPIOID-RELATED HOSPITALIZATIONS VERSUS OTHER HOSPITALIZATIONS IN THE UNITED STATES

Zirui Song. Massachusetts General Hospital, Boston, MA; Harvard Medical School, Boston, MA. (Control ID #2701314)

BACKGROUND: Amidst the opioid epidemic, hospitals often serve as the last resort for care. However, data are lacking on outcomes and composition of opioid hospitalizations in the U.S. Using nationally-representative data, this study offers initial evidence on the mortality and attributes of patients hospitalized with opioid primary diagnoses vs. for other conditions.

METHODS: Using 1993–2013 all-payer data from the National Inpatient Sample, 1,886,291 opioid hospitalizations were compared with 18,374,901 hospitalizations for other drugs and 759,941,269 hospitalizations for all other causes. Census data were used to standardize the volume of hospitalizations by the U.S. population. The key outcome variable was in-hospital mortality. Secondary outcomes were length of stay and hospital costs. Characteristics of opioid vs. other hospitalizations were examined using the t-test, Wilcoxon-Mann–Whitney test, and Chi-squared test. A linear multivariable difference-in-differences model assessed changes in mortality among opioid hospitalizations vs. those for other drugs. Covariates included age, sex, race, payer, income, comorbidities, attributes of the hospitalization, and time. Hospital fixed effects adjusted for time-invariant hospital factors to isolate within-hospital changes over time. The model included sample weights and standard errors clustered by hospital. Sensitivity analyses tested changes in the model and the covariates.

RESULTS: Mortality among opioid hospitalizations grew from 0.43% on average before 2000 to 1.83% by 2013, an average increase of 0.11%-points per year ($p < 0.001$) relative to that of hospitalizations due to other drugs, which was unchanged. The volume of opioid hospitalizations remained stable at 0.3 per 1,000 people over the study period and unchanged vs. those for other drugs, implying an increasing case fatality for opioid hospitalizations. Indeed, the

composition of opioid hospitalizations shifted from opioid dependence and abuse to opioid/heroin poisoning during the study period. Hospitalizations for poisonings grew by 0.01 per 1,000 people per year ($p < 0.001$) after 2000, replacing those for dependence or abuse, which declined by 0.01 per 1,000 people per year ($p < 0.001$). Mortality among hospitalizations for poisonings averaged 2.64% after 2000, over 10 times higher than those for dependence or abuse. Patients admitted for poisonings were more likely white, 50–64 years old, Medicare beneficiaries with disability, and residents of lower-income areas. There was no differential change in costs of opioid hospitalizations vs. those for other drugs. Length of stay also evolved similarly between opioid and comparison hospitalizations.

CONCLUSIONS: Mortality among opioid hospitalizations grew more than 3-fold in recent years, driven by a shift towards higher severity of opioid misuse concentrated in vulnerable and disabled populations. This emphasizes the need to strengthen community interventions and better prepare hospitals to care for a greater severity of opioid intoxication.

THE DATA TRIAL: A RANDOMIZED CONTROLLED TRIAL OF NEXT GENERATION AUDIT AND FEEDBACK Alvin Rajkomar[2]; Sajan Patel[2]; Victoria Valencia[1]; Sumant Ranji[3]; James D. Harrison[2]; Priya A. Prasad[2]; Michelle Mourad[2]. [1]Dell Medical School at The University of Texas at Austin, Austin, TX; [2]University of California San Francisco, San Francisco, CA; [3]Zuckerberg San Francisco General Hospital, San Francisco, CA, San Francisco, CA. (Control ID #2691527)

BACKGROUND: Audit and feedback improves clinical care by highlighting the gap between current and ideal practice. Electronic health record (EHR) data can provide contemporaneous data for quality improvement but has not yet been studied extensively. We conducted a randomized controlled trial (RCT) to determine whether audit and feedback leveraging EHR data with modern web-based dashboards could improve quality outcomes in an academic medical center compared to usual feedback.

METHODS: Eight medicine teams were randomly assigned to receive usual versus intensive feedback from February - April 2016. Usual feedback (ongoing for the 19 months prior to the intervention) consisted of a twice-monthly email with graphical feedback of each team's performance on QI metrics. The intensive feedback consisted of both access to a team-based, real-time online data dashboard and weekly in-person review of team data, which we referred to as "STAT rounds." STAT rounds were a 15-min session of facilitated discussion among intervention teams to review performance of metrics and identify roadblocks and solutions to meet them. The primary outcome was the team's performance on a composite measure of three discharge metrics: a completed medication reconciliation in the EHR prior to discharge, a high-quality after-visit-summary (AVS), and a discharge summary completed within 24 hours of discharge. We used generalized linear models to assess the adjusted effect of the intervention on the primary outcome.

RESULTS: A total of 24 medicine teams (12 intervention and 12 control) comprised of 84 housestaff and 48 attendings participated in the trial over 3 months. The dashboard was accessed an average of 56 times per month. STAT rounds were conducted 12 times with at least one physician representative from each team 98% of the time. The primary outcome, completion of all three metrics, was achieved 79.3% (426/537) in the intervention group compared to 63.2% (326/516) in the control group. Adjusted for possible confounders, composite performance of metrics was significantly increased in the intervention group (OR = 2.40, (95% CI 1.66–3.45). Out of the components, the lowest performing metric in the baseline period – the high-quality after visit summary, demonstrated the strongest improvement during the study period in the intervention group (74% vs 88%, $p < 0.0001$.

CONCLUSIONS: In this RCT, intensive audit and feedback with an electronic dashboard and STAT rounds significantly increased a composite measure of three quality improvement measures compared to usual feedback.

THE DEGREE TO WHICH PRACTICE CONFIGURATION, SIZE, AND COMPOSITION CHANGE WHILE PRACTICES ESTABLISH TEAMS Alyna T. Chien[1, 2]; Michael Anne Kyle[3, 4]; Antoinette S. Peters[1, 5]; Kevin Nguyen[3]; Meredith Rosenthal[3]; Shalini Tendulkar[6, 7]; Sara Singer[1, 3]. [1]Harvard Medical School, Boston, MA; [2]Boston Children's Hospital, Boston, MA; [3]Harvard T.H. Chan School of Public Health, Boston, MA; [4]Harvard Business School, Boston, MA; [5]Harvard Pilgrim Health Care, Boston, MA; [6]Tufts University, Medford, MA; [7]Institute for Community Health, Cambridge, MA. (Control ID #2698787)

BACKGROUND: Team-based care has been associated with greater quality healthcare and physician professional satisfaction. However, little is known about how practices reorganize themselves when transitioning from traditional arrangements to team-based care.

METHODS: Using a pre-post study design and detailed personnel lists (e.g., licensure, job titles and descriptions, and team rosters), we studied 18 hospital- and community-based academic primary care practices that participated in a two-year learning collaborative aimed at establishing team-based care. We measured changes in practice: 1. configuration (e.g., percent of practice staff assigned to "teams" versus serving as "floats" between teams or acting as system-wide supports), 2. size (e.g., total staff members, physician panel sizes), and 3. composition (e.g., ratios of non-physician staff per full-time equivalent [FTE] primary care physicians [PCP]) in the year prior to establishing team-based care (2012) to three subsequent years (2013–2015).

RESULTS: By the second year of the collaborative (2013), all 18 practices had created teams, and 5 further sub-divided their teams into "teamlets." On average, practices assigned 71% (SD 24%) of their staff to "teams" and 29% (SD 24%) to "floats." Teams included a mean of 14 (SD 10) staff members with 51% of teams including ≥1 PCP with either ≥1 registered nurse or ≥1 medical assistant while 33% included ≥1 PCP, ≥1 registered nurse, ≥1 medical assistant, and ≥1 administrative staff member. Teamlets had an average of 6 (SD 6) staff on them; 36% of all teamlets consisted of ≥1 PCP and ≥1 medical assistant. Neither the number of staff members nor physician panel size increased significantly over time, but practices had significantly changed their composition by the fourth year of the collaborative (2015). The ratio of nurse practitioners/physician assistants per 10 FTE PCP increased from 0.4 (SD 0.8) in 2012 to 2.6 (SD 3.3) in 2015 (2015 vs 2012 $p = 0.01$), and the ratio of administrative staff per 10 FTE PCP increased from 13.7 (SD 5.5) in 2012 to 18.5 (SD 7.1) in 2015 (2015 vs 2012 $p = 0.03$).

CONCLUSIONS: When establishing team-based care, practices can change configurations and composition without significantly increasing number of staff or physician panel size.

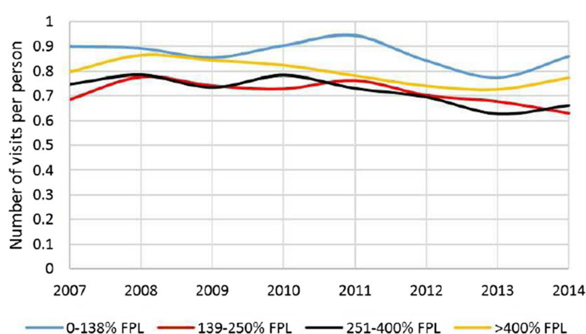
THE DEMAND FOR PRIMARY CARE UNDER THE AFFORDABLE CARE ACT MEDICAID EXPANSIONS Phuc H. Le[1]; Ha T. Tran[2]; Chi R. Nguyen[2]; Michael B. Rothberg[1]; David R. Lairson[2]. [1]Cleveland Clinic, Cleveland, OH; [2]University of Texas Health Science Center School of Public Health, Houston, TX. (Control ID #2705921)

BACKGROUND: Previous studies found that the Affordable Care Act Medicaid Expansions increased insurance coverage, access to care and utilization in low-income persons. Little is known about the demand for primary care on a national scale which is useful for health policy decision making. We aimed to estimate the current demand for primary care and examine trends over time.

METHODS: We used a cross-sectional design and two-part model to estimate the demand for care in US adults aged 18–64. The two-part model estimated the probability of having a visit in the first stage using logistic regression, and number of visits in the second stage using negative binomial regression. The dependent variables were visit (yes/no) and counts of total visits, visits to physicians, and visits to primary care doctors. Based on the Grossman's models of demand for health and healthcare and Andersen-Aday's behavioral model, we identified explanatory variables including demographics, socioeconomic status, health insurance, usual source of care, health status, and cost. The Medical Expenditure Panel Survey 2007–2014 data were used to estimate the mean demand by year and by poverty level (0–138% Federal Poverty Level (FPL); 139–250% FPL; 251–400% FPL; and >400% FPL). We used trend analysis to examine the change in demand overtime. All analyses were conducted in Stata 12.0 and SAS 9.4. A 2-sided p-value <0.05 was statistical significance.

RESULTS: From 2007–2014, the demand for total visits increased from 4.7-5.5 visits/person ($p < 0.05$). Half of the visits were to physicians and <1 visit was made to a primary care doctor. In 2014, mean demand for total visits and physician visits was significantly higher than in earlier years, while the mean demand for primary care was lower ($p < 0.05$). For the lowest income (0–138% FPL) group, demand for total visits was significantly higher in 2014 than before but demand for primary care remained stable.

CONCLUSIONS: Although demand for care increased in 2014, most of the increase was attributed to the low-income group which sought to providers other than primary care doctors. Our study suggests that Medicaid Expansions initially increased the demand for visits in the low-income group but more time is required to determine if the increase was sustained and access to primary care doctors was affected.



THE DIABETIC EYE: DIABETIC RETINOPATHY SCREENING IN A RESIDENT OPERATED CLINIC SHRINA Parekh; Anu Saini; prerna sharma. UPMC, Pittsburgh, PA. (Control ID #2707512)

BACKGROUND: Diabetic Retinopathy is one of the leading causes of blindness in the United States. While many new treatment strategies have been developed in the past decades, we falter at the most significant yet basic step towards treatment; referral and eye exams. At UPMC, EMR tracked data indicates that Mercy Health Center (a resident operated primary health center) has a low rate of documented diabetic eye exams of roughly 27%. This poor rate of screening was concerning and raised many interesting questions in regards to the patient population and individual screening rates. Our objective was to perform a retrospective chart review of diabetic patients at the Mercy Health Center Clinic and study the factors affecting non-compliance and lack of referral. We hope to raise awareness to many resident-operated health centers who could benefit in understanding the complexity of factors that govern referring diabetic patients for retinopathy screening.

METHODS: We compared age, sex, gender ang HgbA1c in two groups-patients screened and not screened versus patients referred and not referred by the PCP. A two sample Student's t test was used to compare the mean HbA1c and age levels in the two screening groups as well as the two referral groups. A Chi-squared test was used to test of an association of gender and HbA1c > 7 with referral and screening. There were no patients with HbA1c greater than 8 in the referral group data set.

RESULTS: The results from the analysis of the data revealed the HgbA1c value of greater than 7 was significantly associated with whether or not the patient was screened. Patients were clearly more likely to be screened for diabetic retinopathy if their HgbA1C value was higher than 7. Those patients who had HgbA1c value of greater than 7 were screened for diabetic retinopathy 87.5% of the time. While the age and gender association in both groups were not clinically significant with their P value greater than 0.05. The association of HgbA1c value was also not found to be clinically significant in the group for PCP referral.

CONCLUSIONS: In conclusion, this data helps us understand whether there maybe a patient driven factor involved in increasing the rates of retinopathy screening. It maybe that patients who are aware of their higher HgbA1c are more likely to follow up with an ophthalmologist and do regular eye exams. Another factor affecting this screening rate maybe that those patients with uncontrolled diabetes are more likely to be counselled and provided emphasis of the screening for retinopathy by their healthcare provider. In either scenario, this study helps us better understand the dynamics of physician referral and patient follow-up especially in high risk populations where screening for a particular disease greatly affects morbidity in a patient. Furthermore, this can help the primary care physicians taking care of the patient understand the motivational factors that affect the screening rates and follow up in patient population.

THE DIFFERENTIAL EFFECTS OF GENDER ON MOOD SYMPTOMS, HEALTH-RELATED QUALITY OF LIFE, SOCIAL SUPPORT, AND DISEASE SEVERITY AMONG PATIENTS WITH SYSTOLIC HEART FAILURE Anam A. Waheed[1]; Emily Guhl[3]; Kaleab Abebe[2]; Yan Huang[2]; Amy Anderson[2]; Bea Herbeck Belnap[2]; Bruce L. Rollman[2]. [1]UPMC, Pittsburgh, PA; [2]University of Pittsburgh, Pittsburgh, PA; [3]University of Pittsburgh Medical Center, Pittsburgh, PA. (Control ID #2706927)

BACKGROUND: Heart failure (HF) affects nearly 6 million Americans and is among the most prevalent cardiovascular disorders. Although gender moderates the course of many medical disorders, little is known about the differential effects of gender on patients with systolic HF. We explore its effects among patients enrolled in the NIH-funded Hopeful Heart Trial, which is currently examining the impact of treating depression in patients with systolic HF.

METHODS: We screened patients with systolic HF (EF <45%) and NYHA class II-IV symptoms at 8 Pittsburgh-area hospitals, for depression with the Patient Health Questionnaire (PHQ-2) just prior to discharge home and telephoned them 2 weeks later to administer the PHQ-9. Protocol-eligible patients with a positive PHQ-2 depression screen and 10 on the PHQ-9 were

randomized to either our depression intervention or usual care ("depressed"); while a randomly selected cohort of patients with a negative PHQ-2 depression screen and <5 on the follow-up PHQ-9 were assigned to our control group ("non-depressed"). We collected sociodemographic and clinical information by patient self-report and chart review at baseline, and assessed mental and physical health-related quality of life (HRQoL) using the SF-12 MCS and PCS, respectively; and social support using the ENRICHD Social Support Index (ESSI) at 2 week follow-up. We then used student's t-test or chi-square test to evaluate for significant differences in patients' characteristics by gender.

RESULTS: From 3/14-11/16 we enrolled 545 patients with systolic HF, 44% female(F) and 56% male(M). The distribution of demographic variables followed identical patterns for both gender groups, with overall mean age of 63.5 years, and about 70% of both genders being Caucasian. The prevalence of comorbid conditions in both genders was also similar, specifically hypertension (F:81%, M:85%, p:0.205), diabetes (F:49%, M:51%, p:0.528), depression (F:33%, M:32%, p:0.645), anxiety (F:7%, M:5%, p:0.645), both depression and anxiety (F:31%, M:29%, p:0.645). Mean levels of social support assessed by the ESSI scale (F:27.3, M:27.1, p:0.778) and HRQoL assessed by mean SF score (M:44, F:43.9, p:0.942) were also similar in both genders. Cardiac function measured by TTE revealed a mean EF of 28.2 in females (range 19.8–36.6) and 27.1 in males (17.5–36.7), demonstrating similar distributions. In spite of having similar degrees of objectively measured HF, women reported higher levels of HF symptoms as assessed by the NYHA categories. 58% of women reported NYHA Class III symptoms and 12% reported Class IV symptoms, compared to 45 and 8% of men respectively ($P < 0.001$).

CONCLUSIONS: Female participants in the Hopeful Heart Trial reported worse subjective severity of HF by NYHA class compared to male participants, despite no significant baseline differences in age, race, EF, mood symptoms, HRQoL, or disease burden. Future reports from our ongoing Trial will examine the differential impact of gender on long-term HF treatment outcomes.

THE DURATION OF ABDOMINAL PAIN APPRISED BY A PATIENT ON THE OFFICE VISIT CAN BE A PREDICTOR OF THE NECESSITY OF ADMISSION. Naoko E. Furukawa; Masaki Tago; Shun Yamashita; Masaki Hyakutake; Shu-ichi Yamashita. Saga University Hospital, Saga, Japan. (Control ID #2689016)

BACKGROUND: There are a few studies of relationship between the duration of abdominal pain and the seriousness of the underlying diseases. The aim of this study is to elucidate the relationship between the duration of pain and the seriousness of the disease by researching the difference of admission rate among patients with various duration of abdominal pain.

METHODS: We retrospectively analyzed the new patients who visited the outpatient clinic or emergency room of the department of General Medicine, Saga university, Japan, for abdominal pain from April 2014 to July 2015. We researched the duration of pain and the necessity of admission on the first visit by chart review. First, the patients were divided into 4 groups according to the duration of pain (shorter than 1 day: group 1; G1, 1 to 2 days: G2, 3 to 14 days: G3, more than 15 days: G4). Second, we analyzed the patients in G1. The patients were divided into 4 groups according to the hours of pain (for 1 hours: G1-1, 2 to 3 hours: G1-2, 4 to 9 hours: G1-3, 10 to 24 hours: G1-4). The admission rate of each group was determined. Third, we analyzed the patients in G4. The patients were divided into 4 groups according to the days of pain (for 15 to 30 days: G4-1, 31 to 90 days: G4-2, 91 to 365 days: G4-3, longer than 366 days: G4-4). Chi-squared test was used to determine the presence of significant differences among each group.

RESULTS: There were 471 patients (13%) visiting with abdominal pain of 3698 new patients during the research period. Of all the patients with abdominal pain, the mean age was 50 ± 20 years, 191 patients (41%) were male and 59 patients (13%) were admitted. The number of patients belonging to G1 was 150, G2 69, G3 98, and G4 103, and their admission rate was 16, 17, 12 and 6% respectively. G4 had significant lower rate of admission than G1 ($p = 0.017$) and G2 ($p = 0.021$) by Chi-squared test. The number of patients belonging to G1-1 was 19, G1-2 39, G1-3 52, and G1-4 40, and their admission rate was 5%, 10, 27 and 13% respectively. There was no significant difference among 4 groups by Chi-squared test ($p = 0.056$); however, G1-3 had the highest rate of admission. The number of patients of belonging to G4-1 was 11, G4-2 34, G4-3 29 and G4-4 29 and the admission rate was 27, 9, 0 and 0% respectively. There was significant difference among 4 groups by Chi-squared test ($p = 0.004$).

CONCLUSIONS: The patients with abdominal pain shorter than 14 days have higher rate of admission than those with pain longer than 14 days, which suggests that acute and sub-acute pain should be treated more cautiously than chronic ones. Still, small but definite part of patients with chronic abdominal pain longer than 14 days and shorter than 90 days have possibilities of admission, so it might be dangerous to take lightly of them. Among the patients with abdominal pain shorter than 24 hours, we should treat the patients with pain for 4 to 9 hours, who had the highest rate of admission, with extreme caution.

THE ED HOSPITALIST TEAM - A COORDINATED STRATEGY FOR CARING FOR ADMITTED PATIENTS WHO ARE STILL IN THE EMERGENCY DEPARTMENT Katherine A. Hochman[1]; Brian Bosworth[1]; Nicole Adler[2]; joshua smith[1]. [1]NYU Langone Medical Center, New York, NY; [2]NYULMC, New York, NY. (Control ID #2701212)

BACKGROUND: Patients admitted to the Medicine Service from the Emergency Department (ED) at times when no beds are available pose a particular challenge to workflow, staffing and patient care. Due to the expansion of our clinically integrated network and recruitment of high-volume surgical teams, the hospital daily census surged, causing an increase in the average number of patients admitted to the hospital but physically located in the ED. The Hospitalist program was charged with developing a coordinated strategy to manage these patients

METHODS: In 2015, we created an ED Hospitalist Team composed of a hospitalist and a nurse practitioner to care for patients admitted to the Medicine Service but awaiting beds on the floor. We purposely created this model so that the medicine teams could focus on caring for patients on their own units and not disrupt their workflow by traveling to the ED. We created a Checklist (Figure 1) for this ED Hospitalist Team to ensure that protocols and pathways were followed, just as they would be on the medical floor. We partnered with ED leadership to identify workspace and standardize handoffs, as well as with leadership from Social Work to proactively identify complex situations starting on hospital day 0. Patients requiring ICU level care were excluded (as intensivists were involved immediately). All patients admitted to the medicine service (i.e. patients who would ultimately be cared for on the general medicine, cardiac, oncologic or hepatobiliary teams), were cared for by the ED Hospitalist team until a bed became available on the appropriate unit.

RESULTS: The average number of patients admitted to the hospital, but physically located in the ED increased from 2.1/day in April 2015 to 14.5/day in October 2016. At least 70% of these patients were admitted to the

Medicine Service. Even with this increase, the observed to expected length of stay (O:E LOS) for Medicine patients remained at 0.92. The discharge before noon rate increased from 39 to 43% during this same period.

CONCLUSIONS: We have demonstrated a strategic and sustainable approach for managing a growing number of patients who are admitted to the Medicine Service but physically located in the ED. By consolidating our resources in creating an ED Hospitalist team, we are able to maintain our workflow efficiencies on the floor, as demonstrated by the O:E LOS and our improved discharge before noon rate.

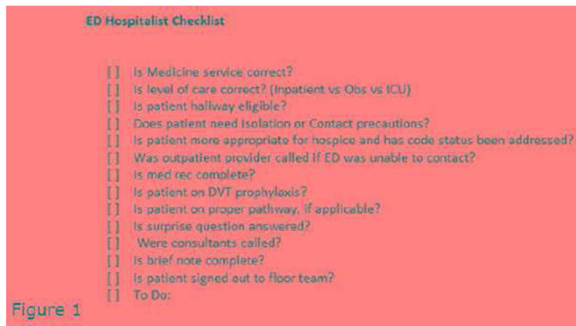


Figure 1

THE EFFECT OF A MOBILE HEALTH INTERVENTION (MPATH-CRC) ON COLORECTAL CANCER SCREENING IN A DIVERSE PATIENT POPULATION David P. Miller[1]; Nancy M. Denizard-Thompson[1]; Larry D. Case[1]; Kathryn Weaver[1]; Michael P. Pignone[4]; Donna Kronner[1]; Jennifer L. Troyer[2]; John G. Spangler[3]. [1]Wake Forest School of Medicine, Winston-Salem, NC; [2]University of North Carolina at Charlotte, Charlotte, NC; [3]Wake Forest School of Medicine, Winston Salem, NC; [4]University of Texas at Austin, Austin, TX. (Control ID #2705792)

BACKGROUND: Although national guidelines encourage routine screening for colorectal cancer (CRC), less than two-thirds of Americans are screened. Screening rates are even lower among low socioeconomic status (SES) individuals, but the rise of mobile device ownership offers new opportunities to reach broadly across populations. Therefore, we developed a mobile health (mHealth) intervention to promote CRC screening. The intervention, called mobile Patient Technology for Health (mPATH-CRC), is a user-friendly iPad app that includes a CRC screening decision aid, the ability for patients to "self-order" a screening test, and follow-up text messages to help patients complete screening. We tested the ability of mPATH-CRC to increase CRC screening in a multi-site randomized controlled trial conducted in a diverse patient population.

METHODS: We conducted the study in 6 community-based primary care practices located in 5 counties in North Carolina. We queried the clinics' shared electronic health record to identify English-speaking individuals aged 50 to 74 years who were scheduled to see a primary care provider (PCP) and were due for CRC screening. A research assistant then called these patients to confirm eligibility and invite them to participate. We randomized participants, stratified by site, to view either mPATH-CRC or a control program about healthy lifestyles immediately before they saw their PCP. The primary outcome was completion of CRC screening within 24 weeks of study entry as defined by blinded chart review and confirmed by a follow-up phone survey. All analyses were based on intention to treat.

RESULTS: Among the 450 participants, 223 were randomized to mPATH-CRC and 227 to the control program. Patient demographics were similar in both groups. The median age was 57 (range 50–74), 57% were white, 38% were black, 53% had annual incomes < $20,000, and 37% had limited health literacy. On surveys administered immediately after participants used the programs, more patients in the mPATH-CRC group than control group were able to state a screening preference (97% vs. 71%, $p < 0.0001$) and increased their intention to receive screening (27% vs. 15%, $p < 0.001$). Completion of CRC screening was higher in the mPATH-CRC group than control group (30.0% vs 13.7%, $p < 0.001$). Additionally, mPATH-CRC doubled screening within specific low SES strata: limited health literacy (26% vs 13%, $p = 0.05$), income < $20,000 (25% vs 12%, $p = 0.02$), and non-white race (35% vs. 17%, $p = 0.01$). In a multivariable logistic regression model adjusted for site, mPATH-CRC almost tripled the odds of completing screening (OR 2.80, 95% CI 1.72–4.53).

CONCLUSIONS: The mPATH-CRC program more than doubled receipt of CRC screening, with similar effects seen across SES strata. These results indicate mHealth programs can reach broadly across populations, potentially decreasing health disparities. Future research should examine how mHealth programs like mPATH-CRC can be implemented in routine practice to improve health outcomes.

THE EFFECT OF PATIENT-CENTERED PRESCRIBING ON MEDICATION ADHERENCE: A NATIONAL ANALYSIS Michael S. Wolf[1]; Ruth Parker[4]; Jenny Jiang[3]; Guisselle del Salto[1]; Deesha Patel[1]; Michael S. Taitel[2]. [1]Northwestern University, Chicago, IL; [2]Walgreens, Deerfield, IL; [3]Walgreens Co, Deerfield, IL; [4]Emory University, Atlanta, GA. (Control ID #2707594)

BACKGROUND: Over the past decade, evidence has emerged supporting the use of a Universal Medication Schedule (UMS) to simplify medication instructions to support patients' prescription (Rx) use. The UMS standardizes the prescribing and dispensing of medicine by more explicitly stating when to take medicine (morning, noon, evening, bedtime). Despite widespread support for this concept, the UMS has not been widely adopted by health systems. Partnering with a large national pharmacy chain (Walgreens), we examined the prevalence of the UMS in current real-world prescribing practices, and sought to evaluate its effectiveness to promote adherence in a national sample of diabetic adults.

METHODS: A cohort of diabetic patients 18 and older affiliated with Walgreens stores nationally and new to a therapy between January and June of 2014 was created ($N = 676{,}739$). The primary independent variable of interest was whether or not prescription instructions dispensed with a medication were written in the manner of the UMS standard ('take in morning, at noon, in evening, at bedtime'). The outcome under study was adherence to medications as determined by pharmacy fill data over the 12 months following the new prescription. The proportion of days covered (PDC) was calculated per each prescription. Proper adherence was considered as having taken > 80% of a medication. Relevant patient and regimen characteristics were derived either from the pharmacy record or imputed using U.S. census tract data. We assessed patient-level characteristics by sig-classification, while census tracts for each patient were linked to aggregate level socio-demographic data. Generalized estimating equations (GEEs) were utilized to compare UMS vs non-UMS prescriptions in predicting PDC. Interaction terms were included to assess effect modification by multi-daily dosing, age, and education.

RESULTS: The cohort of patients was prescribed 722,492 medications that were included in analyses. In GEE models, medications prescribed using the UMS demonstrated slightly better adherence over 1 year compared to non-UMS form prescriptions (Relative Risk (RR) 1.013, 95% Confidence Interval (CI) 1.00-1.023, $p = 0.02$). Yet significant independent associations and interactions with the UMS study arm were noted for the following covariates: 1) multi-daily dosing (> once

daily dosing); 2) age (>65); and 3) education (<9th grade). Specifically, among less educated, diabetic patients over 65 contending with multi-daily regimens (N = 115,285; 14.5% of the overall sample), those whose prescriptions were written with the UMS had greater adherence compared to their more educated counterparts with non-UMS prescriptions. The effect was much larger than what was observed in the general sample (RR 1.11, 95% CI 1.04-1.19, $p = 0.001$).

CONCLUSIONS: The UMS is a minimal, highly scalable intervention that can support adherence among vulnerable groups; by age, education, and regimen complexity. Physicians and health systems might consider it as a new prescribing standard.

THE EFFECT OF RED BLOOD CELL TRANSFUSION ON PHYSICAL AND FUNCTIONAL WELL-BEING QUALITY OF LIFE IN HOSPITALIZED PATIENTS WITH ANEMIA Micah T. Prochaska; David Meltzer. University of Chicago, Chicago, IL. (Control ID #2694242)

BACKGROUND: Anemia is common in hospitalized patients and is associated with decreased health-related quality of life (QOL). Transfusion of red blood cells is the primary treatment for anemia in hospitalized patients, and evidence suggests that receipt of a transfusion while hospitalized can improve patient fatigue, an important QOL symptom of anemia. This raises the question of whether transfusion during hospitalization may also improve other important QOL domains in patients with anemia, such as physical and functional well-being. However, there are no data describing how transfusion during hospitalization affects these QOL domains. Therefore, we sought to measure the effect of transfusion from hospitalization to 30 days post-discharge on the QOL changes in patients' physical and functional well-being.

METHODS: From April 2014 through June 2015, hospitalized general medicine patients with a Hb < 9 g/dL were approached for an interview while hospitalized and a 30-day post-discharge phone interview. At both time points physical and functional well-being were measured using the Trial Outcome Index Anemia (TOI-An) sections that are part of the larger Functional Assessment of Chronic Illness Therapy Anemia questionnaire. TOI-An scores range from 0–136. Changes physical and functional well-being were calculated by subtracting responses on the TOI-An while hospitalized from responses at the 30-day post discharge interview. Patients' hemoglobin (Hb) values while hospitalized, transfusions received and demographic data were abstracted from hospital administrative data. Linear regression was used to test for the effect of transfusion on changes in physical and functional well-being, controlling for age, sex, length of stay, comorbidities, and units transfused.

RESULTS: 513 participants completed both the inpatient and follow-up interview. There were no significant differences between those who were transfused versus those who were not transfused in demographics [(age 57 vs. 55; $p = 0.07$), (female 58% vs. 63%; $p = 0.24$), (African American 64% vs. 59%; $p = 0.54$)], comorbidities (Charlson Comorbidity Index, $p = 0.9$), or baseline (inpatient) physical and functional well-being score (TOI-An 57 vs 59; $p = 0.44$). In linear regression models, the interaction between transfusion, minimum Hb while hospitalized, and baseline physical and functional well-being predicted improvements in physical and functional well-being for patients under the age of 50 ($\beta = -0.35$, $p = 0.04$). A similar effect was seen when analyzing patients of all ages, but the result did not reach statistical significance ($\beta = -0.15$, $p = 0.1$).

CONCLUSIONS: Our results demonstrate that transfusion of hospitalized patients with anemia may improve the physical and functional well-being QOL 30 days after discharge, specifically patients less than 50 years old. Practitioners may be able to combine self-reported QOL measures in patients with a Hb < 9 g/dL to target patients likely to benefit with improved QOL from a transfusion.

THE EFFECT OF STATE MEDICAID EXPANSIONS ON PRESCRIPTION DRUG USE Ausmita Ghosh[2]; Kosali Simon[2]; Benjamin D. Sommers[1, 3]. [1]Harvard School of Public Health, Brookline, MA; [2]Indiana University, Bloomington, IN; [3]Brigham & Women's Hospital, Boston, MA. (Control ID #2704652)

BACKGROUND: The Affordable Care Act (ACA) expanded Medicaid eligibility in participating states to millions of low-income adults. Multiple studies using surveys have demonstrated improved access to care and increased use of services. However, more detailed information on changes in utilization after the expansion can help paint a clearer picture of the law's impact. Given the prominent role of prescription medications in the management of chronic conditions, as well as the high prevalence of unmet health care needs in the population newly eligible for Medicaid, the use of prescription drugs represents an important measure of the ACA's policy impact.

METHODS: We obtained 2013–2015 data from a large, nationally representative, all-payer pharmacy transactions database to examine effects on prescription medication utilization. We used a differences-in-differences regression framework to compare the number of prescriptions filled in expansion vs. non-expansion states, before and after the ACA expansion took effect in January 2014. We compared the source of insurance payment for each prescription, and we also assessed utilization rates within specific drug classes, using Uniform System of Classification product codes. Our models adjusted for the racial and ethnic composition of each state as well as annual state-specific unemployment rates. We also compared utilization changes within states based on the pre-ACA uninsured rate in each area.

RESULTS: Over the first nearly 1.5 years of the ACA's Medicaid expansion, prescriptions paid for by Medicaid increased by 19 percent in expansion states relative to states that did not expand ($p < 0.01$). The greatest increases in Medicaid prescriptions associated with the ACA expansion occurred among diabetes medications, which increased by 24 percent; other classes of medication that experienced large increases include contraceptives (22%), cardiovascular drugs (21%), and mental health drugs (19%) (all p-values <0.01). We did not observe reductions in uninsured or privately insured prescriptions, suggesting that increased utilization under Medicaid did not substitute for other forms of payment. Within expansion states, increases in prescription drug utilization were larger in geographical areas with higher uninsured rates prior to the ACA. Finally, we find suggestive evidence that increases in prescription drug utilization were greater in areas with larger Hispanic and black populations, indicating that Medicaid expansion may be reducing ethnic/racial disparities in access to medications.

CONCLUSIONS: As federal policymakers debate the future of the ACA, we find that the 2014 Medicaid expansion was associated with significantly increased utilization of prescription drugs by patients in Medicaid. In particular, we find large increases in medications that treat chronic disease, suggesting a potential pathway to improved quality of care and health. Future research is needed to assess the long-term health impacts of these changes.

THE EFFECT OF TRIAGE DIAGNOSIS ON CLINICAL REASONING Raj Sehgal[1, 2]; Kevin Ozment[1]; Temple Ratcliffe[1, 2]; Joshua T. Hanson[1, 2]; Jane E. O'Rorke[1, 2]. [1]UTHSCSA, San Antonio, TX; [2]South Texas Veterans Health Care System, San Antonio, TX. (Control ID #2696980)

BACKGROUND: Cognitive errors are common in medicine and can lead to negative patient outcomes. A common error is "anchoring", or the overreliance on a single piece of information in making a diagnosis. With work hour restrictions increasing, trainees frequently assume the care of patients admitted by other providers. There is little in the literature about the effect these initial diagnoses have on the subsequent reasoning by trainees. At our institution, the decision to admit a patient is made by a faculty Triage Physician (TP). The TP admits the patient to a housestaff team, and provides a reason for admission which might be general (ex. "fever") or specific (ex. "pneumonia"). Our aim was to examine the effect that this triage diagnosis has on subsequent diagnostic reasoning by Resident Physicians (RP).
METHODS: We retrospectively reviewed admissions for 100 randomly selected weekdays over a four year period. Patients admitted on weekends and nights were excluded due to differences in the admission process during these times. Data was collected on patients admitted on these dates, including triage diagnosis, the RP's admission diagnosis, and the Attending Physician's (AP) admission diagnosis. Admission notes were also reviewed for evidence of documentation in these diagnostic categories: determination of the most likely diagnosis, consideration of alternative diagnoses, identification of precipitants, and selection of further diagnostic investigations.
RESULTS: 255 patient charts were reviewed, with 145 patients having a specific triage diagnosis and 110 having a general triage diagnosis. 65.5% of RP admission notes documented consideration of alternative diagnoses for general diagnoses versus only 41.4% for specific diagnoses (p-value < 0.0001). RPs also documented the selection of diagnostic tests more frequently when given a general diagnosis (81.8% vs. 61.4%, P value < 0.0001). There were no significant differences between the general and specific groups when it came to documenting the most likely diagnosis or identifying precipitants. Findings for APs were similar to those of RPs.
CONCLUSIONS: RPs and APs showed decreased documentation of diagnostic reasoning when given a specific triage diagnosis, even though documentation of the most likely diagnosis did not significantly change. This suggests that giving trainees a more general, symptom-based initial diagnosis might improve the documentation of diagnostic reasoning.

THE EFFECTIVENESS OF COMPUTERIZED SERVICES AND PEER COACHES TO IMPROVE WEIGHT IN PATIENTS WITH SERIOUS MENTAL ILLNESS Alexander S. Young[3]; Amy N. Cohen[1]; Noosha Niv[4]; Julie Kreyenbuhl[2]; Richard Goldberg[5]. [1]UCLA, Los Angeles, CA; [2]University of Maryland School of Medicine, Baltimore, MD; [3]VA & UCLA, Los Angeles, CA; [4]VA Long Beach Healthcare System, Long Beach, CA; [5]VA Maryland Healthcare System, Baltimore, MD. (Control ID #2698021)

BACKGROUND: People with serious mental illness have high rates of obesity and related medical problems, and die years prematurely, most commonly from cardiovascular disease. Specialized, in-person weight interventions result in weight loss in efficacy trials with highly select, motivated patients who are often paid to participate. In usual care, patient enrollment and retention are low, and effectiveness has been limited. Barriers to use of interventions include limited availability of clinical staff, patients who avoid groups and frequent visits to clinics, and limited patient motivation for ongoing services. The goal of this study was to examine, in patients with serious mental illness, whether internet-based provision of weight management with peer coaching is feasible, acceptable, increases patient engagement, and has greater effectiveness than in-person delivery or usual care.
METHODS: Randomized, controlled, comparative effectiveness study with overweight patients with serious mental illness. 276 patients were randomly assigned to 1) computerized weight management with peer coaching (WebMOVE), 2) in-person clinician-led weight services, or 3) usual care. The computerized system could be accessed from clinic kiosks or anywhere with internet access. It provided audio and text-based education, video, pedometer tracking, goal setting, homework, diet plans, and quizzes. Coaching was delivered by individuals with lived experience with mental illness, was phone-based, and utilized motivational interviewing principles. In-person weight management had the same curriculum as the online program. Patient outcomes were studied at 6 months using mixed methods.
RESULTS: In obese patients, 52/200 (26%) lost 5% or more weight at 6 months. The probability of losing 5% or more weight was significantly different among the three treatment conditions ($\chi^2 = 6.4$; $p = .04$). 22/59 (37%) of the WebMOVE group lost 5% or more weight, while 12/68 (18%) of the in-person group, and 18/73 (25%) in usual care lost 5% of weight at 6 months. Patients were significantly more likely to lose 5% or more of body weight in the WebMOVE group compared to the MOVE SMI group ($\chi^2 = 6.2$; $p = .01$). Average weight change in WebMOVE was 0.5 BMI units (2.8 kg, $t = 3.2$, $p = .001$). No significant change in BMI was seen with in-person services ($t = .10$, $p = .92$), or usual care ($t = -.25$, $p = .80$). When non-obese patients were included in analyses, the condition by visit effect was no longer significant ($F = 2.8$, $p = .06$). WebMOVE was well received, while the acceptability of in-person services was mixed.
CONCLUSIONS: In obese patients with serious mental illness, computerized weight management with peer supports results in lower weight, and can have greater effectiveness than clinician-led in-person services. This intervention is well received, and should be feasible to disseminate.

THE EVOLVING ROLE OF NURSES IN A PATIENT CENTERED MEDICAL HOME: NURSING STAFF TIME ALLOCATION AND JOB SATISFACTION Karen Abernathy[2]; Jingwen Zhang[1]; Kimberly S. Davis[2]; Patty Hutto[1]; Patrick D. Mauldin[2]; William P. Moran[2]. [1]MUSC, Charleston, SC; [2]Medical University of South Carolina, Charleston, SC. (Control ID #2704768)

BACKGROUND: The patient-centered medical home (PCMH) supported by the Electronic Health Record (EHR) has requirements and clinical tasks which go well beyond the traditional primary care model. The remodeling required for PCMH to be successful has resulted in a shifting of roles for clinical staff, leading to changes in workflow and assigned duties. We sought to assess the distribution of tasks and time spent performing these tasks among nursing staff in a PCMH certified academic internal medicine clinic and to evaluate nursing job satisfaction.
METHODS: This study was conducted at a NCQA certified level 3 PCMH academic internal medicine clinic from May - August 2016. Clinic registered nurses (RNs) and licensed practical nurses (LPNs) developed a comprehensive list of 74 activities they performed in clinic. Activities were programmed into a tablet which automatically date/time stamped activity duration. A research assistant followed RNs and LPNs for 38 half-day sessions and documented the activities as they were completed. Nurse job satisfaction was assessed by a validated survey with 28 questions using a 5-point Likert scale.
RESULTS: The 74 activities were aggregated into 10 discrete and mutually exclusive task groups: care coordination, clinic operations, interruptions, EHR/

in-basket, paperwork, rooming, patient/family communication, searching, team communication and training. EHR use and in-basket management accounted for a large proportion of both LPNs and RNs time, ranging from 23-43 to 37-48%, respectively. Care coordination and patient/family communication accounted for 16-26% of the workday for RNs. LPNs spent 25-34% of their time rooming patients. Sixteen nurses completed the job satisfaction survey in September 2016, with a response rate of 88%. The survey was measured on a Likert scale with one (strongly disagree) to five (strongly agree), revealing a mean score of 3.1 for LPNs (SD = 1.2) and 3.0 for RNs (SD = 1.2).
CONCLUSIONS: As primary care clinics continue to adapt to the EHR and ever-increasing administrative duties and outcome measures, we must acknowledge the impact these changes are having on nurses. This study analyzed the day-to-day tasks and responsibilities of nursing staff and has established that nurses are spending the majority of their time on the EHR and other tasks that do not involve direct patient care. Finding ways to increase nurses' interactions with patients, such as re-assessing staffing models to allow for more support and limiting the non-face-to-face and EHR tasks may be a way to improve job satisfaction and retention among nurses. This study was limited to a single academic internal medicine clinic and the results may not be generalizable to other practices. We only observed nursing staff and do not have time data for other providers within the clinic. The Hawthorne effect could have been a factor as nurses may have changed their behavior due to being observed. The survey may suffer from respondent bias and the total number of respondents is low.

THE HOSPITAL SCORE TO PREDICT 30 DAY READMISSIONS AMONG PATIENTS ADMITTED FOR ACUTE VENOUS THROMBOEMBOLISM: PRELIMINARY FINDINGS Julie M. Pearson; Sally Weinstein; Dana Sperber; Eric Goodman; Andrew Dunn; Beth G. Raucher. Mount Sinai Hospital, New York, NY. (Control ID #2699319)

BACKGROUND: The HOSPITAL score is an internationally validated risk assessment to identify patients at risk of 30 day readmission for adults discharged from an inpatient medical department.[1] The HOSPITAL score is validated for all hospital admissions - acute and chronic. The purpose of this study was to assess the use of the HOSPITAL score to predict readmissions among patients with an acute condition, specifically for patients with acute venous thromboembolism (VTE).
METHODS: A random stratified sample of hospital discharges with principal diagnosis codes of VTE were extracted from administrative data to conduct a case–control comparison (9/2014 - 8/2016). The seven predictor variables from the HOSPITAL score were extracted via electronic chart review, and included the following: hemoglobin, discharge from oncology service, sodium level, procedure during the index admission, index type of admission (urgent), number of admissions during the last 12 months, and length of stay. The range of the HOSPITAL score is 0–15 with a greater score indicating a higher risk for readmission. Risk for readmission is categorized into three groups, low risk (0–4 points), intermediate risk (5–6 points) and high risk (≥7 points).
RESULTS: 194 hospital discharges were reviewed; of these, 76 were readmitted within 30 days of hospitalization. VTE patients who were readmitted had similar demographics when compared to the VTE patients who were not readmitted with the exception of race (Table 1). The average HOSPITAL score for patients who were readmitted (5.38) was significantly higher than the average score among patients who were not readmitted (4.27, $p < 0.01$).
CONCLUSIONS: The HOSPITAL score identified patients who were at risk for 30 day readmissions after hospital admission for acute VTE. The HOSPITAL risk score is unique in that it predicts readmissions among patients admitted for acute and chronic conditions whereas most scores predict readmissions for chronic conditions. These findings suggest that the score may help to identify patients with acute VTE at high risk for readmission to allocate transitions of care resources more efficiently. Additional analysis with the complete VTE population during the time period is warranted to assess the readmission rate for each risk category. 1. Donzé, Jacques D., Mark V. Williams, Edmondo J. Robinson, Eyal Zimlichman, Drahomir Aujesky, Eduard E. Vasilevskis, Sunil Kripalani et al. "International Validity of the HOSPITAL Score to Predict 30-Day Potentially Avoidable Hospital Readmissions." JAMA internal medicine 176, no. 4 (2016): 496–502.

Table 1. Demographic information for patients with VTE

Variable	Patients Readmitted within 30 Days (n = 76, cases)	Patients Not Readmitted within 30 Days (n = 118, controls)	p - value
Age (mean)	60.1 years (SD=16.1)	63.7 years (SD=17.6)	0.141
Gender			
Female	43 (56.6%)	70 (59.3%)	0.705
Male	33 (43.4%)	48 (40.7%)	
Race*			
Black	43	43	0.015
White	17	41	
Other	14	33	

*3 patients were removed to conduct the Chi-Square analysis: 1 American Indian (control), 2 Asians (cases)

THE IMPACT OF ACCOUNTABLE CARE ORGANIZATION PARTICIPATION ON POST-ACUTE CARE UTILIZATION AMONG MEDICARE BENEFICIARIES Amol S. Navathe[1, 3]; Alex Bain[1]; Ning Chen[1]; Rachel M. Werner[2]. [1]University of Pennsylvania, Philadelphia, PA; [2]University of Pennsylvania and Philadelphia VA, Philadelphia, PA; [3]CMC Philadelphia VAMC, Philadelphia, PA. (Control ID #2705732)

BACKGROUND: Medicare payments for post-acute care (PAC) have grown faster than most other categories of spending and a 2013 IOM Report indicated that PAC utilization is the largest driver of overall spending variation. While Medicare shared-savings accountable care organizations (ACOs) have incentives to reduce PAC utilization, the impact of admission to an ACO hospital on post-acute care utilization is unknown.
METHODS: Our objective was to evaluate changes in PAC utilization, measured by the proportion of discharges to each of inpatient rehabilitation facilities (IRF), skilled nursing facilities (SNF), and home health agency services (HHA), among hospitals participating in the Medicare Shared Savings ACO program. Using a national sample of 11,683,573 Medicare patients who experienced 26,503,086 admissions from 2010–2013 and a linear probability model, we implemented a difference-in-differences design to evaluate changes in PAC utilization among patients admitted to 235 ACO-participating hospitals before and after the start of the ACO contracts, compared to patients admitted to 3,241 non-ACO hospitals (comparison group). We adjust for hospital fixed effects, market and beneficiary characteristics including comorbidities, a primary diagnosis-specific fixed effect, and secular trends in all analyses.
RESULTS: Admission to an ACO hospital did not result in a change in PAC utilization compared to admission to a non-ACO hospital. For example, the differential change (i.e., comparing admission to ACO vs. non-ACO hospital in the pre- vs. post-ACO period) in the probability of discharge to any PAC was 0.0022 ($P = 0.16$), SNF was −0.0003 ($P = 0.85$), IRF was 0.0006 ($P = 0.40$), and HHA was 0.0018 ($P = 0.11$). These results were robust to analysis of PAC utilization conditional on

discharge to any PAC and restriction to conditions with high PAC use nationally such as major joint replacement of the lower extremity (change in probability of IRF 0.0026, $P = 0.46$, and SNF −0.0110, $P = 0.07$ respectively), coronary artery bypass graft surgery (IRF 0.0085, $P = 0.25$ and SNF −0.0047, $P = 0.66$), and congestive heart failure (IRF 0.000, $P = 0.49$ and SNF −0.0011, $P = 0.75$). Further, the results were similar among ACO-participating hospitals that also had a PAC participant and for utilization measured by length of stay for SNF and IRF and number of visits for HHA.

CONCLUSIONS: Admission to an ACO hospital does not result in changes in PAC utilization, even when considering high PAC-use conditions and ACO hospitals that also have an ACO-participating PAC. This suggests that ACOs may not be an effective policy lever in reducing unwarranted PAC variation.

THE IMPACT OF AGE ON 30-DAY UNSCHEDULED READMISSIONS FOR DIABETES MELLITUS PATIENTS Guat Kheng Goh[4]; Soo Lee[2, 3]; Phillip Phan[3, 1]; Paul A. Tambyah[5, 4]. [1]Johns Hopkins Medicine, Baltimore, MD; [2]Old Dominion University, Norfolk, VA; [3]Johns Hopkins University, Baltimore, MD; [4]National University Health System, Singapore, Singapore; [5]National University of Singapore, Singapore, Singapore. (Control ID #2699510)

BACKGROUND: Global healthcare costs on diabetes mellitus (DM) increased 12% from $548 billion to $612 billion in 2014. In patients over 40 years old, readmissions accounted for most of the hospitalization costs. To improve case management of this population, we study the impact of age and other risk factors on unscheduled readmissions among DM patients.

METHODS: 1,242 patients diagnosed with DM or DM-related conditions from an acute care tertiary hospital in Singapore were analyzed for two outcomes: 30-day unscheduled readmissions and two or more readmissions in 2014. Predictor variables included patients' pre-existing conditions, hospital care, and post-discharge care. Differences between DM readmission and non-readmission groups were analyzed using Student's t- and χ^2-tests for continuous (mean ± standard deviation) and dichotomous variables respectively. The predictive model was analyzed using logistics regression.

RESULTS: 215 patients (17.3%) were readmitted, of which 73 were readmitted two or more times (5.9%). Patients with comorbidities (9.66 ± 3.62 vs 8.47 ± 4.08, $p < .01$), visited the specialist outpatient clinic (SOC) before admission (5.62 ± 4.89 vs 4.68 ± 4.82, $p = .03$), and stayed at subsidized wards (OR = 1.46 [95%CI = 1.07–1.98], $p = 0.02$) were at higher risk of readmission. Patients discharged in the morning were at lower risk of readmission (OR = 0.39 [95%CI = 0.24–0.63], $p < .01$). Younger patients (60.21 ± 14.80 vs 64.10 ± 15.23, $p = .03$), those with more comorbidities (10.39 ± 4.13 vs 8.57 ± 4, $p < .01$), SOC visits (7.85 ± 7.699 vs 4.62 ± 4.37, $p < .01$), and male (OR = 1.97 [95%CI = 1.18–3.26, $p = .01$) were at greater risk of multiple readmissions.

CONCLUSIONS: Identifying drivers of DM readmissions helps policymakers develop interventions to improve clinical care and improve patient outcomes. Contrary to current understanding, older DM patients were *not* at higher risk of readmission. Instead, illness severity and economic status were more important predictors. To the extent that morning discharges indicate efficient organization processes, improving processes can lower readmissions. Future research is needed to explore if better primary care would significantly reduce readmission risk.

THE IMPACT OF CANCER SURVIVORSHIP CARE PLANS ON PRIMARY CARE PROVIDERS' CLINICAL DECISION MAKING AT THE POINT-OF-CARE SarahMaria Donohue[3]; James E. Haine[4]; Elizabeth (Betsy) Trowbridge[1]; Sandra Kamnetz[4]; David Feldstein[4]; James M. Sosman[4]; Zhanhai Li[2]; Lee G. Wilke[3]; Mary Sesto[3]; Amye J. Tevaarwerk[3]. [1]UW SMPH, Madison, WI; [2]UW-Madison, Madison, WI; [3]University of Wisconsin, Madison, WI; [4]University of Wisconsin School of Medicine and Public Health, Madison, WI. (Control ID #2705595)

BACKGROUND: It is recommended that every cancer survivor and their primary care provider (PCP) receive an individualized survivorship care plan (SCP) at the end of active cancer treatment which summarizes cancer diagnosis, treatment and follow up. While the SCP has the potential to improve patient care, whether they are used by PCPs has not been studied. We assessed the use of SCPs in primary care visits and explored the barriers and facilitators to use.

METHODS: We identified breast cancer survivors who (1) were seen by a PCP associated with the UW Health system and (2) had an UW EHR-generated SCP. PCPs identified as the PCP for multiple survivors, had a single survivor with the most recent clinic visit selected in order to identify unique PCP-survivor dyads. A 15-question survey, and PDFs of (1) the survivor's individualized SCP and (2) the clinic note for the survivor's most recent visit were sent to PCPs of eligible patients via email in November 2016 with reminders at 7 and 14 days to nonrespondents.. The survey was designed to determine if the survivor's SCP (a) was utilized by the PCP for the visit and (b) influenced clinical decision-making at the point-of-care.

RESULTS: 88 unique PCP-survivor dyads were identified. The survey response rate was 45.5% ($n = 40/88$). Most PCPs ($n = 24/40$, 60%) identified that cancer or a related issue was discussed at the visit. Cancer information needed in the context of the visit included treatment ($n = 16/24$, 67%), followup visits the cancer team is responsible for ($n = 14/24$, 58%) and followup visits the PCP is responsible for ($n = 14/24$, 58%). PCPs reported acquiring this information by asking the patient or family ($n = 20/24$, 83%), checking oncology notes in the EHR ($n = 18/24$, 75%), checking the SCP ($n = 4/24$, 17%) and checking an online resource ($n = 2/24$, 8%). Most PCPs ($n = 29/40$, 73%) reported being unaware prior to survey that the patient had an SCP. Eleven ($n = 11/40$, 28%) of PCPs reported knowing that the patient had an SCP prior to the survey. Among them, most ($n = 7/11$, 64%) reported previously using the SCP. PCPs who utilized the SCP at the visit ($n = 4$) used the SCP to obtain: cancer treatment, followup visits and plan/monitoring that were PCP responsiblities. PCPs identified barriers to use as (1) unaware of SCP existence ($n = 11/21$, 52.38%), (2) difficulty locating the SCP in the EHR even when aware ($n = 7/21$, 33.33%), and (3) identifying the needed information faster via another mechanism ($n = 3/21$, 14.29%). Most PCPs ($n = 22/40$, 55%) reported that an SCP would be quite or very helpful in future visits with their patient.

CONCLUSIONS: The majority of survivor followup visits addressed cancer or cancer-related issues. PCPs felt that SCPs would be helpful for patient care, but multiple barriers including lack of awareness and inability to find the SCPs prevented them from being useful. Further efforts are needed to educate PCPs about SCPs and overcome access issues while determing how to best tailor SCPs for PCP use.

THE IMPACT OF COMPETING COMMUNITY HEALTH CENTER PROVIDER RESPONSIBILITIES ON AN EHR-BASED INTERVENTION. Guisselle del Salto[2]; Elizabeth Adetoro[4]; Sarah S. Rittner[4]; Andrew Hamilton[4]; Pankaja Desai[4]; Fred Rachman[4]; Laura M. Curtis[2]; Michael S.

Taitel[3]; Ruth Parker[5]; Tim Long[6]; David R. Buchanan[1]; Michael S. Wolf[2]. [1]Erie Family Health Center, Chicago, IL; [2]Northwestern University, Chicago, IL; [3]Walgreens, Deerfield, IL; [4]Alliance of Chicago Community Health Services, Chicago, IL; [5]Emory University, Atlanta, GA; [6]Near North Health Service Coorporation, Chicago, IL. (Control ID #2705856)

BACKGROUND: The Office of the National Coordinator's 'Meaningful Use' initiative and other national calls require bolstering Electronic Health Record System (EHRS) to improve healthcare. From promoting and tracking the use of preventive services to better care management, new EHR tools are constantly being introduced to providers. Yet, challenges providers experience due to complex patient populations and EHR modifications are unclear. We offer a local perspective of challenges encountered when leveraging EHRS to improve patient-centered medication prescribing and education materials about point-of-care delivery in two, large federally qualified health centers.

METHODS: We conducted a root cause analysis evaluating a multi-site ($N=11$) intervention that alters EHR medication instructions to follow an evidence-based approach regarding when to take their medicine (morning, noon, evening, bedtime), the delivery of low literacy, 1-page medication summaries at the time of prescribing, and a complete list of patients' current medications each corresponding to a set of instructions and a checkbox (for morning, noon, evening, bedtime) to help patients visualize when to take their medicine. We were able to track prescriber usage of these new EHR functions and interviews were conducted with a convenience sample of prescribers to better understand any reasons why the functions were not utilized.

RESULTS: Ten months after implementing new prescribing tools - including provider orientations via email, webinar, written instructional guide, and in-person review - 23% of providers used any of the functions at least once. Provider interviews ($N=14$) revealed that many remained unfamiliar with the tools. Providers that were aware of these functions often did not use them due to complicated patient care management needs, competing educational programs (specifically the launch of new diabetes general education materials with the after-visit summary as part of a Meaningful Use initiative), or other significant EHR modifications. For instance, during the initial roll-out of our EHR tools, 42 other EHR upgrades and functions were imparted to providers. None were research related or addressing the medication prescribing specifically, but these did cause distractions as with each new onboarding of a new function, webinars and YouTube links were provided to prescribers to orient them to the update.

CONCLUSIONS: While EHRS may hold promise for improving patient care, our findings suggest that implementation and sustainability over time may be significantly hindered given competing initiatives. Despite intensive efforts to onboard providers to changes, even subtle impacts on workflow can undermine efforts.

THE IMPACT OF HAVING A TRUSTED ADVISOR ON PHYSICIAN BURNOUT, PRODUCTIVITY, AND CAREER SATISFACTION: EVIDENCE FROM A LARGE MULTISPECIALTY PHYSICIAN SURVEY

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BACKGROUND: The value of having a trusted mentor, especially during the early years after training, in academic medicine is well recognized. However, there is limited empirical work that analyzes the impact of advising on a physician's personal and career development. This study examines the impact of having trusted advisor on physician burnout, work engagement, and career satisfaction in the first ten years after training.

METHODS: We used data from a 2014 Massachusetts General Physician Organization (MGPO) survey. The MGPO survey was administered to all clinically active physicians at the institution. Having a trusted advisor and career satisfaction were assessed using a five-point Likert scale, burnout was assessed with the Maslach Burnout Inventory-General Service (MBI-GS), and work engagement was assessed with the Utrecht Engagement Scale (UWES). The MBI-GS and the UWES have three subscales that reflect the underlying dimensions of burnout and engagement.

RESULTS: The sample included 768 physicians who are clinically active and have less than 10 years of experience and a response rate of 96%. Of the 768 physicians, 467 (60.8%) either agreed or strongly agreed with having trusted advisor, 180 (23.4%) either disagreed or strongly disagreed with having a trusted advisor, and the remaining 121 (15.8%) indicated neither. We found those with a trusted advisor had lower burnout scores, higher engagement scores, and higher job satisfaction. In a multivariate regression analysis controlling for age, gender, specialty, and number of years at Massachusetts General Hospital, we found physicians with a trusted advisor are less exhausted (16% lower, $p<0.001$), less cynical (28% lower, $p<0.001$), more efficient (9% higher, $p<0.001$), more dedicated (22% higher, $p<0.001$), and have more vigor (28% higher, $p<0.001$) than those without trusted advisor. We also found physicians who have a trusted advisor are more likely to be satisfied with their career than those without trusted advisor (OR = 3.2, 95% CI = 2.0, 5.2).

CONCLUSIONS: These findings imply health organizations can mitigate burnout, improve career satisfaction, and increase productivity of junior physicians by designing robust mentorship programs.

THE IMPACT OF MEDICAL SCRIBES, PROVIDER WORK-LIFE AND SATISFACTION IN A MULTI-SPECIALTY CLINIC

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BACKGROUND: Medical Scribes are being integrated with increasing frequency in various clinical settings. Studies have shown improved provider efficiency and productivity with scribe support. Our objective was to assess the relationship between medical scribe use and important indicators of provider wellness in the ambulatory clinic setting.

METHODS: We performed a prospective, quasi-experimental study of providers in our hospital-based clinic system. We evaluated the effect of incorporating trained medical scribes in the clinics; before and 3 months after scribe integration, on key measures of provider satisfaction and wellness. The primary outcome measure was provider job satisfaction.

RESULTS: Fifty-one providers were surveyed from nine outpatient clinics before and after the introduction of medical scribes. The pre-scribe response rate was 86.3%, three-months post was 80.4%. Provider satisfaction their clinic role improved from 66.7 to 90.2% satisfied ($p=0.008$). Provider's perception of time pressure for documentation was reduced by >50% ($p<0.0001$). Medical scribes also significantly improved the perception of time spent documenting from home ($p=0.003$), the ability to listen to patients ($p=0.043$), and the ability to provide high quality care ($p=0.022$).

CONCLUSIONS: Medical scribes positively impacted provider work-life, with improvements in provider perceptions of adequate time with patients, overall documentation time, and home documentation burden.

Table 1. Mini Z survey results before and after the introduction of medical scribes.

	Pre-Scribe $n = 44$	Post-Scribe $n = 41$	*P* value
Satisfied with role in clinic (Agree, Agree Strongly)	30 (66.7%)	37 (90.2%)	0.008
Great deal of stress because of my job (Agree, Agree Strongly)	29 (64.4%)	21 (51.2%)	0.215
Control over workload (Poor, Marginal)	25 (55.6%)	15 (36.6%)	0.078
Time for documentation (Poor, Marginal)	33 (75.0%)	10 (24.4%)	<0.0001
Work atmosphere description (Very busy, Hectic, Chaotic)	26 (57.8%)	17 (41.5%)	0.131
Ability to listen to patients (Agree, Agree Strongly)	30 (66.7%)	35 (85.4%)	0.043
Ability to provide high quality care (Agree, Agree Strongly)	31 (70.5%)	37 (90.2%)	0.022
Ability to spend necessary time with patients (Agree, Agree Strongly)	20 (44.4%)	24 (58.5%)	0.191
Amount of time spent on EMR at home (Excessive, Moderately High)	28 (63.6%)	13 (31.4%)	0.003
Value Scribe (Agree, Agree Strongly)		37 (90.2%)	

THE IMPACT OF MICHIGAN'S MEDICAID EXPANSION ON DENTAL CARE ACCESS, UTILIZATION AND HEALTH

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BACKGROUND: Dental disease is prevalent among low-income adults. However, adult dental care remains an optional service in Medicaid expansion under the ACA. Among 32 Medicaid expansion states/DC, Michigan's Healthy Michigan Plan (HMP) is among 27 with at least limited dental coverage. Beneficiaries enroll in Medicaid managed care plans, which are responsible for administering the dental benefit. This mixed-methods study examines the perspectives of HMP beneficiaries about their dental coverage, care, and impact on health.

METHODS: We conducted 67 semi-structured interviews with beneficiaries enrolled in HMP for ≥6 months in April-August 2015. Interviews were analyzed using standard qualitative analysis techniques. From January-October 2016, we conducted a telephone survey in English, Arabic or Spanish with 4,099 non-elderly beneficiaries with ≥12 months of coverage and ≥10 months in a health plan. Sampling was stratified by income and region of the state. Weights adjust for sample design and nonresponse (RR = 54.3%). Outcomes included knowledge of dental coverage, perceived access to and affordability of dental care, and impact of dental care on health and employability.

RESULTS: 22% of survey respondents didn't know about HMP's dental benefit. 47% reported better ability to obtain dental care since HMP enrollment; 18% were unsure; 29% reported no change; and 6% reported worse ability. Among 628 respondents who reported foregoing needed care due to cost in the past 12 months, 68% reported foregoing dental care. Among all respondents, those who were aware that HMP covered dental care were likelier to report better dental care availability with HMP than those who were unaware (93% vs 7%), and less likely to forego dental care due to cost (33% vs 67%). In interviews, many beneficiaries who hadn't obtained dental care were unaware of the covered benefit or had difficulty locating a dentist who accepted their Medicaid coverage. 40% of survey respondents reported improved health of their teeth and gums. In interviews, beneficiaries described how cleanings, fillings and dentures improved their appearance, daily functioning and employability. Some described living with serious oral health problems prior to HMP coverage and receiving life-changing dental procedures after HMP enrollment. "The infection got so bad that it virtually threatened my life. I tell people to take care of their teeth, and now people can." (Male, 58, rural)

CONCLUSIONS: More than a fifth of beneficiaries were unaware of HMP dental coverage, likely decreasing their perceptions of dental care affordability and access, use of dental services, and impact on oral health. Provider availability was sometimes a barrier. Nonetheless, HMP beneficiaries reported increased access to and use of dental care for serious dental problems and routine care. As policymakers consider ways to constrain Medicaid spending and enhance its value, they should recognize the impact of dental care on functioning and health of low income populations.

THE IMPACT OF MICHIGAN'S MEDICAID EXPANSION ON LOW-INCOME ENROLLEES' FUNCTIONAL STATUS, ABILITY TO WORK, AND EMPLOYMENT: A MIXED METHODS STUDY

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BACKGROUND: Michigan is one of 31 states to have expanded Medicaid under the Affordable Care Act. Known as the Healthy Michigan Plan (HMP), the program was launched to improve not only the health and well-being of low-income residents but also the state's business climate and economy. The objective of this study was to understand the impact of HMP on enrollees' functional status, ability to work, and employment.

METHODS: To inform survey development, we conducted 67 semi-structured interviews with HMP enrollees during April-August 2015, which were transcribed and analyzed using standard qualitative analysis techniques. A survey instrument assessing functional/health status, ability to work, and employment was subsequently developed. Between January-October 2016 we conducted a computer-assisted telephone survey of 4,108 non-elderly HMP enrollees with ≥12 months of HMP coverage and ≥10 months in a Medicaid health plan (response rate = 54%). Sampling was stratified by income and region of Michigan. Surveys were conducted in English, Arabic and Spanish. Weights adjusting for sample design and nonresponse were incorporated in the analysis.

RESULTS: Most (80%) respondents had incomes below 100% of the federal poverty level, 68% reported they had excellent/very good/good health, and

66% had ≥1 chronic health condition. One-quarter (25%) reported they had a significant physical functional limitation and 22% had a mental functional limitation. However, 49% of respondents reported better physical health, 40% better mental health, and 43% better dental health since HMP enrollment. Nearly half (47%) reported they were employed/self-employed, 28% were out of work, 13% were unable to work, and 3% were retired. HMP enrollees were more likely to be employed if they had good or better health status or if they had no chronic conditions. Employed respondents missed a mean of 7.7 work days (SD 0.6) in the past year due to illness. Over two-thirds (71%) of employed respondents reported that getting HMP insurance helped them to do a better job at work. For those who changed or sought a job, 60% strongly agreed/agreed that it made them better able to look for a job and 38% strongly agreed/agreed that having HMP insurance helped them get a better job. In interviews, several HMP enrollees attributed their ability to get or maintain employment to improved physical, mental and dental health because of services covered by HMP. Remaining barriers to work cited by enrollees included older age, disability, illness, and caregiving responsibilities.

CONCLUSIONS: Low-income HMP enrollees reported improved functioning, ability to work, and job seeking after obtaining health insurance through Medicaid expansion. While many attributed improvements in employment and ability to work to improved physical, mental and dental health due to covered services, others had ongoing barriers to employment.

THE IMPACT OF MICHIGAN'S MEDICAID EXPANSION ON THE DIAGNOSIS AND ABILITY TO CARE FOR CHRONIC ILLNESSES

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BACKGROUND: As the prevalence of chronic health conditions increases among U.S. adults, expanded access to Medicaid may mitigate the impact of these conditions on poor health and disability. We evaluated the impact of enrollment in Michigan's expansion of Medicaid, the Healthy Michigan Plan (HMP), on diagnosis of chronic conditions and on access to care and health status among low-income enrollees with a chronic condition.

METHODS: We surveyed HMP Enrollees with ≥12 months of HMP coverage by telephone in English, Arabic, or Spanish from January-October 2016. Sampling was stratified on income and region of the state. Validated survey items assessing chronic condition diagnoses and health status from previous national health surveys were used. Analyses incorporated weights adjusting for sample design and nonresponse.

RESULTS: 4108 HMP enrollees were surveyed (response rate 54%). 57% were women, and 35% were 18–34 years old, 34% 35–50 years, and 31% 51–64 years old. 51% reported income < =35% Federal Poverty Level, 45% at 36-100%, and 20% at 101-133%. Overall, 54% of HMP enrollees reported at least one chronic physical condition (ranging from 11% for heart conditions to 35% for hypertension), 31% reported a chronic mental health condition (e.g. depression, anxiety, or bipolar disorder), and 20% had both a physical and mental health chronic condition. About a third (32-36%) of those with common physical health conditions (hypertension, heart disease, diabetes, COPD), 44% of those with stroke, and 28% of those with a mood disorder reported being newly diagnosed with the condition after enrolling in HMP. Among those with a chronic physical or mental health condition ('chronically ill'), in the year prior to HMP enrollment 60% had lacked insurance, 57% had not seen a primary care provider, and 54% had problems paying medical bills. Since HMP enrollment, 66% of chronically ill enrollees reported their ability to fill prescription medications improved and 87% reported their ability to pay medical bills had improved. 53 and 44% of chronically ill enrollees reported overall improvements in their physical and mental health status, respectively, after enrolling in HMP, while only 8 and 6% reported their physical and mental health status had worsened.

CONCLUSIONS: Chronic health conditions, including comorbid physical and mental health conditions, were common among enrollees in Michigan's Medicaid expansion enrollees, even though most enrollees were under 50 years old. A large proportion of these conditions were newly diagnosed after enrolling in HMP. Prior to HMP enrollment, a majority of enrollees with chronic illness lacked health insurance and could not access needed care. Since enrollment, over half of these individuals reported improved physical health and most were better able to access medications that are crucial to managing chronic conditions and avoiding future complications.

THE IMPACT OF THE 2013 NATIONAL CHOLESTEROL TREATMENT GUIDELINE IN THE VA: AN INTERRUPTED TIME SERIES ANALYSIS

Adam A. Markovitz[3, 2]; Rob Holleman[2]; Mandi L. Klamerus[2]; TImothy Hofer[1, 2]; Eve A. Kerr[1, 2]; Jeremy Sussman[1, 2]. [1]University of MIchigan, Ann Arbor, MI; [2]VA Center for Clinical Management Research, Ann Arbor, MI; [3]University of Michigan Medical School, Ann Arbor, MI. (Control ID #2704781)

BACKGROUND: The 2013 national cardiology cholesterol treatment guideline fundamentally shifted focus away from the "treat-to-target" cholesterol levels approach of the 2004 guideline and to prescribing moderate and high intensity cholesterol-lowering statin drugs based on patient cardiovascular risk (Table). Despite being widely publicized, we know very little about how this new guideline affected patient care. We examined prescribing data before and after the guideline release to estimate whether new guideline increased the use of moderate or high intensity statins, particularly among patients with increased cardiovascular risk.

METHODS: We performed an interrupted time series analysis of active patients ages 40 to 75 who sought care in the Veterans Health Administration from July 1 2011 to June 30 2016 and were exempt from drug copayments ($n = 791{,}525$). Our main study outcome was whether a patient met the 2013 guideline in a given quarter (Table). Secondary outcomes included use of statin drugs, nonstatin lipid-lowering drugs, and lipid testing. Our exposure was introduction of the new guideline in the fourth quarter of 2013. To address pre-existing statin trends, we performed an interrupted time series analysis and estimated marginal effects (ME) by comparing predicted and observed statin use at the study's end. Finally, we examined whether guideline responses varied across pre-specified guideline "risk groups."

RESULTS: The release of the new guideline was associated with a 7 percentage-point increase in the probability of meeting the 2013 guideline (ME, 0.070, Standard Error [SE], 0.002), after adjusting for underlying time trends. This reflected a shift away from low (ME, −0.032, SE, 0.001) or moderate intensity statins (ME, −0.024, SE, 0.002) and toward high intensity statins (ME, 0.086, SE, 0.001). There was a slight decrease in nonstatin lipid-lowering drugs (ME, −0.009, SE, 0.001) and a small increase in lipid testing

(ME, 0.016, SE, 0.001). Gains in meeting the guideline were large among patients with ASCVD, diabetes, and high ASCVD risk but not hyperlipidemia. **CONCLUSIONS**: The 2013 guideline was associated with immediate and sustained changes in statin prescribing that were predominantly concordant with the guideline. Our findings highlight the potential for guidelines to influence patient care when given wide media exposure. Professional societies must work to publicize new guidelines more effectively if we are to ensure the adoption of guideline changes.

Guideline recommendations

New 2013 ACC/AHA guidelines	
Atherosclerotic cardiovascular disease (ASCVD)	On moderate or high intensity statin
Hyperlipidemia (LDL ≥ 190 mg/dL), non-ASCVD	" "
Diabetes, non-ASCVD	" "
High risk (≥7.5%10-year ASCVD risk)	" "
Low risk (<7.5%10-year ASCVD risk)	N/A
Old 2004 ATP III guidelines	
High risk (ASCVD, diabetes)	LDL < 100 mg/dL
Moderate risk (≥2 risk factors)	LDL < 130 mg/dL
Low risk (<2 risk factors)	LDL < 160 mg/dL

THE INSULIN TITRATION PROGRAM: MEDICAL STUDENTS HELPING PATIENTS IMPROVE DIABETES CONTROL Ryan Johnson[2]; Lani Kroese[2]; Kelsey Savery[2]; Mohan Nadkarni[1]; Ira Helenius[2]. [1]UVAHS, Charlottesville, VA; [2]University of Virginia, Charlottesville, VA. (Control ID #2704168)

BACKGROUND: Type 2 Diabetes Mellitus (T2DM) is a major cause of early illness and death worldwide. Fortunately, many complications of T2DM can be prevented with adequate glycemic control, often achieved through pharmacologic therapies and lifestyle intervention. Many patients need support controlling their disease, and medical students can help provide this support between clinic visits. The purpose of this study was to assess the effectiveness of a medical student-led Insulin Titration Program (ITP) in helping patients better manage their diabetes. A previous assessment of this program in 2015 showed benefit but did not use a control group, and included no patient self-assessment survey.
METHODS: The ITP program was implemented in 2014 in a large outpatient internal medicine teaching clinic associated with the University of Virginia. This study is a non-randomized trial comparing outcomes in a convenience sample of referred patients with uncontrolled T2DM who receive the intervention to a control group of randomly chosen patients with uncontrolled T2DM in the same clinic who were not referred to the ITP. The ITP intervention involved weekly phone calls from trained medical student volunteers who provided lifestyle counseling and adjusted the patient's long-acting insulin dose per the program protocol. The primary outcome for the study was the change in HbA1C values after a study period of 3 months of enrollment. The study group was also administered a telephone-based version of the Summary of Diabetes Self-Care Assessment (SDSCA) before and after the intervention. The SDSCA is a previously validated self-report questionnaire which assesses various aspects of DM self-management.
RESULTS: Results of this study indicate that participation in the ITP was associated with larger improvement in glycemic control when compared to controls. The study group consisted of 31 patients with a mean age of 56.4 (+/− 11.6). The control group consisted of 32 patients with a mean age of 51.5 (+/− 13.2). Enrollment HbA1C values for the study and control group were 10.6% (+/− 1.8) and 9.9% (+/− 1.8) respectively. HbA1C values after an average of 17.0 weeks (+/− 5.2) for the study and control group were 9.2% (+/−2.0) and 9.5% (+/− 2.2) respectively. We found that the decrease in HbA1C values after the study period were significantly lower in the study group with a mean decrease in HbA1C of 1.4% (+/− 2.0) when compared with the control group decrease of 0.4% (+/− 2.0); $p = 0.05$. There was no difference found between the pre- and post-intervention dose of insulin in the study group. The answers to the SDSCA questionnaire also showed no statistical difference after the intervention.
CONCLUSIONS: The results indicate that a medical student-led telephone-based intervention can play an important role in managing chronic illnesses such as T2DM. Further investigation is needed to determine which, if any, specific behavioral changes are positively impacted by such a telephone-based intervention.

THE INTERACTIVE INFLUENCE OF GENDER, ACCULTURATION, AND EDUCATION ON CURRENT SMOKING AMONG LATINOS OF DIFFERENT NATIONAL BACKGROUNDS Erik J. Rodriquez[3]; Alicia Fernandez[1]; Jennifer Livaudais-Toman[2]; Eliseo J. Perez-Stable[3]. [1]UCSF, San Francisco, CA; [2]University of California, San Francisco, Greenwich, CT; [3]National Institutes of Health, Bethesda, MD. (Control ID #2705897)

BACKGROUND: Acculturation and educational levels influence smoking behavior among Latinos. More acculturated women are more likely to smoke, but findings among Latino men have been mixed. Among Latinos, in contrast to Whites, a higher level of education does not always decrease the risk of current smoking. We hypothesized that a) greater acculturation level would increase the likelihood of current smoking, especially among women; b) educational attainment of high school or greater would decrease the likelihood of current smoking; and c) the relationship between acculturation level, educational attainment, and current smoking would differ by national background.
METHODS: The National Health Interview Survey (NHIS) is a nationally representative survey which uses a complex, multistage sampling methodology to assess health behaviors. Data from Latinos in the 2009–2012 NHIS were analyzed and included gender, national background, acculturation, educational attainment, and current smoking. Latino national background groups included participants identifying as Cuban, Dominican, Mexican, Puerto Rican, and Central and South American. Categorical levels of acculturation were defined: 1) Less acculturated (foreign born and preferred Spanish), 2) Bicultural (U.S. born and preferred Spanish or foreign born and preferred English), and 3) More acculturated (U.S. born and preferred English. Multivariable logistic regression models were stratified by gender and national background.
RESULTS: 20,993 participants self-identified as Latino (55% women; 45% men). Mean age was 40.2 years and more men than women were married or living with a partner (63% vs. 60%; $p < 0.001$). For both genders, over 60% of participants had a high school level of education or less. While the majority of Latinos were interviewed only in English (62%), less than half (39%) were born in the U.S. Mexicans were the largest national background (65%), group followed by Central and South Americans (17%) and Puerto Ricans (10%). Overall, 17.8% of men and 9.6% of women reported current smoking. Among women, current smoking was more prevalent among those with more than a 9th grade education (10% vs. 5%). Smoking prevalence was greatest among men with a 9th to 11th grade (22%) or high school (21%) education, compared to those with less than a 9th grade (15%) and lowest for men with a bachelor's degree (9%). For Latinos in aggregate, an interactive effect between greater acculturation and education reduced the odds of smoking among men (adjusted

odds ratio [aOR] = 0.71; 95% confidence interval [CI] = 0.56, 0.89). More acculturated and educated Mexican men had a lower odds of smoking (aOR = 0.66; 95% CI = 0.48, 0.92).

CONCLUSIONS: Increased acculturation and educational level was associated with less cigarette smoking among Latinos in aggregate. The effect of acculturation on health behaviors among Latinos is influenced by education and is not linear. These factors must be considered when developing tobacco control strategies.

THE NEED FOR POINT OF CARE ULTRASOUND TRAINING FOR INTERNAL MEDICINE RESIDENTS WHO ROTATE TO RESOURCE-POOR CLINICAL SITES Stephanie Maximous; Phillip Lamberty; Carla Spagnoletti. University of Pittsburgh, Pittsburgh, PA. (Control ID #2703672)

BACKGROUND: Interest in provision of health care in resource-poor settings is prevalent among US physicians. As such, many internal medicine (IM) training programs offer formal experiences to support this interest. The WHO estimates 2/3 of the world's population have inadequate access to diagnostic imaging, though ultrasound machines are more likely to be available than other imaging modalities. However a training gap for their use exists for both local clinicians and rotating residents. In anticipation of developing a mastery-learning point of care (POC) ultrasound curriculum for IM residents who rotate to resource-poor sites, we conducted a needs assessment to determine current practices among IM residents with POC ultrasound in resource-poor settings.

METHODS: The cross sectional survey was administered to the 12 GH track residents within the IM residency program at the University of Pittsburgh Medical Center (UPMC) in 2016, chosen because of their structured clinical experiences in sites of varying resources. Respondents were asked to indicate the conditions for which they have utilized POC ultrasound, how frequently their use of ultrasound impacts their management, and how confident they are acquiring and interpreting ultrasound images. They were also asked to identify the major barriers to using POC ultrasound. Data were analyzed using frequencies and summary statistics.

RESULTS: All (100%) completed the needs assessment. They reported diverse conditions amenable to POC ultrasound diagnostics at their clinical sites abroad, including heart failure, pleural effusions, soft tissue abscesses, and hepatobiliary pathologies. A total of 70% indicated lack of access to ideal imaging tests on a daily basis at their resource-poor clinical sites. They indicated that use of POC ultrasound at these sites impacted their clinical judgment or changed patient outcomes 75% of the time. The mean self-rating for confidence with image acquisition and interpretation was 3.13 (scale 1–5 where 1 = not confident, 5 = extremely). All (100%) indicated desire for further training. The top 3 barriers to use of POC ultrasound included lack of available equipment (66%), lack of confidence in skills (71%), and lack of preceptors to provide feedback on their technique (80%).

CONCLUSIONS: The data presented supports the need for additional POC ultrasound training for a group of internal medicine residents with clinical experiences in both resource-rich and resource-poor settings. The GH track residents are a pilot group selected to examine feasibility and shape the development of a POC ultrasound curriculum for internal medicine trainees. Future plans to ensure sustainability include a teach-the-teacher curriculum for GH track residents who become proficient in ultrasound and application of this curriculum to full-time clinicians at resource-poor sites. The curriculum can then be expanded to other institutions interested in better preparing trainees to practice medicine in resource-poor settings.

THE NEXT GENERATION OF GENERALISTS: WHAT KNOWLEDGE AND SKILLS DO PRIMARY CARE PHYSICIANS AND LEADERS NEED? Anna Volerman; Michael T. Quinn; Julie Grutzmacher; Deborah L. Burnet. University of Chicago, Chicago, IL. (Control ID #2706746)

BACKGROUND: Primary care faces immense challenges in today's health care system and transformation is required to effectively deliver high-quality, high-value, patient-centered care. A diverse, well-prepared workforce is needed, and primary care leaders are necessary to guide clinics and systems in the transformation toward population health and team-based care. Our objective is to understand key factors in residency training that led to a subsequent career in primary care to inform a new program for resident and faculty physicians in urban communities.

METHODS: We conducted a survey of primary care physicians (PCPs) in internal medicine, pediatrics, and family medicine in the Chicago area. The survey was distributed electronically to PCPs at one major academic medical center and its affiliated community health centers. Questions focused on identifying important factors in residency training for a career in primary care as well as knowledge and skills necessary for primary care physicians and leaders in today's healthcare system. Responses were obtained with a five-point Likert scale for level of importance and also ranking and open-ended questions. Demographic, residency, and practice information was collected. The study was IRB exempt.

RESULTS: The survey was completed by 82 primary care physicians, with 48.8% Internal Medicine, 31.3% Family Medicine, 12.5% Pediatrics, and 7.5% Medicine-Pediatrics. The majority practice in an academic medical center (56.3%), followed by community health center (37.5%). Years in practice varied from 0–5 years (30%) to more than 25 years (20%). Physicians worked on average 20 clinic hours per week, including direct patient care and precepting trainees. One-third completed residency training in a formally designated primary care track (32.4%), and the majority did not complete fellowship (64.9%). Respondents indicated the most important training components for a subsequent career as a PCP were being exposed to a PCP role model and learning in a variety of primary care settings. For physicians to transform primary care, the most important knowledge and skills were: interprofessional collaboration (30%), leadership skills (28%), effective communication (27%), care coordination (25%), and integrated behavioral health (23%).

CONCLUSIONS: Primary care programs would benefit from incorporating experiences in a variety of ambulatory settings and providing strong role models for trainees in primary care. In addition, primary care leaders need strong training in team-based care, population health, leadership, and communication; these topics should be emphasized in primary care curricula. The results are affected by selection bias, with disproportionate representation from academic medical centers and within one community of practice. Further studies examining key knowledge and skills for primary care physicians and leaders can inform training programs that aim to prepare physicians to practice in and guide primary care practice transformation.

THE PATIENT EXPERIENCE WITH INTEGRATION OF COMPLEMENTARY AND INTEGRATIVE HEALTH INTO CONVENTIONAL CHRONIC PAIN CARE Caitlin Felder-Heim[1]; Danielle M. Kline[4]; Ingrid Binswanger[5]; Stacy Fischer[5]; Regina Fink[2]; Lisa Corbin[4]; Joseph W. Frank[3]. [1]University of Colorado, Denver, CO; [2]University of Colorado Anschutz Medical Campus, Aurora, CO; [3]University of Colorado School of Medicine, Aurora, CO; [4]University of Colorado Denver School of Medicine, Aurora, CO; [5]University of Colorado School of Medicine, Denver, CO. (Control ID #2706134)

BACKGROUND: There is an urgent need for novel strategies to manage chronic pain. Expert guidelines recommend multimodal pain care, which may include Complementary and Integrative Health (CIH) modalities such as acupuncture or yoga. However, little is known about the patient experience of initiation and integration of CIH into conventional pain care.

METHODS: We conducted a qualitative study of patients experiencing chronic pain and accessing CIH ($N = 11$). We recruited patients from Internal Medicine and Integrative Medicine clinics at an academic medical center through the use of flyers posted in waiting areas. Inclusion criteria were chronic pain (pain ≥ 3 months duration), experience with CIH, age ≥ 18 years, and English fluency. We conducted semi-structured, audio-recorded interviews about participants' experiences with chronic pain care and CIH followed by a brief survey to collect demographics, brief pain inventory, and CIH use patterns. Using a team-based, mixed inductive and deductive analytic approach, we iteratively refined emerging themes within the study team and based on feedback from Integrative Medicine experts.

RESULTS: Participants were older ($\mu = 52$ years, SD = 14), female (80%), and white (70%). Mean pain duration was 12.8 years. Average daily pain scores for the participants ranged from 3 to 6.5 on a 0–10 numeric rating scale. Among participants, 60% reported current opioid medication use; 80% used non-opioid analgesics. We organized emergent themes into 3 domains: 1) CIH initiation, 2) CIH effectiveness, and 3) barriers to accessing CIH. Participants described three key factors involved in CIH initiation: provider or acquaintance recommendation, disillusionment with conventional care, and desperation for pain relief. One participant initiated CIH after "experiencing that level of frustration with the typical mainstream medical system." The effectiveness of CIH treatments was perceived as unique to each participant and influenced by the CAM provider's affect and capabilities. Participants also felt that CIH modalities worked synergistically to provide pain relief. One participant noted, "I'm only getting improvement because I'm doing so many [different treatments] and because I'm hitting so many different aspects." Most participants spent years developing an effective pain regimen, and experience substantial barriers to accessing CIH included logistical barriers, cost, and difficulty reliably accessing CIH providers.

CONCLUSIONS: Patients' experiences with CIH for chronic pain reveal important facilitators of CIH treatment initiation and barriers to its integration into conventional care. Patients view CIH as a key part of their pain care, working synergistically with conventional treatments, and yet experience significant barriers to accessing CIH. Future studies should evaluate the effectiveness of interventions such as patient navigators or referral networks to improve the integration of CIH into conventional pain care.

THE PHYSICIAN EXPERIENCE IN AN INTERVENTION TO IMPROVE ADHERENCE TO OPIOID PRESCRIBING GUIDELINES

Phoebe A. Cushman[1, 2]; Payel J. Roy[1, 2]; Jane M. Liebschutz[1, 2]; Karen E. Lasser[1, 2]; Julia Keosaian[1, 2]; Victoria A. Parker[3]. [1]Boston Medical Center, Boston, MA; [2]Boston University School of Medicine, Boston, MA; [3]Boston University School of Public Health, Boston, MA. (Control ID #2703752)

BACKGROUND: Efforts to curb the opioid crisis have generated multiple guidelines to increase safety of opioid prescribing for chronic nonmalignant pain (CNMP). We analyzed implementation of an intervention (TOPCARE, "Transforming Opioid Prescribing in Primary Care") to improve primary care physician (PCP) adherence to opioid guidelines. We explored how TOPCARE influences PCPs' *knowledge*, *attitudes*, and *behavior* regarding opioid guidelines and how PCPs' *clinical contexts* affect TOPCARE implementation.

METHODS: We conducted semi-structured qualitative interviews with 22 of 24 intervention PCPs from TOPCARE, a cluster RCT at 4 safety-net primary care clinics. The intervention consists of a patient registry, population management by nurse care managers (NCMs), education by academic detailers (ADs), and electronic decision support tools. We conducted thematic analysis of the transcribed interviews, tracking with Nvivo.© Our conceptual model merged two existing frameworks and guided *a priori* codes: Cabana et. al's "Why don't physicians follow clinical practice guidelines?" and Rycroft-Malone's "Promoting Action on Research Implementation in Health Services" (PARiHS). We double-coded every third interview and met weekly to reconcile codes.

RESULTS: Key themes included *increased knowledge*, *unexpected feedback*, *increased outcome expectancy*, *transfer of tasks to NCMs*, *guidelines becoming routine*, *reduced isolation*, *and reduced variability in opioid prescribing*. PCPs gained *knowledge* of guidelines via expertise of NCMs, ADs, and support tools. PCPs also received unexpected feedback about patients by applying guidelines: "TOPCARE came around and [the NCM] said, 'You've never checked urine on this person,' [so we did]. It's been a shock—I'd considered [the patient] one of my stars!" PCP *attitudes* toward CNMP did not change under TOPCARE. However, PCP outcome expectancy increased; PCPs voiced expectations that applying guidelines would yield useful results: "[Under TOPCARE], I've become more systematic about doing the PEG scale [for pain] and seeing opioids as a trial." PCP *behavior* change occurred by way of NCMs taking on guideline-recommended tasks. TOPCARE also helped PCPs make guidelines part of their routine. In examining PCPs' *clinical contexts*, we found that TOPCARE helped reduce PCP isolation in their opioid prescribing decisions, particularly through partnerships they formed with NCMs: "It gives me a second opinion, somebody else's eyes." We also found that variability among prescribing styles within a practice hindered guideline implementation; PCPs felt that TOPCARE reduced that variability: "We'd had some prescribers in the past who were 'cowboys,' prescribing a lot. [Under TOPCARE], we are more together about how we prescribe."

CONCLUSIONS: An intervention to improve adherence to opioid guidelines increased PCPs' knowledge and outcome expectancy. PCPs experienced tangible and emotional support to help reduce variability and carry out guideline-concordant care.

THE PREVALENCE AND IMPACT OF UNHEALTHY ALCOHOL USE AMONG MEN WHO HAVE SEX WITH MEN INITIATING PRE-EXPOSURE PROPHYLAXIS FOR HIV INFECTION: A PILOT STUDY

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BACKGROUND: Unhealthy alcohol use is common among men who have sex with men (MSM) and may influence HIV risk prevention. Among MSM initiating pre-exposure prophylaxis (PrEP) for HIV infection, we sought to determine the prevalence of unhealthy alcohol use and examine its impact on PrEP adherence and retention in care.

METHODS: MSM who initiated PrEP between 2015 to 2016 at one of two PrEP clinics in Providence, RI or New Haven, CT were enrolled into an

observational cohort study. Data were collected as part of routine clinical care using structured encounter forms. The prevalence of unhealthy alcohol use (by Alcohol Use Disorders Identification Test [AUDIT]-C score >4) was described at baseline and compared across those with and without low PrEP adherence (self-report of missing seven or more pills in the last 30 days at the 3-month visit). We additionally examined the association between level of alcohol use (AUDIT-C scores, categorized based on the distribution, as 0, 1–6 and 7–12) and low PrEP adherence using the Mantel-Haenszel test for linear trend. We then examined the prevalence of unhealthy alcohol use across those with and without retention in care (follow-up visit within three months of the baseline clinic visit). Significance was defined as $p <= 0.05$.

RESULTS: Among 131 MSM, 40% were between 25–34 years old and the sample was racially (65% white, 13% black, 25% multiracial/other/unknown) and ethnically (22% Hispanic) diverse. At baseline, 71 (54%) of MSM met criteria for unhealthy alcohol use. Among MSM retained in care at three months ($n = 93$), 12% of those with unhealthy alcohol use had low PrEP adherence compared to 7% without unhealthy alcohol use (odds ratio [95% confidence interval] = 1.76 [0.4, 9.1], $p = 0.47$). However, increasing levels of alcohol use were associated with a greater proportion reporting low PrEP adherence: among those with an AUDIT-C of 0, 1–6 and 7–12, the proportion reporting non-adherence was 0%, 8 and 38%, respectively ($p = 0.03$ for trend). Three-month retention in care was similar among those with (72%) and without unhealthy alcohol use (70%, $p > 0.05$).

CONCLUSIONS: Unhealthy alcohol use is very common among MSM initiating PrEP and may negatively impact adherence to PrEP. Interventions to address unhealthy alcohol in PrEP care settings are needed.

THE PROMISES AND PERILS OF A PRODUCE PRESCRIPTION PROGRAM: A QUALITATIVE EXPLORATION Allison V. Schlosser[1]; Kakul Joshi[1]; Samantha Smith[2]; Anna B. Thornton[4]; Erika Trapl[1]; Shari Bolen[3]. [1]Case Western Reserve University, Cleveland, OH; [2]Cuyahoga County Board of Health, Parma, OH; [3]MetroHealth/Case Western Reserve University, Cleveland, OH; [4]Prevention Research Center for Healthy Neighborhoods at CWRU, Shaker Heights, OH. (Control ID #2702609)

BACKGROUND: Although produce prescription programs have shown improvements in healthy eating behaviors, little is known about how participants experience them.

METHODS: We conducted in-person, semi-structured interviews with participants in a unique produce prescription program for hypertensive adults (PRx HTN) at 3 safety net clinics in partnership with 20 farmer's markets (FMs). We interviewed 5 providers (at least 1 from each clinic), 23 patients (6–8 from each clinic), and 2 FM managers. Project staff recruited interviewees via a mail-in response card sent to all program participants and e-mail to program providers. Patient interviews focused on: 1) beliefs about food, healthy eating and FMs; 2) clinic-based program experiences; and 3) FM experiences. Provider and market manager interviews focused on their experiences providing the program. All interviews were audio-taped, transcribed, and analyzed using NVIVO software. We conducted analyses of *a priori* themes related to program processes and emergent themes of program experiences. Two investigators independently coded 10% of the interviews, achieving 80% inter-coder reliability.

RESULTS: Patients were mainly middle-aged (mean age 62 years), African American (100%), and female (78%). Providers and market managers were mainly middle-aged men and women of diverse race/ethnicities. We identified six overarching themes related to program experience (program enthusiasm, increased fruit and vegetable (FV) intake, economic hardship, co-morbidity, social interactions, and beliefs about patient agency). First, program providers, patients, and market managers expressed confidence in and enthusiasm for the program. Although providers faced some challenges integrating the program into clinics, they improvised solutions such as simplifying scheduling and providing education in group settings. Second, patients reported greater access to and consumption of fresh produce, exposure to novel FV, and knowledge of food preparation. Third, patients often described economic hardships influencing their FV shopping and eating patterns pre and post program. Fourth, patient co-morbidity (e.g., diabetes) shaped their program experience via parallel healthcare and prior nutrition interventions bolstering PRx education. Fifth, positive social interactions between patients and providers enhanced participants' sense that providers "care" for them. Sixth, patient, provider, and market manager beliefs about patient agency shaped their views of program goals and implementation.

CONCLUSIONS: Our findings highlight the promises and challenges of produce prescription programs for disadvantaged patients with complex health and economic needs. To sustain improvements in healthy eating and better integrate the program into clinics, future efforts should consider patient economic constraints, the influence of co-morbidity, and participant beliefs regarding patient agency.

THE RELATIONSHIP BETWEEN HEALTH LITERACY AND PATIENT-PHYSICIAN COMMUNICATION ON RECEIPT AND QUALITY OF DISCHARGE INSTRUCTIONS PRIOR TO HOSPITAL DISCHARGE: A PILOT STUDY Meredith Park[2]; Margot Hedlin[3]; Darren A. DeWalt[4]; Amy Weil[3]; Jamie A. Jarmul[1]. [1]UNC-Chapel Hill, Durham, NC; [2]UNC-Chapel Hill, Greensboro, NC; [3]UNC Chapel Hill School of Medicine, Chapel Hill NC, NC; [4]Center for Medicare and Medicaid Innovation, Baltimore, MD. (Control ID #2703618)

BACKGROUND: Low health literacy and poor patient-physician communication during hospitalization is associated with increased adverse events after hospital discharge as well as increased risk of hospital readmission (Kripalani 2007; Hersh 2015). However, it is unclear whether health literacy directly impacts patients' experiences of physician communication at hospital discharge, as well as patients' ability to recall important instructions after discharge. The objective of this pilot study was to collect preliminary data on screening for health literacy in an inpatient setting, as well as patient-reported data on physician communication, scheduling of follow-up appointments and quality of discharge instructions.

METHODS: Study design: Mixed methods pilot study Setting: Large, academic medical center serving a safety net population Population: Convenience sample of admitted medical patients categorized as either moderate or high risk of readmission (using an EMR-based algorithm) Measures: Health literacy was assessed using the Newest Vital Sign (NVS); quality of patient-provider communication was assessed using the Health Communication Assessment Tool (HCAT) (20 questions; scale of 1 (poor) to 5 (excellent)). We collected qualitative data on quality of discharge instructions and scheduling of follow-up appointments through in-person and phone interviews. Analytic procedures: This study was approved by the IRB at UNC Hospitals. Eligible patients were approached and informed consent was obtained when chart review indicated that they were within 24 hours of discharge. We first administered the NVS and HCAT and then conducted the in-person interview; follow-up phone interviews were conducted within 7–14 days of discharge.

RESULTS: We enrolled a total of 10 patients in this pilot study; 8 out of 10 patients had limited literacy. The mean of all HCAT questions was ≥ 4.4, indicating that patients generally felt communication with their physicians during hospitalization was excellent. While the majority of patients (8 of 10) felt prepared for discharge, several (4 out of 10) had not discussed follow-up plans with their physicians and most (8 of 10) did not have a follow-up appointment scheduled when interviewed less than 24 h before hospital discharge. We were able to contact 6 of 10 patients for the follow-up phone interview; 4 out of 6 were able to recall the primary diagnosis from their hospitalization and 3 of 6 had received written information about "red flag" symptoms for their conditions.
CONCLUSIONS: In this small study, the majority of patients had limited health literacy, but most were satisfied with communication with their physicians. Patients felt prepared at discharge, but few actually knew the reason they were hospitalized and had follow up appointments scheduled.

THE ROLE OF SUBJECTIVE SOCIAL STATUS IN SMOKERS' RESPONSE TO A PROACTIVE SMOKING CESSATION INTERVENTION Elisheva Danan[1]; Steven Fu[1]; Rachel Widome[4]; Barbara Clothier[2]; Siamak Noorbaloochi[1]; Patrick Hammett[4]; Diana Burgess[3]. [1]Minneapolis VA Health Care System, Minneapolis, MN; [2]Mpls VAHCS, Minneapolis, MN; [3]University of Minnesota and Minneapolis Veterans Affairs Health Care System, Minneapolis, MN; [4]University of Minnesota, Minneapolis, MN. (Control ID #2705723)

BACKGROUND: While the overall prevalence of smoking in the US has declined over the past several decades, disparities in smoking prevalence and quit rates by socioeconomic status have increased. Underlying this are likely "fundamental causes" as defined by Phelan and Link (2005), in which those with lesser social and material resources are less likely to reap benefits from traditional health-promotion interventions. Our objective was to test whether a proactive, population-based tobacco cessation intervention would confer greater benefit to higher social status individuals.
METHODS: This was a secondary analysis of a randomized clinical trial involving a population-based registry of current smokers, identified using the Department of Veterans Affairs (VA) electronic medical record. Current smokers were randomized to usual care or proactive care, which combined proactive outreach and the offer of free smoking cessation services. Social status was assessed by the 10-level MacArthur Scale of Subjective Social Status (SSS), which captures perception of one's position in the social hierarchy. The primary outcome was 6-month prolonged smoking abstinence at 1 year and was assessed by a follow-up survey sent to all participants who had enrolled in the trial at baseline ($N = 2249$).
RESULTS: There was an interaction between treatment group and SSS ($p = .0047$), after taking into account the stratification by site study design and demographics, such that higher SSS smokers were more likely than lower SSS smokers to benefit from the intervention. The OR for proactive versus usual care was 2.36 (95% CI = (1.43,3.88)) for the higher SSS group (highest 4 levels) and OR = 0.92 (95% CI = (0.58, 1.46)) for the lower group (lowest 4 levels). Estimated quit rates for the proactive and usual care arms were 24.2 and 12.0%, respectively for the higher SSS group and 13.5 and 14.6% for the lower group.
CONCLUSIONS: Fundamental causes are likely important drivers of smoking disparities and are not necessarily overcome by offering traditional smoking interventions. While proactive cessation outreach is an important and effective tool for connecting with hard-to-reach smokers, disadvantaged smokers could likely benefit from interventions that go even further to enhance their access to resources.

THE ROLE OF THIRD YEAR CLERKSHIP STUDENTS AND THE POTENTIAL FOR CHANGE Catherine Burke; Dylan E. Masters; Patricia O'Sullivan; Leslie Sheu. University of California, San Francisco, San Francisco, CA. (Control ID #2689096)

BACKGROUND: Preclerkship medical education has undergone extensive reform and the clinical years are growing targets for curricular innovation. Perceptions of the third year medical student (MS3) role and responsibilities vary and are not standardized across clerkships or clinical sites. As institutions implement new and innovative preclerkship programs, the perspective of clerkship leadership regarding the current role of MS3s will facilitate targeting and redefining these roles within novel curricula. This research sought to answer the following questions: What is the current role of the MS3? What factors influence this role? What is the potential for MS3 roles to change, particularly in the context of preclinical curricular change?
METHODS: In this qualitative exploratory study, we interviewed current clerkship directors and site directors for eight core clerkships using semi-structured questions regarding the current MS3 role, factors contributing to the role, and the potential for changing the role in the context of curricular reform. Through an iterative consensus building process, researchers identified themes relevant to the three research questions.
RESULTS: Twenty-three clerkship directors and site directors participated. Results reveal that the MS3 role is determined by intrinsic student-specific factors, supervisor-specific factors, and system constraints. The MS3 role is considered unique, adding value to teams through team-patient communication and inquiry tasks. The role is considered authentic and workplace learning is enhanced when the student is able to function as a "mini-resident," assisting with patient care tasks. Directors' positive perceptions of a novel curriculum are associated with identification of new and expanded MS3 roles, such as engagement in interdisciplinary collaboration and care transitions, or formalizing sharing of learning topics with the team; neutral or negative perceptions are associated with concerns about further systems constraints or deviation from traditional clinical skills and knowledge acquisition.
CONCLUSIONS: A paradox exists wherein MS3s are considered unbound by defined physician roles allowing them freedom to engage in unique tasks, but are simultaneously expected to mirror more advanced team members in an apprenticeship model. The contradictory nature of the role makes it difficult for directors to describe and consider change. While system constraints understandably limit the MS3 role, the role is largely determined by individual students and supervisors. Directors' historical perspectives and reliance on tradition may hinder them from expanding the MS3 role to capitalize on new skills developed within a reformed preclerkship curriculum. Thoughtful and deliberate engagement of directors is required to assist in envisioning innovative changes to MS3 roles that utilize novel skills in training 21st century physicians.

THE TRANSITION TO RESIDENCY BLOCK SCHEDULING: A SYSTEMATIC REVIEW Ami DeWaters; Hilda Loria; Helen Mayo. UT Southwestern, Dallas, TX. (Control ID #2701148)

BACKGROUND: In an effort to improve resident satisfaction with ambulatory training, many Internal Medicine residencies have redesigned traditional ambulatory schedules (a half day of clinic/week) into a block schedule (e.g. the 4 + 1). However, the impact of block scheduling is poorly understood. We conducted a systematic review to examine the impact of transitioning from a

traditional to a block schedule on resident and patient satisfaction with ambulatory care, as well as continuity of patient care.

METHODS: We searched Ovid MEDLINE, Ovid MEDLINE InProcess, EBSCO CINAHL, EBSCO ERIC and the Cochrane Library from date of inception to June 2016. Reference lists of included articles were reviewed to identify additional studies. We included studies a) if the ambulatory schedule transitioned from the traditional one half day of clinic/week to a block schedule (clinic scheduled in blocks lasting anywhere from 1 week to 1 year), b) that were either a RCT or observational study with a comparison group, including a historical comparison group, c) set in Internal Medicine residencies within the US, and d) which had patient and/or resident satisfaction, or continuity of patient care as a primary outcome. 7,741 studies were identified. Two authors independently reviewed titles and abstracts to identify 37 studies for full text review, of which 9 studies met inclusion criteria. Data were extracted on methods, settings, scheduling, and outcomes.

RESULTS: The definition of block scheduling was heterogeneous including: a 4 weeks inpatient + 1 week ambulatory schedule (3 studies), a 3 weeks inpatient + 1 week ambulatory schedule (1 study), a 1 month inpatient + 1 month ambulatory schedule (1 study), a "long block" of ambulatory training lasting 1 year in the 17th-28th months of residency (1 study), and 3 multisite studies which combined all of the above into their definition of block scheduling. Patient satisfaction was a primary outcome in 3 studies, each of which found it unchanged after implementing block scheduling. Five of six studies that examined resident satisfaction as a primary outcome showed significant increases in resident satisfaction with ambulatory training after transitioning to block scheduling. Provider continuity of care, defined by the percentage of time that providers saw their own patients, was examined by 3 studies, all of which showed a decline in continuity (10.2–15% less time seeing their own patients) with block scheduling.

CONCLUSIONS: The transition from traditional to block scheduling in Internal Medicine residencies increased resident satisfaction with ambulatory training and had no impact on patient satisfaction. However, provider continuity of care declined in the block system. Further research is necessary to determine whether changes in continuity of care associated with block scheduling have affected patient care outcomes.

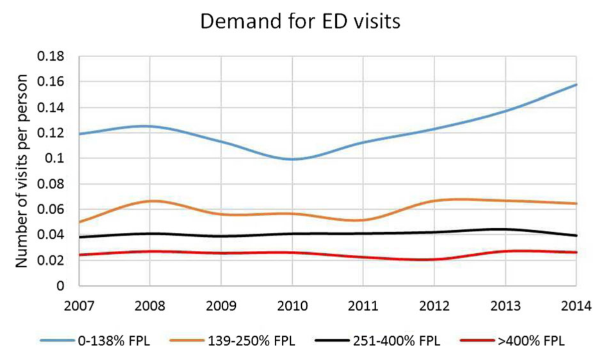
THE TREND IN THE DEMAND FOR EMERGENCY DEPARTMENT VISITS BEFORE AND AFTER THE AFFORDABLE CARE ACT MEDICAID EXPANSIONS Phuc H. Le[1]; Chi R. Nguyen[2]; Ha T. Tran[2]; Michael B. Rothberg[1]; David R. Lairson[2]. [1]Cleveland Clinic, Cleveland, OH; [2]University of Texas Health Science Center School of Public Health, Houston, TX. (Control ID #2705829)

BACKGROUND: The Affordable Care Act Medicaid Expansions aimed to improve insurance coverage so as to increase access to primary care and reduce unnecessary emergency department (ED) use in low-income persons. Previous studies on the association of improved coverage and ED use were mixed. There is no national estimate of the demand for ED visits to inform decision making in the rapidly changing US healthcare environment. We aimed to estimate the demand for ED visits and examine the trend over time.

METHODS: A pooled cross-sectional design and two-part model were used to estimate the demand for ED visits in US adults aged 18–64 years. The first stage of the model, the probability of having an ED visit, was estimated with logistic regression. In the second stage, the number of ED visits conditional on making ≥1 visit was predicted using negative binomial regression. The demand was the product of the predicted probability and number of visits. Grossman's models of demand for health and healthcare and Andersen-Aday's behavioral model informed selection of independent variables which included demographics, socioeconomic status, insurance, usual source of care, health status, and cost. Using 2007–2014 Medical Expenditure Panel Survey (MEPS) data, we estimated the mean demand by year and by poverty level (0–138% Federal Poverty Level (FPL); 139–250% FPL; 251–400% FPL; and >400% FPL). Finally, we performed trend analysis to examine the change in demand overtime. We used Stata 12.0 and SAS 9.4 to analyze data. A two-sided p-value of <0.05 was considered statistical significance.

RESULTS: The demand for ED visits increased from 0.047 visits/person in 2007 to 0.061 visits/person in 2014 (p for trend <0.05. However, persons ≤250%FPL saw a statistically significant increase in use. Comparing 2014 to earlier years, the average demand was significantly higher for the population (0.061 vs. 0.051 visits/person), and for the lowest income (0–138% FPL) group (0.158 vs. 0.117 visits/person) (p-values < 0.05).

CONCLUSIONS: The demand for ED visits increased following the full enactment of Medicaid Expansions, especially for low income individuals. The increase in demand was highest among the poorest persons. Our study suggest that low-income persons still rely on expensive EDs despite the insurance coverage. Other measures may be necessary to ensure access to primary care for the underserved.



THE TYPES AND CAUSES OF MEDICATION ERRORS WHEN USING COMPUTERIZED PROVIDER ORDER ENTRY SYSTEMS IN PEDIATRICS: A SYSTEMATIC REVIEW Clare L. Brown[4]; Niamh Forde[3]; Katherine Coffey[3]; Andrew K. Husband[2]; David W. Bates[1]; Sarah P. Slight[3]. [1]Brigham and Women, Boston, MA; [2]Durham University, Teesside, United Kingdom; [3]Durham University, Stockton on Tees, United Kingdom; [4]University of Durham, Sunderland, United Kingdom. (Control ID #2707448)

BACKGROUND: Pediatric patients are particularly vulnerable to medication errors. It has been estimated that up to a quarter of pediatric medication orders may contain an error.[1] Computerized Provider Order Entry (CPOE) with Clinical Decision Support (CDS) has been associated with a reduction in pediatric medication errors[2]. However, some new types of error have also emerged with the use of these systems. We performed a systematic literature review to identify and understand the types and causes of medication errors associated with the use of CPOE systems in pediatrics, and provide recommendations on how these systems could be improved.

METHODS: Our review was conducted according to the PRISMA guidelines. We included primary research studies that discussed the occurrence and underlying causes of errors that were generated using CPOE systems. The search

included English language articles and the timeframe was not restricted. Non-peer-reviewed publications, editorials and commentaries were excluded. Three large databases, the Cumulative Index Nursing and Allied Health Literature (CINAHL), Embase and Medline were searched using broad search terms related to 'CPOE', 'Errors' and 'Pediatrics'. Three authors independently reviewed the titles; abstracts and full texts were then reviewed independently by two authors, with one acting as a constant across all publications. Data were extracted using a customised data extraction sheet and a narrative synthesis of all eligible studies was undertaken. This review was registered with PROSPERO.

RESULTS: We identified 414 papers of which 47 articles (44 full texts and 3 conference abstracts) met our inclusion criteria. We highlighted four key types of errors: 1) Drug selection errors, where the wrong dose and/or route was accidently selected from alphabetical drop-down menus; 2) Drug calculation errors–when prescribing oral liquids, due to a lack of standardised concentrations on the system (e.g., mg/5 ml and mg/1 ml); failure to update the child's weight on the system also contributed to the occurrence of these errors; 3) Discrepancies between the medication order placed and the free-text administration instructions provided, due to a lack of available dosing options on some systems (e.g. '1 drop daily' while the 'additional instructions' field read '1 dropper (full) daily'); and 4) Erroneous alerts such as an under-dose alert for erythromycin when it was prescribed as an anti-motility agent (rather than as an antibiotic), were presented resulting in high alert override rates.

CONCLUSIONS: This review outlines four key types of errors that occurred during the use of CPOE in the paediatric population. The existence of safeguards within CPOE systems used in pediatrics is critically important across all these four areas in order to avoid these errors occurring in the future. Further research is needed to prevent future errors.

THERE'S JUST NO CRYSTAL BALL: A QUALITATIVE STUDY OF PHYSICIANS' PERSPECTIVES ON DECISION MAKING ABOUT DIALYSIS INITIATION IN OLDER ADULTS Melissa W. Wachterman[4, 5]; Tarikwa Leveille[4, 5]; Nancy L. Keating[3, 5]; Steven R. Simon[2]; Barbara G. Bokhour[1]. [1]ENRM Veterans Affairs Medical Center, Bedford, MA; [2]VA Boston Healthcare System, Boston, MA; [3]Harvard Medical School, Boston, MA; [4]VA Boston Healthcare System, Jamaica Plain, MA; [5]Brigham and Women's Hospital, Boston, MA. (Control ID #2702364)

BACKGROUND: Older adults are the fastest growing group of patients with end-stage renal disease (ESRD). The 1-year mortality rate for those over age 80 initiating dialysis is about 50%. Dialysis may increase longevity, but decrease quality of life and increase the medicalization of the last phase of life. Over half of dialysis patients regret having initiated dialysis, and many report 'no choice' but to start. Conservative non-dialytic management is uncommon in the United States. Little is known about clinicians' perspectives on decision-making about dialysis initiation. We explored nephrologists' perspectives about the decision-making process around dialysis initiation in older adults with ESRD.

METHODS: We conducted semi-structured in-person interviews with 17 nephrologists who care for older adults with advanced chronic kidney disease in different clinical settings (outpatient clinic, hospital, dialysis unit) in both academic and community practices. Interviews were audiorecorded and transcribed. We analyzed the data using grounded thematic analysis, a systematic approach to deriving qualitative themes from textual data.

RESULTS: We identified six interrelated themes that affect decisions about dialysis versus non-dialytic management of ESRD, including 4 barriers and two facilitators of real choice. Barriers included: 1) "No crystal ball"-nephrologists talked about how difficult it can be to predict who will do well versus poorly on dialysis and told stories about older adults who, unexpectedly, did well on dialysis. This weighed on them and gave them pause about not recommending dialysis initiation even when they thought patients would do poorly on dialysis; 2) "Alternative to dialysis is death"-doctors characterized the dialysis decision as a binary choice between life and death; 3) "You can always stop dialysis"-doctors noted that the decision is reversible, which some said they emphasize when patients voice ambivalence or lean towards not initiating dialysis; 4) Confronting death is difficult -nephrologists stated that it was hard to face death and to discuss it with patients and families. Facilitators of real choice included: 5) Consideration of quality of life-taking into account the downsides of dialysis; 6) Communication about patient and family preferences and goals-rarely done.

CONCLUSIONS: Elements of the dialysis initiation decision such as perception of "life or death" stakes, reversibility, and the emotional burden on nephrologists of not initiating dialysis combine to make initiation the default. Future interventions may include communication training for providers that attempts to mitigate the barriers we identified and facilitate conversations that incorporate information about quality of life and elicit patient and family preferences and personal goals, a critical component of providing patient-centered care. Future research should assess primary care providers' views about how they can collaborate with nephrologists in engaging patients in these difficult decisions.

THREE HABITS OF HIGHLY EFFECTIVE RESIDENTS IN OUTPATIENT CLINIC Karthik J. Kota[1]; Amar Kohli[1]; Gary Fischer[2]. [1]University of Pittsburgh Medical Center, Pittsburgh, PA; [2]University of Pittsburgh, Pittsburgh, PA. (Control ID #2701422)

BACKGROUND: With throughput and complexity increasing in primary care, the ability to provide efficient care in outpatient practice is a crucial skill for residents to master. Current research focuses on clinic flow and office staff management, rarely addressing physician efficiency. The few studies on residents and efficiency (none in Internal Medicine) focus on precepting before starting the day, documentation in forms, preparatory primary care "boot camps," and motion studies. In order to discover methods by which residents become efficient, this study conducted one-on-one interviews to elicit trends and themes on efficiency and inefficiency

METHODS: Internal medicine residents with primary care clinic at the University of Pittsburgh Physicians - General Internal Medicine (Oakland) Clinic were invited (by email and study coordinators) to one-on-one, semi-structured interviews conducted by phone and recorded for later transcription. The semi-structured format included questions on practice style, office visit mechanics, 2 vignettes (1 urgent care, 1 complex primary patient), and thoughts on efficiency. Interviews were transcribed by one author and verified by another. Respondents' names were not included in transcriptions. Coding was done separately by two authors and compared prior to final analysis

RESULTS: 8 of 9 recorded interviews have been transcribed, with further interviews planned; averaging 25 min, interviews ranged from 13 to 37 min. Of the ones transcribed, 4 were graduated (Post Graduate Year (PGY)-4), 2 were PGY-3, and 2 were PGY-2; 2 self-described as inefficient, 6 as efficient. Several themes emerged. Inefficient residents looked up patients prior to the clinic day; efficient ones did so the day of clinic. Inefficient residents *did not*

write notes while in the room (finding it difficult to empathize and pay attention while using the computer), while efficient ones (with one exception) at least started a note in the room (of note, nearly all efficient residents stressed starting notes early). Efficient residents lumped activities before precepting (e.g., pelvic exams, pending orders), while inefficient residents tended to defer activities until approved by attendings. Of note, no resident was ever asked to change or addend their note

CONCLUSIONS: The preliminary analysis of this qualitative study shows clear differences between residents who self-identify as efficient and inefficient. Though of roughly equal quality (as determined by the lack of needing to change or addend notes), self-identified efficient residents are more independent, spend less time preparing (e.g., pre-reading, planning notes as opposed to starting them), and tend to be more focused (e.g., urgent care is for urgent care, not health maintenance). Further research will elucidate other themes, but initial efforts to improve resident efficiency may focus on encouraging independent action, focusing visits, and facilitating starting notes in the room (e.g., templated common outpatient presentations)

TIME TO FILLING OF NEW PRESCRIPTIONS FOR CHRONIC DISEASE MEDICATIONS AMONG THE ELDERLY Jessica M. Franklin[1]; Alexis Krumme[1]; Mufaddal Mahesri[1]; Gregory Brill[1]; Heather Black[3]; Caroline McKay[3]; Newell McElwee[3]; Niteesh K. Choudhry[2]. [1]Brigham and Women's Hospital, Boston, MA; [2]Harvard Medical School, Boston, MA; [3]Merck & Co, Inc., Kenilworth, NJ. (Control ID #2697852)

BACKGROUND: Data on primary nonadherence remains sparse. In addition, previous work on primary nonadherence has used a wide range of follow-up periods from 30 days to 18 months, making results difficult to compare. We sought to evaluate primary nonadherence by measuring time until filling in a cohort of elderly patients.

METHODS: Data comes from a linked database of electronic health records (EHR) and claims for patients aged 65 years enrolled in Medicare A/B/D. From these data, we identified patients receiving a new prescription for a chronic disease medication. Patients were required to have continuous Medicare enrollment for 180 days prior to the index prescription order and no fills or orders for the medication during this period. We then followed patients for a fill of the index prescription for one year. Patients were censored when medication filling could not be assessed due to end of data availability, disenrollment from Medicare Part D, a hospitalization or other institutional stay lasting at least one week, or death. Cox models were used to assess differences in time until filling across patient and therapeutic characteristics.

RESULTS: In 28,770 new medication orders, the majority (58%) were filled within 1 day, 73% were filled within 7 days, 81% were filled within 30 days, and 93% were filled by the end of one year. The rate and timing of filling was similar across therapeutic areas except for insulin, where filling rates were much lower (Table). Within therapeutic areas, time until filling was generally similar across medication classes. Prescriptions with supply > 30 days had a 13% (11–15%) lower rate of filling than prescriptions with supply < 30 days. Men were less likely to fill than women (hazard ratio [HR]: 0.93 [0.90–0.95]), and patients greater than 74 years old were more likely to fill (HR: 1.05 [1.03–1.08]). Patients with increasing numbers of current medications were much more likely to fill their new prescription. Patients with 3–4 medications had a 71% (65–77%) higher rate of filling than patients with 2 or fewer medications. Patients with 5–7 medications had twice the rate of filling (HR: 2.06 [1.99–2.14]), and patients with more than 7 current medications had 2.4 (2.3–2.5) times the rate of filling.

CONCLUSIONS: With the exception of insulin, the rates of primary nonadherence were relatively low, and the vast majority of prescriptions were filled quickly. Focusing interventions on patients with few current medications or those initiating specific medications, such as insulin, may be a promising approach to improve medication adherence.

Time until filling across therapeutic areas

Therapeutic area	% Filling by day 30	% Filling by day 365	50th percentile filling time	Hazard ratio (95% CI)
Antihypertensive	83%	93%	0	[REF]
Antidiabetic	82%	93%	0	0.976 (0.924, 1.031)
Antihyperlipidemic	80%	94%	0	0.916 (0.884, 0.948)
Antiplatelet	84%	93%	0	0.979 (0.865, 1.107)
Anticoagulant	83%	95%	0	0.991 (0.922, 1.064)
Antiosteoporosis	77%	89%	0	0.823 (0.774, 0.876)
Insulin	55%	81%	11	0.420 (0.376, 0.469)
Asthma/COPD	81%	93%	0	0.967 (0.937, 0.948)

TIME TO GET WITH THE USPSTF HYPERTENSION GUIDELINES? LOW PREVALENCE OF HOME AND AMBULATORY BLOOD PRESSURE MONITORING IN PATIENTS WITH ELEVATED SCREENING OFFICE BLOOD PRESSURE Christina Eckhardt; Nathalie Moise; Daichi Shimbo; Alexandra Sullivan; Ian M. Kronish. Columbia University Medical Center, New York, NY. (Control ID #2705419)

BACKGROUND: In 2015, the US Preventive Services Task Force (USPSTF) updated their screening recommendations to advise that patients with elevated office blood pressure (BP) undergo ambulatory (ABPM) or home blood pressure monitoring (HBPM) to rule out white coat hypertension before receiving a new diagnosis of hypertension. Despite growing support for out-of-office BP testing, little is known about how often this recommendation is followed. This study aimed to determine prevalence of out-of-office BP testing prior to the release of 2015 USPSTF guidelines in order to elucidate baseline rates of use and identify potential barriers.

METHODS: We performed a retrospective chart review of patients scheduled for primary care visits in 2014 at 5 clinics affiliated with an academic medical center in New York City (New York-Presbyterian Hospital). Patients were considered eligible for ABPM or HBPM if they satisfied USPSTF criteria: 1) office BP ≥140/90 mmHg during a scheduled visit and 2) no prior diagnosis of hypertension per review of primary care notes. Patients were excluded if BP was ≥180/110 mmHg or if there was evidence of hypertension-induced end-organ damage (i.e., coronary artery disease, chronic kidney disease, heart failure, peripheral vascular disease) based on review of problem lists, labs, and EKGs. Patients were categorized as receiving ABPM or HBPM by

reviewing provider notes and orders. Fisher exact test was used to compare provider type in those who ordered out-of-office BP monitoring.

RESULTS: In 2014, there were 521 unique patients who met criteria to undergo out-of-office BP testing. Mean patient age was 44 ± 15 years. The majority (61%) were women. Race/ethnicity was not documented for 56% of eligible patients, 36% identified as Hispanic, 6% as black, and 2% as white.. Out-of-office BP testing was ordered for 6 (1.2%) patients (0 ABPM, 6 HBPM). A higher percentage of attendings ordered out-of-office BP testing as compared to residents and nurse practitioners (2.1% vs. 0.7% vs. 0.0%, $p = 0.3$). Too few out-of-office BP tests were ordered to identify additional predictors of who was referred for testing. A review of provider documentation showed that none of the six patients received adequate training in conducting HBPM (i.e. frequency of monitoring, appropriate positioning during monitoring etc.). Nonetheless, a chart review of subsequent visits revealed that 3 of 6 patients completed HBPM as ordered. All 3 patients had normal BP readings outside of the office, and BP medications were not initiated in these patients.

CONCLUSIONS: In an urban hospital-affiliated primary care setting serving an ethnically diverse patient population, out-of-office BP testing was rarely ordered. Even when ordered, there were gaps in how HBPM was implemented. To achieve the benefits of hypertension screening guidelines, efforts are needed to understand barriers to ordering and completing ABPM and HBPM, and interventions are needed to increase test ordering.

TIMELY FOLLOW-UP WITH A MULTI-DISCIPLINARY TEAM REDUCES 30-DAY READMISSIONS AND ASSOCIATED COSTS IN A LARGE ACADEMIC PRACTICE Rachel H. Kon; Emily Cetrone; William Clay. University of Virginia, Charlottesville, VA. (Control ID #2705924)

BACKGROUND: Almost 1 in 5 Medicare patients is readmitted within 30 days, estimated to cost taxpayers 17 billion dollars annually. Many readmissions are preventable, but studies looking at interventions to reduce readmission have shown mixed results. Our objective was to determine if timely hospital follow-up with a multi-disciplinary team, including a clinical pharmacist, would reduce 30-day readmissions and costs in a large academic clinic.

METHODS: University Medical Associates (UMA), an internal medicine resident clinic, serves 15,000 patients annually. Residents hold clinic 1 week each month, so timely follow-up is a common issue. Starting in January 2016, UMA patients discharged from UVA receive an appointment at the new discharge clinic within 2 weeks. The patient meets with the multidisciplinary team (a clinical pharmacist, a nurse, and resident and faculty physicians) to review the hospitalization and medications. We conducted a retrospective cohort study. All UMA patients discharged from UVA between January and December 2016 were eligible. The study group included any patient who attended a discharge clinic appointment. Our comparison group consisted of UMA patients who had at least 1 admission in 2016 but did not attend the discharge clinic. Demographic differences between the groups were compared with chi-square testing. Incidence rate ratios were calculated for inpatient days after index discharge between the groups.

RESULTS: 127 unique patients attended the clinic in 2016. Our comparison group had 840 patients. There were no significant differences in distance from clinic, index admission length of stay, Elixhauser score, or proportion taking high-risk medications. The Charleson index and LACE scores were significantly higher in the clinic group relative to controls. All analyses controlled for demographic differences in race, gender, age, and pay scale, as well as Charleson index and LACE score. In the 30 days following index discharge, logistic regression indicated that clinic patients were less likely to be readmitted than the comparison group, $b = -.49$, (95% CI = −1.13, 0.07), OR = 0.61. Additionally, Poisson regression indicated that clinic patients spent roughly one fifth the number of days hospitalized in the 30 days after index hospitalization relative to the comparison group, $b = -1.62$, (95% CI = −2.05, −1.23) IRR = .20. 30-day direct costs for clinic patients were much less due to reduced inpatient days in the 30 days after index hospitalization.

CONCLUSIONS: Our study shows that timely follow-up with a multidisciplinary team could be effective in reducing 30-day readmission rates and costs. This could be particularly effective in a large academic practice where patients may not be able to see their PCP for several weeks following discharge, and patients have many comorbidities.

TIMING OF HOSPICE ENROLLMENT AND END-OF-LIFE UTILIZATION AND SPENDING AMONG PATIENTS WITH END-STAGE RENAL DISEASE Melissa W. Wachterman[2, 3]; Susan Hailpern[4]; Nancy L. Keating[1, 3]; Manjula K. Tamura[5]; Ann O'Hare[4]. [1]Harvard Medical School, Boston, MA; [2]VA Boston Healthcare System, Jamaica Plain, MA; [3]Brigham and Women's Hospital, Boston, MA; [4]University of Washington, Seattle, WA; [5]Stanford University, Palo Alto, CA. (Control ID #2704961)

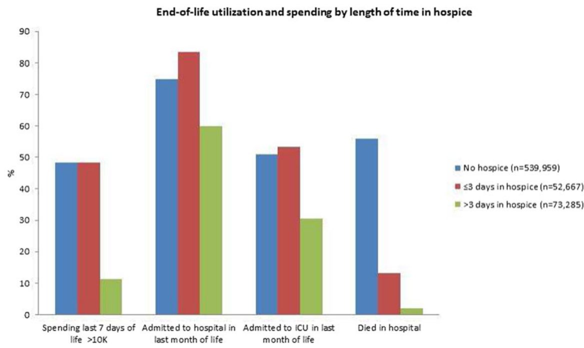
BACKGROUND: Rates of hospice enrollment in patients with end-stage renal disease (ESRD) are lower than for other serious illnesses. Because Medicare will not pay concurrently for dialysis and hospice for patients whose life-limiting illness is ESRD, these patients may also be referred to hospice in a less timely fashion. We characterized national trends in the frequency and timing of hospice enrollment among patients receiving chronic dialysis and examined the relationship between hospice use and end-of-life utilization and spending.

METHODS: Using United States Renal Data System data, we identified all hemodialysis patients with Medicare Parts A & B who died between 2000 and 2012. We grouped patients based on hospice use before death: A) no hospice, B) ≤3 days of hospice, and C) >3 days of hospice. Utilization in the last month of life was assessed for the following outcomes using Medicare claims: hospital admission, intensive care unit (ICU) use, and death in the hospital. We also assessed Medicare spending in the last 7 days of life. We used generalized linear models to compare outcomes across hospice use categories, adjusting for demographics and comorbidities.

RESULTS: Of the 665,911 decedents in our sample, 19% were enrolled in hospice at the time of death, increasing from 11% in 2000 to 26% in 2012. Among hospice enrollees, 43% were enrolled ≤3 days before death in 2000 versus 40% in 2012. Adjusted measures of spending and utilization were significantly lower for those who received >3 days of hospice than for non-hospice users (Figure, all $P < .001$). However, for patients who received ≤3 days of hospice, spending was not significantly different than for hospice non-users ($P = .97$), and hospital admission and ICU use were higher (both $P < .001$).

CONCLUSIONS: Hospice use among ESRD patients increased from 2000–2012, but nearly half of patients continued to enroll during the last 3 days of life. While longer hospice stays were associated with reductions in health care utilization and costs, shorter stays were not. Our findings suggest that efforts to improve access to hospice in this population are unlikely to result in cost

savings or changes in utilization at the end of life unless there are efforts to promote earlier referral to hospice.



TIMING OF HOSPITAL FOLLOW-UP DOES NOT IMPACT TIME TO READMISSION AMONG A POPULATION OF HIGH-UTILIZERS Colin Washington; Sara Turbow. Emory University School of Medicine, Atlanta, GA. (Control ID #2705549)

BACKGROUND: As part of efforts to improve healthcare quality while decreasing costs, hospital readmission rates are under scrutiny. Many interventions designed to decrease readmission rates have included transitions of care goals. In a population of Medicare Advantage patients, dedicated post-hospital follow-up within 7 days was shown to decrease the risk of 30-day readmissions. High-utilizer patients access healthcare services at higher rates than their peers, and are much more likely to be readmitted to the hospital. The objective of our study is to examine whether time to post-discharge outpatient follow-up has an impact on time to readmission in a population of high-utilizers at a public hospital in Atlanta, GA.

METHODS: We reviewed the charts of a random sample of 314 patients admitted 3 or more times in a calendar year between 2011–2013. We abstracted patient demographics, number of admissions, dates of admission and discharge and primary care follow-up, defined as a kept appointment with a physician or advanced practice provider in the primary care center, geriatrics, or HIV primary care clinics. An independent sample t-test was performed to compare the mean time to readmission among patients who had their first follow-up within 14 days of discharge to those who were seen after 14 days post-discharge or not seen at all. Two additional analysis were performed with cutoffs of 30 days and 60 days.

RESULTS: Patient healthcare use is presented in Table 1. There was no statistically significant difference in time to readmission among patients who were seen within 14 days of discharge compared to those who were seen after 14 days post-discharge (70.72 vs. 54.16, $p = 0.161$). Among patients who followed up within 30 days to those who did not, times to readmission were almost identical (56.27 vs. 55.75, $p = 0.949$). Finally, patients who were seen within 60 days had a shorter time to rehospitalization than patients who were seen after 60 days post-discharge, although the difference was not statistically significant (54.81 vs. 57.13, $p = 0.751$).

CONCLUSIONS: In this population of patients, time to post-discharge follow-up does not have a statistically significant impact on time to hospital readmission. There was no difference in number of hospital admissions across the three groups. This suggests that the factors driving hospital readmissions in this population are not fixable with urgent or more frequent PCP visits. The major limitation of our study was our small sample size, which prevented us from analyzing a 7-day follow-up group. Future efforts to understand factors that impact time to hospital readmission should include an examination of the influence of social determinants of health and other patient-level challenges that may not be solved with a primary care visit.

Analysis Group Healthcare Utilization

	14 day follow-up		30 day follow-up		60 day follow-up	
	≤14 days ($n = 28$)	>14 days ($n = 237$)	≤30 days ($n = 79$)	>30 days ($n = 186$)	≤60 days ($n = 140$)	>60 days ($n = 125$)
Average number of admissions	5.04	6.71	6.46	6.60	6.38	6.71
Average total number of PCP appointments (% attended)	7.82* (63.87%)	5.71* (51.00%)	7.51* (58.86%)	5.35* (49.85%)	7.04* (61.63%)	4.97* (44.17%)

TITRATED DISEASE MANAGEMENT FOR HYPERTENSION George L. Jackson[2]; Morris Weinberger[3]; Miriam A. Kirshner[2]; Karen Stechuchak[2]; Hayden Bosworth[2]; Cynthia Coffman[1]; Pamela W. Gentry[2]; Isis Morris[2]; Cynthia Rose[2]; Jennifer Taylor[2]; Carrie L. May[2]; Byungjoo Han[2]; David Edelman[2]. [1]Duke University Medical Center, Durham, NC; [2]Durham VA Medical Center, Durham, NC; [3]University of North Carolina, Chapel Hill, NC. (Control ID #2705770)

BACKGROUND: Patients who have chronic disease benefit from having the doses and types of medication titrated based upon clinical parameters, for example, higher and lower blood pressure. Similarly, these patients may also require differing intensity of disease management based upon clinical outcomes. We conducted a pragmatic clinical trial to evaluate the effectiveness of titrated disease management for patients with hypertension.

METHODS: We conducted a two-arm 18-month randomized clinical trial for patients with pharmaceutically treated hypertension for which SBP was not controlled based on clinical practice guidelines in place at the start of the study (≥140 mmHg for non-diabetic or ≥ 130 mmHg for diabetic patients). The primary aim was to compare two treatment arms in terms of impact on SBP: Arm 1 - An intervention arm using titrated disease management in which patients' hypertension control, assessed at baseline, 6 and 12 months, would be used to decide the *resource*

intensity of strategies: 1) Medium/level 1 resource intensity strategy: a registered nurse would provide monthly tailored behavioral support telephone calls + home BP monitoring; 2) High/level 2 resource intensity strategy: a pharmacist would provide monthly tailored behavioral support telephone calls + home BP monitoring + pharmacist-directed medication management; and 3) Booster (low) resource intensity strategy: a licensed practice nurse (LPN) would provide bi-monthly, non-tailored behavioral support telephone calls to patients whose SBP comes under control. Arm 2 - A comparison arm, in which an LPN would provide bi-monthly non-tailored behavioral support telephone calls (same procedures as the booster (low) resource intensity strategy component of the titrated intervention).

RESULTS: We randomized 385 Veterans. The majority (92.5%) were men, the mean age was 63.5 years, and the majority were black (61.8% black; 33.8% white; 4.5% other race). Mean baseline SBP was 143.6 mmHg and 76.6% had a baseline SBP level considered to be out of control. While the SBP (primary outcome) was reduced over 18 months in both the intervention (6.4 mmHg) and comparison (4.8 mmHg) arms, the estimated mean difference between arms was not statistically significant (−1.6 (95% confidence interval = −5.6-2.4; *p*-value = 0.43).

CONCLUSIONS: An algorithm using only blood pressure levels to determine intensity of adjuvant hypertension services does not lead to those services' generating better blood pressure outcomes. This suggests potential for the use of lower intensity telephone interventions when addressing the need to reduce blood pressure among primary care patients with hypertension, and that further research is needed to determine if there are better approaches to determining which patients with hypertension should receive advanced services.

TO ADMIT OR NOT TO ADMIT? A MULTI-INSTITUTIONAL SURVEY ON THE ROLE OF THE HOSPITALIST IN TRIAGING INPATIENT ADMISSIONS. Vijay Giridhar[2]; Sadie Trammell Velasquez[1]; Emily S. Wang[2]. [1]University of TX Health Science Center at San Antonio, San Antonio, TX; [2]University of Texas Health Science Center at San Antonio, San Antonio, TX. (Control ID #2706915)

BACKGROUND: With the increased scrutiny on the appropriateness of inpatient admissions and emphasis on efficient patient flow by hospital systems, the role of the hospitalist as a "triagist" to assess admissions from the emergency room and other outpatients setting has emerged. Despite the increasing prevalence and importance of the triagist, the skill set required is not yet defined. Our study details the differing roles and responsibilities of the triagist in a nationally distributed sample of hospital medicine and internal medicine (IM) residency programs. This information can be used to delineate the role of the triagist across multiple institutions and can assist in defining and developing a critical skill set for training IM residents.

METHODS: This is a national, multi-site survey with 11 collaborating academic institutions. Data was collected by a confidential, multi-question, mixed format RedCap survey with over 30 key questions encompassing a wide range of topics from hospitalist and residency program demographics, hospital characteristics, triage process, admission point of contact, roles and residency curriculum pertaining to triagist training. Semi-structured telephone interviews were completed to obtain further details. Data was extrapolated to graphical plots and data tables to understand current triage practices/processes.

RESULTS: The role of triaging as the admission point of contact is a faculty role greater than 75% of the time. Faculty hospitalist is the admission point of contact for the majority of the academic centers approximately 24 hours per day. Less than 50% of residency programs have a dedicated "Hospitalist/Triagist" curriculum or elective rotation. Less than 25% of all patients admitted were seen by the triagist in hospitals where the Emergency Department has admitting privileges.

CONCLUSIONS: Our study demonstrates the structure of the triagist role varies across institutions. However, with the predominance of attending physicians serving in this role rather than resident physicians, our IM residents may lack the opportunity to benefit from this training. These results demonstrate a possible gap in skills and knowledge in IM resident education and the need for further research in defining the skill set for the triagist role. In addition, there are differences in direct patient contact and patient flow depending on individual institutions and whether the emergency department has admitting privileges. This may have implications for patient safety.

TO PRODUCE OR NOT TO PRODUCE: THE CLINICAL PRACTICE GUIDELINE DILEMMAS FOR SYNTHESIZING EVIDENCE BACKGROUND Aysegul Gozu[1]; Demetrios Psihopaidas[3]; Stephanie Chang[2]. [1]AHRQ, Clarksville, MD; [2]AHRQ, Rockville, MD; [3]HRSA, Rockville, MD. (Control ID #2708335)

BACKGROUND: Clinical practice guidelines (CPG) are one of the foundations to improve patient outcomes and the quality of care. 2011 Institute of Medicine (IOM) guideline trustworthiness standards require the use of systematic review (SR) as a basis for CPG recommendations. Unfortunately, there is limited information on how CPGs develop/acquire SR evidence, what factors influence the use of any particular method, and what resources they use in developing CPGs. Our objective is to describe the advantages and challenges of different practices for developing or acquiring the SR evidence necessary for CPG development.

METHODS: We used purposive sampling to identify a rich and diverse sample of CPG developers and conducted semi-structured qualitative interviews with 9 different CPG-developing organizations in the US.

RESULTS: We identified 4 option/methods that CPG developers used in developing SRs: (1) In-house de novo production of SRs by using internal resources to produce original SRs; (2) In-house adaptation and update of existing SRs; (3) External engagement with an independent body to produce de novo SRs; and (4) Adopting existing published SRs to develop a CPG. Adopting or adapting existing SRs is preferable for CPG-developing organizations with limited staffing (often only 1–3 full time persons) due to decreased monetary and time costs. However, lack of needed information for CPG development, such as specific population-intervention specific data, use of different outcome measures, and lack of access to source data, is a potential challenge. Prior experience of panel members and staff with CPG development, the use of individual versus standing CPG panels, and the productivity of CPG panel volunteers may alter the ability of the CPG to use other methods.

CONCLUSIONS: CPG developers face multiple obstacles during development of CPG recommendations. These include balancing the desire for methodologically-rigorous SR evidence, assuring clinical relevance, meeting a variety of external requirements, time and resource limitations, and relying upon volunteer experts to develop time-sensitive SR and CPG recommendations.

TOLERANCE FOR AMBIGUITY: A TRAIT TO BE FOSTERED FOR PROMOTING WISE PHYSICIANS AND DECREASING BURNOUT

Rachel H. Kon; Justine E. Owens; Tabor E. Flickinger; Sudheer Vemuru; John Schorling; Margaret L. Plews-Ogan. University of Virginia, Charlottesville, VA. (Control ID #2705822)

BACKGROUND: A dynamic trait that may be protective against burnout in medicine is tolerance for ambiguity. Intolerance of ambiguity is the perception of ambiguous situations as a threat and conversely, tolerance for ambiguity is the tendency to approach ambiguous situations with openness and interest, working through them, rather than avoiding uncertainty. Tolerance for ambiguity has been shown to influence practice patterns, resource utilization, and leadership capacity. Preliminary evidence has linked intolerance of ambiguity to burnout. Tolerance for ambiguity may be a component of wisdom, helping physicians to navigate the complexities of testing and treatment options and accepting the limitations of medical knowledge. We conducted a cross-sectional study of medical students to assess levels of burnout, tolerance of ambiguity, and wisdom.

METHODS: All medical students at the UVA School of Medicine were sent an online anonymous survey in 2015–2016 that included the Maslach Burnout Inventory (MBI), the 7-item Tolerance for Ambiguity (TFA) scale, and Ardelt's 3-Dimentional Wisdom Scale (3D-WS). We considered high burnout to be a score of 27 or greater for emotional exhaustion (EE) or a score of 10 or greater for depersonalization (DP). Chi-square testing was used to compare MBI scores between cohorts. ANOVA testing was used to compare mean scores between year in school for 3D-WS and TFA. Pearson correlation was used to measure the relationship between MBI or 3D-WS and TFA scores.

RESULTS: 625 students were eligible and 332 responded to both MBI and TFA scales (53%). Participants had a mean age of 25 and 53% were female. Mean scores for EE were 21.15 (SD 10.34). Mean scores for DP were 6.48 (SD 5.65). Combining all years, 43.0% of students meet criteria for combined burnout. High combined burnout was significantly higher in second and third year students ($\chi^2 = 11.6$, $p = .009$), driven by EE in the second year and DP in the third year. Mean score for TFA was 22.20 (SD 6.22). Mean 3D-WS was 3.76 (SD 0.38). There was no significant difference in 3D-WS ($F = 0.970$ and $p = 0.407$) or TFA score between years in school (F 1.85 and $p = 0.138$). Those with high burnout had significantly lower tolerance for ambiguity scores (F 9.85, $p = 0.002$) at a mean of 20.98 (SD 6.25). TFA and EE burnout had a weak but significant negative correlation ($r = -0.243$, $p < 0.000$). TFA and DP burnout had a weak but significant negative correlation ($r = -0.156$, $p = 0.004$). Those with high overall wisdom had significantly higher TFA scores (F 39.80, $p < 0.000$) at a mean TFA of 25.53 (SD 5.78). TFA and 3D-WS show a moderate positive correlation ($r = 0.467$, $p < 0.000$).

CONCLUSIONS: Burnout is lower in medical students with higher tolerance for ambiguity. Students who score higher on the domains of wisdom also have higher tolerance for ambiguity. Our results suggest that promoting wisdom and tolerance for ambiguity may mitigate burnout in medical students.

TOPCARE - A MULTICOMPONENT INTERVENTION TO IMPROVE ADHERENCE TO CHRONIC OPIOID THERAPY GUIDELINES AND REDUCE OPIOID MISUSE IN PRIMARY CARE: A CLUSTER RANDOMIZED CONTROLLED TRIAL

Jane M. Liebschutz[2, 1]; Ziming Xuan[4]; Christopher W. Shanahan[2]; Marc Larochelle[3]; Julia Keosaian[1]; Daniel P. Alford[3]; Roger Weiss[5, 6]; Jeffrey H. Samet[2]; Karen E. Lasser[1]. [1]Boston Medical Center, Boston, MA; [2]Boston University School of Medicine, Boston, MA; [3]Boston University School of Medicine and Boston Medical Center, Boston, MA; [4]Boston University School of Public Health, Boston, MA; [5]McLean Hospital, Belmont, MA; [6]Harvard Medical School, Boston, MA. (Control ID #2701511)

BACKGROUND: Prescription opioid misuse has become a national epidemic. Few evidence-based clinical innovations improve monitoring of chronic opioid therapy for non-cancer pain. We tested a multicomponent intervention based on the Chronic Care Model to increase use of controlled substance agreements (CSA) and urine drug testing (UDT) while reducing opioid misuse and dosage.

METHODS: We conducted a cluster-randomized, controlled trial of 53 primary care providers (PCPs) caring for 985 patients who received >3 opioid analgesic prescriptions 21 days apart in a 6-month period at 4 safety-net primary care practices in Massachusetts from January 2014- March 2016. We randomized 25 PCPs to receive nurse-care management, an electronic registry, academic detailing and electronic tools (www.mytopcare.org) to support chronic opioid therapy. 28 control PCPs received electronic tools only. We compared patient data in the 12 months of the intervention to the prior year. The main outcomes, derived from the electronic health record (EHR), included: CSA ever in EHR, > 1 UDT in the 12 month intervention period, combination of CSA and UDT, and >2 early refills of usual opioid medication (>3 days prior to expected fill date). Secondary outcomes included termination of opioids (none in final 60 days of trial year) and > 10% decrease in mean Morphine Equivalent Daily Dose (MEDD) in mg at end of trial year. In an intent-to-treat analysis we compared proportions of patients meeting outcomes in the post-intervention year using chi-squared tests. Generalized estimating equations models accounted for clustering among patients within PCP, controlling for baseline differences.

RESULTS: At baseline, the mean patient age was 54.7 years, with 52% white, 37% black and 9% Hispanic. Patients received an average of 57.8 mg MEDD in the month prior to trial start, with no overall group differences. At one year, intervention patients had more CSA (83.5% vs. 60.9%, $p < 0.0001$, AOR 11.9, 95% CI 4.4-32.3), more UDT (79.0% vs. 54.6%, $p < 0.0001$ AOR 2.4, 95% CI 1.1, 5.2) and combination of CSA and UDT (69.8% vs. 35.3%, $p < 0.0001$, AOR 3.3, CI 1.7, 6.6). Early refills did not differ between groups (20.7% vs. 20.1%, $p = 0.75$, AOR 1.0, 95% CI 0.7, 1.7). Intervention patients were more likely to have MEDD reduced by > = 10% (32.8% vs. 22.9%, $p = 0.002$, AOR 1.6, 95% CI 1.1, 2.4). Discontinuation of opioids was more common in intervention patients but this difference was significant in only adjusted analyses (21.3% vs. 16.8%, $p = 0.08$, AOR 1.4, 95% CI 1.0, 2.1). The two largest sites implemented TOPCARE at trial conclusion.

CONCLUSIONS: TOPCARE is a promising model of team-based care to improve safety of opioid prescribing in primary care. Future studies should examine patient experience and potential unintended consequences such as illicit drug use upon termination of opioids.

TRACKING PATIENT REPORTED OUTCOME MEASURES IN A STUDENT-FACULTY COLLABORATIVE CLINIC

Shirley S. Mo[2]; Yuebi E. Hu[1]; Trevor R. Nash[1]; Shiri B. Feingold[3]. [1]Harvard College, Cambridge, MA; [2]Harvard Medical School, Boston, MA; [3]Massachusetts General Hospital, Boston, MA. (Control ID #2706881)

BACKGROUND: Patient-reported outcome measures (PROMs) are common metrics that offer a standardized assessment of health from the patient's perspective using a validated set of clinical scales. By assessing PROMs longitudinally, providers can determine whether interventions actually improve

a patient's health status. PROMs questionnaires have yet to be administered in the setting of student-faculty collaborative practices (SFCPs) or student-run clinics. In January 2015, the Crimson Care Collaborative at Internal Medicine Associates (CCC-IMA), a SFCP affiliated with Harvard Medical School and Massachusetts General Hospital, launched a platform to collect and track PROMs. The objective of this study is to report the PROMS data collected from patients at CCC-IMA. Understanding our patient population and their perceived needs will allow clinicians and volunteers to better target resources and interventions to improve the quality of care provided.

METHODS: PROMs questionnaires were administered via Apple iPads to English and Spanish speaking patients at CCC-IMA's Tuesday evening clinic from January 2015 to December 2016. Clinically validated screening instruments (PROMIS-10, PHQ-9, GAD-7, and AUDIT-0) were used to develop 32 questions that assess general physical health, mental health, alcohol abuse risk, depression, anxiety, intimate partner violence, and falling risk. The dynamic questionnaire adjusts the length and type of questions asked based on a patient's previous responses. Descriptive statistics were used to characterize the cohort answering the questionnaire and summarize the self-reported indicators described above. For each measure, patients were classified based on their numerical score for the corresponding instrument.

RESULTS: 115 patients completed a total of 177 questionnaires, completing one at each visit. This population consists of 59% male, with an average age of 40 (median 35), 31% non-native English speakers, 57% non-Caucasian, 20% reported annual household incomes of less than $15,000, and an additional 22% reporting income between $15,000 and $30,000 per year. Greater than 50% of patients reported average general physical and mental health scores. Nearly 80% reported minimal to no depression, 71% reported minimal to no anxiety, 90% were at low risk for alcohol abuse, 94% screened negative for domestic violence, and 64% reported no risk of falls. 26 and 25% of patients reported below average general physical and mental health scores, respectively. Of the cohort, 40 patients (35%), completed >1 questionnaire, and reported an average of 3 and 9% improvement in physical and mental health scores.

CONCLUSIONS: Although our patients appear to self-report their health and personal safety status similar to patients in other urban primary care clinics, continued use of PROMS will prompt thoughtful analysis, guide our use of clinical and social service resources, and allow us to longitudinally assess the efficacy of future interventions.

TRAINING ENVIRONMENTS ASSOCIATED WITH PRESENCE AND ABSENCE OF MEDICAL STUDENT RACIAL AND GENDER CLINICAL DECISION-MAKING BIASES Robert Williams[2]; Andrew Sussman[2]; Christina Getrich[1]; Miria Kano[2]; Cirila Estela Vasquez-Guzman[2]; Blake Boursaw[2]; Crystal Krabbenhoft[2]. [1]University of Maryland, College Park, MD; [2]University of New Mexico, Albuquerque, NM. (Control ID #2670624)

BACKGROUND: Research has demonstrated the presence of racial and gender biases in practicing clinicians and the role these biases may play in health disparities. We found evidence of such biases in medical students in a previous survey of 4806 seniors from 84 medical schools, using clinical vignettes in which we varied the patient race and gender. We also noted variations in the presence or absence of these biases across schools. Our current research objective was to identify modifiable aspects of the medical school training environments that would reduce the likelihood of biases.

METHODS: We conducted case studies of two clusters of medical schools, showing presence (7 schools) or absence (8 schools) of evidence of student biases in our earlier survey. During site visits to the 15 schools, we gathered quantitative and qualitative data on 24 attributes of training environments theorized to influence student attitudes, practice, or bias formation. Qualitative data were collected from key informant interviews of faculty, staff and students, and from focus groups of clinical level students. We analyzed the data using an iterative grounded hermenuetic editing approach, with five analysts identifying thematic structures. Concurrently, we used fuzzy set qualitative comparative analysis (FSCQA) to examine the data for multiple associations with the absence of evidence of biases. We focused our analysis on identifying feasible steps that schools could take to reduce biases.

RESULTS: Across the 15 schools, we interviewed 104 faculty and staff and 21 students and conducted 29 focus groups with 196 students. In the qualitative analysis, we found no attributes invariably distinguished training environments in the two clusters of schools. However, several factors were found more commonly in schools without evidence of student biases (e.g., longitudinal reflective small student groups, non-accusatory approach to training in cultural competency, etc.). The FSQCA showed that the presence of a longitudinal reflective component in the curriculum was sufficient, but not necessary to be associated with the schools without evidence of bias. Alternatively, FSQCA showed the presence (necessarily together) of attributes grouped into "formal training" (e.g., approach to diversity training) and "school priorities" (e.g., admissions preferences) or "learning environment" (e.g., faculty diversity) was sufficient to be associated with lack of evidence of biases.

CONCLUSIONS: Using two different analytic approaches, we found several potentially modifiable aspects of medical school training environments that are associated with schools whose students do not show evidence of racial and gender clinical decision-making biases. While the presence of a longitudinal reflective component in the curriculum was most strongly associated with lack of biases, several other approaches to formal and informal curriculum, communications and admissions processes were also associated with schools whose students did not exhibit biases.

TRAINING VULNERABLE PRIMARY CARE PATIENTS TO USE AN ONLINE PATIENT PORTAL Courtney Lyles; Lina Tieu; Stephen Kiyoi; Shobha Sadasivaiah; Neda Ratanawongsa; Urmimala Sarkar; Dean Schillinger. University of California, San Francisco, San Francisco, CA. (Control ID #2705238)

BACKGROUND: Patient portals, websites that provide patients and caregivers access to personal health information, are becoming ubiquitous in the US, especially with the support of Meaningful Use financial incentives. Previous research has documented substantial usability barriers, especially among patients with limited health literacy. We conducted a randomized pilot trial to determine the effectiveness of an online video-based training program to increase patient use of a portal website in a safety net healthcare setting.

METHODS: Based on our previous work documenting usability barriers to portal use, we created a website with simple instructions and 11 how-to videos for accessing features of the patient portal available in the public healthcare system in San Francisco (videos available at goo.gl/2K3X3e). We randomized 93 patients to receive: a) an in-person tutorial with a trained research assistant versus b) a link to watch the videos on their own. English-speaking patients with

at least 1 chronic condition and previous email use were eligible for the study, as the portal website was only available in English and previous research documented higher portal use among those with a chronic disease. The primary outcome was portal use (number of log-ins) at least 3 months post-training. We measured whether participants logged into the tutorial on their own. Finally, we collected baseline and follow-up survey measures to identify significant changes in participants' perceptions of the importance of the portal website, experiences with their chronic illness healthcare, and digital health literacy ratings, and to examine significant differences in the effectiveness of the training by current Internet use rates, health literacy, and other demographic characteristics.

RESULTS: The trial enrollment with complete baseline data capture was completed in September 2016. From a list of 833 provider-referred patients, we contacted 377 via phone, of which 52 declined and 186 were ineligible primarily due to lack of email use (108, 58%). Of the remaining 139 individuals, 93 participants were enrolled in the study. The mean age of the sample was 54 years, and 51% had limited health literacy; 60% were non-white, 51% were female, 25% reported speaking English less than very well. While the majority of participants used the Internet daily (77%) and reported that it was very important to access their medical information electronically (75%), over a quarter (30%) reported that they lacked the skills to use a portal website to manage their healthcare. The follow-up randomized data collection will be finished in February 2017.

CONCLUSIONS: Patients in the safety net are interested in using a portal to manage their healthcare, but many lack confidence in their ability to use it independently. Among a diverse group of patients with varying technical proficiencies, we will be able to report concrete data on how much training and support for portal use increases patient engagement with these websites.

TREATING THE PATIENT, NOT THE PROBLEM: DIVERSITY IN PERCEPTIONS OF PATIENT CENTERED CARE AMONG EARLY M1 MEDICAL STUDENTS Bruce L. Henschen[1]; Elizabeth R. Ryan[2]; Daniel Evans[1]; Ashley Truong[1]; Diane Wayne[2]; Jennifer Bierman[1]; Kenzie A. Cameron[1]. [1]Northwestern University, Chicago, IL; [2]Northwestern University Feinberg School of Medicine, Chicago, IL. (Control ID #2706508)

BACKGROUND: Teaching patient-centered care (PCC) is a key component of medical education curricula. It is unknown, however, how medical students perceive primary care, patient-centeredness, and patient-centered care. In this qualitative study, we investigate the baseline perceptions of incoming M1 medical students about primary care and patient-centered care to better inform primary care curricular development and evaluation.

METHODS: Randomly selected first year medical students in the entering Class of 2019 were invited to participate in semi-structured interviews within four months of entering medical school. We recruited a total of 38 students (20 male, 18 female). We asked participants to reflect on their perceptions of primary care by defining the concepts of "primary care" and "patient-centered care" and by indicating why "patient-centered care" may or may not be an important way for them to frame their interactions with patients. Interviews were digitally recorded, transcribed verbatim and analyzed using the constant comparative method to code, characterize emergent themes, and identify illustrative quotes.

RESULTS: Interviews lasted a mean of 24.2 min and produced over 300 pages of transcription. Students defined a primary care physician as being the "first point of contact" who cares for a patient's overall health longitudinally but only rarely discussed active management of chronic disease. PCC was defined by students as an implicit or intuitive concept; by juxtaposing it with paternalism and other motives; as involving patients and patient values in decision making; and as being jargon. Students noted that PCC is a goal or an objective to work toward as physicians and as a health system and that it can be seen as a reminder that avoids paternalism.

CONCLUSIONS: There is a diversity of perceptions about primary care and PCC among entering M1 medical students. M1 medical students tended to see a primary care physician as a 'passive gatekeeper' as opposed to one who actively manages patients' chronic illnesses, preventive care and health needs. Patient-centered care was seen as being intuitive and integral to the task of being a physician and at odds with the way students perceive that medicine was 'traditionally' practiced. Recognizing and understanding these perceptions is critical in designing or evaluating medical curricula that address primary care or patient-centered care. Authentic, longitudinal clinical experiences may have the potential to promote concepts of patient centeredness to a diverse group of medical trainees.

TRENDS AND RACIAL VARIATION IN MULTIMORBIDITY IN THE UNITED STATES Paul E. Ronksley; James Wick; Amy Metcalfe. University of Calgary, Calgary, AB, Canada. (Control ID #2695470)

BACKGROUND: The increasing prevalence of multimorbidity is a key challenge for health systems worldwide. However, little is known about the relative contribution of specific comorbidities to multimorbidity, how this has changed over time, and whether this varies by race. The objective of our study was to understand trends and racial variation in multimorbidity over a 20-year period within the United States and to describe the individual chronic conditions that differentially contribute to multimorbidity across racial groups.

METHODS: Annual data on hospitalized adults (≥18 years) between 1993–2012 were obtained from the Nationwide Inpatient Sample, representing a 20% sample of hospital discharges from across the United States. We explored trends in the proportion of inpatients with multimorbidity (as defined by ≥3 chronic conditions based on the Elixhauser comorbidity index) and stratified all estimates by five racial groups (White, Black, Hispanic, Asian/Pacific Islander, Native American). We then used population attributable fractions (PAF), adjusted for age, sex, and primary payer, to quantify the relative contribution of individual comorbidities to the outcome of multimorbidity over time and across races.

RESULTS: We analyzed data on 123,613,970 hospitalizations between 1993–2012. Over this 20-year period, the overall prevalence of multimorbidity increased from 25.7 to 47.3%. This ranged from a 23.0% relative increase in Hispanic populations to a 32.0% increase in Native American populations. Of the 30 Elixhauser comorbidities, uncomplicated hypertension was the most prevalent and increased by 22% between 1993 and 2012 in White and Native American populations. The relative change in the proportion with COPD and renal failure increased the most among Black populations (13.4 and 13.1% respectively) while depression and hypothyroidism increased the most in White populations (11.6 and 10.0% increase respectively). Adjusted PAF showed that the relative contribution of uncomplicated hypertension to multimorbidity increased for all races but had the largest contribution in Hispanic populations (27.3% in 2012). There were also large increases in the PAF for renal failure and obesity across all racial groups, though the largest relative changes were observed in Hispanic and Asian/Pacific Islander populations. In contrast, the PAF for congestive heart failure has decreased, particularly in White and Native American populations, while the PAF for cardiac arrhythmias has decreased the most in White and Hispanic populations.

CONCLUSIONS: While multimorbidity continues to increase in the United States, the relative contribution of individual chronic conditions has changed over time and varies substantially by race. In an era of precision medicine, these findings suggest the need for targeted strategies to address the medical conditions that differentially affect racial groups in an attempt to curb the burden of multimorbidity.

TRENDS IN COST-RELATED ACCESS BARRIERS AMONG NON-ELDERLY US ADULTS IN HIGH-DEDUCTIBLE VS. TRADITIONAL HEALTH PLANS, 2011–2015 Tyler N. Winkelman[2, 3]; Joel E. Segel[4]; Jeff Kullgren[1]. [1]Ann Arbor VA Healthcare System and University of Michigan, Ann Arbor, MI; [2]University of Michigan, St. Paul, MN; [3]VA Ann Arbor Healthcare System, Ann Arbor, MI; [4]The Pennsylvania State University, University Park, PA. (Control ID #2707516)

BACKGROUND: One in three privately-insured Americans are now enrolled in a high-deductible health plan (HDHP). HDHP enrollees may experience higher out-of-pocket (OOP) costs for needed care than in traditional health insurance plans. Recent policy developments, such as the Affordable Care Act's provisions on maximum OOP spending limits and coverage for preventive services without co-pays, may have benefited individuals in HDHPs more than individuals in traditional health insurance plans. However, little is known regarding trends in cost-related access barriers among Americans in each of these types of private health insurance plans.
METHODS: We used data from the 2011 to 2015 National Health Interview Survey (NHIS), an annual nationally representative survey of non-institutionalized adults in the United States. We limited our sample to adults aged 18–64 who were enrolled in a single private health insurance plan, which we classified as an HDHP (using annual IRS definitions) or a traditional plan (i.e., a private plan that was not an HDHP). Our key outcome was any reported cost-related access barrier in the last 12 months, which we defined as self-report of foregone or delayed needed care due to cost, problems paying medical bills, reduction/elimination of medication due to cost, or being very worried about paying medical bills if an illness occurred. We used a multivariable linear probability model to compare linear time trends in cost-related access barriers in HDHPs and traditional plans, adjusting for income, marital status, employment, race, gender, age, education, and number of chronic conditions (0, 1, 2 or more). We accounted for the complex survey design using Stata 14.2 and considered $P < .05$ to be statistically significant.
RESULTS: Our sample consisted of 29,164 HDHP enrollees and 72,591 traditional plan enrollees. Between 2011 and 2015, cost-related barriers declined 1.8 percentage points per year among HDHP enrollees ($P < 0.001$) and 1.0 percentage points per year among traditional plan enrollees ($P < 0.001$). Among HDHP enrollees, cost-related access barriers declined to a significantly greater degree (−0.8 percentage points; $P = 0.02$), but remained more prevalent than among traditional plan enrollees in 2015 (26.2% vs. 19.3%; $P < 0.001$).
CONCLUSIONS: Between 2011 and 2015, cost-related access barriers declined significantly for non-elderly US adults in HDHPs and in traditional plans, but to a greater extent for those in HDHPs. Despite these larger declines in cost-related barriers among HDHP enrollees, they remain at significantly higher risk for cost-related access barriers. As HDHP enrollment continues to grow, policymakers should consider taking additional steps to ensure individuals in these plans are able to afford needed care.

TRENDS IN HOSPITALIZATIONS FOR FIREARM INJURIES INFLICTED BY CIVILIANS AND POLICE ON ADOLESCENTS AND YOUNG ADULTS: U.S. PATTERNS BY RACE/ETHNICITY, 2005–2014 Frances V. Ue; Alison Alpert; Kay Negishi; Sarah Stoneking; Gina Kim; Krupa Parikh; James S. Lang; Michael McShane; Gaurab Basu; Danny McCormick. Cambridge Health Alliance, Boston, MA. (Control ID #2706669)

BACKGROUND: Young people of color are at highest risk of dying from gun violence. However, non-fatal firearm injuries are far more common and most often require hospitalization. Given the national debate about firearm violence, particularly against young people of color, we examined trends in hospitalizations for firearm injuries caused by police and civilians according to race/ethnicity of those assaulted.
METHODS: We analyzed hospital discharge data from the National Inpatient Sample (NIS) of the Healthcare Cost Utilization Project (HCUP) from 2005–2014. We used ICD-9 External Cause of Injury Codes (E-Codes) to identify all hospitalizations due to firearm injuries inflicted on people ages 15–44 years by: 1. Police (E-code, E970), "in the course of arresting lawbreakers, suppressing disturbances, maintaining order or other legal action"; and 2. Civilians (E-codes, E9650-9654), individuals who are not police. Using NIS survey weights, we tabulated the number of hospitalizations in the US yearly and stratified by race/ethnicity. We then used US Census Bureau data on the population in the ages and years studied to calculate rates of admissions/million US population per year. We compared yearly admission rates by race/ethnicity using chi-square tests and used linear regression to model hospitalization rates as a function of time.
RESULTS: Most patients with civilian-inflicted firearm injuries (CIFIs) were uninsured (35.8%), in the lowest quartile of median zip-code income (54.8%), and male (91.5%), similar to those with police-inflicted firearm injuries (PIFIs). Black people represented 51.4% of CIFIs and 27.8% of PIFIs. A total of 157,142 people were admitted for CIFIs and 4,418 for PIFIs. We found no significant difference in admissions for CIFIs between 2005 (128.5/million population [95%CI: 86.9, 170.1]) and 2014 (103.1 [95% CI: 87.6, 118.8]; p for trend = 0.15); observed increases for white and black people and a decrease for Hispanic people did not reach statistical significance. In contrast, the rate of admissions for PIFIs increased by 59.5% between 2005 (2.2/million population [95%CI: 1.5, 3.0]) and 2014 (3.5 [95% CI: 2.7, 4.3]; p for trend = 0.045). Increases were also observed in each racial/ethnic group but only reached statistical significance for white people (p for trend = 0.006). Rates of admissions for CIFIs and PIFIs were higher among black than white people. In 2014, admissions among black people were 2.8 times higher than whites for PIFIs and 20 times higher for CIFIs.
CONCLUSIONS: Hospitalizations for firearm injuries caused by civilians did not change, but those caused by police increased from 2005 to 2014. While trends for racial/ethnic minorities were not statistically significant, rates of admissions from both causes were dramatically higher among black as compared to white people. Changing policing practices and addressing other adverse social circumstances of young people, particularly those of color, may reduce hospitalizations for gun violence.

TRENDS IN INSURANCE COVERAGE AND CONTRACEPTIVE USE AMONG REPRODUCTIVE-AGE WOMEN IN THE ERA OF THE AFFORDABLE CARE ACT Mara E. Murray Horwitz; Dennis Ross-Degnan. Harvard Medical School and Harvard Pilgrim Health Care Institute, Boston, MA. (Control ID #2706958)

BACKGROUND: There are significant disparities in reproductive health care in the U.S. by race, ethnicity, socioeconomic status, and age. The Affordable Care Act (ACA), effective late 2012, reduced racial, ethnic, and economic disparities in insurance coverage and health care utilization, but its impact on reproductive health disparities is unknown. Recent studies showing that (1) adolescent and minority women are more likely to choose effective contraception when cost is not a barrier, and (2) the ACA has reduced cost-sharing and out-of-pocket expenses for long-acting reversible contraceptives (LARCs) and oral contraceptive pills, suggest that the ACA may help to reduce disparities in reproductive health care. This study aims to assess trends in insurance coverage and contraceptive use among reproductive-age women in the U.S., pre- and post-ACA, with a focus on racial, ethnic, and income disparities over time.

METHODS: This study is based on the National Survey of Family Growth (NSFG), a nationally representative survey of reproductive-age men and women in the U.S., using results from survey years 2002, 2006–2008, 2008–2010, 2011–2013 (pre-ACA) and 2013–2015 (post-ACA). Types of insurance coverage and contraceptive use were compared between racial, ethnic, and income groups over time.

RESULTS: The sample comprised 31,222 women from 2002 to 2015, of whom 23,384 were eligible for contraception and included in the analysis. The major demographic shifts over time were a rising proportion of Hispanic women, increasing rates of poverty, and increasing rates of urban residence. Public insurance coverage increased across the years in all racial/ethnic groups and the lowest income group. The share of the population with only single-service (e.g. dental or vision) or no insurance dropped post-ACA, mostly in higher income groups. The percent covered by private insurance was steady across the years. Rates of any contraceptive use were high (88%) and stable, but types of contraception varied over time. Short-acting hormonal contraceptive use decreased steadily from 2002 to 2015 in all racial/ethnic, income, and insurance groups, and sterilization declined from 2011 among non-Hispanic White and high-income women. LARC use increased steadily from 2008 in all racial/ethnic, income, and insurance groups, most prominently for non-Hispanic Black women among whom rates increased from 1% in 2002 to 10% in 2015.

CONCLUSIONS: Use of LARCs is rising in the U.S., especially among Black women, a trend that predates the insurance coverage gains associated with the ACA. Meanwhile sterilization and short-acting hormonal contraceptives are declining in popularity. Further study using interrupted time-series analysis will be conducted to determine the early impact of the ACA on women's contraceptive choices in population groups who have experienced disparities.

TRENDS IN OUTPATIENT PREVENTIVE HEALTH EXAMINATIONS AMONG ASYMPTOMATIC ADULTS Aarti Rao; Minal Kale. Icahn School of Medicine at Mount Sinai, New York, NY. (Control ID #2706184)

BACKGROUND: The preventative health exam (PHE) and its role in primary care have been debated for several decades. At present, while a majority of physicians are proponents of the exam, others believe that it is an inefficient use of health care resources. A 2012 Cochrane review concluded that the PHE does not reduce morbidity and mortality. However, this review mainly drew from studies published prior to 1973, making it difficult to generalize these findings in an evolving healthcare landscape. The objective of this study is to describe trends in visit content in adult PHE visits.

METHODS: We performed a cross-sectional analysis using data from the 2001–2003, and 2011–2013 National Ambulatory Medical Survey (NAMCS). NAMCS is a nationally representative survey conducted annually by the CDC. We focused on ambulatory visits to physicians by adults aged ≥ 18 years. We identified a visit as a PHE if the major visit reason was a general medical examination, or if the visit diagnosis code was a general medical examination. We identified a provider as a PCP if the physician self-identified as the patient's primary care provider. We used the χ^2 test to compare the differences in the weighted proportions of PHE visits over the 10-year interval.

RESULTS: 135,709,770 adults received a PHE from a PCP in 2001–2003 (45.5%; 95% CI, 41.5–49.7%), and 175,094,483 million adults received a PHE from a PCP in 2011–2013 (44.6%; 95% CI, 43.5–49.7%). In the 10-year interval under consideration, PCPs provided significantly less diet and nutrition counseling (26.6 to 17.4%; $P < 0.001$), stress management counseling (4.4 to 1.8%; $P < 0.01$), exercise counseling (20.4 to 14.5%; $P < 0.01$), and tobacco cessation counseling (6.05 to 3.8%; $P < 0.05$), ECG (10.6 to 6.1%; $P < 0.05$), urinalysis (29.9 to 15.5%; $P < 0.001$), PAP smear (16.6 to 8.6%; $P < 0.001$), PSA screening (9.5 to 5.3%; $P < 0.001$), and mammogram (8.9 to 5.9%; $P < 0.01$). In 2011–2013, PCPs provided more preventive services than non-PCPs. PCPs provided significantly more diet and nutrition counseling (17.4 to 10.1%; $P < 0.001$), tobacco cessation counseling (3.8 to 1.9%; $P < 0.01$), weight reduction counseling (5.9 to 2.9%; $P < 0.001$), ECG (6.1 to 1.6%; $P < 0.001$), CBC (24.9 to 6.6%; $P < 0.001$), PSA screening (5.3 to 1.3%; $P < 0.001$), lipid profile (27.8 to 3.7%; $P < 0.001$), HbA1c screening (11.5 to 2.2%; $P < 0.001$), chlamydia screening (1.5 to 0.4%; $P < 0.02$), and depression screening (3.6 to 1.9%; $P < 0.05$). We did not find differences for the following measures: asthma education, stress management, echocardiogram, bone density imaging, urinalysis, mental health counseling, and psychotherapy ($p > 0.05$).

CONCLUSIONS: Overall PCPs provide more preventative and counseling services in comparison to non-PCP providers during the PHE visit. However, the decrease in counseling services provided by PCPs is concerning, and while it may have been driven by an emphasis on quality metrics and a lack of time to devote to patient education, it requires further investigation.

TRENDS IN OUTPATIENT UTILIZATION OF ANTIBIOTICS IN THE UNITED STATES (2005–2015) Mallika Mundkur[4]; Joan Landon[5]; Aaron Kesselheim[2]; Michael Fischer[1]; Jessica M. Franklin[3]; Krista Huybrechts[3]; Elisabetta Patorno[3]. [1]Brigham & Women's Hospital, Boston, MA; [2]Brigham and Women, Boston, MA; [3]Brigham and Women's Hospital, Boston, MA; [4]Brigham and Women's Hospital, Lexington, MA; [5]Brigham and Womens, Boston, MA. (Control ID #2705735)

BACKGROUND: Antibiotic overuse appears to be a persistent public health problem, although the most recent assessments do not include data from the past five years. The main objectives were to describe general trends in utilization of outpatient use of oral antibiotics over the period 2005–2015 and to identify specific time points associated with changes in use.

METHODS: We included individuals from the Optum Research Database (2005–2015), who were at least 18 years old at the start of the calendar year, were enrolled continuously throughout each year of interest, and had at least 6 months of continuous enrollment at baseline. For each yearly and quarterly interval, we assessed the number of filled oral antibiotic prescriptions per 1000 enrollees. We evaluated trends in antibiotic use over the entire time period, stratifying our analysis by age (65 and above vs. under 65). We evaluated antibiotic use overall, and use of major antibiotic classes (i.e. macrolides, penicillins, quinolones). We implemented a computer algorithm within *R* to

automatically identify potential change points for each antibiotic class; we compared the AIC of the resulting piecewise model to simple linear representation of trend to select only clinically meaningful changes. Finally, for the year 2015, we also assessed a number of ICD9-based covariates such as indications, patient characteristics and recent healthcare encounters (e.g. outpatient vs. emergency room).

RESULTS: We assessed over 75 million person-years of data for antibiotic use. Over the period 2005 through 2015, overall use of oral antibiotics declined significantly among adults under 65, from 879 to 806 prescriptions/1000 enrollees/year ($p < .0001$), while for adults 65 and older, rates of use increased non-significantly from 929 to 943 prescriptions/1000 enrollees/year ($p = 0.4312$). During the year 2015, penicillins were the most frequently prescribed antibiotic in adults of both age groups and respiratory conditions remained most common indication associated with antibiotic use (35.8% of fills). While most fills were preceded by an office or emergency room visit (70.1%), nearly one-third of prescriptions could not be associated with any visit. Use of penicillins and quinolones respectively increased and decreased in 2008 ($p < .01$), while use of macrolides decreased following the second quarter of 2013 ($p < .0003$).

CONCLUSIONS: Our study provides the most current view of antibiotic utilization trends among adults, revealing distinct trends among older and younger adults. We have identified two time points at which use of major antibiotics classes have changed significantly for all adults, and are temporally associated with black-box warnings for quinolones (2008) and a safety communication for azithromycin (2013). These findings suggest that clinicians and patients are sensitive to risks of antibiotics when deciding between treatment options.

TRENDS IN PRESSURE ULCERS FOLLOWING MEDICARE'S VALUE-BASED PURCHASING PROGRAMS INVOLVING HOSPITAL-ACQUIRED CONDITIONS: EVIDENCE FROM FLORIDA, WASHINGTON AND NEW YORK, 2009–2014 Shawna N. Smith; Heidi Reichert; Ashley M. Snyder; Laurence F. McMahon; Jennifer Meddings. University of Michigan, Ann Arbor, MI. (Control ID #2705268)

BACKGROUND: Two value-based purchasing policies aiming to reduce hospital-acquired complications (HAC) target pressure ulcers (PUs). The 2008 Hospital-Acquired Conditions Initiative (HACI) denies payment for advanced-stage, hospital acquired PUs and removes lower-stage pressure ulcers as payable comorbidities, when listed as diagnoses in administrative discharge data. CMS' HAC Reduction Program (HACRP) penalizes hospitals for several HACs, including hospital-acquired advanced-stage PUs from administrative data as measured by AHRQ's Patient Safety Indicator (PSI-3). Unlike the HACI PU measures, the PSI-3 applies several exclusions, including higher risks conditions like paralysis. Recent federal reports on PUs using chart review indicate a 23% reduction since 2010; it is unclear if the administrative data used for implementing CMS' value-based purchasing programs support this improvement. This study examines trends in hospital-acquired (HA) and present-on-admission (POA) PU rates, 2009–2014, from administrative data in Florida, New York and Washington. The principle question is, do the current measures using administrative data provide a valid "value signal" as part of CMS transition to value-based payment?

METHODS: We used administrative data from the Healthcare Cost and Utilization Project (HCUP) State Inpatient Databases for Florida, New York and Washington to generate annual PU rates 2009–2014 as a percentage of discharges, by stage and status on admission (used for HACI, without comorbidity exclusions) to compare with the more restrictive PSI-3 rates used for HACRP. Annual data included >4 million adult discharges from >562 acute-care hospitals.

RESULTS: Among all discharges, 94% of PUs were POA rather than HA. Early-stage HA PUs saw the largest relative decline (53%) from 2009–2014, followed by early-stage POA (24%). Advanced HA PUs saw a relative decline of 20%, or a decline in incidence from 0.035 to 0.028%. PSI-3 rates saw a similar relative decline of 25%; however given its more extensive exclusion criteria yielding only ¼ of total discharges eligible for measurement, this yielded only 232 fewer PSI-3 PUs in 2014 than 2009, from >4 million patients. Hospital-level correlation between HA PUs without exclusions and PSI-3 PU rates was also low ($r = 0.19$).

CONCLUSIONS: Both HACI and HACRP policies target PUs as preventable HACs, but use different definitions and measures of PUs. PSI-3's more extensive exclusions for defining preventable PUs result in a much smaller eligible patient population with seemingly substantial relative declines yielding only a few hundred fewer PUs amongst >4 million patients. CMS' policy focus on advanced stage PUs ignores the vast majority of PU incidence and risks interpreting a handful of PU cases as valid "value signal" rather than noise. Further, different definitions of eligible patient populations raise questions as to which PUs are considered preventable and for whom, undermining potential for value-based policy to inform evidence-based practice.

TRENDS IN RACIAL/ETHNIC/NATIVITY DISPARITIES IN CARDIOVASCULAR HEALTH AMONG ADULTS WITHOUT PREVALENT CARDIOVASCULAR DISEASE IN THE UNITED STATES, 1988–2010 Arleen F. Brown[1]; Li-Jung Liang[1]; Stefanie D. Vassar[1]; Jose J. Escarce[1]; Sharon S. Merkin[1]; Eric M. Cheng[1]; Adam K. Richards[1]; Teresa Seeman[1]; W.T. Longstreth[2]. [1]UCLA, Los Angeles, CA; [2]University of Washington, Seattle, WA. (Control ID #2707106)

BACKGROUND: Trends in cardiovascular health disparities are poorly understood, even as diversity in the United States increases. This study examined changes in racial/ethnic/nativity disparities in cardiovascular health by age group, adjusting for sex, education, and poverty.

METHODS: We analyzed data from the National Health and Nutrition Examination Survey (NHANES), cross-sectional, multistage, stratified, clustered probability samples of the non-institutionalized US population, for 1988–1994, 1999–2004, and 2005–2010, excluding persons who reported prior stroke, myocardial infarction, heart failure, or angina. Analyses included 17,552 White, 8,445 African-American, 3,587 US-born Mexican-American, and 4,832 Non-US-born Mexican-American adults ages 25 years and older. We examined racial/ethnic/nativity and period differences in Life's Simple Seven (LS7) health factors and behaviors (blood pressure, cholesterol, hemoglobin A1c [A1c], body mass index [BMI], physical activity, diet, and smoking) and a summed composite measure of "optimal" cardiovascular health, representing the top tertile of the total LS7 score.

RESULTS: We observed declines in control of A1c and BMI and in levels of physical activity and healthy eating, but improvements in cholesterol control and smoking. Disparities in LS7 components and composite scores varied by race/ethnicity/nativity group and period. Relative to whites, African Americans and Non-US-born Mexican Americans had lower optimal cardiovascular health in all age groups and periods. In 1988–1994, cardiovascular health among African Americans was lower by 21.1% (95% CI: 16.5%,25.8%) in 25–44 year

olds and by 13.2% (9.6%,16.5%) in those 65 years and older; by 2005–2010, the differences fell to 14% (10.4%,17.6%) and 7.8% (5.3%,10.7%), respectively. For Non-US-born Mexican Americans in 1988–1994, these differences were 10.7% (4.7%,17.2%) in the 25–44 year olds and 14.9% (10.7%,18.8%) in those 65 years and older; by 2005–2010, these differences fell to 6.4% (1.5%,11.2%) and 8.3% (4.6%,11.5%), respectively. Fewer significant differences existed between whites and US-born Mexican Americans. Many disparities decreased over time because whites had the largest, most consistent absolute reductions in optimal cardiovascular health: between 1988–1994 and 2005–2010, the declines ranged from 11.6% (6.0%,16.7%) for 25–44 year olds to 6.8% (3.2%,10.4%) in those 65 years and older.

CONCLUSIONS: Between 1988 and 2010, the cardiovascular health of the nation declined, and although inequities persisted, several racial/ethnic/nativity disparities decreased due to worsening cardiovascular health among whites rather than gains among African Americans and Mexican Americans.

TRENDS IN SHARED DECISION MAKING AMONG ADULTS IN THE UNITED STATES, 2002–2014

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BACKGROUND: Shared decision-making (SDM) occurs when clinician and patient are both involved in decision-making, share information, build consensus, and agree on treatment. SDM's benefits may include improved patient knowledge, reduced uncertainty, and reduced overuse of unnecessary services. Despite significant efforts to optimize SDM, little data exist on SDM nationally over time.

METHODS: The Medical Expenditure Panel Survey is an annual, nationally-representative survey of the US population (annual response range: 53–65%). We restricted our analyses to the adult population aged 18 and older (n = 21,915-26,509/year). To assess SDM, we used 7 questions. Six questions used a never/sometimes/usually/always scale: how often did your clinician (1) ask you to help decide; (2) show respect for alternative treatments; (3) listen carefully to you; (4) explain things so they were easy to understand; (5) show respect for you; and (6) spend enough time with you. The final yes/no question asked if your clinician presented all the options to you. A participant's "SDM composite" was the total number of "always" or "yes" responses. To assess change over time, we compared the mean SDM composite in 2002 and 2014 using the chi-squared test. To evaluate variables associated with SDM, we used multivariable linear regression adjusting for calendar year, age, gender, race/ethnicity, having a usual source of care (USC), having a same-race/ethnicity USC, perceived health, and 14 other variables. Interaction terms with year had minimal effects so were not included.

RESULTS: From 2002 to 2014, participants aged (mean age 45 to 47 years-old), were less White (71 to 64%), more Hispanic (12 to 15%), less privately insured (74 to 68%), and less often had a USC (77 to 75%; all $p < 0.05$). The mean SDM composite increased gradually from 4.4 in 2002 to 5.0 in 2014 ($p < 0.05$). The proportion responding "Always" or "Yes" between 2002 and 2014 increased from 52 to 63% for "help decide," from 65 to 72% for "respect alternatives," from 55 to 66% for "listened to you," from 58 to 67% for "explained to you," from 59 to 71% for "showed respect," from 46 to 57% for "spent enough time," and from 93 to 96% for "presented all options" (all $p < 0.05$). In multivariable analyses, characteristics associated with higher SDM scores included calendar year (0.04 composite points/year), Black vs White race/ethnicity (+0.33 composite points), having a USC (+0.42), and having a same-race/ethnicity USC (+0.23; all $p < 0.05$). Characteristics associated with lower SDM scores included Asian vs White race/ethnicity (−0.28 composite points), being uninsured (−0.17), and worse perceived health (−0.41; all $p < 0.05$).

CONCLUSIONS: Among adult Americans, SDM increased significantly from 2002 to 2014, despite sociodemographic disparities and poor performance for specific SDM questions. Beyond increasing insurance coverage and availability of a USC, efforts to improve SDM should target Americans without a same-race/ethnicity USC and with poor perceived health.

TRENDS OF MODIFIABLE HEALTH BEHAVIORS AND HEALTH OUTCOMES IN AN URBAN COUNTY FROM 2011–2016

Ashela Bean; Mirela Feurdean. Rutgers NJMS, Newark, NJ. (Control ID #2686577)

BACKGROUND: Essex County, NJ ranks number 20th of 21 counties in New Jersey in regards to health outcomes per County Health Rankings. Along with genetics, healthcare and social determinants of health, health behaviors directly influence health outcomes.

METHODS: We used County Health Rankings and Roadmaps registries for data collection. For health outcomes, we searched for premature death using years of potential life lost before age 75, prevalence of diabetes and HIV. For health behaviors, we searched for prevalence of tobacco smoking, obesity, sexually transmitted infections, teen births, and physical inactivity. We compared data from Essex County with the state of New Jersey.

RESULTS: The percentage of adults who smoked in Essex County remained stable (17% in 2016 and 2011), while in the state of New Jersey it decreased by 12% (17% in 2011 to 15% in 2016). The percentage of obese adults in Essex County increased by 3.9% (26% in 2011 to 27% in 2016), and by 4.2% in New Jersey (24% in 2011 to 25% in 2016). The number of newly diagnosed Chlamydia cases (per 100,000 persons) in Essex County increased by 2.9% (644 in 2011 to 662.8 in 2016), and by 23.9% in New Jersey (258 in 2011 to 319.6 in 2016). The number of births per 1,000 females ages 15–19 in Essex County decreased by 22% (41 in 2011 to 32 in 2016), and by 23% in New Jersey (26 in 2011 to 20 in 2016). The percentage of adults aged 20 and over reporting no leisure-time or physical activity in Essex County decreased by 3.6% (28% in 2011 to 27% in 2016), and by 4% in New Jersey (25% in 2011 to 24% in 2016). The HIV prevalence (per 100,000 persons) in Essex County increased by 12% (1428 in 2011 to 1600 in 2016), while it remained stable in New Jersey (513 in 2016 and 2012). No HIV prevalence data for 2011 in New Jersey State was found. The percentage of adults aged 20 and above with diabetes in Essex County increased by 20% (10% in 2011 to 12% in 2016), and by 11% in New Jersey (9% in 2011 to 10% in 2016). The years of potential life lost before age 75 (per 100,000) in Essex County decreased by 19% (8866 in 2011 to 7200 in 2016), and by 11% in New Jersey (6170 in 2011 to 5500 in 2016).

CONCLUSIONS: Since 2011, premature deaths, teen births and physical inactivity have declined in Essex County and New Jersey State. The decline in premature death could be attributed to many factors other than health behaviors. Upward trends were noted with regard to sexually transmitted infections and obesity, prevalence of HIV and diabetes. There was no change in the prevalence of smokers in Essex County, while there was a decline in the state of New Jersey. There are many opportunities for intervention, especially with regards to smoking, obesity and sexually transmitted infections.

TRIPLE SMOKING CESSATION THERAPY WITH VARENICLINE, NICOTINE PATCH AND NICOTINE LOZENGE: A PILOT STUDY TO ASSESS TOLERABILITY

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BACKGROUND: For both primary care providers and their patients who smoke, the difficulty of quitting and the lack of new evidence-based treatment options result in frustration and impede cessation success. Innovative combinations of existing cessation medications are one potential mechanism to rapidly advance cessation success. Researchers have examined nicotine patch + varenicline, but studies have yielded conflicting results. In this pilot study, we examined the tolerability of “triple therapy” (nicotine patch + nicotine lozenge + varenicline).

METHODS: This observational pilot study examined triple therapy in 36 smokers trying to quit. Participants were recruited via Facebook (goal = 40), and had to be > 17 years old, smoking at least 5 cigarettes daily, not using bupropion or varenicline, and free of medical or psychological contraindications. The primary outcome was tolerability, measured via adverse events (insomnia, dreams, nausea, mood changes, dizziness, rash, sweating, dyspnea, vomiting, chest tightness, angina) specifically elicited at each contact. Secondary outcomes were satisfaction rates, medication changes, and self-reported point-prevalence abstinence at week 12. Smokers received 9 calls over 12 weeks after their initial in-person visit for nicotine withdrawal, medication-related adverse events (AEs), satisfaction with medications (10-point Likert scales), and smoking status assessments.

RESULTS: Enrolled participants averaged 44 years old (SD = 12.8), were 50% women, and 6% non-white. 35 of 36 participants reported at least one AE; insomnia ($n = 27$, 75%), vivid dreams ($n = 26$, 72%) and nausea ($n = 23$, 64%) were most commonly reported. Most AEs (84%) were reported as mild to moderate in severity. No deaths, hospitalizations, cardiovascular events, or suicidality were reported. Six participants (17%) decreased at least one medication (all AE-related), 5 (14%) decreased then discontinued at least one medication (all AE-related) and 13 participants (36%) discontinued at least one medication (6 AE-related, and 7 AE-unrelated). AE-unrelated reasons for discontinuing medications included relapse, running out, or not feeling the need. Participants were highly satisfied with the medications’ abilities to control their withdrawal symptoms (M = 9.1/10, SD = 1.2) and were equally satisfied with the medications’ abilities to help them quit smoking (M = 9.2/10, SD = 1.4). Self-reported 7-day point-prevalence abstinence at week 12 was 58%, assuming that withdrawn participants ($n = 1$) or participants with missing data ($n = 9$) had relapsed.

CONCLUSIONS: Despite high rates of commonly reported AEs (e.g., nausea, insomnia), and over half the sample altering their medication regimens, triple therapy yielded a high satisfaction rate and high abstinence rate at 12 weeks with no serious events reported. While additional data on safety, tolerability, and efficacy are needed, triple therapy may be a promising new treatment option for smoking cessation.

TRUST: A CRITICAL COMPONENT FOR PHYSICIAN PARTICIPATION IN TEAM-BASED QUALITY IMPROVEMENT INITIATIVES

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BACKGROUND: Quality improvement (QI) is a priority for organisations striving to achieve the Triple Aim. Implementing QI projects typically involves teaming, which may constitute a new group of individuals brought together to work on a project or an established, stable, and bounded team that manages multiple projects. Teams also may include individuals from one or more disciplines. Research shows that the outcomes of QI projects tend to plateau or are subject to attrition over time. We used mixed methods to investigate whether physicians’ motivation to participate within teams influences the success of QI projects.

METHODS: We searched and iteratively reviewed the academic published and grey literature to form a conceptual model of themes that might influence physician participation in QI activities. We developed interview questions to explore these themes, which included personal experience with QI projects, perceived mediators of success/failure, attitudes of peers and health systems, impact of teaming on personal learning and general clinical duties and the role of junior physicians. We conducted focus groups with hospital-based physicians from a range of specialties (eight participants per group). Participants were a self-selected, convenience sample of attendees at a local leadership course.

RESULTS: Trust was consistently described as critical to the success of QI projects. Analysis revealed three distinct trust domains: 1. Trust that the project has a worthwhile purpose, 2. Trust that the project has a chance of being successful, and 3. Trust that the QI team will be effective in accomplishing project objectives. Participants emphasised that trust needed to be engendered early in the project timeline, preferably prior to commencement. Resource availability (funding or time) and non-financial incentives (the opportunity for publication of results or peer recognition) were considered important motivators. Contrary to most research, support from management was viewed as helpful but not vital for success. Participants felt involving residents and fellows was beneficial for both success and trainees’ education. Participants emphasised the importance of information feedback regarding progress against predefined metrics to team members throughout a project.

CONCLUSIONS: This study highlights the importance to physicians of three domains of trust as necessary preconditions to success in QI initiatives. This finding aligns with organisational behaviour literature, which suggests that teams should have a clear, shared, compelling purpose to motivate members. The lesser importance attributed by physicians to support from senior managers indicates physicians view trust as a greater mediator of success. Alternatively, this could reflect a lack of awareness of what managers do in support of QI. We suggest that prior to launching any team-based QI project, steps should be taken to promote trust in each domain. It may also be advisable for managers to interact more with physicians around QI activities.

UNDERREPRESENTED MINORITY (URM) MEDICAL STUDENT PERSPECTIVES ON RETENTION AND ADVANCEMENT

Ashley J. Smith; Leo Morales; Cam Solomon. University of Washington School of Medicine, Seattle, WA. (Control ID #2701304)

BACKGROUND: Underrepresented minority (URM) medical students have lower retention rates compared with majority medical students. Research identifying effective support or evidence-based interventions for the retention and advancement of URM students is limited. The purpose of this study is to investigate URM medical student perspectives on retention and advancement.

METHODS: An online survey was administered to garner the perspectives of URM medical school graduates between 2011 and 2015. Respondents ($N = 57$)

were recruited by email through URM student networks and referrals. The survey consisted of 4 domains including demographic and social characteristics, medical school characteristics, facilitators of success, and self-assessed success in medical school. Facilitators of success were divided into 6 categories including mentorship, academic support, financial support, peer support, mental health counseling and career counseling. Respondents rated the importance of each facilitator category on an ordinal scale of 0–5, with 0 being "not at all important" and 5 being "extremely important".

RESULTS: Respondents rated faculty mentoring (mean 4.47, SD 1.01) and financial support (mean 4.52 SD 0.80) as the most important factors to retention of URM students in medical school. When asked about desired mentor characteristics, respondents rated having a mentor with the same career interest as them highest (mean 3.88, SD 1.38) followed by someone who was of the same race/ethnicity as them (mean 3.19, SD 1.38). Peer support was also ranked highly (mean 4.17, SD = 1.09). Membership in URM student affinity groups had the greatest positive effect on students psychosocial wellbeing (mean 4.29, SD 1.15, $n = 41$). Membership in URM student affinity groups also had positive effects on professional development (mean 4.00, SD 1.22, $n = 41$) and academic performance (mean 3.54, SD 1.27, $n = 41$).

CONCLUSIONS: Participants reported that mentorship, financial support, and peer support were the most important facilitators associated with retention and success in medical school. This report suggests that medical schools seeking to retain and advance the careers of URM students should focus on providing effective mentorship, adequate financial support, and support for student affinity groups. Racial/ethnicity concordance between students and their faculty mentors was also highly valued by survey respondents, pointing to the importance of minority faculty in medical schools.

UNDERSTANDING AND PURSUING INCLUSION WITHIN HEALTH CARE ORGANIZATIONS Jaya Aysola; Ana Bonilla Martinez; Matthew Kearney; Carlos Carmona; Kareha Agesa; Fran Barg; Eve Higginbotham. University of Pennsylvania, Philadelphia, PA. (Control ID #2707275)

BACKGROUND: We lack knowledge on how organizations can promote inclusion in their efforts to retain a diverse health care workforce. Our objective was to understand the sources of feelings of inclusion and exclusion among faculty, staff, and students at University of Pennsylvania Health Sciences affiliated schools and hospitals.

METHODS: We designed this qualitative analysis to evaluate why a prior survey conducted in the same population revealed significant differences in perceptions of organizational inclusivity. We solicited narratives from employees, faculty, and students across all Penn affiliated health care organizations and asked them to respond anonymously via REDCap to two open-ended questions about their experiences at work or school with inclusion or lack there-of, followed by a series of demographic questions. All data were entered into NVivo 11 for coding and analysis. We conducted a narrative analysis of all fully completed responses ($n = 315$). A randomly selected subset ($n = 30$) of narratives were analyzed by the team to create a codebook. The remainder ($n = 285$) were coded with 20% of the sample triple coded for interrater reliability (mean Kappa score is .93). Any discrepancies in coding were resolved with consensus.

RESULTS: Of the 315 participants, 61% self-identified as female, 48% as a racial/ethnic minority, 17% as LGBT. Narratives overwhelming highlighted opportunities for change at the organizational level and describe a systematic lack of recognition. Narratives reflected the need to feel recognized, especially from more influential members within an organization. The majority of participants referenced a system-level culture that allows for unwritten rules to govern individual acts of discrimination or nepotism. Participants consistently reported the failure of formal channels, such as going to human resources, leadership, or an ombudsman, to address such acts. This often resulted in self-accommodating actions taken by the individual as the ultimate solution, with many describing negative effects on their well-being. Despite reassurances of anonymity, some responded that they could not share their story, while others often sandwiched their negative experiences with positive statements. Some stories revealed feelings of exclusion from those that are not in minority cultures and/or presumptions about what group/s the words "diversity" or "inclusion" refer to, despite the generalizability of those terms. Participants proposed strategies to improve organizational culture, such as implicit bias training, increasing diversity in leadership positions, and creating a culture and a structure that supports advocacy from those that witness discrimination.

CONCLUSIONS: Our study reveals key insights to measure and promote inclusion within organizations and highlights the need for broad-based strategies designed to combat existing presumptions about organizational "inclusion" efforts that may serve to alienate some.

UNDERSTANDING OF HEALTHCARE QUALITY AND ITS EFFECT OF PATIENT DECISION MAKING- A CROSS-SECTIONAL SURVEY Michael Cantor[2]; Barbara Porter[1]. [1]NYU SOM, New York, NY; [2]NYU Schoo of Medicine, NY, NY. (Control ID #2687450)

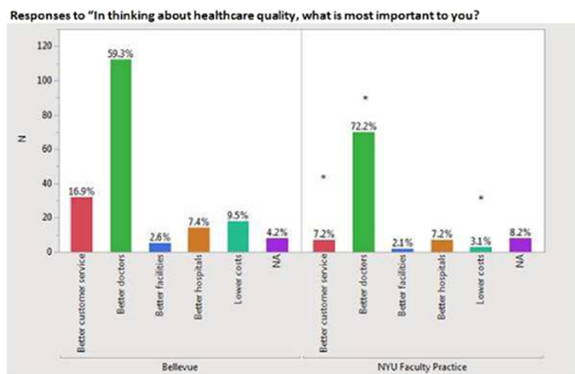
BACKGROUND: Though information on quality is more accessible, little is known about how health care consumers actually use this data in their decision making when choosing a doctor or healthcare institution. Often the important constituents of healthcare quality as perceived by patients are different than those measured or reported by healthcare providers.

METHODS: We developed a 14-question survey to evaluate the role data quality played in patients' healthcare-related decisions. We distributed the paper surveys, in either English or Spanish, in two different practice settings- in the waiting area for the medical clinics at Bellevue Hospital (BHC), which is part of New York City's public hospital system, and in the waiting area of the NYU Faculty Practice's internal medicine office (NYU).At Bellevue, we had a bilingual research assistant actively approach patients, offer them the survey in either English or Spanish, and collect the surveys afterward. At the NYU Faculty Practice, registration staff offered patients the surveys and collected them in English only.

RESULTS: We collected 189 surveys from Bellevue and 97 from NYU. At both sites, most patients were familiar with healthcare quality and also confident in their understanding of the concept. We also did not find any significant difference in this category when we compared groups based on level of education or on type of insurance. Quality was also an important factor for most patients in choosing their doctors or clinics. There was a wide range of responses regarding the meaning of quality to patients (see Figure), with the majority at both sites answering "better doctors." Few patients in either setting were familiar with quality rating sites such as Hospital Compare.

CONCLUSIONS: Healthcare quality is important to patients in their decision making, but the meaning of and measures that go into evaluating quality may differ between patients and providers. Government-sponsored quality rating

sites may need to be re-evaluated to become tools that are more useful to patients.



UNDERSTANDING PHYSICIAN TREATMENT DECISIONS FOR THE MANAGEMENT OF UPPER RESPIRATORY TRACT INFECTIONS Aditi Patel[1, 2]; Alexander Chaitoff[3]; Michael B. Rothberg[1, 2]; Bo Hu[2]; Mahesh Manne[1]; Elizabeth Pfoh[2]; Anita D. Misra-Hebert[1, 2]. [1]Cleveland Clinic, Cleveland Heights, OH; [2]Cleveland Clinic, Cleveland, OH; [3]Cleveland Clinic Lerner College of Medicine, Cleveland, OH. (Control ID #2706350)

BACKGROUND: Inappropriate antibiotic use for upper respiratory tract infections (URI) is a problem. There is extreme variation in the prescribing practices that is unexplained by patient factors. It is important to know how physician beliefs may contribute to inappropriate prescribing. We performed a qualitative study of high and low prescribers to understand the factors which influenced their decision making in the management of URI.

METHODS: Primary care physicians whose rate of antibiotic prescribing above (i.e. high prescribers) or below the mean (i.e. low prescribers) were identified in a previous study using electronic health record data. We created an interview guide to understand the decision making process for antibiotic prescribing for URI including clinical and non-clinical factors (patient satisfaction, time pressure, and comparison to peers) Between August 2015 and April 2016 physicians were contacted via email and invited to participate in a 15–20 min semi-structured interview. Interviews were conducted by 2 study team members (AC, AP) who were blinded to the physicians' prescribing rates. Interviews were audiorecorded and transcribed. Using an inductive qualitative content analysis approach, two team members (AMH and AP) concurrently analyzed 5 transcripts adding descriptive codes and discussed results. Once consensus was reached one team member (AP) analyzed the remainder of the transcripts until thematic saturation was achieved. Codes were then revised and sorted into pertinent themes.

RESULTS: Physicians were interviewed and 20 transcripts were coded including 10 high and 10 low prescribers. Physicians reported that clinical factors (e.g. patient age and comorbidities, duration and severity of symptom), desire to follow evidence based practice, and concern about adverse effects of antibiotics influenced prescribing patterns. Non-clinical factors identified included 1) physician-patient relationship, 2) concern for patient satisfaction being adversely affected, 3) patient expectation and preferences, and 4) patient convenience. High and low prescribers expressed variability in the above themes. When asked "Do you believe you prescribe antibiotics more, less or about the same as your colleagues?" The majority of low prescribers correctly identified themselves as prescribing less vs high prescribers who most often thought they prescribed the same as their colleagues. Low prescriber often cited evidence-based medicine, while high prescribers often expressed concerns about meeting patient expectations.

CONCLUSIONS: Physicians report that non-clinical factors frequently influence their decision to prescribe antibiotics for URI. High prescribers were concerned about patient satisfaction or expectation and appeared to be unaware that they differed from peers. Comparative reports and education about patient satisfaction might be effective for reducing antibiotic prescribing.

UNDERSTANDING SPONSORSHIP IN ACADEMIC MEDICINE: CHARACTERISTICS OF EFFECTIVE SPONSORS AND PROTéGéS AND SUCCESSFUL SPONSORSHIP RELATIONSHIPS AT ONE ACADEMIC HEALTH CENTER Manasa Ayyala; Kimberly Skarupski; Joann Bodurtha; Marlis Gonzalez Fernandez; Lisa Ishii; Barbara Fivush; Rachel Levine. Johns Hopkins University School of Medicine, Baltimore, MD. (Control ID #2705742)

BACKGROUND: In business, sponsorship is critical to advancing high potential employees into leadership. In academic medicine (AM), little is known about how sponsorship functions. Our goal in this qualitative study was to discover in AM who gets sponsored, who does the sponsoring and what makes for a successful sponsorship relationship.

METHODS: We conducted 23 in-depth semi-structured interviews with Johns Hopkins School of Medicine (SOM) faculty in 2016. Faculty were identified as either 'sponsors' or 'protégés.' Sponsors were identified ($N=12$) due to positions of power as department chairs; protégés ($N=11$) based on participation in a SOM executive leadership development program. Two investigators coded transcripts for thematic content using editing style analysis. A coding framework was created through an iterative process involving all study team members. Final themes were derived from this framework.

RESULTS: The following themes were identified: 1) *Mentorship is not enough*: *Sponsorship is episodic and focused on procuring specific opportunities*; 2) *Effective sponsor*: *A well-connected talent scout*; 3) *Effective protégé*: *Rises to the task and remains loyal*; 4) *We are in this together*: *trust and respect are key to successful sponsorship relationships*. Informants described sponsorship as distinct from mentorship. Mentorship is longitudinal; focused on general career development. Sponsorship is characterized as episodic; focused on specific "stretch" opportunities that position protégés for advancement. Sponsors and protégés portrayed an effective sponsor as well-connected and able to recognize talent. They agreed that a sponsor should be well-established and not threatened by the protégé. Sponsors valued humility and focusing on the "bigger picture," when promoting others. Protégés said an effective sponsor must have "your back." Sponsors viewed success as joy from promoting others and ensuring a legacy. Both characterized effective protégés as hard working, team players. Sponsors focused on the protégé's ability to make the most of a "stretch" opportunity and being self-aware of strengths and weaknesses. They described seeing their former selves in a protégé, or seeing traits they admire. Protégés focused on loyalty to the sponsor and understanding that their performance would reflect on their sponsor. The successful sponsorship relationship is based on trust and respect with a clear understanding of mutual benefit. This allows a sponsor to provide candid and constructive feedback to which the protégé is receptive. The protégé trusts that the sponsor will advocate and go out on a limb for them. The sponsor trusts that the protégé feels accountable to their actions as the sponsor's credibility and reputation are on the line.

CONCLUSIONS: Our findings support the importance of sponsorship in advancing in AM. Informants' insights on the attributes of effective sponsors

and protégés and on a successful sponsorship relationship will be helpful for faculty working to achieve academic advancement.

UNDERSTANDING THE IMPACT OF MEDICAL SCRIBES ON PRIMARY CARE PRACTICE Ryan E. Anderson; Evan Tschirhart. Brigham and Women's Hospital, Boston, MA. (Control ID #2706601)

BACKGROUND: While electronic health records hold potential to improve patient care, in practice their use has also produced negative effects on patient-doctor communication and physician professional satisfaction, an impact felt keenly in primary care. Medical scribing represents a promising innovation to reduce burnout and free provider time for direct patient care. However, research on the effects of medical scribing in primary care is limited, and the impact of scribes can be difficult to quantify. Our analysis seeks to understand the effect of medical scribing on patient-doctor communication, patient and clinician satisfaction, and care quality, and to identify barriers and recognize best practices in use.
METHODS: Semi-structured 45-min interviews were conducted with 23 informants engaged in a scribe pilot at a large provider organization. Informants included organization leaders, site administrators, primary care clinicians using scribes and medical scribes themselves across three pilot practices. A code structure of common themes was developed using a consensus-based procedure at regular meetings of the research team. Full interview transcripts were then coded using the constant comparative method to collate recurrent responses, expressed in language similar to that used by informants, in order to illustrate the impacts of scribe use as well as the insights and challenges faced in the implementation experience.
RESULTS: Pilot participants overwhelmingly described the impact of scribes on improving patient communication (91% of informants coded), particularly in perceived listening skills, time spent with patient, and degree of transparency. Perceived patient concerns included loss of privacy (35%), restriction of autonomy (30%), and treatment of the physical exam (26%). Provider responses described reduced emotional exhaustion (93%), reduced time spent on low-value work (87%), greater professional competence (67%), and enjoyment of mentorship role with scribe (47%). Providers cited challenges including scribe turnover, variability in scribe readiness, and required investment in training the scribe. Organization outcomes included improved clinical quality (61%), improved clinical documentation (57%), improved access (39%) and improved team-based care (35%). Impressions of the financial impact of scribe use were mixed and varied by informant. A number of best practices emerged during the pilot which helped to minimize challenges and maximize the benefits of scribe use.
CONCLUSIONS: The use of medical scribes in primary care can improve patient-doctor communication and significantly impact physician joy in practice. Patients approved of scribe use if key concerns could be ameliorated by implementing best practices. Given increasing demands placed on primary care by modern EHRs, growing access concerns for an aging population, and high rates of reported burnout in the field, medical scribing represents an important practice innovation with potential to transform primary care.

UNDERSTANDING THE RELATIONSHIP OF TEAM-BASED CARE AND CONTINUITY OF CARE WITH HIGH-COST UTILIZATION: EVIDENCE FROM THE PATIENT-CENTERED MEDICAL HOME IN THE VETERANS HEALTH ADMINISTRATION. Ashok Reddy[5]; Edwin Wong[3]; Karin M. Nelson[3, 5]; Stephan D. Fihn[4, 5]; Anne Canamucio[1]; Rachel M. Werner[2, 1]. [1]Philadelphia VA Medical Center, Philadelphia, PA; [2]University of Pennsylvania and Philadelphia VA, Philadelphia, PA; [3]VA Puget Sound, Seattle, WA; [4]Department of Veterans Affairs, Seattle, WA; [5]University of Washington, Seattle, WA. (Control ID #2702409)

BACKGROUND: While the patient-centered medical home shifts focus from individual provider-based care to a team-based care model, it remains unknown if team-based care can provide an alternative to continuity with primary care provider (PCP) in reducing healthcare utilization. Our main objective was to assess whether availability of high-quality team-based care and continuity of care with a PCP is associated with utilization of high-cost services. Additionally, we assessed whether the association between care continuity and utilization differed by quality of team-based care.
METHODS: This retrospective cohort study examined 1.1 million patients dually eligible for both VA and Medicare services in 2012. We restricted our sample to patients with at least 2 primary care visits in 2012 and had an assigned VA PCP in 2013. A 50% random sample was used in our analysis. Continuity was measured using the Usual Provider of Care (UPC) score, which indicates the proportion of a patient's visits with the assigned provider from 0 (lowest) to 1 (highest). To measure team-based care for a clinic site, we used the relevant domain of the PACT implementation progress index (PI^2), scoring clinics as −1 (low performing), 0 (medium), or 1 (high). Our primary outcomes were the number of ED visits, any ACSC hospitalization, and number of hospitalizations in 2013. We constructed mixed effects negative binomial and logistic regression models to estimate a patient-level outcome of interest as a function of UPC and team-based care, adjusting for covariates including age, race/ethnicity, sex, income, marital status, co-morbidity, number of PCPs in county, number of hospital beds in county, co-payment, and distance to VA.
RESULTS: The final sample included 551,385 Veterans. During 2013, average ED visit was 1.0, all-cause hospitalizations 0.4, and 5% of Veterans required an ACSC hospitalization. The mean UPC score was .59 (SD .36). In our analysis, a 10% point increase in continuity of care was associated with 1% point decrease in all-cause hospitalization ($p < 0.001$), 3% lower odds of an ACSC hospitalizations ($p < 0.001$), and 0.7% point increase in ER visits ($p < 0.001$). In addition, we found that hospitalization rates in high-quality team-based care clinics were 45% lower than those in low-quality clinics. However, we found no significant association between patient ER visits or ACSC hospitalization and team-based care. In a stratified analysis by team-based care, we found that continuity was more protective in high-performing clinics than in low-performing clinics with regard to hospitalizations, likelihood of having an ACSC hospitalization, and ER visits.
CONCLUSIONS: Our findings suggest that higher continuity of care is associated with lower patient hospitalizations, decreased likelihood of ACSC hospitalization, and higher ED visits. Moreover, while high-quality team-based care cannot substitute for poor continuity on patient outcomes, it can reinforce the impact of continuity on reducing high-cost utilization.

USE OF A REGISTRY AND EDUCATION TO ADDRESS UNCONTROLLED HYPERTENSION FOR LOW INCOME HISPANICS WITH DIABETES: RESULTS FROM FIVE YEARS OF A MEDICAID WAIVER IN TWO RESIDENCY CLINICS Barbara J. Turner[2, 2]; Yuanyuan Liang[1, 2]; Shruthi Vale[2]; Ramin Poursani[3]; David F. Montemayor[2]; Julie Parish Johnson[2]. [1]University of Maryland School of Medicine, Baltimore, MD; [2]University of Texas Health Science Center at San Antonio, San Antonio, TX; [3]University of Texas Health Science Center at San Anotino, San Antonio, TX. (Control ID #2706028)

BACKGROUND: Hispanics are greatly affected by diabetes mellitus (DM) which is often complicated by uncontrolled hypertension (HTN). In a Medicaid Waiver starting in 2013 in 2 residency clinics serving primarily low income Hispanics, we aimed to improve HTN control by developing a DM registry to offer daily summaries of HTN, DM, and lipid control and biannual reports to clinics on quality of care. We educated faculty, residents, and staff about measuring blood pressure, HTN treatment guidelines, adherence supports such as reducing multiple daily doses (BID+), and more affordable drugs. Case managers also educated patients.

METHODS: From the 5-year DM registry, eligible subjects were age 18 to 75 and had >1 systolic blood pressure (SBP) >140 mmHg on treatment in a baseline year with a last SPB >12 months later in the next year. We created four cohorts of patients treated in consecutive years: 2012–13, 2013–14, 2014–15, and 2015–16. The outcome was SPB control (<140 mmHg) in the 2nd year for each cohort. At first high SBP, study variables were: demographics, SBP level, Elixhauser comorbidity score, hemoglobin A1c, # prescribed HTN drug classes, intensity of all HTN drug doses, and any prescribed BID+ drug. Variables at last SBP were: clinic type, # visits, visit adherence (%), change in # of HTN drug classes, change in drug intensity, and any prescribed BID+ drug. In mixed effects logistic regression accounting for subjects in multiple cohorts, we examined predictors for controlled last SBP.

RESULTS: Among 2,349 subjects: 58.0% were women, 80.0% Hispanic, and mean age 56.8 yrs (SD = 9.6). For all subjects, mean baseline SBP was 153.2 (SD = 14.2), mean # baseline drug classes was 1.61 (SD = 1.1) and mean follow-up 551.4 days (SD = 96.8). Last SPB control improved over time ($p < 0.001$): 2012–13 (58.4%); 2013–14 (58.0%), 2014–15 (61.8%), 2015–16 (68.5%). After full adjustment, adjusted odds ratio (AOR) for SBP control in 2015–16 was 1.60 [CI: 1.26-2.05, $p < 0.001$) vs 2012–13. Versus no prescribed BID+ drugs, AOR for SPB control for any BID+ drugs was 0.77 (CI: 0.64-0.91, $p = 0.003$). Odds of SBP control were 16% lower ($p < 0.001$) per HTN drug class prescribed at baseline and 11% lower ($p = 0.007$) per drug added by last SBP. Analysis of HTN drug intensity showed similar effects. Secular changes showed 47.1% of subjects were prescribed BID+ drugs at last SBP in 2012–13 versus 26.6% in 2015–16 while fewer HTN drugs were prescribed both at baseline and added at last SBP in 2015–16 versus earlier years (all $p < 0.001$). At last SPB in 2012–13, 42.0% of subjects were prescribed beta-blockers declining to only 29.2% in 2015–16 ($p < 0.001$).

CONCLUSIONS: In these residency clinics, the challenge of HTN control for complex low income patients with DM and uncontrolled HTN was ameliorated by a registry, education, and adherence support. Improved SPB control was achieved with fewer HTN drugs by focusing on prescribing simpler, more affordable, and more effective regimens.

USE OF CHRONIC CARE MANAGEMENT CODES FOR MEDICARE BENEFICIARIES: A MISSED OPPORTUNITY? Rebekah Gardner[2, 1]; Blake Morphis[1]; Kimberly Pelland[1]; Emily Cooper[1]; Alyssa DaCunha[1]; Rouba Youssef[1]. [1]Healthcentric Advisors, Providence, RI; [2]Alpert Medical School of Brown University, Providence, RI. (Control ID #2697980)

BACKGROUND: Physicians spend significant time outside of office visits caring for complex patients. This work is important but time consuming and historically has not been compensated. In 2015, Medicare introduced a Chronic Care Management (CCM) code to allow billing for non-face-to-face care coordination for beneficiaries with multiple chronic conditions. Little is known about how the new CCM code is used. The objective of this study is to characterize the use of the CCM code among Fee-for-Service (FFS) Medicare beneficiaries in New England in 2015.

METHODS: This retrospective observational analysis includes all FFS Medicare beneficiaries in New England continuously enrolled in Parts A and B in 2015. Using 2013–2015 Medicare claims and enrollment data, we created an eligible pool of beneficiaries who could potentially have received CCM services because they had two or more chronic conditions and a qualifying outpatient claim. We then stratified the pool by CCM status (with or without claims). Our primary outcome is the number of beneficiaries with a CCM claim per 1,000 eligible beneficiaries. Secondary outcomes include the total number of CCM claims, the total reimbursement for those claims, and differences between eligible beneficiaries with and without claims. Descriptive statistics and logistic regression were used, with beneficiary-level characteristics, such as age, sex, and race.

RESULTS: Of the more than 2 million FFS Medicare beneficiaries in New England in 2015, 11,629 (0.54%) had any CCM claim. Massachusetts beneficiaries had the highest penetration of CCM use (8.53 per 1,000 eligible beneficiaries); Vermont the lowest (0.51 per 1,000 eligible beneficiaries). Among those receiving CCM services, the mean number of claims for the year per beneficiary was 1.26. Compared to those who were eligible but did not have a CCM claim, those with a CCM claim were more like to be 65 years or older, white, dually-eligible for Medicare and Medicaid, have five or more chronic conditions, and see fewer specialists. These remained significant after adjustment. The total reimbursement for CCM claims in New England was $422,251 in 2015, with more than half of that going to clinicians in Massachusetts. The mean reimbursement per clinician in Massachusetts was $2,289 for the year, where the average number of claims per clinician was 3.64, compared to New Hampshire at $101 mean reimbursement, where the average number of claims per clinician was 1.41.

CONCLUSIONS: Few FFS Medicare beneficiaries in New England had CCM claims for management of chronic conditions, despite a large pool of eligible beneficiaries. Our findings suggest that the CCM codes, as currently implemented, are not achieving their intended effect. Medicare recently simplified the CCM code requirements, and future analyses can compare whether the changes result in greater uptake. We hope these results can inform implementation of similar initiatives, so Medicare can better support practices in their management of complex patients.

USE OF CT PULMONARY ANGIOGRAPHY TO DIAGNOSE PULMONARY EMBOLISM IN THE EMERGENCY DEPARTMENT OF A COMMUNITY TEACHING HOSPITAL Suresh K. Subedi; Jahangir Khan; Mohammed Osman; Azza Ahmed; Thair Dawood; Carlos Rios-Bedoya. Hurley Medical Center, Grand Blanc, MI. (Control ID #2706507)

BACKGROUND: CT pulmonary angiography (CTPA) in patients at low risk for pulmonary embolism adds to the cost and leads to unnecessary radiation and contrast exposure. Guidelines recommend using pretest probability scores and high sensitivity d-dimer test to identify low risk patients who can safely forego CTPA. Modified wells score is commonly used to categorize suspected pulmonary embolism patients into high probability or low probability. The aim of our study was to investigate the inappropriate use of CTPA in the emergency department and adherence to the guidelines.

METHODS: We conducted a retrospective chart review of adult patients who underwent CTPA for suspected PE in the emergency department from January

1, 2015 to December 31, 2015. Pregnant and trauma patients were excluded. CTPA was considered appropriate if modified wells score (MWS) was greater than 4 or any score with high sensitivity d-dimer greater than 500. CTPA was considered inappropriate if MWS was less than or equal to 4 and d-dimer was either not ordered or value was less than 500.

RESULTS: A total of 295 encounters fulfilled the inclusion criteria. 203 (68.81%) were females and 92 (31.18%) were male patients. Only 16 (5.42%) cases of pulmonary embolism were diagnosed. 122 (41.35%) CTPA were inappropriately performed. D-dimer was not performed in 99% of patients with inappropriately performed CTPA.

CONCLUSIONS: Adherence to published guidelines to diagnose pulmonary embolism is low. Application of modified wells score and d-dimer at initial presentation in the emergency department can avoid excessive ordering of CTPA and eventually decrease costs as well as lower harm to patients in form of contrast and radiation exposure.

USING A DECISION-SUPPORT TOOL TO DECREASE THE USE OF UNNECESSARY TELEMETRY AND URINARY CATHETERS

Charlie M. Wray[2, 3]; John Fahrenbach[4]; Nikhil Bassi[4]; Poushali Bhattacharjee[5]; Matthew Modes[6]; Michael Howell[4]; Vineet M. Arora[1]. [1]University of Chicago Medical Center, Chicago, IL; [2]San Francisco VA Medical Center, San Francisco, CA; [3]University of California, San Francisco, San Francisco, CA; [4]University of Chicago, Chicago, IL; [5]John H. Stroger Hospital, Chicago, IL; [6]University of Washington, Seattle, WA. (Control ID #2699335)

BACKGROUND: The Society of Hospital Medicine's Choosing Wisely guidelines recommend regular assessment of inpatients' need for urinary catheters and telemetry monitoring. Since studies suggest clinicians are not aware which patients have an indwelling catheter or are on telemetry, we aimed to use the electronic patient list to improve cognitive awareness of unnecessary urinary catheters and telemetry utilization.

METHODS: As part of an institutional challenge to promote Choosing Wisely projects, we inserted a passive indicator that signaled an active telemetry or urinary catheter order for each patient in the Epic electronic health record (EHR). Clicking on the indicator, a green check mark located on the electronic patient list, enabled the provider to cancel the order. During the 6-month intervention, monthly e-mail education about the new feature and the Choosing Wisely recommendations were sent to residents and attendings at the start of their general medicine rotation. We utilized an interrupted time-series analysis to estimate changes in utilization. The pre-intervention period was defined as 9 months prior to the intervention. In order to focus on low risk patient populations, we excluded patients with hospital stays >14 days, had an ICU stay, or a catheter on admission. Utilization rates were obtained through the EHR and analyzed with R, v3.3.2.

RESULTS: In total, 1,213 and 7,901 patients with a catheter and telemetry were assessed, respectively. Assuming pre-intervention trends, 29% fewer catheters were ordered (8.5% vs. 6.0%; $p < 0.05$), though no change in catheter duration was found (41.5 vs. 35.8 hrs; $p > 0.05$). While no absolute difference in the percentage of patients who received telemetry orders was seen, a significant decrease in the ordering trend for telemetry ($p < 0.01$) was noted after implementation. Additionally, patients receiving telemetry orders spent 18% less time on telemetry (42.5 vs. 34.9 hrs; $p < 0.01$). The average monthly case mix index (CMI), which reflects the clinical complexity of the patient population, increased from 1.64 to 1.88 ($p < 0.05$) and 1.25 to 1.40 ($p > 0.05$) for patients who received a catheter or telemetry order, respectively.

CONCLUSIONS: Following implementation of this tool, we demonstrated a trend toward less telemetry use, less time spent on telemetry, and fewer catheters ordered. Additionally, the intervention led to more selective utilization of catheters in sicker patients, as observed by the increasing CMI within this cohort. While it remains unclear whether the benefits were due to educational reminders or the electronic indicator, teaching alone is unlikely to lead to sustained practice changes. This intervention is highly generalizable as it involved a simple modification to one of the most widely used EHRs in the US.

USING NATURAL LANGUAGE PROCESSING TO AUTOMATE GRADING OF STUDENT'S PATIENT NOTES: A PILOT STUDY OF MACHINE LEARNING TEXT CLASSIFICATION.

Adina Kalet[1]; So-Young Oh[1]; Marina Marin[1]; Yili Yu[2]; Heather Dumorne[1]; Yindalon Aphinyanaphongs[1]. [1]New York University School of Medicine, New York, NY; [2]New York University, New York, NY. (Control ID #2702520)

BACKGROUND: At NYU, as part of a comprehensive objective structured clinical skills exam, experienced medical educators judge clinical knowledge, decision-making, and clinical reasoning skills of trainees based on their patient notes. Despite being rubric-driven, this task requires tremendous time and effort to establish consistent scoring, delaying and limiting individualized feedback. We conducted pilot machine learning text classification studies to establish if accurate automated scoring of clinical notes is possible.

METHODS: As a use case, we tested 100 student written clinical notes from 7 standardized patient cases (Vision Loss, Tel Diarrhea, Difficulty Sleeping, Shoulder Pain, Failure To Thrive, Abdominal, Pain, Palpitations) that had been scored for quality of clinical reasoning by faculty on a 1–4 scale. In order to assess performance of NLP strategies to categorize students in meaningful groups we dichotomized students based on their faculty given scores by case into "failing" (score of 1, 5–18 students per case) and "passing" (score 2,3,4). We treated each task as a binary classification task in a text classification pipeline. First, we treated each note as a bag of tokens and weight each token with term frequency-inverse document frequency (TFIDF) a numerical statistic that reflects how important a word is to a document. We then applied 3 different classification algorithms (random forests, support vector machines, and Bayesian logistic regression) and measured discriminatory performance using Area Under Curve (AUC) in a cross validation evaluation design.

RESULTS: TFDIF performed with AUCs between 0.669 and 0.905. Logistic regression provided the highest AUC in four cases: Difficulty Sleeping (0.905), Shoulder Pain (0.618), Failure To Thrive (0.717) and Abdominal Pain (0.892). As we observed the highest AUCs in Difficulty Sleeping and Abdominal Pain cases, we have begun to refine the algorithm for these two cases by identifying the importance features that lead faculty to give students to a higher grade and improve the accuracy of NLP based scoring. Promising features include the presence and sequence of certain words in the problem representation, sentence length in the management section, ranking of the differential diagnosis, sequence between key words (e.g. rule out appendicitis), and evidence of "thinkingness" or what many call semantic qualifiers.

CONCLUSIONS: With additional effort to build targeted case specific classifiers for clinical content and reasoning, a validated machine-learning model may achieve partial or full automation of grading of the notes. This work, which builds on decades of clinical decision-making and critical reasoning

research, may provide medical trainees with more and potentially better feedback; facilitating learning of clinical reasoning, freeing faculty to coach this process, and in the long run impacting healthcare quality and patient safety.

USING NATURAL LANGUAGE PROCESSING TO EXTRACT SOCIAL DETERMINANTS OF HEALTH AND IMPROVE 30-DAY READMISSION MODELS Salomeh Keyhani[1, 3]; Marzieh Vali[3]; Brett South[4, 5]; Lee Christensen[4, 5]; Danielle Mowery[4, 5]; Wendy Chapman[4, 5]; Louise Walter[2]. [1]University of California at San Francisco, San Francisco, CA; [2]University of California, San Francisco, San Francisco, CA; [3]San Francisco VA Medical Center, San Francisco, CA; [4]University of Utah, Salt Lake City Utah, UT; [5]Salt Lake City VA Medical Center, Salt Lake City, UT. (Control ID #2705177)

BACKGROUND: The Hospital Readmission Reduction program administered by the Centers for Medicare and Medicaid Services (CMS) penalizes hospitals with above average 30-day readmission rates. Hospitals caring for disadvantaged populations might be penalized by current 30-day readmission models that do not include the social determinants of health (SDOH) of the patients served. Measures of SDOH (e.g. living alone, social support, housing, and substance abuse) are inadequately available in Medicare data. Yet many of these variables are available in the free text of electronic health record or in VA clinical databases which are comprised of data collected as part of care. We compared VA models that include measures of SDOH to CMS based models created using only administrative data.

METHODS: First we developed two sets of SDOH variables: 1) three variables created from VA data (drug abuse, alcohol abuse and erratic health care use) and 2) three variables extracted from the free text of the medical record using natural language processing (living situation, housing situation and social support). The NLP algorithm was derived and validated on notes from 500 patient. We then identified all 15,095 patients 65 and older admitted with congestive heart failure to the VA in 2012 and applied CMS inclusion and exclusion criteria to the sample leaving 8,471 patients. We randomly selected 1500 hospital admissions and extracted all patients' notes in the year prior to admission. We identified 235,517 notes and pruned the note set to 77,975 notes based on relevance to the domains of interest. We extracted complete readmission data by collecting data on hospital readmissions in both the VA and Medicare program. We first developed a CMS-based 30-day readmission model that included age and comorbid conditions based on ICD9 codes (model 1) using logistic regression. Second, we compared this model to a model that included SDOH measures derived from national VA clinical databases (model 2). Finally, we compared these two models to a model that included all variables in model 1 and 2 in addition to SDOH measures extracted using NLP (model 3).

RESULTS: Interrater agreement (NLP algorithm vs. human chart review) was excellent (Cohen's Kappa >0.8). The 30-day readmission rate was 22.7%. In univariate analysis adequate social support (OR = 0.64, 95% 0.43–0.98) was associated with lower likelihood of 30-day readmission. Marginal housing (OR = 1.83, 95% CI 1.03–3.15), drug abuse (OR = 1.61, 95% CI 1.03–2.46), and erratic health service use (OR = 1.61, 95% CI 1.25–2.06)), were associated with a higher likelihood of 30 day readmission. After adjusting for age and comorbid conditions in model 3, only erratic health service use remained significantly associated with a higher likelihood of 30-day readmission. The C-Statistic for model 1, model 2 and model 3 was 0.60, 0.62 and 0.63 respectively.

CONCLUSIONS: Measures of SDOH are associated with 30-day readmission but have a minmal effect on the performance of the readmission model.

USING NORMALIZATION PROCESS THEORY TO UNDERSTAND WORKFLOW IMPLICATIONS OF DECISION SUPPORT IMPLEMENTATION ACROSS DIVERSE PRIMARY CARE SETTINGS Rebecca G. Mishuris[5]; Joseph Palmisano[5]; Lauren McCullagh[2]; Rachel Hess[3]; David Feldstein[4]; Paul D. Smith[4]; Thomas McGinn[1]; Devin M. Mann[6]. [1]Hofstra North SHore-LIJ, Manhasset, NY; [2]Hofstra North Shore LIJ School of Medicine, Manhasset, NY; [3]University of Utah, Salt Lake City, UT; [4]University of Wisconsin School of Medicine and Public Health, Madison, WI; [5]Boston University School of Medicine, Boston, MA; [6]New York University School of Medicine, New York City, NY. (Control ID #2702509)

BACKGROUND: Effective implementation of new technologies into clinical workflow continues to be hampered by lack of integration into daily activities. Normalization process theory (NPT) can be utilized to describe the kinds of "work" necessary to implement complex new healthcare practices and technologies. We used NPT to assess the facilitators, barriers and "work" of implementation of two clinical decision support (CDS) tools - integrated clinical prediction rules (iCPRs) to assess the likelihood of and appropriate treatment for Group A streptococcus pharyngitis or bacterial pneumonia- across diverse primary care settings' electronic health records (EHRs).

METHODS: We conducted baseline and 6-month follow-up quantitative surveys at two academic institutions' primary care clinics that were randomized to the intervention group of the larger randomized controlled iCPR study. The survey was adapted from the previously validated NPT toolkit which analyzes the four domains of implementation of complex interventions: sense-making, participation, action, and monitoring. NPT domains were then summarized among all completed survey responses ($n = 60$) and examined for potential associations by role (clinic manager ($n = 31$), medical director ($n = 29$)), institution (Wisconsin ($n = 42$), Utah ($n = 18$)) and time (baseline ($n = 33$), 6 months ($n = 27$)). Summary measures are presented as domain median by group. Associations were investigated via Wilcoxon Rank Sum and Kruskal-Wallis tests as appropriate within time-point (baseline and 6 months). Generalized estimating equations (GEE) were used for analyses of domains over time.

RESULTS: At baseline, the median score for each NPT domain was the same across roles and institutions. Median values for each NPT domain declined from baseline to 6 months across both roles and institutions. Among clinic managers, only participation declined significantly at 6 months ($p = 0.003$). Among medical directors, all domains scored lower at 6 months ($p < 0.003$ for each domain). The action domain score decreased significantly ($p = 0.03$) from baseline to 6 months among Utah respondents. All domains were lower at 6 months than baseline among Wisconsin respondents ($p \leq 0.008$ for each domain).

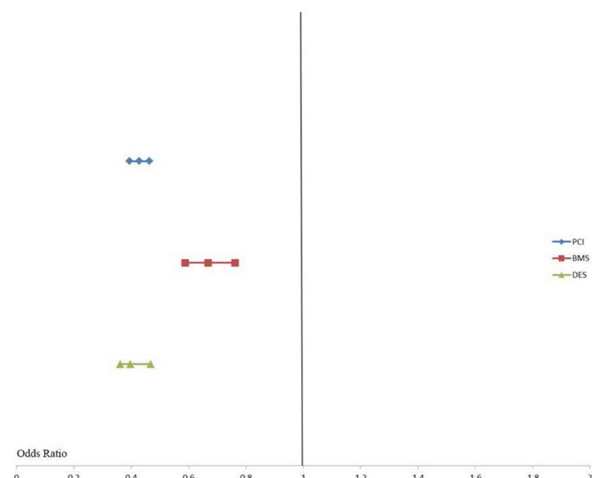
CONCLUSIONS: To the best of our knowledge, this study employed NPT for the first time to assess the implementation of new CDS in EHRs across diverse primary care settings at two institutions. Using NPT to evaluate this implementation provides insight into work domains which can be addressed with participants to improve integration of the new CDS tools and persistent efforts to ensure success of implementation. The decline in engagement from baseline to follow-up may suggest the need for more frequent contact with intervention sites to maintain momentum. NPT provides a framework for evaluation of technology and workflow innovation implementations in healthcare settings.

USING PRACTICE FACILITATION IN PRIMARY CARE SETTINGS TO REDUCE RISK FACTORS FOR CARDIOVASCULAR DISEASE: PHYSICIANS' BURNOUT ANALYSIS Batel Blechter; Nan Jiang; Keith Goldfeld; Nina Siman; Carolyn Berry; Donna Shelley. NYU School of Medicine, New York, NY. (Control ID #2702873)

BACKGROUND: National surveys indicate high rates of burnout, particularly among primary care physicians. Despite concerns about the impact of burnout on health outcomes, this relationship is not well studied. HealthyHearts NYC, funded through the EvidenceNOW initiative of the Agency for Healthcare Research and Quality is evaluating the effectiveness of practice facilitation to improve adoption of Million Hearts' evidence-based ABCS guidelines (Aspirin, Blood pressure control (BP), Cholesterol management, and Smoking cessation) in small-to-medium size primary care practices. This study examined the association between site characteristics and physicians' burnout, as well as the relationship with the ABCS outcomes.
METHODS: We present data on 99 small practices working with the NYCDOHMH Primary Care Information Project, and 8 Federally Qualified Health Centers (FQHC) from the Community Health Care Association of New York State. Each provider from participating practice sites completed a survey that included a validated question assessing burnout that used a 5-point scale ranging from 1- no symptoms of burnout to 5- completely burned out. For sites with multiple providers, we calculated a site burnout score by extracting the maximum score within each site. The burnout level was dichotomously coded as 1- burned out, and 0- not burned out. Each site completed a practice survey to report site characteristics, including the number of providers (1 vs. 2 or more), Patient Centered Medical Home (PCMH) status (recognized vs. not recognized), average number of patient visits per week, and total number of support staff. We used logistic regression analysis to assess the association of practice site characteristics and burnout. We also calculated a composite measure for patients with multiple CVD risk factors to capture the extent to which targets are met across three of the outcome measures (ABC). We used t-tests to assess the difference in ABCS and composite measures by burnout status.
RESULTS: Overall, 19% of physicians reported burnout. A significant difference was detected for all ABCS measures by the sites' burnout status. Sites reporting burnout had higher rates of meeting aspirin, smoking, and composite measure targets, but lower rates of meeting BP and cholesterol target measures and were more likely to have achieved PCMH recognition. FQHCs reported higher rates of burnout compared with small practices.
CONCLUSIONS: The overall rates of burnout were lower than reported in previous surveys. Lower burnout rates among small independent practices compared with FQHCs may be related to small practice providers' greater level autonomy. We will present additional data exploring organizational factors that may explain variation in burnout across these different practice settings. Finally, previous research has similarly found inconsistent associations between quality and burnout. Further studies are required to determine whether healthier workplaces also result in higher quality care.

UTILIZATION OF PERCUTANEOUS CORONARY INTERVENTION IN PATIENTS WITH DEMENTIA PRESENTING WITH ACUTE MYOCARDIAL INFARCTION - INSIGHTS FROM NATIONAL INPATIENT SAMPLE Siva Sagar Taduru[1]; Shubha Deep Roy[1]; Madhuri Ramakrishnan[1]; Dushyant Ramakrishnan[2]; Paramdeep S. Baweja[1]. [1]University of Missouri Kansas City, Kansas City, MO; [2]Osmania Medical College, Hyderabad, India. (Control ID #2706470)

BACKGROUND: The prevalence of acute myocardial infarction (AMI) and dementia increases with age. The management of AMI frequently involves percutaneous coronary intervention (PCI). It is essential to be on dual antiplatelet agents after PCI with stent. A recent study showed that invasive management of AMI in patients with dementia has a survival benefit. However, management of AMI in patients with dementia has traditionally been more conservative. There is limited data on utilization of PCI in patients with dementia in recent years.
METHODS: We searched the National Inpatient Sample (NIS) 2013 using International Classification of Diseases (ICD-9-CM) codes for patients older than 18 years with dementia (290.xx, 294.xx, 310.0, 331.xx) who presented with AMI(410.xx). We used propensity score to establish matched cohorts to control for baseline imbalances in patients with and without dementia. We used Chi squared test and ANOVA to compare categorical and continuous variables respectively. We performed Multivariate binary logistic regression to identify adjusted odds-ratio (AOR) between the groups.
RESULTS: We identified a total of 839,070 (weighted) patients with AMI admitted in 2013. A total of 72,975 (8.7%) patients had dementia. A total of 279,285 (33%) PCIs were performed. PCI rates were 35.7 and 8.4% in non-dementia and dementia groups. We identified a total of 72,945 patients in each group after propensity score matching (PSM). A total of 19,155 (13.1%) PCIs were identified in matched cohorts. PCI rates were 18 and 8.4% in non-dementia and dementia groups after PSM. Drug eluting stents (DES) and bare metal stents (BMS) were placed in 4.5 and 2.8% patients in dementia cohort respectively. AOR for undergoing PCI in dementia cohort was 0.428 (CI = 0.395–0.463; $p < 0.0001$) compared to non-dementia cohort. AOR for DES in dementia cohort was 0.398 (CI = 0.362–0.468; $p < 0.0001$) and AOR for BMS in dementia cohort was 0.669 (CI = 0.588–0.762; $p < 0.0001$) compared to non-dementia cohort.
CONCLUSIONS: Our study shows that PCI is highly underutilized in patients with dementia despite the survival benefit it offers.



VA PHYSICIANS' PERSPECTIVES AND EXPERIENCES REGARDING PRESCRIPTION DRUG MONITORING PROGRAMS: A MULTI-STATE QUALITATIVE STUDY Thomas R. Radomski[2, 4]; Felicia R. Bixler[4]; Susan L. Zickmund[6]; Katielynn M. Roman[4]; Jennifer A. Hale[4]; Leslie R. Hausmann[4]; Carolyn T. Thorpe[1, 4]; Joshua M. Thorpe[1, 4]; K J. Suda[7]; Kevin T. Stroupe[7]; Fran E. Cunningham[8]; Adam Gordon[3, 4]; Chester Good[4]; Michael J. Fine[4]; Walid F. Gellad[5]. [1]University of Pittsburgh, Pittsburgh, PA;

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BACKGROUND: Although the Veterans Health Administration (VA) has implemented robust strategies to monitor prescription opioid dispensing, these strategies do not account for opioids prescribed to thousands of VA patients by providers outside the VA. State-based Prescription Drug Monitoring Programs (PDMPs) track dispensed opioid prescriptions and are a potential tool to identify VA patients' receipt of opioids from non-VA sources, but their use can be time consuming and administratively burdensome. Our objective was to evaluate VA physicians' perspectives and experiences regarding use of PDMPs to monitor Veterans' opioid use from non-VA sources.

METHODS: From 2/2016 - 8/2016, we interviewed 42 VA primary care physicians who had prescribed opioids to ≥15 Veterans in 2015. We sampled physicians from 2 states with PDMPs (MA, IL) and one state without physician access to a PDMP (PA). We conducted semi-structured telephone interviews that addressed the following topics regarding PDMPs: overall perceptions and experiences, ideas to improve use, and barriers/facilitators to use. Interviews were audio-recorded and transcribed verbatim. Two trained qualitative analysts developed a codebook, independently coded 20% of the transcripts, and assessed inter-coder reliability (kappa = 0.70) before the master coder coded the remaining transcripts.

RESULTS: We identified 3 overarching themes. First, physicians universally supported PDMPs (MA, IL) or desired access to one (PA), despite noting additional time and administrative burdens associated with their use. To improve use, physicians suggested: 1) linking PDMPs with the VA electronic health record, 2) using templated notes to document PDMP use, and 3) delegating routine PDMP queries to ancillary staff. Second, PDMP use challenged physicians' underlying biases regarding opioid misuse. "I used to kind of make a value judgement of my patients about whether or not I felt they were reliable and made prescribing choices based upon that," said one physician. "And in doing this (using a PDMP), I've realized that all of those things have to go out the window." Third, physicians felt the limited data contained within their state's PDMP was a barrier to optimal use. One physician said, "It (the PDMP) only gives me information about Massachusetts. So, for our patients who might be accessing medications in bordering states - I have no idea if that's happening or not, and I wish I did." Physicians from Illinois also had access to neighboring states' PDMPs, but desired national data, including current data from the VA.

CONCLUSIONS: Despite the time and administrative burdens associated with their use, VA Physicians uniformly supported PDMPs and acknowledged how they challenged their biases regarding opioid misuse. Our findings can help the VA meet the requirements of the Comprehensive Addiction and Recovery Act, which requires use of PDMP data by VA physicians, and may also inform efforts outside the VA to implement use of PDMPs into practice.

VACCINATION & OSTEOPOROSIS SCREENING RATES IN PATIENTS WITH ULCERATIVE COLITIS

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BACKGROUND: Despite defined preventive care quality metrics from the American Gastroenterology Association to improve care for patients with ulcerative colitis (UC), adherence is thought to remain low, and determinants of adherence would aid in optimizing practice patterns. The aim of this study was to assess whether quality metric adherence in patients with UC is common and is it influenced by the age of onset of disease.

METHODS: We performed a retrospective cross-sectional study of 631 patients with UC seen at an outpatient GI clinic between January 1, 2014 and December 31, 2015. Electronic medical records (EMR), available after 2010, were reviewed for UC history, laboratory testing and procedures, and medical therapies. Unpaired t-tests and chi-squared analysis were used to compare differences in compliance to quality measures by UC onset before or after age 50.

RESULTS: Approximately 75% ($n = 477$) of UC patients had disease onset before age 50, with a mean age of onset of 31. Overall adherence to quality measures was similar and well documented between the two groups if receiving Anti-TNF therapy, including hepatitis B and tuberculosis screening. However, rates of documented adherence to influenza and pneumococcal vaccination, as well as osteoporosis screening, was significantly low among those with UC, particularly those with onset before age 50. (See Table)

CONCLUSIONS: Documented compliance for IBD-specific quality measures is higher for patients with age of UC onset at 50 and older, particularly with respect to vaccinations and osteoporosis screening. This may reflect general compliance with ACIP guidelines for the elderly and a widespread lack of understanding of the elevated risk of future immunocompromise and bone mineral density compromise prematurely in patients with UC. This study demonstrates that gastroenterologists provide critical preventive care in patients recieving anti-TNF therapy. However, they may not provide appropriate preventive and screening care to patients with UC not on biologic therapy, rendering it incumbent upon primary care physicians to recognize the general health risks associated with IBD and provide appropriate screening and preventive measures to such patients. Improvement in adherence to accepted quality standards is needed for UC patients collectively to improve quality of care, particularly those diagnosed at earlier ages.

Quality Metrics by UC Age of Onset

	Age of onset <50 ($n = 477$)	Age of onset ≥50 ($n = 154$)	ρ
Age, (SD)	31 (9.6)	62 (9.2)	<0.01
UC Duration, mean, (SD)	17 (13)	8 (6)	0.10
Influenza Vax 2014 & 2015, n(%)	144 (30.3)	87 (54.7)	<0.01
Pneumococcal Vax, w/in past 5 yrs, n(%)	98 (20.6)	68 (42.8)	<0.01
DEXA, n(%)	137 (29)	71 (45)	<0.01
Anti-TNF Rx, n(%)	82 (17.2)	19 (12)	0.12
HepB assessment prior to Anti-TNF, n(%)	74 (90.2)	18 (94.7)	0.54
Latent TB assessment prior to Anti-TNF, n(%)	77 (93.9)	18 (94.7)	0.89

*DEXA: dual-energy X-ray absorptiometry; TNF: tumor necrosis factor; TB: tuberculosis.

VALIDATING A CLINICAL REASONING ASSESSMENT STRATEGY TO IDENTIFY ACTIONABLE FEEDBACK FOR STRUGGLING MEDICAL STUDENTS

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BACKGROUND: Although clinical reasoning is a foundational skill for physicians, educators have limited tools for standardized assessment to result in actionable feedback to medical students. We sought to assess the potential utility of a novel Think Aloud Protocol assessment strategy, Clinical Reasoning Task (CRT), to identify specific deficits among third-year medical students compared to the current validated multiple-choice instrument, the Clinical Data Interpretation (CDI) Test, which provides a global assessment of clinical knowledge but does not assess proficiency in specific clinical reasoning tasks.
METHODS: We conducted a pilot study of third-year medical students during their Internal Medicine clerkship at one large US medical school. We assessed clinical reasoning using the CDI among all students before a group project-based learning exercise, during which each group created a SOAP note. One student from each group then participated in a structured Think Aloud Protocol, which consisted of a structured interview assessing the justification for assessment, differential diagnosis and plan for the patient case. Each Think Aloud Protocol interview was recorded and scored by two independent reviewers using the validated CRT to identify actionable deficits in the clinical reasoning process (kappa = 0.88). We assessed CRT to CDI correlation with the Pearson correlation coefficient.
RESULTS: Eighteen students participated in the study. The mean CDI score among all participants was 46.2 (SD = 7.0). Among Think Aloud participants, the average CDI score was 44.6 (SD = 7.3). Think Aloud participants used only 11 of the possible 24 tasks. On average, each student uttered 15.8 tasks [range 8–23] to discuss the case. The most frequently used task was "select diagnostic investigations." Think Aloud Participant CRT and CDI scores were strongly positively correlated, but did not reach statistical significance ($R = 0.7$, $p = 0.07$).
CONCLUSIONS: Assessment of Think Aloud protocols using the validated CRT provides a global assessment of medical student clinical reasoning ability that correlates with assessment via the existing CDI, but also additional provides students with actionable feedback on specific deficits in clinical reasoning. Think Aloud used in conjunction with the CRT may be more helpful in identifying specific skills for remediation among medical students struggling with clinical reasoning and problem solving.

Clinical Reasoning Tasks	Number of Students Using Task	Mean (including repeated utterances)	Range
Identify active issues	5	1.3	1-2
Assess priorities	3	1	1-3
Reprioritize	6	1.7	1-3
Consider alternative diagnoses and underlying cause(s)	6	2.2	1-3
Identify precipitants or triggers to the current problem(s)	1	0.2	0-1
Select diagnostic investigations	6	4	3-5
Determine the most likely diagnosis and underlying cause(s)	6	1.7	1-3
Identify modifiable risk factors	3	0.5	0-1
Identify complications associated with the diagnosis, diagnostic investigations, or treatment	5	1.5	0-3
Establish management plans	5	1.7	0-3
Determine follow-up and consultation strategies	1	0.2	0-1

VALIDATION OF A COMPOSITE HEALTH SCORE TO PREDICT 90-DAY ALL-CAUSE HOSPITALIZATION IN A POPULATION OF GENERAL MEDICINE AND FAMILY MEDICINE PATIENTS SEEN AT TWO LARGE, ACADEMIC FACULTY PRACTICES

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BACKGROUND: Reducing the rate of potentially preventable hospitalizations is a high priority for clinically integrated health care delivery systems participating in accountable care organizations. To most efficiently target "admissions prevention" efforts, we developed an EMR-based admissions risk model (the "Composite Health Score", or CHS) to help identify patients at the highest risk for hospitalization. The objective of this study was to prospectively evaluate the ability of the CHS to accurately identify patients at risk for hospitalization within 90 days and to investigate various thresholds for defining a "high risk" subpopulation.
METHODS: Study design: Prospective, observational cohort study Population and Setting: 39,231 patients (>18 years old) attributed to primary care physicians at UNC Internal Medicine Clinic and UNC Family Medicine Clinic on 8/1/2016. Measures: A "snapshot" of the CHS for each patient was recorded on 8/1/2016. 90-day all-cause hospitalization was defined as any hospital admission to one of the UNC Health Care-affiliated system hospitals between 8/2/2016 and 11/2/2016. Analytic procedures: We used logistic regression analysis to evaluate the association of the CHS with 90-day all-cause hospitalization in all patients as well as in subpopulation of patients who had not had any hospitalizations/ED visits in the past year. We also evaluated the discrimination of the CHS to predict 90-day all-cause hospitalizations using the C-statistic, and investigated the sensitivity, specificity, positive predictive value (PPV) and negative predictive value (NPV) associated with a threshold of 25 to define "high risk" patient populations.
RESULTS: For the entire patient population, the average (± SD) CHS was 6.3 ± 7.2. There were a total of 2,708 hospitalizations within the study time period (average rate of 23 admissions per 1000 patients per month); the average CHS was 16.9 ± 12.6 within that subset of patients. In the overall analysis, for every 1 point increase in a patient's CHS, their odds of being hospitalized in the next 90 days increased by 1.15-fold (95% CI: 1.141-1.151; C-statistic 0.877). In patients without a hospitalization or ED visit in the past year, the odds of being hospitalized within the next 90 days increased 1.27-fold for every 1 point increase in the CHS (95% CI: 1.251-1.293; C-statistic 0.882). If a patient's CHS was over 25, their odds of being hospitalized in the next 90 days was 16-fold greater than patients with CHS less than 25 (95% CI: 14.2-17.9). Using a CHS cut-off of 25 correctly classified the 90-day hospitalization status of 93% of patients, and had a sensitivity of 21%, specificity of 98%, PPV of 44 and NPV of 95%.
CONCLUSIONS: The CHS is highly predictive of 90-day all-cause hospitalization in population of patients seen at two large academic faculty practices. A threshold of 25 correctly classifies the 90-day hospitalization status of 93% of patients and thus can reasonably be used to target admissions prevention efforts.

VALIDATION OF A COMPUTERIZED ADAPTIVE TEST FOR DEPRESSION AND ANXIETY IN PRIMARY CARE

Alexa Minc[1]; Andrea E. Kass[1]; Neda Laiteerapong[2]; Robert Gibbons[1]. [1]The University of Chicago, Chicago, IL; [2]University of Chicago, Chicago, IL. (Control ID #2706018)

BACKGROUND: In primary care, there is a great need to screen and ensure adequate treatment for mental health conditions. Approximately half of patients with major depressive disorder (MDD) and generalized anxiety disorder (GAD) are unrecognized and over half of those with mental illness go untreated. Brief screening tools exist for depression and anxiety, such as the Patient Health Questionnaire-2 or −9 (PHQ-2 or PHQ-9) and Generalized Anxiety Disorder-7 (GAD-7). However, since computers are ubiquitous in clinical practice, online screens for mental health conditions may be more accurate, efficient, and agreeable to patients than questionnaires. Computerized adaptive tests (CATs) are screening tools that adapt the order and number of questions administered based on patient responses for a more tailored assessment, personalized to their level of severity. We sought to validate a CAT for mental health (CAT-MH) conditions in a primary care population.

METHODS: We recruited adult primary care patients prior to their appointments. Participants completed 3 assessments for depression and anxiety: the CAT-MH, questionnaires (PHQ-2, PHQ-9, GAD-7), and gold standard Structured Clinical Interview for DSM-5 Disorders (SCID). To assess depression, the CAT-MH selected questions from a bank of 452 validated symptom-based questions. To assess anxiety, the CAT-MH selected from a bank of 467 validated questions. CAT-MH scores range from 0 (no symptoms) to 100 (severe symptoms).

RESULTS: 271 patients completed the study (402 approached, 285 consented, 14 incomplete). Based on the SCID, 31 patients were diagnosed with MDD and 29 with GAD. To diagnose MDD, the CAT-MH administered an average of 4.2 ± 0.5 questions, and if positive, an additional 7.6 ± 1.9 to assess severity. To assess anxiety, the CAT-MH administered an average of 11.8 ± 4.1 questions. For MDD screening, the CAT-MH and PHQ-9 had higher accuracy than PHQ-2 (AUC 0.85 and 0.83 vs. 0.71, respectively). Sensitivity was higher for the CAT-MH and PHQ-9 than PHQ-2 (0.77 and 0.75 vs. 0.58); specificities were similar (0.93 and 0.94 vs. 0.93). As CAT-MH depression severity scores increased, odds of a MDD diagnosis based on the SCID increased (OR 10.7; 95% CI 3.7-18.2). For GAD screening, CAT-MH had high predictive accuracy (AUC 0.93, 95% CI 0.90-0.97) to the GAD-7 (AUC = 0.97, 95% CI 0.96-0.99) and odds of predicting a GAD diagnosis increased with increasing score (OR 10.1; 95% CI 7.0-13.3). More patients preferred the CAT-MH (53%) than the interview (33%) or questionnaires (14%).

CONCLUSIONS: The CAT-MH is a valid tool for depression and anxiety screening and severity assessment in primary care. CATs may provide a more accurate and patient-centered method of screening for mental health conditions compared to brief questionnaires. Use of the PHQ-2 for depression screening may need to be reconsidered in primary care.

VALIDATION OF A COMPUTERIZED METHOD FOR CALCULATING CTPA YIELD IN THE EMERGENCY DEPARTMENT

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BACKGROUND: The diagnostic uncertainty inherent to the clinical assessment for pulmonary embolism (PE) coupled with the possibly fatal consequence of a missed diagnosis has led to increasing utilization of computed tomography pulmonary angiography (CTPA) in the Emergency Department (ED). This has caused growing concerns about the harms of overuse. A recent prospective study found CTPA caused twice as many patients to develop contrast induced nephropathy (14%) as it was able to diagnose with PE. The lifetime malignancy risk can be as high as 2.76% in young female patients. Given the potential for significant iatrogenic harm from overuse, it is important to monitor appropriateness of use by estimating CTPA yield, the percentage of tests positive for PE. The outcome measure "CTPA Yield" is a critical measure needed to better understand how to study and monitor overuse of CT technology. CTPA yield has not been previously studied or validated for use in diagnostic studies for PE. In our study we propose and validate a computerized method for calculating CTPA yield in the ED.

METHODS: The electronic medical record databases at two tertiary care academic hospitals, North Shore University Hospital (NSUH) and Long Island Jewish Medical Center (LIJMC), were queried for CTPA orders completed in the ED over a one month period. From these visits we selected those with a linked inpatient admission and an inpatient discharge diagnosis of PE (ICD-9-CM 415.19/ICD-10- CM I26.99). The CTPA yield was calculated as the number of CTPA orders with an associated inpatient discharge diagnosis of PE divided by the total number of orders for CTPA completed. This calculated yield was then validated by performing a manual chart review which included reading the free text radiology reports for each CTPA performed.

RESULTS: Between both sites, 325 CTPA orders were completed and 27 were found to have an associated inpatient discharge diagnosis of PE. This returned a calculated CTPA yield of 8.31%. Manual chart review revealed 28 positive scans for a true CTPA yield of 8.61%. The one discordant scan was tied to a patient who was discharged directly from the ED, and as a result never received an inpatient discharge diagnosis. During the chart review at NSUH it was noted that 7% of CTPAs were ordered to evaluate for an aortic dissection, all of which had linked orders for CT angiography of the abdomen and pelvis. All CTPA studies with linked orders for CT angiography of the abdomen and pelvis were removed from the total list of CTPAs for both hospitals.

CONCLUSIONS: This is a successful validation study of a computerized method for calculating CTPA yield in the ED. Using this method of EMR data extraction allows for an accurate determination of CTPA yield without time consuming manual chart reviews. This computerized method for calculating CTPA yield provides health systems with the means to monitor for CTPA overuse in the ED and to assess the impact of interventions to reduce overuse, thereby preventing iatrogenic harm.

VALIDATION OF THE 4-ITEM SCREENING COMPONENT OF THE TAPS TOOL TO IDENTIFY UNHEALTHY SUBSTANCE USE AMONG PRIMARY CARE PATIENTS

Robert Schwartz[1]; Jan Gryczynski[1]; Jennifer McNeely[2]; litzy Wu[3]; Gaurav Sharma[4]; Jacquie king[4]; Eve M. Jelstrom[4]; courtney nordeck[1]; Anjalee Sharma[1]; Shannon Mitchell[1]; Kevin O'Grady[5]; Dace Svikis[6]; Lauretta Cathers[6]; Geetha Subramaniam[7]. [1]Friends Research Institute, Baltimore, MD; [2]NYU School of Medicine, New York, NY; [3]Duke University, Durham, NC; [4]Emmes Corporation, Rockville, MD; [5]University of Maryland, College Park, MD; [6]Virginia Commonwealth University, Richmond, MD; [7]National Institute on Drug Abuse, Rockville, MD. (Control ID #2708980)

BACKGROUND: There is a need for a rapid substance use screening instrument to detect unhealthy tobacco, alcohol, and other drug use among primary care patients. The Tobacco, Alcohol, Prescription Medications, and other Substances Tool (TAPS Tool) is a combined 2-part screening and brief assessment developed for adult primary care patients. Its screening component (TAPS-1) consists of 4 items asking about past 12-month use of four substance categories

(any tobacco, 5 or more drinks/day for men [4 for women] of alcohol, any illicit drug use, and any non-medical use of prescription drugs. Categorical response options are: never, less than monthly, monthly, weekly, and daily or almost daily. The objective of this preplanned secondary analysis was to validate the TAPS-1 against the DSM-5 substance use disorder (SUD) criteria.

METHODS: This was a multi-site study evaluating the concurrent validity of the TAPS-1 compared to SUD criteria conducted among 2,000 adult primary care patients in 5 clinics located in 4 Eastern US states. Participants completed the TAPS Tool in a self- administered version on a tablet computer and in an interviewer-administered format, in random order. They were then administered a modified version of the Composite International Diagnostic Interview (CIDI) to determine DSM-5 criteria. Optimal cut points for identifying SUDs were obtained using receiver operating characteristics (ROC) analysis to obtain sensitivity (sens), specificity (spec), positive predictive value (PPV), negative predictive value (NPV), and area under the curve (AUC).

RESULTS: The optimal cut-point on the interviewer-administered TAPS-1 for identifying SUDs was '≥ monthly use' for tobacco (sens = .95, spec = .80, PPV = .62, NPV = .98, AUC = .88) and for alcohol (sens = .68, spec = .87, PPV = .45, NPV = .94, AUC = .77). In contrast, 'any use' was the optimal cut-point for illicit drugs (sens = .93, spec = .86, PPV = .50, NPV = .99, AUC = .89) and for non-medical use of prescription drugs (sens = .90, spec = .95, PPV = .41, NPV = 1.0, AUC = .93). The self-administered format had similar performance.

CONCLUSIONS: The TAPS-1 was able to rapidly screen adult primary care patients for SUDs. Thus, the TAPS-1 could assist health care providers in determining which patients might need a focused, in-depth substance use assessment.

VALIDATION OF THE PRINCIPAL DIAGNOSIS IN THE 30-DAY RISK STANDARDIZED READMISSION RATE IN A LARGE ACADEMIC TERTIARY CARE HOSPITAL Molly J. Horstman[2, 3]; Glynda Raynaldo[1]; Lindsey Jordan[1]; Laura A. Petersen[2, 3]. [1]Michael E. Debakey Medical Center and Baylor College of Medicine, Houston, TX; [2]Baylor College of Medicine, Houston, TX; [3]Michael E. DeBakey VA Medical Center, Houston, TX. (Control ID #2704256)

BACKGROUND: CMS and other entities have focused on reduction of readmissions as a national quality improvement goal. The 30-day risk standardized readmission rate is derived from administrative data and requires the accurate coding of a principal diagnosis. We sought to validate the coded principal diagnosis for patients admitted with pneumonia and to determine if local efforts to improve inpatient coding improved data validity.

METHODS: Two attending physicians reviewed all index admissions with a principal diagnosis of pneumonia from Fiscal Years (FY) 2014–2015 at a large, tertiary care teaching hospital using a standardized abstraction form. Index admissions that did not meet the data definition for the 30-day risk-standardized readmission rate were excluded. Each reviewer independently determined a principal diagnosis for each admission. Disagreements between reviewers were resolved by consensus when possible, or by a third reviewer when needed. In FY 2015, the Michael E. DeBakey VA Medical Center implemented a comprehensive intervention to improve medical documentation and coding. The bundle included resident and attending education and twice-weekly coding huddles with physicians and coders. The proportion of admissions with a confirmed principal diagnosis of pneumonia or alternative diagnosis were compared before and after the coding intervention using a chi square test, and kappa statistics were used to measure interrater reliability.

RESULTS: In FY 2014, 156 admissions met the inclusion criteria. Of these, 29 (18.6%) admissions had a principal diagnosis of pneumonia on chart review. The remaining 127 (81.4%) admissions were determined to have a more appropriate alternative principal diagnosis, most commonly sepsis (n = 88) and acute hypoxic respiratory failure ($n = 20$). In FY 2015, only 92 admissions met the inclusion criteria likely due to an increase in the use of observation status. Of these, 18 (19.6%) admissions had a principal diagnosis of pneumonia on chart review. The remaining 74 (80.4%) admissions were determined to have an alternative principal diagnosis (sepsis $n = 51$, acute hypoxic respiratory failure $n = 17$). The intervention did not change the proportion of admissions with a confirmed coded principal diagnosis of pneumonia ($p = 0.85$). Interrater reliability was moderate (kappa = 0.42).

CONCLUSIONS: We found that less than one fifth of admissions were correctly categorized with a principal diagnosis of pneumonia. This proportion did not improve meaningfully with a coding intervention. Our findings call into question the validity of data used in reporting 30-day readmission rates. The disagreement between experienced physicians regarding the appropriate principal diagnosis highlights the challenges clinicians face in clinical documentation. Recent data definition changes from CMS to include a principal diagnosis of sepsis with a secondary diagnosis of pneumonia as a pneumonia admission may improve the validity of the data.

VALUE-BASED PRIMARY CARE OUTCOMES: VALIDATING AN ALGORITHM FOR INCIDENT MYOCARDIAL INFARCTION AND ASSESSING TRENDS OVER 10 yearS Jeffrey M. Ashburner[2]; Daniel M. Blumenthal[2]; Steven Mcdermott[2]; Wei He[1]; Steven J. Atlas[2]. [1]MGH, Boston, MA; [2]Massachusetts General Hospital, Boston, MA. (Control ID #2705447)

BACKGROUND: Most primary care (PC) quality measures assess care processes or intermediate outcomes. Delivering value-based services requires assessing outcomes that directly contribute to health. We developed and validated an electronic algorithm to identify patients seen within a large PC network with incident myocardial infarction (MI); identified incident MIs over a 10 year period; and examined changes in prevalence of pre-existing chronic diseases over time.

METHODS: The cohort includes adults aged 18+ with incident MI cared for in a 19-practice PC network between 2006–2015, a period when the network grew from 143,995 to 163,279 patients. We identified patients with an inpatient primary discharge diagnosis of MI or two outpatient visits with problem list terms or billing code diagnoses for MI. We excluded outpatient MI diagnoses identified in patients new to the network without an inpatient diagnosis to exclude prevalent events. We applied this algorithm to each calendar year. We randomly chose up to 2 cases per practice in each year ($n = 312$) and 25 controls per practice ($n = 475$) for chart review validation.Fifty randomly selected patients with newly diagnosed coronary artery disease (CAD) not identified as having a MI were assessed to identify missed incident events occurring outside our network. A research nurse performed blinded electronic chart reviews. We assessed the number and proportion of patients with incident MI per year, and the proportion with established cardiovascular disease (CVD) (CAD, peripheral and cerebrovascular disease), hypertension, and diabetes before the incident MI. We examined trends over time using the Cochran-Armitage test.

RESULTS: Chart review validation of 787 patients yielded a sensitivity of 96%, specificity of 91%, positive predictive value of 86%, and negative predictive value of 98%. Among 50 patients with a new CAD diagnosis without incident MI, 46 (92%) did not have a MI, while 4 (8%) had a MI.

Of the 4, 2 occurred before joining the PC network, and 2 (4%) were incident MIs missed by the algorithm. Between 2006–2015, the annual in-network incidence of MI ranged from 0.09% ($n = 130$ in 2009) to 0.13% ($n = 192$ in 2011). The average age of MI patients was 67.5 years, and 65.6% were male. The proportion of MI patients with pre-existing CVD (14.7% in 2006, 28.1% in 2015) or hypertension (46.9% in 2006, 65.9% in 2015) increased over time (all $p < 0.001$), while the proportion with pre-existing diabetes did not (23.1% in 2006, 25.2% in 2015; $p = 0.8$). The proportion with any chronic condition increased from 51.8% in 2006 to 68.3% in 2015 ($p < 0.001$).

CONCLUSIONS: We developed and validated an outcome measure for incident MI in a PC network. Though rates of MI were stable, the percentage of patients with pre-existing chronic disease risk factors for MI increased over 10 years. The low incidence of MI in this large network suggests that composite measures which include multiple outcomes (e.g. MI and stroke) may be needed to accurately assess value-based PC quality.

VARIABILITY IN THE COMPLETION OF TRANSITIONAL CARE MANAGEMENT ELEMENTS AT POST-DISCHARGE PRIMARY CARE VISITS Salina Bakshi[1, 2]; Karen Sherritt[1, 2]; Michelle Potter[1, 2]; Jeffrey L. Schnipper[1, 2]; Lipika Samal[1, 2]. [1]Brigham and Women's Hospital, Boston, MA; [2]Harvard Medical School, Boston, MA. (Control ID #2706205)

BACKGROUND: The Partners PCORI Transitions Study was designed to improve transitions of care after hospital discharge. While many patients are scheduled for follow-up appointments with their primary care physicians (PCP), there is no standard of care for these visits. Medicare's Transitional Care Management (TCM) Services Guidelines describes a set of potential tasks for post-discharge visits, but PCPs may be unaware of these guidelines. Our study examined variation in documented completion of TCM elements during these visits.

METHODS: Patients admitted to medical or surgical units at two hospitals were eligible for the study if they received primary care at one of 18 practices within the Partners accountable care organization. Patients were eligible if they were discharged from hospital to home between October 2013 and September 2015. Patients were excluded if they were re-admitted to the hospital directly from their PCP's office. We examined post-discharge notes for eight TCM elements based on Medicare's TCM Services Guidelines. These include elements such as "Review of Discharge Summary" and "Assessment of Disease Management." Completion of services was based on a set of definitions iteratively refined for reliability and conducted by a research assistant working with a clinician-investigator and a resident in internal medicine. We calculated a "TCM score," which was the unweighted sum of the number of TCM elements documented during the visit.

RESULTS: We reviewed 46 post-discharge visits, representing 34 different physicians. About half (54%) of patients were male, 59% were white, and 48% were married. The majority of the visits (63%) were conducted by the patient's PCP, while the others were conducted by a different provider in the practice. The mean unweighted TCM score was 3.66 (range 0–7). No visits which fulfilled all eight elements. Rate of completion of each element ranged from 11% (discussion of home-based resources) to 77% (assessment of disease control; Table 1).

CONCLUSIONS: On average, the post-discharge visit fulfilled less than half of recommended transitional care elements, at least as documented in visit notes. There was great variation in documented completion of these services, both by TCM element and by visit. Our findings suggest that the Medicare TCM Services Guidelines, as currently implemented, may be insufficient to ensure consistent completion of transitional care elements during post-discharge visits.

Documented Completion of TCM Elements During Post-Discharge Primary Care Visits

TCM Element	Proportion Documented as Completed
Review of discharge summary	68%
Assessment of disease control	77%
Treatment change	51%
Review of pending studies	34%
Scheduling follow-up with other providers	36%
Discussion of community & home based resources	11%
Patient and caregiver education	30%
Medication reconciliation or education	60%

VARIATION IN CHOICE OF DIABETES PREVENTION STRATEGY BY GENDER, RACE AND ETHNICITY AFTER A PREDIABETES SHARED DECISION MAKING VISIT WITH A PHARMACIST: THE PREDIABETES INFORMED DECISION AND EDUCATION (PRIDE) STUDY. Jacqueline Martin[1, 2]; Jonathan Grotts[1, 2]; O. Kenrik Duru[2, 1]; Tannaz Moin[3]; Janet Chon[1, 2]; Chi-Hong Tseng[1, 2]; Richard Maranon[1, 2]; Keith Norris[1, 2]; Gerardo Moreno[2, 1]; Susan Ettner[2, 1]; Carol Mangione[1, 2]. [1]David Geffen School of Medicine at UCLA, Los Angeles, CA; [2]UCLA, Los Angeles, CA; [3]UCLA/VA Greater Los Angeles, Los Angeles, CA. (Control ID #2707022)

BACKGROUND: Approximately 1 in 3 American adults have prediabetes (pre-DM) and 11% are predicted to develop diabetes over a 3-year period. Currently very few persons with pre-DM are engaged in evidence-based diabetes prevention strategies including intensive lifestyle change and/or metformin. The goals of these analyses are: 1) assess the impact of a pre-DM shared decision making (SDM) visit with a pharmacist on overall rates of selection of an intensive lifestyle program (Diabetes Prevention Program/DPP) and/or use of metformin (MF); and 2) examine variation in treatment choice by demographic and clinical characteristics.

METHODS: The study population included 365 participants with pre-DM from 10 primary care practices from the intervention arm of a cluster-randomized trial of SDM designed to evaluate uptake of diabetes prevention. Eligible participants were between the ages of 18 and 65 years with a body mass index (BMI) > 24 m/kg^2 (>22 m/kg^2 if Asian), and an A1c between 5.7-6.4%. At the completion of the SDM visit with a clinical pharmacist, patients could make one of 4 treatment choices (DPP, MF, DPP + MF, or no treatment). Variation in treatment choice by age, race/ethnicity, gender, BMI and A1c was assessed with a multivariate logistic regression model.

RESULTS: A total of 365 study participants were enrolled with a mean (SD) age of 56.3 years (11.5), BMI of 30.4 kg/m2 (5.2), and A1c of 6.0%. The sample included 44.1% White, 21.4% Asian, 16.4% Hispanic, and 13.2% African American participants, as well as 58.6% women. Among these subjects, 209 (57%) chose DPP, 33 (9%) chose MF alone, 61 (17%) chose both DPP + MF, and 62 (17%) declined both treatments. In analyses adjusted for age, race/ethnicity, BMI, and A1c, when compared to women, men were significantly less likely to choose DPP or DPP + MF (OR = 0.59, $p = .04$) and subjects with higher BMI were more likely to select a choice that included DPP (OR = 1.1 per unit increase in BMI, $p = .001$). No other characteristics were significantly associated with choosing DPP. Younger age (<50 years reference, 50–59 [OR = 0.77], > 60 [OR = 0.4], $p = .01$) and higher BMI was significantly associated with choosing MF with or without DPP, (OR = 1.08, $p = .005$).

CONCLUSIONS: Overall 83% of subjects with pre-DM selected an active diabetes prevention strategy after participating in a pharmacist led SDM visit. This level of engagement in diabetes prevention is much higher than what has been reported in the literature. However, the selection of specific diabetes prevention treatments after a SDM visit varied by gender, age and BMI with those with the highest BMIs significantly more likely to select both prevention strategies either alone or simultaneously. We did not find an association between A1c level and choosing any diabetes prevention strategy, suggesting that the participants may not have perceived an increased risk of diabetes with higher baseline A1c.

VARIATION IN PHYSICIANS' DECISIONS ON ANTIHYPERTENSIVE TREATMENT IN OLDEST-OLD AND FRAIL INDIVIDUALS ACROSS 29 COUNTRIES Sven Streit[2]; Marjolein Verschoor[2]; Nicolas Rodondi[2, 3]; Daiana Bonfim[4]; Robert A. Burman[5]; Tuz Canan[6]; Claire Collins[7]; Biljana Gerasimovska Kitanovska[8]; Sandra Gintere[9]; Raquel Gómez Bravo[10]; Kathryn Hoffmann[11]; Claudia Iftode[12]; Kasper L. Johansen[13]; Ngaire Kerse[14]; Tuomas H. Koskela[15]; Sanda Kreitmayer Peštić[16]; Donata Kurpas[17]; Christian Mallen[18]; Hubert Maisonneuve[19]; Christoph Merlo[20]; Yolanda K. Mueller[21]; Christiane Muth[22]; Marija Petek Šter[23]; Ferdinando Petrazzuoli[24]; Thomas Rosemann[25]; Martin Sattler[26]; Zuzana Švadlenková[27]; Athina Tatsioni[28]; Hans Thulesius[29]; Victoria Tkachenko[30]; Peter Torzsa[31]; Rosy Tsopra[32]; Rita P. Viegas[33]; Shlomo Vinker[34]; Margot W. de Waal[1]; Andreas Zeller[35]; Jacobijn Gussekloo[1]; Rosalinde K. Poortvliet[1]. [1]Leiden University Medical Center, Leiden, Netherlands; [2]University of Bern, Bern, Switzerland; [3]Inselspital, Bern, Switzerland; [4]Hospital Israelita Albert Einstein, São Paulo, Brazil; [5]Vennesla Primary Health Care Centre, Vennesla, Norway; [6]Kemaliye Town Hospital, Erzincan University, Erzincan, Turkey; [7]Irish College of General Practitioners, Dublin, Ireland; [8]University Clinical Centre, University St. Cyril and Metodius, Skopje, Macedonia (the former Yugoslav Republic of); [9]Riga Stradins University, Riga, Latvia; [10]University of Luxembourg, Luxembourg, Luxembourg; [11]Medical University of Vienna, Vienna, Austria; [12]Sano Med West Private Clinic, Timisoara, Romania; [13]Danish College of General Practitioners, København, Denmark; [14]University of Auckland, Auckland, New Zealand; [15]University of Tampere, Tampere, Finland; [16]University of Tuzla, University of Tuzla, Bosnia and Herzegovina; [17]Wroclaw Medical University, Wroclaw, Poland; [18]Keele University, Keele, United Kingdom; [19]University of Geneva, Geneva, Switzerland; [20]nstitute of Primary and Community Care Lucerne (IHAM), Luzern, Switzerland; [21]Institute of Family Medicine Lausanne (IUMF), Lausanne, Switzerland; [22]Goethe-University, Frankfurt/Main, Germany; [23]University of Ljubljana, Ljubljana, Slovenia; [24]National Society of Medical Education in General Practice, Milano, Italy; [25]University Hospital Zurich, University of Zurich, Zürich, Switzerland; [26]SSLMG, Societé Scientifique Luxembourgois en Medicine generale, Luxembourg, Luxembourg; [27]Ordinace Repy, s.r.o, Praque, Czech Republic; [28]Faculty of Medicine, School of Health Sciences, University of Ioannina, Ioannina, Greece; [29]Lund University, Malmö, Switzerland; [30]Shupyk National Medical Academy of Postgraduate Education, Kiev, Ukraine; [31]Semmelweis University, Budapest, Hungary; [32]Université Paris, Paris, France; [33]NOVA Medical School, Lisboa, Portugal; [34]Tel Aviv University, Tel Aviv, Israel; [35]Centre for Primary Health Care (uniham-bb), Basel, Switzerland. (Control ID #2685840)

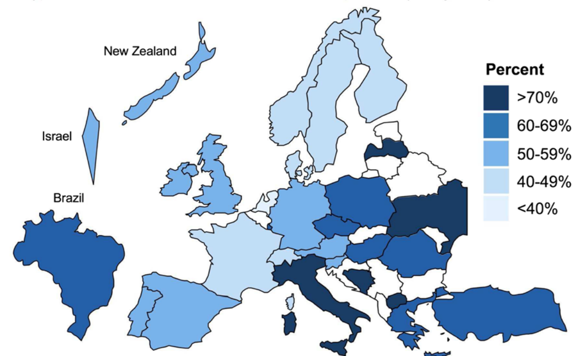
BACKGROUND: In oldest-old patients (>80), few trials showed efficacy of treating hypertension and they included mostly the healthiest elderly. The resulting lack of knowledge has led to inconsistent guidelines, mainly based on systolic blood pressure (SBP), cardiovascular disease (CVD) but not on frailty despite the high prevalence in oldest-old. This may lead to variation how primary care physicians (PCP) treat hypertension. Our aim was to investigate treatment variation of PCPs in oldest-olds across countries and to identify the role of frailty in that decision.

METHODS: Using a survey, we compared cases of oldest-old varying in SBP, CVD, and frailty. PCPs were asked if they would start antihypertensive treatment in each case. In 2016, we invited PCPs in Europe, Brazil, Israel, and New Zealand. We compared the percentage of cases that would be treated per countries. A logistic mixed-effects model was used to derive odds ratio (OR) for frailty with 95% confidence intervals (CI), adjusted for SBP, CVD, and PCP characteristics (sex, location and prevalence of oldest-old per PCP office, experience, and guideline adherence when treating hypertension in oldest-old). The mixed-effects model was used to account for the multiple assessments per PCP.

RESULTS: The 29 countries yielded 2,543 participating PCPs (response rate 3–93% per country): 52% were female, 51% located in a city, 71% reported a high prevalence of oldest-old in their offices, 38% had >20 years of experience, and 69% reported adherence to guidelines. Across countries, considerable variation was found in the decision to start antihypertensive treatment in the oldest-old ranging from 34–88% (Figure 1). In 24/29 (83%) countries, frailty was associated with PCPs' decision not to start treatment even after adjustment for SBP, CVD, and PCP characteristics (OR 0.53, 95%CI 0.48–0.59; ORs per country 0.11–1.78).

CONCLUSIONS: Across countries, we found considerable variation in starting antihypertensive medication in oldest-old. The frail oldest-old had an OR 0.53 of receiving antihypertensive treatment. Future hypertension trials should also include frail patients to acquire evidence on the efficacy of antihypertensive treatment in oldest-old patients with frailty, with the aim to get evidence-based data for clinical decision-making.

Figure 1. National percentages in which primary care physicians decide to start antihypertensive treatment in cases of oldest-old patients (unadjusted).



VARIATIONS IN ADHERENCE TO SYNDROME-SPECIFIC PREVENTIVE HEALTHCARE AMONG ADOLESCENTS AND ADULTS WITH DOWN SYNDROME Kristin M. Jensen[1, 2]; Elizabeth J. Campagna[2]; Elizabeth Juarez-Colunga[2, 2]; Desmond K. Runyan[2]; Allan V. Prochazka[1]. [1]University of Colorado School of Medicine, Aurora, CO; [2]University of Colorado, Aurora, CO. (Control ID #2705404)

BACKGROUND: Persons with Down syndrome (DS) have risks of comorbidities across their lifespan, for which syndrome-specific recommendations exist. Little is known about adherence to DS-specific recommendations, particularly with regards to the influence of the age-focus of primary care provider (PCP). In this study, we evaluate adherence to DS-specific recommendations among adolescents and adults with DS.

METHODS: Using Medicaid claims data (2006–2010) in CA, CO, MI, and PA, we defined our cohort as DS patients ≥12yo enrolled in Medicaid for ≥45/60 mo without concurrent Medicare. Patients without a PCP were excluded (total cohort 3501). Providers were considered PCPs if they billed ≥10 well exams in a year. PCPs with ≥80% of their well-exams billed as well-child or well-adult were categorized as child- or adult-focused, respectively. The remaining PCPs were classified as mixed-focus. DS screenings recommended every 1-2 yr include thyroid, vision, and hearing. Additional DS screenings prompted by clinical suspicion include sleep apnea and acquired valve disease. We used Pearson's chi-squared tests to compare adherence to these screening activities at least once within 5 yr by PCP focus within age groups.

RESULTS: 52% of our cohort was male, with 21% adolescent (12–17yo), 32% transition aged (18–25yo), and 47% adult (≥26yo). 52% had a child-focused PCP (12–17yo 73%, 18–25yo 54%, ≥26yo 40%), with the remaining split equally between adult- and mixed-focused PCPs. Hearing and vision screenings were comparable between PCP types in all age groups. Adult-focused PCPs had increased adherence to thyroid screenings among 18–25yo ($p < 0.001$) and ≥26yo ($p = 0.006$). Screening for acquired valve disease and sleep apnea was similar between PCP types across age groups, except in 18–25yo where more patients with child-focused PCPs underwent sleep apnea screening ($p = 0.009$).

CONCLUSIONS: We observed little variation in adherence to DS-specific recommendations by patient age or PCP focus with marked variation in adherence between individual screening measures. This represents a significant opportunity to improve syndrome-specific care in adolescents and adults with DS.

	Total	12-17yo		18-25yo		≥26yo	
PCP Focus		C/M	A	C	A	C	A/M
DS-Specific Screenings Recommended Every 1-2 yrs							
Thyroid	72%	61%	70%	63%*	75%*	76%*	82%*
Hearing	18%	36%	44%	17%	19%	11%	10%
Vision	55%	64%	62%	50%	53%	51%	55%
DS Screenings Personalized to Symptoms/Risk							
Sleep Apnea	5%	8%	5%	6%*	2%*	4%	3%
Acquired Valve Disease							
- CHD	90%	85%	88%	93%	93%	91%	92%
- no CHD	22%	19%	11%	19%	18%	28%	24%

PCP Focus: C=child, M=mixed, A=adult
CHD= Congenital Heart Disease
* p<0.05 comparing PCP-types within age groups

VETERAN PATIENTS' PERSPECTIVES ON RECENT RE-HOSPITALIZATION: QUALITATIVE FINDINGS Lauretta E. Grau[2]; Sheila Antony[1]; Rebecca Brienza[1]. [1]VA Connecticut Healthcare System, West Haven, CT; [2]Yale School of Public Health, New Haven, CT. (Control ID #2705726)

BACKGROUND: VA patients are at high risk of readmission due to their lower socioeconomic status, older age, poor social supports, and multiple comorbidities. The current study was undertaken in response to VA interest in reducing readmission risk and enhancing quality of healthcare by exploring patients' perceptions about putative factors contributing to their readmission and their perspectives on how to reduce the likelihood of readmission.

METHODS: Subjects were purposively sampled at the VA Connecticut hospital in West Haven. All were inpatients, 18+ years of age, re-hospitalized to internal medicine within 30 days of last discharge, medically stable, and competent to provide consent. Interviews were audiotaped, lasted 20–30 min, and asked about perceived health status after last discharge, reason for readmission, and access to and support from primary care. They were also asked about demographics. All audiotaped interviews were transcribed verbatim, de-identified, independently coded (LG, SA), and analyzed using thematic analysis. Coding discrepancies were resolved by consensus. Data collection continued until theoretical saturation was achieved. The study was approved by the West Haven, VA IRB.

RESULTS: The study sample comprised 17 males and 1 female VA patients; all were Caucasian, elderly (mean age 71.6;11.1 SD), and financially secure but on limited budgets. Approximately half lived with family or a spouse; many had serious medical conditions or histories of affective disorders. Themes about precipitating factors in readmission included logistical/structural barriers to accessing primary care providers (PCP), limited PCP involvement patients sought emergency care, and patients' belief that readmission was inevitable. Themes related to the discharge process and post-discharge services included beliefs of having been prematurely discharged, inadequate understanding of post-discharge plan, and poorly coordinated post-discharge services. Most patients highly valued their VA Primary and inpatient care but recommended increasing PCP involvement in their inpatient care, reducing transportation and distance barriers to primary and specialty care, expanding pre-discharge services, and improving post-discharge service coordination in order to reduce risk of re-hospitalization.

CONCLUSIONS: Limited contact with the medical system prior to returning to the hospital, limited access to care due to clinic hours and distance, and inadequate services pre- and post-discharge were seen by patients to contribute to their readmission. They suggested proactive outreach to high-risk patients following discharge, expanded access to outpatient care, and increased coordination and communication between all relevant inpatient and outpatient services in preparation for discharge and after-care could improve VA healthcare delivery.

VIDEO VISITS CAN BE BOTH EFFICIENT AND EFFECTIVE: A SYSTEMATIC REVIEW Michael C. Gao; Peggy Leung. NewYork-Presbyterian/Weill Cornell, New York, NY. (Control ID #2699081)

BACKGROUND: Telemedicine has the potential to lower cost and to reach patients where regular care cannot. However, existing reviews have come to varying conclusions as to its clinical appropriateness. One challenge is that telemedicine technologies are heterogenous and include remote monitoring, direct-to-consumer apps, asynchronous communication (e.g. e-mail consults), and synchronous communication (e.g. video visits). In this study, we systematically review randomized-controlled trials (RCTs) investigating one important component, the use of video visits, and describe their findings in terms of clinical outcomes, patient costs, process measures, and patient and provider satisfaction.

METHODS: We conducted a systematic literature searches in Medline, Embase, and Cochrane from their inception through August 2016. Major search terms included telemedicine, virtual or video visit, and remote consultation. In addition, reference and article related searches were conducted in Ovid and Pubmed. We included English-language manuscripts that (1) were RCTs, (2) compared video visits at the patient's residence to standard outpatient care, and (3) contained MD, DO, or NP providers. Studies were excluded if the video visit portion was ancillary to the digital platform as a whole, e.g. visits triggered by telemonitoring of pacemakers. Two researchers independently reviewed all retrieved articles to identify studies meeting eligibility criteria and to abstract pertinent data. The Clinical Appraisal Scales Programme (CASP) RCT checklist, a validated 22 point scale, was used to evaluate study quality.

RESULTS: Of the 1785 articles identified, seven met our inclusion criteria. The mean CASP score was 15.1 and ranged from 9 to 19 points. Five studies had visit reasons relevant to primary care, including Type 2 Diabetes (T2DM), HIV, Parkinson's Disease (PD), and two described post-operative management in Urology and in Orthopedics. Video platforms used included enterprise software (VSee, Vidyo, SBR Health), consumer software (Skype), custom-built software, and video-conferencing phones. Five out of seven studies reported clinical outcomes: both T2DM studies showed greater HbA1C improvement by video visits, one PD study showed greater quality of life and motor improvements, and the remaining two studies found no significant differences. Three studies reported patient non-visit costs (e.g. travel, days off work), and all significantly favored video visits. Three studies reported process measures (e.g. percent of appointments kept, visit time, wait time) and none showed significant differences. Five studies reported either patient or provider satisfaction measures and none found significant differences.
CONCLUSIONS: Although additional research is needed, video visits have the potential to lower patients' cost of access while simultaneously providing perceived high-quality care. In some chronic conditions, video visits may even lead to improved clinical outcomes.

WE HAVE HIV, IT DOESN'T HAVE US: ADDRESSING STIGMA THROUGH A VIRTUAL COMMUNITY FOR PEOPLE LIVING WITH HIV Tabor E. Flickinger; Claire L. DeBolt; Alison Kosmacki; Ava Lena Waldman; Karen Ingersoll; Rebecca Dillingham. University of Virginia, Charlottesville, VA. (Control ID #2703468)

BACKGROUND: Stigma against persons living with HIV (PLWH) has negative consequences, including poor mental health and lower treatment adherence. We designed a clinic-based smartphone app for PLWH that includes an anonymous private online support group. We analyzed how stigma was discussed within this virtual community of PLWH.
METHODS: The Positive Links program is based at an academic outpatient Ryan White Clinic in southwestern Virginia. For this pilot study, 77 patients were enrolled and given smartphones with the Positive Links app installed. The app was designed through an iterative, user-based process and includes the opportunity to interact with other users on a community message board (CMB). CMB content was analyzed qualitatively using constant comparisons methodology to explore themes of stigma. Posts were classified as stigma-related if they referred to positive or negative social implications of HIV status. Coding was performed by three coders who achieved good reliability (kappa 0.86).
RESULTS: Of the 77 participants, 63% were male; 49% black non-Hispanic; and 72% below the federal poverty level. Over 30 months, participants made 2300 posts on the CMB. Participants expressed a lack of self-worth (feeling undeserving of love) and negative framings of HIV status (suggesting HIV diagnosis is a negative result of past actions). In contrast, other participants expressed affirmation of self-worth (one still has value despite HIV+ status) and positive framings of HIV status (how HIV diagnosis has positively impacted life). Negative interpersonal themes were disrupted relationships, fear of HIV transmission, feelings of loneliness or isolation, negative past or anticipated experiences with disclosure, and negative consequences of failing to disclose status. Positive interpersonal themes were finding true friends or family (suggests that HIV status has allowed person to create stronger relationships), and positive past or anticipated experiences with disclosure. Interactions in stigma-related threads included sharing negative emotions with CMB, asking questions related to stigma, sharing need to talk, sharing one's story, as well as offering companionship/support, blessings, instructional advice in stigma-related situations, and encouraging positive thinking and a will to overcome.
CONCLUSIONS: CMB participants expressed negative experiences of internalized and interpersonal stigma. They also shared positive experiences of overcoming stigma by affirming self-worth, reframing HIV status in a positive way, and finding friends and family who accepted them. The Positive Links community offered support to each other in addressing issues of stigma within themselves and in their relationships. Next steps include quantifying frequencies of stigma-related post types and mixed-methods analysis of posting behavior and outcomes for participants. Online communities have potential to help patients find acceptance and develop resilience by overcoming adversity together.

WE NEED EXTRA CARE: TRANSGENDER PEOPLE OF COLOR DESCRIBE HEALTHCARE PRIORITIES AND FACILITATORS TO ACCESS Zoe Ginsburg[1]; Mollie B. Nisen[1]; Elliot Goodenough[3]; Madeleine Lipshie-Williams[1]; Jules Chyten-Brennan[2]; Viraj V. Patel[1]. [1]Albert Einstein College of Medicine, Bronx, NY; [2]Montefiore, New York, NY; [3]Montefiore Medical Center, Bronx, NY. (Control ID #2706089)

BACKGROUND: Transgender people have poor health outcomes in nearly every measure compared to cisgender people, and experience health care discrimination. These disparities are worse for transgender people of color (TPOC). While researchers have explored barriers to care, little has focused on transgender patients' priorities for their own healthcare, facilitators to care, and none is specific to TPOC. We conducted a qualitative study to explore priorities for and facilitators to healthcare for TPOC in the Bronx.
METHODS: We conducted 3 focus groups in September 2016 (2 in English and 1 in Spanish), led by a trained, experienced, bilingual peer-facilitator. Participants ($n = 22$) were recruited through key informants in the Bronx transgender community and convenience sampling social media. Inclusion criteria included being over 18, identifying as transgender or gender non-conforming, fluency in English or Spanish, and had or may access healthcare in the Bronx. We used grounded theory approach to analysis.
RESULTS: All participants were non-white: half (11/22) were black, and 6 were Spanish speakers. Nearly half (10) were transwomen (self-identified women who were assigned-male-at-birth), 8 were transmen (self-identified men who were assigned-female-at-birth) and 3 were non-binary (did not currently identify as male or female). The average age was 35.7 (23–59), over 80% (17) were insured, with the majority having Medicaid (10/17). Three key themes or priorities to facilitate transgender healthcare access emerged: (1) transgender specific resource allocation, (2) using existing transgender peer networks, and (3) ongoing mechanisms to incorporate feedback. Participants framed these 3 themes in the context of general distrust of the medical system. First, (1) TPOC look for resources allocated specifically for transgender people to overcome existing barriers to care, including training for all staff and clinicians, having healthcare workers who are trans, and media and materials featuring TPOC. Second, (2) existing transgender networks are a rich conduit for information sharing and can quickly spread (mis)trust. Third (3), despite historical distrust of medical systems, TPOC are willing to invest energy to advise on culturally appropriate practices; feedback mechanisms may foster mutual trust. Participants expressed interest in a community advisory board and on the condition they are compensated for their time and expertise, and saw suggestions being implemented.
CONCLUSIONS: TPOC look for resource allocation and staff training specifically for transgender clients as a proxy for competency and medical safety, and

rely on peer networks for information and support over "official" resources. These results suggest healthcare systems can facilitate access by hiring transgender people themselves, and creating responsive, ongoing feedback mechanisms. Despite medical system distrust, participants were willing to be involved in new models of care provided their input is valued and operationalized.

WHAT ACCOUNTS FOR THE VARIATION IN AVOIDABLE ED USE AMONG MEDICARE ENROLLEES? Amresh D. Hanchate[2, 1]; William E. Baker[1]; Michael Paasche-Orlow[1]; Sophia Dyer[1]; Jean Degeorge[3]; James Feldman[1]. [1]Boston University School of Medicine, Boston, MA; [2]VA Boston Healthcare System, Boston, MA; [3]Boston Medical Center, Boston, MA. (Control ID #2701245)

BACKGROUND: Avoidable ED (AED) use is associated with lack of insurance and Medicaid coverage; sources of AED use among those with stable coverage is unknown. We sought to estimate regional variation in AED use for Medicare patients and its association with patient health status, socioeconomic indicators, and provider availability.

METHODS: We identified 2010 ED visits in a national sample ($N = 999{,}999$) of Medicare Fee for Service enrollees aged 66 and older. AED use was identified based on outpatient ED discharges classified as "non-emergent" or "emergent but primary care treatable" using the NYU-Billings' algorithm. Our primary outcome was the number of AED visits per 100 person-years ("AED rate"). We also examined the number of all ED visits per 100 person-years ("ED rate"). Using Dartmouth's hospital referral region (HRR) as the area unit, we estimated age-sex adjusted AED and ED rates, and grouped all HRRs ($N = 306$) into quartiles. We examined concordance between AED and ED rate quartiles. Using Poisson regression models we assessed the share of patient health status (comorbidities), socioeconomic indicators (minority race/ethnicity, dual Medicaid coverage, low income) and provider availability (metropolitan area, proximity to hospital) in accounting for interquartile differences in AED rate.

RESULTS: The national AED rate (13.9, 95% CI 13.7–14.1) was 24% of overall ED rate (58.3, 95% CI 58.2 59.2). HRR-level variation in AED rate ranged from 6.8 (95% CI 5.3 8.3) in Lancaster, PA to 27.8 (95% CI 23.6 31.2) in Bangor, ME. Relative to HRRs in the lowest rate quartile, HRRs in the highest quartile had a 74% higher AED rate (incidence rate ratio (IRR) 1.74, 95% CI 1.67–1.81). Concordance between regional AED and ED rates was poor (kappa = 0.32, 95% CI 0.25–0.38); AED rates were relatively higher but ED rates relatively lower in Midwest and West regions. Adjusting for health status, socioeconomic indicators, and provider availability reduced quartile 1 vs. quartile 4 difference in AED rate by 21% (IRR 1.58, 95% CI 1.51–1.65). Provider availability was associated with the largest variation in AED rate (13.4%), followed by socioeconomic indicators (9.8%) and patient health status (<0.1%). Specifically compared to metropolitan statistical areas, higher adjusted AED was observed in micropolitan statistical areas (IRR 1.13, 95% CI 1.09–1.18) and non-urban areas (IRR 1.25, 95% CI 1.25–1.35); among socioeconomic indicators, Medicaid dual coverage (IRR 1.43, 95% CI 1.37–1.48) and black race (IRR 1.47, 95% CI 1.43–1.51) were associated with higher AED relative to white enrollees without Medicaid coverage.

CONCLUSIONS: AED rates vary by HRR, even among Medicare enrollees with similar health status. Associations of provider availability and socioeconomic indicators with AED use point to potential opportunities for targeted efforts to safely reduce AED use by reducing barriers to timely and convenient outpatient care. Additional sources of regional variation need to be explored.

WHAT CONSTITUTES AN "INDEPENDENT STATISTICAL ANALYSIS" OF AN RCT? Ann Abraham[5]; Rosa Ahn[3]; Alexandra Woodbridge[5]; Susan Saba[6]; Erin Madden[2]; Deborah R. Korenstein[1]; Salomeh Keyhani[4]. [1]Memorial Sloan Kettering Cancer Center, Pelham, NY; [2]NCIRE, SAn Francisco, CA; [3]Oregon Health and Science University, Portland, OR; [4]University of California at San Francisco, San Francisco, CA; [5]San Francisco VA Medical Center, San Francisco, CA; [6]Stanford University School of Medicine, Palo Alto, CA. (Control ID #2700445)

BACKGROUND: The term "independent statistical analysis" is used to suggest impartiality and robustness of trial data and analysis. We conducted a descriptive study to examine how the term "independent statistical analysis" is used in published randomized controlled trials (RCT) examining the efficacy of drugs.

METHODS: We searched MEDLINE for all RCTs with abstracts in the English language published in 2013. We randomly selected 496 trials for review, including trials with a primary efficacy outcome and excluding those that did not specify the drug of interest. One hundred ninety trials met inclusion criteria and underwent review independently by two reviewers, including the Methods and Acknowledgement sections, for terms describing an independent statistical analysis or independent statistician. Disagreements were resolved by discussion. Papers reporting independent statistical analysis were further reviewed for data on the role of the statistician in data analysis, the statistician's access to data, and the employer of the statistician. We also abstracted for funding source and role of the sponsor with regards to data management and analysis. All information was abstracted by one reviewer and verified by a second reviewer.

RESULTS: Among the 190 trials that met inclusion criteria, 17 (8.9%) reported independent statistical analysis. Among the 17 trials, the majority (14, 82.3%) were funded by industry and most (12, 70.6%) were published in high impact journals (impact factor > 10). The independent statistician(s) was clearly identified in the majority of the papers (70.6%).The role of independent statisticians varied across trials; they led the analysis in 6 (35.3%), validated the sponsors analysis in 5 (29.4%), and provided statistical assistance in 3 (17.6%). In about a quarter of the trials, the role of the statistician was not specified. Independent statisticians had complete access to the data in 8 trials (47.1%), and limited access in 3 (17.6%); 6 (35.3%) trials did not specify. The majority of statisticians were employed by academia, such as universities, academic research organizations or non-profit hospitals (13, 76.5%) with the remainder employed by contract research organizations (4, 23.5%). In 7 (41.1%) trials with independent statistical analysis the sponsor was not involved in data collection, management, or analysis; in 7 (41.1%) the sponsor was involved in these data functions, in 2 (11.8%) trials the sponsor performed the analysis in parallel with the independent statistician, and in 1 (5.8%) sponsor relationship to data was unspecified.

CONCLUSIONS: Independent statistical analyses of RCTs focused on drug efficacy are found mostly in industry funded studies published in high impact journals. However, while the term is used in the literature, there does not appear to be a uniform definition for what constitutes an independent statistical analysis.

WHAT DEFINES AN HONORS STUDENT? A TEACHING WARD ATTENDING PERSPECTIVE Lauren Nicholas (Nico) Herrera[3]; Ryan Khodadadi[3]; Winter Williams[1]; Erinn Schmit[3]; Nina Mingioni[4]; Andrew R. Hoellein[2]; Karen L. Law[5]; Christopher Knudson[5]; Carlos Estrada[1]. [1]The University of Alabama at Birmingham, Birmingham, AL; [2]University of Kentucky, Lexington, KY; [3]University of Alabama at Birmingham,

Birmingham, AL; [4]Thomas Jefferson University, Philadelphia, PA; [5]Emory University, Atlanta, GA. (Control ID #2703040)

BACKGROUND: Nationwide, 20–40% of clerkship students receive the top grade. However, little is known on the key characteristics that define high-performing students. We examined teaching ward attendings' opinions of characteristics that define honors medical students.

METHODS: *Design*: cross-sectional. *Setting*: seven teaching sites in the US. *Participants*: teaching ward attendings in internal medicine [IM] and pediatrics clerkships (2013–2016). *Exclusion*: subspecialty and consults services. *Measures*: survey framed around ACGME competencies and other characteristics, question posed: "How much emphasis do you place on each of the following characteristics when designating a student as 'honors' (or top grade)?" (24-items; 1 = less emphasis, 10 = more emphasis). Survey was pilot tested after cognitive interviews. *Analysis*: factor analysis and Cronbach's alpha (>0.9 is considered excellent, >0.8 good, >0.7 acceptable, >0.6 modest, <0.6 poor).

RESULTS: Response rate was 65% (224/344); 33% were internists, 25% hospitalists, 21% IM subspecialists, 12% pediatricians, and 9% others (or no data). The top five characteristics were taking ownership, clinical reasoning, dependability, high ethical standards, and curiosity (in descending order, mean range 9.3 to 9.0). The bottom five characteristics were prioritizes patient safety, understands social determinants of health for care transitions, comments from staff, coordination of care, and physical exam skills (in descending order, mean range 7.4 to 7.2). On factor analysis, 22 items fit into three factors with Eigenvalues > 1 accounting for 86% of the variance. The internal consistency was good (Cronbach's alpha 0.85 to 0.86). *Factor 1* was the most important domain, mean 8.7 (95% confidence interval [CI] 8.5 to 8.8), and included multiple ACGME competencies: professionalism, interpersonal and communication skills [ICS], medical knowledge [MK](curiosity), patient care [PC](interviewing skills), and problem-based learning and improvement [PBLI](seeks/responds to feedback). *Factor 2* was the next most important, mean 7.8 (95% CI 7.6 to 8.0), and included ICS and a general positive attitude (interactions with patients and their families, comments from patients, residents, and staff, appropriate confidence, handles stress well, positive). *Factor 3* was last, mean 7.4 (95% CI 7.2 to 7.6), and included PBLI (sets learning goals, appraises evidence), SBP (prioritizes patient safety, coordinates patient care, understands social determinants of health for care transitions), patient care (physical exam skills), and medical knowledge (applies evidence).

CONCLUSIONS: Clinical reasoning, professionalism, communication skills, and curiosity were the most important characteristics to teaching ward attendings when considering medical students worthy of honors designation during clerkships. Our findings underscore the importance of other approaches to recognize excellence; clerkship directors could find ways to assess PBLI, SBP, and physical exam.

WHAT DO HIGH RISK PATIENTS VALUE IN CARE MANAGEMENT PROGRAMS? Ishani Ganguli[1, 2]; Endel J. Orav[1]; Eric M. Weil[4, 3]; Timothy G. Ferris[4, 3]; Christine Vogeli[4, 3]. [1]Brigham and Women's Hospital, Chestnut Hill, MA; [2]Harvard Medical School, Boston, MA; [3]Partners HealthCare, Boston, MA; [4]Massachusetts General Hospital, Boston, MA. (Control ID #2706952)

BACKGROUND: There is growing interest in coordinating care for high risk patients through care management programs. These programs have shown high patient satisfaction and variable ability to reduce cost and utilization, but we know little about what medically complex patients value in them. Therefore, we surveyed patients in a primary care-based program to explore their awareness and perceived utility of its offerings.

METHODS: We conducted a cross-sectional phone survey of participants in the Boston-based Partners Integrated Care Management Program in Dec 2015-Jan 2016. Our main outcome was the number of issues (out of 8, Figure) on which patients reported "very helpful" discussions with their care team in the past year. We analyzed awareness of one's care manager as an intermediate outcome, then as a primary predictor, along with demographics, time in the program, health attitudes, and worries as secondary predictors. We built a logistic regression model to determine predictors of care manager awareness and an ordinal logistic regression model to examine the adjusted effect of awareness on the main outcome.

RESULTS: The survey response rate was 31% ($n = 1182$); nonrespondents were similar to respondents in age, sex, race, area-level poverty and education, insurance type, years in program, and Impact Pro risk score. More respondents reported worrying about family (72.8%) or about financial issues (52.5%) than about their own health (41.6%). 73.7% reported knowing their care manager, particularly women (OR 1.33,95%CI 1.01,1.77) and those with more years in the program (OR 1.16,95%CI 1.03,1.30). Respondents reported varying rates of discussions (Figure) and 81% noted at least one very helpful discussion. Those who were aware of their care manager reported very helpful discussions on more topics (OR 2.77,95%CI 2.15–3.56), as did women (OR 1.25,95%CI 1.00,1.55), younger respondents (OR 0.98,95%CI 0.97,0.99), and those with higher risk score (OR 1.04,95%CI 1.02,1.06), preference for deferring treatment decisions to doctors (OR 2.00,95%CI 1.60,2.50), and reported control over their health (OR 1.67, 95%CI 1.33,2.10).

CONCLUSIONS: Our results suggest high risk patients worry about socio-economic issues affecting health more than their health itself. Varying discussion rates across topics highlight opportunities for more meaningful engagement. Promoting awareness of care managers may help participants make better use of these programs.

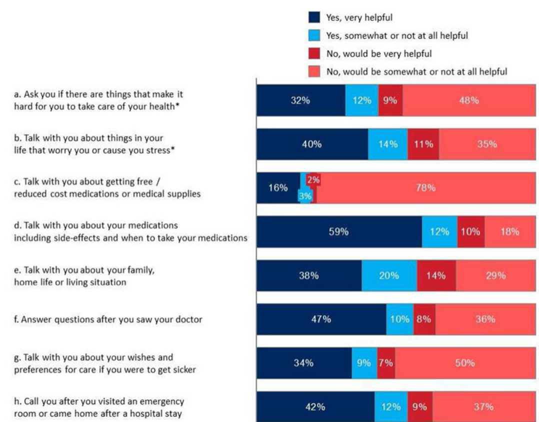


Figure. For each of the items, the respondent was asked if anyone in his or her primary care doctor's office had done the stated task. If the answer was yes, he or she was asked how helpful it was. If the answer was no, he/she was asked how helpful it might be in the future.
*Adapted from Massachusetts Health Quality Partners (MHQP) and Consumer Assessment of Healthcare Providers and Systems (CAHPS) surveys

WHAT DO PATIENTS REALLY DO WHEN THEY FAST? PATIENTS' PRACTICES AND PERCEPTIONS TOWARDS FASTING BLOOD WORK Ami DeWaters; Jamael Thomas; Daniel Mejia; Bryan Elwood; Michael E. Bowen. UT Southwestern Medical Center, Dallas, TX. (Control ID #2700020)

BACKGROUND: Fasting glucose is an important screening and diagnostic test for diabetes. However, little is known about patients' behaviors and

attitudes towards fasting blood work. To improve our understanding, we conducted a survey to assess patients' practices and perceptions of fasting blood work in clinical practice.
METHODS: We designed and administered a survey to assess fasting behaviors in a convenience sample of patients presenting for outpatient blood work at an academic medical center in the fall of 2016. We invited English speaking adults age 18 or older, who presented to the lab between 6:30 and 10:00 AM to participate. We subsequently reviewed the EHR and extracted demographics, comorbidities, and laboratory results from the laboratory visit on the day of the survey. Participants who had nothing to eat or drink except water for at least 8 hours were considered fasting, in accordance with the American Diabetes Association (ADA) fasting definition. We describe the frequencies of fasting behaviors and examine differences in characteristics between fasting and non-fasting participants using Chi2 and Fisher's Exact tests as appropriate.
RESULTS: In this 6 week pilot study, we collected 79 surveys toward the study goal of 550. On average, survey participants were 52 years old, 58% female, 30% non-white, and 22% had diagnosed diabetes. Overall, 75% (N = 59) of participants self-identified as fasting, and 93% of those met our fasting definition. Surprisingly, 53% of all participants felt it was important to fast for every blood test, and 42% of those who self-reported fasting (N = 59) reported receiving no directions to fast from their healthcare providers. Only 3.8% of participants had documentation of fasting instructions in clinic notes or patient instructions on chart review. However, 43% (N = 34) of all participants reported they were told to fast by a healthcare provider with 91% meeting our gold standard fasting definition. We observed no differences in fasting behavior by patient characteristics, including by common comorbidities such as hypertension and hyperlipidemia. Importantly, 94% of patients with diagnosed diabetes (N = 17) fasted on the day of the survey, and 100% reported taking their diabetes medications as prescribed the day of their lab visit, including 5 of 6 patients on insulin. Of the 19 patients without diabetes who fasted unbeknownst to their clinicians and had a glucose measured, 3 cases of prediabetes and 1 case of diabetes were missed.
CONCLUSIONS: Patients commonly fast for routine laboratory tests and adhere to ADA fasting guidelines even if not told to do so by their healthcare providers. Fasting is common among patients with diabetes taking hypoglycemic medications, which poses significant safety concerns. Development of standardized protocols to assess and report fasting status when patients present for routine blood work may improve recognition and diagnosis of prediabetes and diabetes in clinical practice.

WHAT DOES COMMUNICATION SKILLS PERFORMANCE IN A HIGH-STAKES 3RD YEAR OSCE TELL US ABOUT THE TRANSITION TO RESIDENCY? Colleen C. Gillespie[2]; Sondra Zabar[1, 3]; Ruth Crowe[1]; Jasmine A. Ross[2]; Kathleen Hanley[2, 3]; Lisa Altshuler[2]; Adina Kalet[2, 2]. [1]NYU School of Mediicne, New York, NY; [2]NYU School of Medicine, New York, NY; [3]Gouverneur Healthcare Services, New York, NY. (Control ID #2706318)

BACKGROUND: It is critically important for medical schools to understand how well prepared their graduates are for residency and yet we do not have a full understanding of how well competencies, assessed in medical school, transfer to residency. This study explores how communication skills measured in a high-stakes, rigorous, comprehensive OSCE in the 3rd year of medical school are related to performance in a similar OSCE in residency and to Residency Program Directors' ratings of intern competence.
METHODS: We analyzed communication skills from three time points in a longitudinal cohort of NYU graduates who entered our Internal Medicine Residency (n = 42). 39 provided consent for their GME-UME data to be compiled into a longitudinal, de-identified educational research database through an IRB-approved Registry. Communication skills were measured using a behaviorally anchored 15-item checklist across the 8-station, pass/fail, MS3 OSCE and then midway through PGY2 of residency in a 6-station OSCE (score = % of items rated well done). SPs also provided an overall rating of communication skills (not recommend, with reservations, recommend, highly recommend). In between, at the end of intern year, residents were also rated by their Program Directors on communication skills (and other competencies) using a 4-pt scale.
RESULTS: OSCE communication performance assessed in medical school was modestly associated with performance in residency (r = .26, p = .07) but not with Program Directors' ratings of residents' communication skills as interns (r = .11, p = .28). Number of cases in which medical students were "not recommended" for their communication skills was negatively associated with residency OSCE communication scores (r = −.33, p = .05) and positively associated with number of "not recommends" (r = .46,p = .01) but not with Directors' ratings of interns (r = −.08, p = .49). Number of not recommends independently explained more variance in subsequent residency communication scores than did medical school performance (9% vs. 5%). While average OSCE communication scores improved from medical school to residency (65 to 71%), those with 2 or more "not recommends" improved significantly more than those with 1 or no "not recommends. Overall, most learners' (21/39) communication scores improved substantially; less than a quarter (7) decreased; and about a quarter (11) were stable.
CONCLUSIONS: While communication scores from medical school are associated with similarly measured scores in residency, SPs' decisions to "not recommend" students appear to serve as an independent indicator of future skill deficits. Patterns of change, however, are not necessarily straightforward: students with the most "not recommends" improved the most. The ability to track competency assessments longitudinally is essential for understanding the transition from medical school to residency and future research will benefit from larger sample sizes and the inclusion of learner characteristics that may explain developmental patterns.

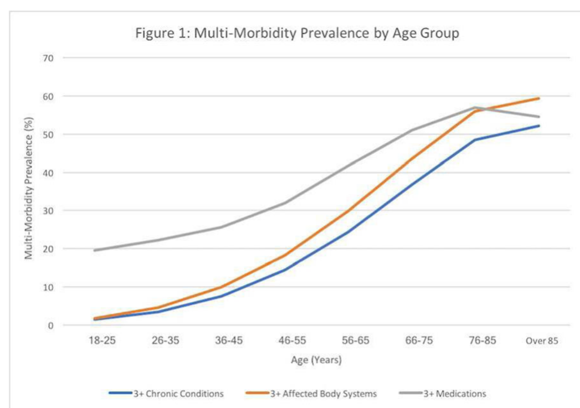
WHO ARE THE MEDICALLY COMPLEX PATIENTS IN CANADIAN PRIMARY CARE? A COMPARATIVE ASSESSMENT OF MEASURES OF MULTI-MORBIDITY Ashley Jensen; Tyler Williamson; Paul E. Ronksley; Gabriel E. Fabreau; Alicia J. Polachek; Amanda Cheung; Kerry McBrien. University of Calgary, Calgary, AB, Canada. (Control ID #2704030)

BACKGROUND: Multi-morbidity, the presence of more than one chronic health condition, is common among primary care (PC) patients and often used as an indicator of medical complexity. Prior estimates of multi-morbidity prevalence have varied widely due to a lack of standardized measures; more precise measures are needed to aid development of interventions for medically complex patients. Our objective was to compare three measures of multi-morbidity and describe the prevalence of multi-morbidity among Canadian PC patients.
METHODS: We employed a retrospective cohort design using secondary data from the Canadian Primary Care Sentinel Surveillance Network. We examined multi-morbidity in a cohort of 577,530 adult patients from 9 provinces and

territories. We included patients with at least two PC visits between 2011 and 2015, with at least one occurring during the most recent year. Multi-morbidity was defined using three approaches selected for simplicity, existing evidence and content validity: count of chronic conditions (from a list of 33 possible); count of affected body systems; and count of medications prescribed in a 1-year period. We then compared demographic characteristics and PC utilization across the resulting three cohorts.

RESULTS: Among our patient cohort, 59.4% were female and the mean age was 50.1 years. The prevalence of multi-morbidity was 33.1% for 2 or more chronic conditions, 33.5% for 2 or more affected body systems and 34.5% for 3 or more medications. Significant overlap was noted between the multi-morbidity cohorts identified by condition and affected body system counts, however, only 42.8% of the cohort identified by medication counts were common to either of the other two. All measures of multi-morbidity showed increasing prevalence by age (Figure 1). For all measures a high degree of multi-morbidity (90th percentile and above) was associated with higher PC utilization.

CONCLUSIONS: Counts of chronic conditions and affected body systems identified similar multi-morbid cohorts. Medication counts, however, did not correlate with the other measures, so caution is needed when using this as a proxy for multi-morbidity. Clearly defined measures of multi-morbidity will enhance PC research and inform the development of targeted interventions for medically complex patients.



WHY IS EVERYONE BREATHING 20 TIMES A MINUTE? PATTERNS OF RECORDED RESPIRATORY RATE IN HOSPITALIZED ADULTS.

Jack Badawy[1]; Oanh K. Nguyen[2]; Christopher Clark[1]; Ethan Halm[3]; Anil N. Makam[1]. [1]UT Southwestern, Dallas, TX; [2]UT Southwestern Medical Center, Dallas, TX; [3]Univ of TX Southwestern Med Ctr, Dallas, TX. (Control ID #2701244)

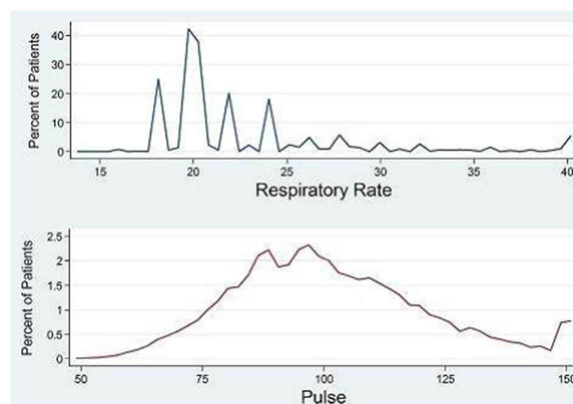
BACKGROUND: Respiratory rate (RR) is an independent predictor of adverse outcomes across a variety of conditions among hospitalized adults. Thus, accurate assessment is necessary to recognize disease severity and prognosis. Prior studies suggest that recorded RR is inaccurate compared to objective measures. We sought to assess the potential accuracy of recorded RR in medical inpatients.

METHODS: This was a descriptive, retrospective observational cohort study of consecutive adult admissions from 2009–10 from 6 diverse hospitals excluding those in the ICU. We assessed the distribution in recorded RR as a proxy for accuracy, since accurately recorded RRs should be normally distributed when compared to heart rate (HR). We assessed patterns of RR using descriptive statistics and the coefficient of variation (CV) during hospitalization and for specific subgroups expected to have abnormal breathing, and thus greater variation (cardiopulmonary illness and hypoxemia).

RESULTS: We included 28,511 patients, representing 220,665 unique hospital days. Mean age was 62 years, 54% female and 40% non-white. Recorded RR was not normal distributed as compared to HR (Figure). RRs were clustered at 18 and 20 breaths/minute with a right skewed pattern. The minimum was equal to the maximum RR in 26% of hospital days. The maximum RR equaled 18 or 20 in 75% of all hospital days. There was little variation over the duration of the hospitalization (CV of 0.2 for the first day, 0.15 for two days prior to discharge, and 0.12 for day of discharge). Patients with cardiopulmonary illness (CV 0.22 vs. 0.19) or with hypoxemia (CV 0.23 vs. 0.18) had only modestly greater variation in RRs than those without.

CONCLUSIONS: Among a large, diverse multicenter cohort of adults hospitalized for a broad range of medical conditions, we found that recorded RR was not normally distributed, and that there was little variation in the recorded RR on admission and throughout hospitalization even among those with cardiopulmonary compromise. The clustering of values suggests that the recorded RR is likely an estimate, with 18 and 20 used in place for 'normal'. Inaccurate recording of the RR may lead to misclassification of disease severity and prognosis, and potentially jeopardize patient safety.

Distribution of Maximum RR on Admission.



WIDESPREAD ADOPTION OF ELECTRONIC SPECIALTY REFERRALS IN A LARGE SAFETY-NET SYSTEM ENABLES RAPID ACCESS TO SPECIALTY CARE

Michael L. Barnett[2]; Ateev Mehrotra[1]; Hal F. Yee[3]; Paul Giboney[3]. [1]Harvard Medical School, Boston, MA; [2]Harvard T.H. Chan School of Public Health, Boston, MA; [3]Los Angeles County Department of Health Care Services, Los Angeles, CA. (Control ID #2705800)

BACKGROUND: Lack of timely access to specialty care is a persistent challenge in safety-net systems. To address this challenge, in 2012 the Los Angeles Department of Health Services (DHS), a large public health system with a population of 670,000 patients, implemented an electronic specialty referral system ("eConsult") to improve specialty access. In the eConsult model, primary care providers (PCPs) request all specialty input electronically. Frequently the question can be addressed through an electronic "curbside" dialogue between a PCP and specialist thereby precluding a face-to-face visit. In this evaluation, we examined trends in eConsult volume and assessed whether eConsult implementation led to sustained improvement in specialty access.

METHODS: We performed an observational analysis of all eConsult requests from 2012–2015 ($n = 395{,}050$). To address the increasing adoption of eConsult by new providers, we also examined a subsample of eConsults 2014–2015 from PCPs active on eConsult prior to 2014 ($n = 60{,}864$ eConsults). We tracked the volume of eConsult requests, time until first eConsult response, time until a scheduled appointment after eConsult request, and the fraction of eConsults resolved without a visit vs. scheduled for a face-to-face visit. To test for statistical significance, we used t-tests or for time trends, bivariate linear regression with a linear term for quarter.

RESULTS: From 2012–2015, eConsult volume grew rapidly from 86 to 12,082 monthly requests, an 8% increase in volume per month ($p < 0.001$). By 2015, the median time to first response for an eConsult request was slightly under 24 hours (0.99 days) and 25.0% of eConsult requests were resolved without a visit. Among PCPs active on eConsult before 2014, the median time to a face-to-face appointment after an eConsult decreased 17.4% from 63 days in 2014 to 52 days in 2015 ($p < 0.001$), while the percentage of appointments scheduled within 30 days increased from 24.0 to 30.2% ($p < 0.001$). From 2014–2015, we found no significant change in the average monthly volume of eConsults resulting in a face-to-face visit ($p = 0.90$).

CONCLUSIONS: These findings illustrate the successful adoption of an eConsult system in a population with historically poor specialty access. Four years after initial implementation, the median response time to an eConsult was under 1 day, 25% of eConsults were resolved without a visit and the median time to appointment continued to decrease though wait times remained more than 50 days. These changes occurred without an increase in face-to-face visits, implying a decreased backlog of patients waiting for appointments, with no evidence of 'pent up' demand leading to increased utilization. eConsults are a promising mechanism to improve specialty access in safety net populations.

WOMEN VETERANS' VIEWS ON THE ROLE OF PEER SUPPORT TO IMPROVE HEART HEALTH Karen M. Goldstein[6, 4]; Leah Zullig[6, 4]; Sara Andrews[5]; Mary E. Grewe[2]; Michele Heisler[1]; Eugene Oddone[6, 4]; Corrine Voils[3, 4]. [1]Ann Arbor VA/University of Michigan, Ann Arbor, MI; [2]Department of Veteran Affairs, Durham, NC; [3]Durham VA Medical Center, Duke University Medical Center, Durham, NC; [4]Duke University School of Medicine, Durham, NC; [5]Research Triangle Institute International, Durham, NC; [6]Durham VA, Durham, NC. (Control ID #2698746)

BACKGROUND: Women veterans are at high risk for cardiovascular disease (CVD) due to high rates of both traditional (e.g., smoking) and non-traditional risk factors (e.g., depression). One approach to support behavioral change for CVD risk reduction is peer support. But while studies have proven peer support effective in improving chronic disease management among men veterans, similar studies in women veterans are needed. Toward this goal, we sought to identify which aspects of peer support and which modalities for providing peer support are preferred by women veterans at risk for CVD.

METHODS: We conducted 25 semi-structured telephone interviews with women veterans aged 35 to 64 years who are at risk for developing CVD (defined as having hypertension, hyperlipidemia, diabetes, obesity, or currently smoking). Interview questions elicited preferences for types of peer support (e.g., appraisal, informational, emotional) and ideal structure of peer support interventions. We analyzed interview text using directed content analysis.

RESULTS: Mean participant age was 50 years (range: 35 to 63). Participants identified as African-American (56%), White (20%), Multi-racial (20%), and Other (4%). Sixty-four percent were divorced/widowed or never married, and 4% participants lived alone. Four key themes emerged. First, women veterans anticipated that to help engagement in healthy activities (e.g., exercising or healthy eating) a peer partner could provide accountability and external motivation. Second, preferences for peer partners included sharing a common health goal, physical proximity to peer partner, and having a positive and engaged attitude. Third, women felt a need to build trust at the start of a peer partnership, preferably via in-person social interactions. Finally, women noted potential barriers to peer support including disliking overt emotional support or 'cheerleading'.

CONCLUSIONS: As an intervention to support heart healthy behaviors, women veterans endorsed peer support. Peer support interventions will need to account for preferences in peer matching and provide opportunities for peers to become acquainted through socially-oriented activities.

Women veterans' quotes on peer support

Theme	Quote
Accountability/ motivation	"So I want someone more like me that's not going to say 'We can do it tomorrow'. No, you push me. I need that and vice versa."
Preferences for Peer Partner	"We'd need positive attitudes first and foremost. You need to want to really do it and there shouldn't be anyone condemning the next person. It's a struggle already."
Need to build trust	"Once I make that face-to-face…I could call some on the phone….it doesn't matter because we've established that trust."
Importance of socializing	"If you get out and you socialize together, it kinda strengthens the bond….it would be seen more as fun instead of a chore."
Potential barriers	"You want some positive feedback, and not from your girlfriends saying 'You go girl'…I don't need a cheerleader."

CLINICAL VIGNETTES

"MOM, WHERE'S THAT BAG OF MEDS?": USING A HOME VISIT TO DIAGNOSE POLYPHARMACY Maureen McCamley; Theresa Vettese. Emory University School of Medicine, Atlanta, GA. (Control ID #2705219)

LEARNING OBJECTIVE #1: Identify polypharmacy as a cause of rapidly progressive dementia

LEARNING OBJECTIVE #2: Recognize the utility of home visits in an internal medicine training program

CASE: Ms. R is a 56yo African American female with hypertension, diabetes, depression, and possible bipolar disorder who was seen in follow up with concerns from family about memory loss. She scored a 6/30 on the MOCA, and was sent for labs and referred to memory clinic. A week later she was admitted for memory loss, falls, and confusion. She underwent extensive workup including brain CT and MRI, EEG, LP, and a paraneoplastic panel which were unremarkable. At that time there was concern for a Parkinsonian syndrome vs infectious vs adverse medication effects and she was to follow up in neurology clinic. She was readmitted a week later for similar complaints and had a repeat brain CT. Three weeks later, a home visit revealed 27 bottles of 14 different medications. An extensive reconciliation was performed simplifying her to five oral medications, and the remainder were removed from the home. At a follow up appointment two months later, she and her family noted significant improvement. A repeat MOCA was performed, and she scored a 17/30

IMPACT: This case highlights a common problem in primary care: communication gaps that lead to harm from polypharmacy in a high risk patient. Our experience emphasized the need to identify patients whose low health literacy, socioeconomic status, or engagement across multiple systems put them at high risk of adverse outcomes due to lack of communication. The case also identifies the impact home visits can have on clinical reasoning during residency.
DISCUSSION: The lack of communication either directly or through the EMR between her PCP, inpatient teams, and psychiatrist led to her essentially stockpiling medications at home, leading to a significant dementia. She underwent multiple unnecessary invasive procedures over repeated hospitalizations, putting her at significantly increased risk for iatrogenic complications, including CT scans, a lumbar puncture, and MRIs. An early home visit intervention could likely have prevented these complications. We will review the literature on home visits, specifically data pertaining to interventions involving high risk patients, as well as the inclusion of home visits in a residency curriculum. Given the impact of this case on our own clinical practice, we will argue the value of adding home visits as part of the clinical development of internal medicine (and specifically primary care) residents. In an environment that is emphasizing value based care, the economic impact of this case is especially relevant. We will discuss how targeted home visits can significantly increase outcomes and quality of care while simultaneously decreasing cost.

ACUTE MYOCARDIAL INFARCTION IN A YOUNG PATIENT WITH SYSTEMIC LUPUS ERYTHEMATOSUS Daniel Wann[1]; Kamil F. Faridi[2]; Pablo Quintero[2]; Kalon Ho[2]; Jonathan S. Hausmann[2, 3]. [1]Beth Israel Deaconess Medical Center, Brookline, MA; [2]Beth Israel Deaconess Medical Center, Boston, MA; [3]Boston Children's Hospital, Boston, MA. (Control ID #2693646)

LEARNING OBJECTIVE #1: Recognize that patients with systemic lupus erythematosus (SLE) have an increased risk of coronary artery disease (CAD) compared to the general population.
LEARNING OBJECTIVE #2: Appreciate the importance of diagnosing and managing of cardiovascular risk factors in patients with SLE.
CASE: A 35 year-old man presented to the emergency department (ED) after a sudden loss of consciousness and bystander-initiated CPR. His medical history is notable for hyperlipidemia and systemic lupus erythematosus (SLE) complicated by class V lupus nephritis. He was intermittently non-compliant with his medications which included prednisone, mycophenolate mofetil (MMF), and hydroxychloroquine. He was a non-smoker and denied illicit drug use. Upon arrival to the ED, an echocardiogram revealed a left ventricular ejection fraction of 25% with multiple regional wall-motion abnormalities. Labs were notable for a troponin-T peak of 22.1, CK-MB >600, negative toxicology screen, total cholesterol of 276, LDL of 226, and HDL of 19. Coronary angiography showed diffuse three-vessel coronary artery disease and an acute occlusion of the ramus intermedius; a bare metal stent was successfully placed in the ramus.. He was discharged after a two-week course and prescribed aspirin, atorvastatin, ticagrelor, metoprolol succinate, lisinopril, furosemide, hydroxychloroquine, MMF, and prednisone. One month later he again experienced a loss of consciousness and was brought to the ED with signs of cardiogenic shock. Coronary angiography showed stable disease and a patent stent, but echocardiogram showed worsening cardiac function. He received a left ventricular assist device and experienced a prolonged hospital course.
IMPACT: This case raised our awareness of the substantial risk of CAD in patients with SLE. We will change our practice by striving to identify and appropriately manage CAD risk factors in every patient with SLE, even if they are young.
DISCUSSION: SLE is a major risk factor for CAD; patients have as much as a 10-fold increase in CAD as compared to the general population. Patients with SLE have increased prevalence of traditional CAD risk factors including hypertension, hyperlipidemia, and a sedentary lifestyle, and they may be exacerbated by the presence of lupus nephritis or the use of glucocorticoids. The chronic inflammation associated with SLE may also independently contribute to accelerated atherosclerosis and premature CAD. Because of the elevated risk of CAD in patients with SLE, recognition and management of traditional CAD risk factors is imperative even in young patients. In addition to regular monitoring of lupus activity, patients with SLE should have at least yearly measurements of blood glucose and cholesterol, as well as close monitoring of blood pressure and body mass index. Patients with SLE may benefit from co-management with a cardiologist to help identify and manage modifiable risk factors to prevent morbidity and mortality related to CAD.

ACUTE RENAL FAILURE IN A MEDICALLY COMPLICATED PATIENT Emi Okamoto. Hospital University of Pennsylvania, Philadelphia, PA. (Control ID #2706816)

LEARNING OBJECTIVE #1: Recognize the role for renal biopsy in diagnosing acutely worsening renal function
CASE: RF is a 73 year-old male with a history of alcoholic cirrhosis, obstructive sleep apnea, pulmonary hypertension, diabetes, atrial fibrillation, and osteoarthritis with prior bilateral knee replacement who presented with a rising creatinine while on treatment for an methicillin resistant Staph aureus (MRSA) joint infection. He initially presented 3 weeks prior to this presentation with right knee pain and an aspiration of the prosthetic joint showed 80,000 WBC and grew MRSA on culture. He was initially treated with vancomycin and piperacillin-tazobactim for 8 days then transitioned to vancomycin and rifampin for outpatient treatment. Eight days after discharge, routine labs showed a creatinine of 3.0 mg/dL and a vancomycin trough of 32 mg/L and he was admitted to the hospital, though otherwise asymptomatic. Initial urinalysis showed microscopic hematuria, red blood cell casts, and dysmorphic red blood cells. He had 2 grams protein in 24 hour urine collection, as well as negative/normal ANCA, ANA, and compliments. Empiric prednisone was started at 1 mg/kg and his creatinine stabilized at 4.2 mg/dL. Empiric albumin challenge was unsuccessful. A renal biopsy showed interstitial edema and inflammation with infiltrates consistent with acute interstitial nephritis as well as tubular damage. He was discharged on daptomycin and 80 mg prednisone with outpatient follow up.
IMPACT: Acute renal failure is a challenging diagnosis with broad differential. The plausible differential included post-infectious glomerulonephritis, vancomycin toxicity, interstitial nephritis, diabetic nephropathy, and hepatorenal syndrome. During his inpatient time, we anchored on post-infectious glomerulonephritis, particularly because dysmorphic red blood cells is thought pathognomonic for glomerular injury. As well, this is an increasingly well-recognized entity with Staph aureus and the time course also fit perfectly for the case. Ultimately, a renal biopsy was crucial to elucidate the actual cause and avoid drug re-exposure.
DISCUSSION: Acute interstitial nephritis is often caused by medications, with methicillin the first prototypical drug. Now multiple agents have been identified, notably including NSAIDs, other penicillin derivatives, and rifampin. It is still relatively rare, occurring on only 2–3% of renal biopsies. The mechanism of action is thought to be cellular immune-mediated, and it is particularly important

to recognize as re-exposure to the insulting agent will re-induce injury. Generally kidney function recovers with removal of the offending agent, and corticosteroids have a questionable role in aiding recovery.

DRUG INDUCED LEUKOCYTOCLASTIC VASCULITIS: MEROPENEM A RARE CAUSE Kinanah Yaseen; Mohammad Al-Omari; Bassam AL- Haddad. Cleveland Clinic, Westlake, OH. (Control ID #2706844)

LEARNING OBJECTIVE #1: <span style=”color:black; font-family:arial,sans-serif; font-size:14 pt; line-height:107%; margin:0px”><span style=”margin:0px”>

CASE: A 50 year old man with medical history of hepatitis C, type 2 diabetes, end stage renal disease on hemodialysis, coronary artery disease, and hypertension presented to our facility with very painful, blackish skin lesions on his dorsal aspect of left hand and medial aspect of right wrist. One month prior to his current admission patient was treated with meropenem for left foot abscess and ulcer. His physical exam revealed stable vital signs, but 3x2 cm raised blackish lesions over his right medial wrist and dorsal aspect of hand as well as on his both elbows, In addition to bilateral wrist swelling and tenderness. Laboratory studies showed elevated ESR, CRP, positive hepatitis C antibodies with high viral load but normal ENA panel, cry globulin antibodies, p-ANCA antibodies, c-ANCA antibodies, complement level, rheumatoid factor and negative urine toxicology. Later on, he underwent punch skin biopsy which was consistent with leukocytoclastic vasculitis. Meropenem was discontinued and patient was started on oral steroid. Subsequently, his skin lesions started to dry out, and heal but he was left with deep necrotic ulcer over his third MCP which required skin graft.

IMPACT: The use of meropenem has recently increased due to resistance patterns of bacteria, and it is important to recognize this potential adverse effect of this drug.

DISCUSSION: Drug-induced leukocytoclastic vasculitis is an inflammation of blood vessels triggered by various drugs including several antibiotics, allopurinol, and anti-seizure medications. To best of our knowledge, we report the first case of meropenem-induced leukocytoclastic vasculitis. Drug-induced LCV accounts about 10% of all vasculitis cases, and penicillin, sulfonamide, quinolones, allopurinol, propylthiouracil, valproic acid, phenytoin, anti-TNF alpha agents, and hydralazine are well known causes of LCV. Drug induced LCV should be suspected in any patient with a new onset of skin rash, a temporal relationship with the offending drug, and resolution of symptoms with discontinuation of the drug. Physician should be aware that meropenem-induced LCV is one of the rare side effects of this medication. The only reported case to date of imipenem-induced leukocytoclastic vasculitis (3) was in 1997, when a patient was treated with imipenem-cilastatin for a postoperative infection then developed maculopapular rash.

LYME IN THE COCONUT: A CASE OF MISDIAGNOSIS AND ANCHOR BIAS Jason Unger; daniel selig. Walter Reed National Military Medical Center, Bethesda, MD. (Control ID #2707382)

LEARNING OBJECTIVE #1: Understanding how Anchor Bias affects diagnostic decision making

LEARNING OBJECTIVE #2: Understanding how clinical decision making is affected with multiple disease processes presenting at once

CASE: This is a 55 year old previously healthy Airman reservist, whose father died of brain cancer in his 50’s. He presented to the oversees Military Hospital Emergency Room after falling. Per report, he saw a straight blade upon standing in teh barber shop, then “turned white,” and subsequently fell and hit his head. Initial CT head in the Emergency Departmen showed no evidence of trauma, and he was discharged. He returned to the ED 10 days later though after reporting syncopal events. Repeat CT head demonstrated a new right frontal lobe hypodensity.The radiologist was most reportedly most concerned for infection versus malignancy at that time. His hospital course was complicated by intermittent episodes of complete heart block. Given the patient’s CT findings and family history of brain cancer, the neurologist at the overseas facility recommended medical evacuation to a tertiary care center in the United States for neurosurgical evaluation for stereotactic brain biopsy. At the receiving facility reviewed all images and as well as new imaging, and thought that the findings were not consistent with infection or malignancy. Rather, imaging was most concerning for brain contusion, with possible coup-counter pattern from his initial fall and posterior head injury. During his hospital stay there was no signs of high grade heart block noted on EKG or telemetry. The patient was discharged two days later.

IMPACT: Approximately one week after discharge, the primary ICU team was notified that the patients initial Lyme titers from Germany had resulted, and were markedly positive. Hw hS no further episodes of heart block and was discharged home with antibiotics for treatment of Lyme disease.

DISCUSSION: In medicine, we are thought to rule out common potentially acute and deadly causes of illness first. After the potentially fatal disease have been ruled out, we are then to consider more benign and possibly more common causes of disease. The English Franciscan Frior, William of Occam’s was the first to report on this phenomenon. He described how we normally seek to select a single parsimonious explanation for a series of events by choosing the unifying hypothesis with the fewest underlying assumptions. The counter to this in Medicine is often referred to as Hickam’s Dictum. Dr John Hickum, a 1950’s is commonly quoted as saying in the vernicular: “ A patient can have as many diseases at one time as they Darn well please.” In this case, the anchoring on the potentially concerning imaging findings on the follow up head CT, lead to a shift in focus away from the ultimate diagnosis. The complicating factor of the syncopal events was ultimately attributed to the additional diagnosis of cardiac lyme, for which he was treated, and has had no reported syncopal events since that time.

SARCOIDOSIS MIMICKING METASTATIC ENDOMETRIAL ADENOCARCINOMA Raghunandan Ghimire[1]; Manita Chapagain[2]; Jack Ringler[1]. [1]Berkshire Medical Center, Pittsfield, MA; [2]Holy Family Red Crescent Medical College, Dhaka, Bangladesh. (Control ID #2708180)

LEARNING OBJECTIVE #1: Distinguish between Sarcoidosis and metastatic cancer with similar presentation

LEARNING OBJECTIVE #2: Manage a case of lymphadenopathy with histology diagnosis

CASE: A 52 year old woman was worked up for post menopausal vaginal bleeding. Biopsy of the endometrial tissue showed endometrial carcinoma endometroid type Grade 1. She underwent laparoscopic hysterectomy and bilateral salphingo-oopherectomy.The disease recurred 1 ½ years later when a vaginal nodule was biopsied. CT scan of chest abdomen and pelvis showed pelvic peritoneal soft tissue nodules measuring 1.5X1cm on right and

1.1X1.1 cm on left,heterogenous attenuation of vaginal cuff, consistent with recurrent disease. Several mediastinal lymph nodes were seen. Few scattered retrocaval, mesenteric and retroperitoneal lymph nodes were also seen. The patient was treated with chemotherapy with Carboplatin and Taxol. CT scan of chest and abdomen after 5 months showed shrinkage of pelvic nodules, but increasing mediastinal lymphadenopathy and bilateral hilar adenopathy, highly suspicious for malignant lymph nodes. A PET scan showed hypermetabolic adenopathy noted in the mediastinum suggesting metastatic disease. Biopsy of the mediastinal mass revealed anthracotic lymph node with non caseating granuloma, negative for organisms, negative for AFB and fungal stains. Histology result suggested sarcoidosis without evidence of malignancy. With no local or systemic symptoms, watchful monitoring of the symptoms with surveillance was suggested.

IMPACT: The development of lymphadenopathy in the context of stage 4 cancer should raise concern for metastasis.No treatment should be started before histological diagnosis as treatment for sarcoid and metastasis are different.The unusual diagnosis of thoracic sarcoid lesion has taught us lesson regarding importance of appropriate diagnosis before starting the treatment.This case could be one of the cases in the literature which can add an evidence for association of sarcoidosis with endometrial cancer.

DISCUSSION: The relationship between sarcoidosis and malignancy is complex and incompletely understood. Several meta-analyses have suggested an association between incident Sarcoidosis and subsequent development of cancer. There are only few reports of sarcoidosis diagnosed after the treatment of cancer and initially mistaken for progression of cancer. There are also case reports of sarcoidal changes surrounding malignant pathology.The diagnostic dilemma due to sarcoid lesions mimicking metastatic disease in patients with malignancy can lead to delayed and inappropriate treatment. Histological diagnosis is mandatory before starting treatment in such patients.With advances in cancer immunology and sarcoidosis research, one can hope for a better clinical understanding of the rare circumstances where malignant and sarcoidal pathologies concur.

SEVERE HYPERTRIGLYCERIDEMIA INDUCED ACUTE PANCREATITIS: MANAGEMENT STRATEGY IN A RURAL SETUP

Umair Iqbal[2]; Mohammad Arsalan Siddiqui[1]; Ahmad Chaudhary[2]; Hafsa Anwar[3]; Madiha Alvi[2]. [1]Henry Ford Hospital, Detroit, MI; [2]bassett medical center, Cooperstown, NY; [3]Dow University of Health Sciences, Karachi, Pakistan. (Control ID #2700891)

LEARNING OBJECTIVE #1: Intravenous Insulin has similar efficacy to plasmapheresis in emergent management of HTG induced AP

LEARNING OBJECTIVE #2: Patients with TG > 500 mg/dl are recommended to undergo genetic testing to rule out disorders associated with lipid metabolism.

CASE: 44 year old male with history of diabetes mellitus and hypertension presented with severe epigastric abdominal pain radiated to the back associated with several episodes of vomiting for past 24 h. He denies fever, chills, diarrhea, black tarry stools and weight loss. He denied history of excessive alcohol use. His medications included metformin and insulin glargine. On presentation he was vitally stable and had generalized abdominal tenderness, audible bowel sounds with no palpable hepatosplenomegaly. Labs revealed lipase of 5006 U/L (50–290 U/L), amylase of 299 U/L (30–110 U/L). CT abdomen revealed moderate peri-pancreatic edema concerning for acute pancreatitis (AP). Triglycerides levels (TG) were severely elevated to 6672 mg/dl (55–150 mg/dl). He was started on conventional treatment of AP with IV hydration and analgesia. Given our rural setup and absence of availability of plasmapheresis (PP) for rapid correction of HTG, patient was started on insulin infusion 0.1 units/kg/hr along with D5W to maintain euglycemia. He was continued on that regimen with hourly blood glucose monitoring until TG were <500 mg/dl which was achieved on day 8. He was discharged on atorvastatin and fenofibrate with a referral to a lipidologist to rule out genetic causes of hypertriglyceridemia (HTG).

IMPACT: In a clinical setup where PP is not readily available for acute management of HTG induced AP, use of IV insulin with IV dextrose is an effective alternative treatment strategy. Rapid reduction in TG levels to <500 mg/dl is associated with improved clinical outcomes.

DISCUSSION: HTG is the third most common cause and is responsible for almost 1–4% of AP. The incidence of AP in patients with TG > 2000 up to 20. In patients who developed an episode of AP secondary to severe HTG, the goal is to bring the TG less than 500 as early as possible because it is associated with improved clinical outcome. PP is usually considered first-line therapy for severe HTG with many studies supporting its clinical utility. In a case series of 7 patient, 41% decrease in TG was reported with single plasma exchange. In absence of availability of PP, alternate treatment modalities with intravenous (IV) insulin should be considered. Standard approach is 0.1-0.3 units/kg/hr of regular insulin IV along with dextrose saline to maintain euglycemia until TG come down to <500. There are no randomized controlled trials which compare efficacy of insulin with PP in treatment of severe HTG. Therefore, treatment is usually based on availability and preference. Long-term goal for patients who had episodes of AP secondary to HTG, is to prevent further episodes by optimizing lipid lowering therapy and lifestyle modification. Non-compliant patients may need periodic PP to prevent episodes of AP.

STIFF AS A LEAD PIPE Haleh Moazen; Amir Ansari-Ezabadi. Montefiore Medical Center, Bronx, NY. (Control ID #2700760)

LEARNING OBJECTIVE #1: Recognize the clinical features and appropriate management of neuroleptic malignant syndrome.

CASE: A forty year old woman with a history of impulse control disorder was admitted after being found unresponsive at her group home.At baseline, the patient was ambulatory and talkative.Vitals revealed tachycardia and fever.Physical exam was remarkable for the patient being obtunded and having diffuse lead pipe rigidity.Laboratory tests showed rhabdomyolysis and leukocytosis.History revealed that the patient was prescribed ziprasidone and olanzapine.Olanzapine was discontinued two weeks prior to admission.Chest wall rigidity resulted in hypoventilation and respiratory distress requiring intubation.Intravenous fluid, antipyretic,dantrolene,amantadine and bromocriptine were initiated for presumed neuroleptic malignant syndrome.The patient improved and was extubated. Recommendations were to hold neuroleptic medication for two weeks.The patient was restarted on low dose olanzapine and has remained stable.

IMPACT: Internists are increasingly prescribing neuroleptics to control the psychosis commonly associated with dementia.Hospitalists are involved in the care of a large number of psychiatric patients maintained on neuroleptics that present to the hospital with fever and change in mental status.The widespread use of neuroleptic medication within the medical community necessitates that physicians recognize the clinical features and appropriate management of neuroleptic malignant syndrome.

DISCUSSION: Neuroleptic malignant syndrome occurs with either initiation of the neuroleptic therapy or a change in the drug dosage. The onset of the

syndrome does not correlate with the duration of neuroleptic exposure.Neuroleptic malignant syndrome has a significant mortality rate of 10–20% if not diagnosed early.Sudden and profound dopaminergic blockade or depletion in the central nervous system is the probable mechanism of the disease.Diffuse lead pipe muscle rigidity is an early manifestation of the syndrome.Other finding includes altered mental status,autonomic instability and hyperthermia.Complications are related to the sustained muscle rigidity resulting in rhabdomyolysis,renal failure and respiratory failure.Aggressive hydration,antipyretic,direct muscle relaxant,removal of the neuroleptic agent and dopamine agonist such as amantadine and bromocriptine should be administered.A two week minimum washout period is needed before reinstating the neuroleptic medication.Resumption of therapy should be with low dose agents with slow upward titration.Other medications have been reported to cause the syndrome through synergistic interactions or an undefined mechanism.Neuroleptic malignant syndrome is a life threatening condition.Enhanced awareness and prompt recognition of the early clinical signs of this syndrome and greater vigilance on the part of physicians who treat patients receiving agents that affect dopaminergic activity will assist in substantially reducing the mortality of this disease.

A "FLU"KE CASE OF ARTHRALGIA Anne Press; Katherine N. Riedy; Monica Gupta. NYU School of Medicine, New York, NY. (Control ID #2702931)

LEARNING OBJECTIVE #1: Recognize a rare cause of polyarthralgias.
LEARNING OBJECTIVE #2: Treat septic arthritis secondary to Haemophilus influenzae.
CASE: A 50 year-old male with no significant medical history presented with three days of arthralgias. He reported pain, erythema, and swelling in his left shoulder three days prior to admission associated with fevers up to 102 °F. Over the next 72 hours, the joint pain migrated to his right shoulder, bilateral knees, and ankles. He denied rash, dysuria, or abdominal pain. He denied intravenous drug use. He reported an unprotected sexual encounter with a male one week prior. On admission he was hemodynamically stable, afebrile, and in no acute distress. Exam was notable for edema of all four extremities and limited range of motion in all joints. White blood cell count was 13.4 mg/nL with 89% neutrophils, erythrocyte sedimentation rate 55 mm/hr, and c- reactive protein 39 mg/L. ANA, C3, C4, HIV antibody, and HIV PCR were negative. Total IgA, IgG, IgM levels were within normal limits. Blood cultures and joint aspiration cultures were positive for noncapsulated Biotype I Haemophilus influenzae (H. influenzae). Transesophageal echocardiogram showed fibrinous stranding on the aortic valve concerning for bacterial seeding. Of note, PSA was within normal limits and FOBT was negative. The patient was treated for H. influenzae septic arthritis, bacteremia, and endocarditis with serial joint aspirations, intravenous dexamethasone, and four weeks of ceftriaxone with significant improvement in his symptoms.
IMPACT: While uncommon, H. influenzae can cause invasive septic polyarthritis in an immunocompetent patient. There are limited cases in the literature of an immunocompetent adult presenting with septic polyarthritis secondary to noncapsulated H. influenzae.
DISCUSSION: H. influenzae can cause numerous diseases including meningitis, epiglottitis, pneumonia, and endocarditis. H. influenzae was previously a common cause of septic arthritis in the pediatric population, however the incidence has decreased significantly since the introduction of vaccinations. H. influenzae rarely causes septic arthritis in adults and very few cases have been reported in the literature, and of those, most subjects were immunocompromised. Prompt diagnosis and aggressive treatment with combined surgical and medical treatment can result in optimal recovery. Serial aspirations or surgical wash out with prolonged antibiotic therapy is the standard of care. In the pediatric population, steroids have been shown to decrease cartilage degradation and improve post-infection healing. As such, steroids were also used in this case. It is important to consider this as a cause of septic polyarthritis as early detection is crucial to preventing sepsis, permanent destruction of the joints, and in this case, valve destruction from infective endocarditis. Steroids should also be considered in treatment of the adult population given this patient's significant improvement.

A 30,000-FOOT-VIEW OF A PATIENT WITH SICKLE CELL TRAIT
Emily Japp; Ginger Wey. Albert Einstein College of Medicine/Montefiore Medical Center, New York, NY. (Control ID #2706383)

LEARNING OBJECTIVE #1: Recognize the hematologic complications associated with sickle cell trait.
LEARNING OBJECTIVE #2: Identify the potential triggers of sickling events in patients with sickle cell trait.
CASE: A 26-year-old Hispanic male with hepatitis B and sickle cell trait presented with 4 days of left upper quadrant pain associated with pleuritic chest pain. His symptoms began after recent air travel to Mexico and ingestion of alcohol. He was briefly hospitalized in Mexico and received supportive care for gastroenteritis. He denied fever, palpitations, nausea, vomiting, or diarrhea. He was afebrile, tachycardic, and tachypneic. Cardiopulmonary examination was normal. His abdomen was non-distended, and the left upper quadrant was tender to palpation. Significant labs included: Hgb 14.8 g/dL, Hct 41.3%, WBC 10.7 k/uL, indirect bilirubin 1.7 mg/dL, reticulocyte count 2.5%, LDH 684 U/L, and haptoglobin < 8 mg/dL. On ultrasound, the liver was normal size and the spleen was enlarged to 13.6 × 13.8 × 6.2 cm, with a hypoechoic band consistent with an infarct. Hgb electrophoresis revealed HgbS 40.9 and HgbA 54.2%, with positive sickling activity. The patient was treated with analgeics to improvement.
IMPACT: The diagnosis of an acute splenic infarct can be challenging and even delayed in patients with sickle cell trait, in whom hematologic complications are typically rare. This case contributes to the pre-existing literature on the occurence of sickling crises in carriers after exposure to conditions causing hypoxia, dehydration, or acidosis.
DISCUSSION: Sickle cell trait is a carrier condition in which one allele of the β-globin gene possesses a substitution mutation. Its prevalence is up to 30% in Sub-Saharan Africa, where it is protective against *P. falciparum* malaria. In the U.S., the prevalence is highest in African Americans, and ranges from 7–10%. Patients with sickle cell trait rarely have hematologic manifestations, but may be susceptible to renal or splenic infarctions, splenic sequestration, venous thromboembolism, rhabdomyolysis, or sudden death induced by bodily stress. In particular, case reports describe splenic infarctions triggered by low oxygen tension present at high altitudes, associated with activities such as flying or hiking. In these case reports, most patients were male, non-black, and had > 40% HgbS during the events. Dehydration and local tissue hypoxia are also postulated to be contributing factors. Splenic infarctions can be asymptomatic in up to 40% of patients. The most common presenting symptom is left upper quadrant pain, and can be associated with fever, chills, nausea, vomiting, pleuritic chest pain, or left shoulder pain. The diagnosis can be made by ultrasound, but because the infarct appearance can change with time, the preferred method is computed tomography with contrast. Treatment is largely supportive, with supplemental

oxygen, hydration, and analgesics. Splenectomy is rare, since there are few cases of splenic infarction, and most do not progress to rupture.

A BLOOD CLOT TALE Rashmi Advani; Tulay Aksoy. Montefiore Medical Center Moses and Weiler Division, Bronx, NY. (Control ID #2702566)

LEARNING OBJECTIVE #1: Identify the indication for screening for May Thurner syndrome (MTS) in patients with recurrent deep vein thrombosis (DVT)

LEARNING OBJECTIVE #2: Assess the appropriate management of MTS in patients with an acute DVT

CASE: 38 year-old woman presented with worsening left lower extremity swelling for one month. She had a medical history of recurrent left-sided DVTs: first was 10 years ago while six weeks pregnant and second was diagnosed one month prior to presentation. She was on Rivaraxoban for the past one month. She reported no prolonged immobilization, recent surgeries, travel, family history of clots, smoking or oral contraceptive use. Prior hypercoagulability workup was negative. On exam, left leg was erythematous, swollen and tender. Given the progression of the swelling on the same side with previous history, CT scan of abdomen and pelvis with contrast was done, which revealed progression of left common femoral DVT and pathologic compression of the left common iliac vein by the right common iliac artery. She was discharged on Lovenox without intervention. A week after, she presented with further progression of left leg swelling. At that point, she underwent endovascular stenting with angioplasty and was discharged on anticoagulation.

IMPACT: This case is important in identifying the right diagnostic and therapeutic approach in patients with recurrent DVT, either with or without an identifiable risk factor. It also reminds us to include common anatomical vascular variances, such as MTS in the differential diagnosis of recurrent DVTs.

DISCUSSION: Deep vein thrombosis (DVT) is encountered by internists in both the inpatient and outpatient setting. About two-thirds of cases are provoked from major risk factors such as recent hospitalization, trauma, surgery or immobilization. Minor risk factors include obesity, malignancy, pregnancy, and use of oral contraceptives or hormone replacement therapy. DVTs diagnosed without the above risk factors may prompt evaluation into inherited hypercoaguable disorders or anatomic vascular abnormalities such as May Thurner Syndrome (MTS). MTS is an under-diagnosed condition marked by an anatomical variant in which the right common iliac artery overlies the left common iliac vein resulting in mainly left-sided iliofemoral DVT. The prevalence of MTS is approximately 30 and is commonly diagnosed in young women, however is likely an underestimation as patients are initially asymptomatic. Screening for MTS should be considered in the setting of multiple recurrent, same-sided DVTs, especially if progressing while on anticoagulation. Contrast venography is the gold standard in diagnosis; however, no standard screening protocol has yet been established. Appropriate treatment includes endovascular stenting, angioplasty with anticoagulation. Use of anticoagulation alone and delay in endovascular intervention can lead to a recurrence or worsening of DVT.

A CASE FOR PROPHYLAXIS IN AUTOIMMUNE-RELATED INTERSTITIAL LUNG DISEASE Adrienne N. Poon[1]; Suchita Kumar[2]; Robert Maximos[3]. [1]George Washington School of Medicine and Health Sciences, Clifton, NJ; [2]GW School of Medicine & Health Sciences, Washington, DC; [3]Veterans Affairs Medical Center, Washington, DC. (Control ID #2706850)

LEARNING OBJECTIVE #1: Recognize the need for PCP prophylaxis in interstitial lung disease (ILD) on immunosuppression

LEARNING OBJECTIVE #2: Assess for development of autoimmune disease in patients with ILD and non-specific markers

CASE: A 62 year old man with a history of interstitial lung disease, hypertension, hyperlipidemia, and depression presented with shortness of breath. A year prior, CT scan had shown groundglass opacities in bilateral lung zone peripheries suggestive of interstitial lung disease. Open lung biopsy had found small airway injury with organizing pneumonia (OP) and fibrotic non-specific interstial pneumonia (NSIP). He was on high-dose steroids that were tapered then abruptly discontinued 2 months ago. He had a sister with NSIP as well as mixed connective tissue disorder. Medications included: Albuterol, fluticasone, tiotropium, lisinopril, metoprolol, furosemide, pravastatin, and duloxetine. Vitals on admission: T 99.1, BP 104/63, RR 18, HR 94, spO2 85% on oxygen. Physical exam revealed diffuse bilateral inspiratory crackles as well as 3+ bilateral edema. Labs included: WBC 9.75 K/uL, 14.8 hemoglobin g/dL, 140 platelets, creatinine of 1.4, and lactate 1.4 mEq/L, procalcitonin 2.23 ng/ml, LDH 1078 U/L, ANA 1:40 speckled pattern. CT thorax revealed bilateral ground glass opacities. He was empirically covered with vancomycin, zosyn, azithromycin, valganciclovir, trimethoprim-sulfamethoxazole and then atovaquone due to worsening renal failure. Due to worsening respiratory failure, he was acutely intubated. Silver gram stain was positive for pneumocystis jiroveci pneumonia (PJP) and all medications were stopped and he was switched to clindamycin and primaquine due to disease severity.

IMPACT: OP/NSIP related to Undifferentiated Connective Tissue Disease (UCTD) may predispose to acute respiratory failure in immunosuppressed patients at risk for PJP. Physicians should consider prescribing PCP prophylaxis in immunosuppressed non-HIV patients. Routine monitoring of rheumatological markers in patients presenting with undifferentiated autoimmune-related ILD should be performed.

DISCUSSION: OP/NSIP overlap including autoimmune-related cases such as UCTD in this patient predisposes to unfavorable disease progression. Evidence is controversial as to whether patients with autoimmune diseases on immunosuppression should be given PJP prophylaxis. This patient had multiple risk factors for presentation in acute respiratory failure including OP/NSIP as well as medication-related immunosuppression predisposing to PJP that often has delayed diagnosis in non-HIV patients. This patient was likely PJP colonized with immune reconstitution reaction given abrupt withdrawal of steroids despite mixed evidence in ILD. Given the variability of PJP risk, strategies such as monitoring CD4 count or using PJP PCR may be helpful in risk-stratifying patients and determining initiation or withdrawal of prophylaxis. Immunosuppressants should also be tapered slowly given the risks of immunoreconstitution disease.

A CASE OF ACUTE, SYMPTOMATIC HEPATITIS C IN A PATIENT WITH INJECTION DRUG USE Anshul K. Srivastava; Jessica Taylor. Boston Medical Center, Boston, MA. (Control ID #2706142)

LEARNING OBJECTIVE #1: Recognize acute HCV infection; counsel on clearance rates and indications for treatment

LEARNING OBJECTIVE #2: Differentiate acute liver injury from acute liver failure

CASE: A 38-year-old man with severe opioid use disorder (OUD) was admitted for musculoskeletal pain and noted to have mild transaminitis. His hepatitis C virus (HCV) antibody, previously negative, was weakly reactive. His viral load was 81,860,787 IU/mL and genotype was 1B. He endorsed

recent needle sharing and was started on buprenorphine for his severe OUD. Outpatient follow-up was arranged. At his primary care visit, the patient reported nausea, vomiting, fatigue, clay-colored stools, jaundice, and subjective mild confusion. He was readmitted given progression of acute liver injury (ALI) and concern for possible acute liver failure (ALF). Labs showed AST 2921 u/L, ALT 2294 u/L, total bilirubin 33.2 mg/dL, and INR 1.1. Ceruloplasmin, autoimmune markers, and iron levels were unremarkable, and acute HCV was felt to be the etiology of his ALI. A liver biopsy confirmed acute viral hepatitis. Patient did not develop encephalopathy or coagulation abnormalities to suggest ALF. Patient's liver function tests and symptoms slowly improved. He is doing well in recovery from OUD. He is being monitored for spontaneous clearance of HCV and has not started direct acting antiviral (DAA) therapy.

IMPACT: Chronic HCV is prevalent in people who inject drugs and is managed by the authors in primary care; however, acute, symptomatic HCV is uncommon. This case prompted the authors to review clearance rates and indications for early treatment of acute HCV in order to counsel the patient on his expected course.

DISCUSSION: Although the overwhelming majority of acute HCV infections are asymptomatic, this case highlights the importance of considering acute HCV in cases of unexplained transaminitis or ALI. Testing should include both anti-HCV antibodies and HCV RNA. Our patient was eager to begin treatment. However, spontaneous clearance occurs in 20-50% of acute HCV cases. Higher clearance rates are seen in young patients, females, and those with genotype 1, a high initial viral load, and symptomatic acute infection. Prior to availability of DAA's, cure rates with interferon-based regimens were higher when treatment was started acutely. There is no advantage to early treatment in the era of DAA's, which are highly effective in chronic HCV. Six months of monitoring to allow for spontaneous clearance are now recommended. Acute treatment is reserved for those with no access to DAA's, underlying liver disease, high transmission risk, or ALF. A key step in this patient's case was distinguishing ALI from ALF. ALF occurs when liver injury, an INR ≥ 1.5, and encephalopathy are seen in a patient without underlying liver disease; given high risk of mortality, ALF should be managed at a liver transplant center. Our patient did not go on to develop ALF, supporting data that ALF is rare in acute HCV.

A CASE OF ACYCLOVIR-INDUCED ENCEPHALOPATHY PRESENTING WITH ATYPICAL FINDINGS

Guramrinder S. Thind; Prashant Patel; Richard Roach. Western Michigan University School of Medicine, Kalamazoo, MI. (Control ID #2700895)

LEARNING OBJECTIVE #1: Recognize acyclovir neurotoxicity as a cause of encephalopathy in dialysis-dependent patients.

LEARNING OBJECTIVE #2: Identify potential cerebral spinal fluid (CSF) abnormalities in acyclovir-induced encephalopathy.

CASE: An 82-year old male with a history of end stage renal disease (ESRD) was transferred from a nursing home with altered mental status. Patient had been getting progressively more confused and somnolent for the past 4–5 days. Notably, patient was diagnosed with herpes zoster by his primary care physician five days ago, and was started on a course of valacyclovir 1 grams three times a day. Evidently, the dose of valacyclovir was not adjusted for his renal impairment. Initial workup revealed a questionable right-sided infiltrate on chest X-ray. He was started on antibiotics for presumed pneumonia. However, his mentation did not improve and a lumbar puncture was performed on the third day. CSF studies revealed 37 WBCs/hpf (100% monocytes), protei*n* = 64 mg/dL, and glucose = 52 mg/dL. His antimicrobial therapy was switched to ceftriaxone, ampicillin, and acyclovir. At this point, infectious disease service was consulted. An MRI of the brain was done and was unremarkable. Acyclovir-induced encephalopathy was high on differential, but patient's CSF findings were concerning for viral encephalitis. Herpes simplex virus (HSV) and varicella zoster virus (VZV) were considered as potential etiologies. Nonetheless, all antimicrobials were discontinued and patient was scheduled for an 5 hour dialysis session. The very next day, patient showed immense improvement in his mental status and was much more wakeful. Thereafter, CSF PCR tests for both HSV and VZV came back negative. Patient had complete recovery and was discharged from the hospital on day 7.

IMPACT: This case reinforces the importance or renal dosage of medications, and the importance of history taking in the diagnosis of acyclovir-induced encephalopathy. It creates awareness of a unique situation where two differentials have polar opposite therapeutic implications. CSF studies may show mild pleocytosis in acyclovir-induced encephalopathy, and this can easily be confused with viral encephalitis. Extended-session dialysis may enhance acyclovir clearance.

DISCUSSION: Valacyclovir is the prodrug of acyclovir, 90% of which is excreted renally. It is for this reason that acyclovir neurotoxicity is much more common in patients with ESRD. Our patient received six times the recommended dose of valacyclovir for ESRD patients. Absence of fever and meningeal signs, history of high-dose acyclovir treatment, and its temporal relationship with onset of symptoms can help distinguish acyclovir-induced encephalopathy from viral encephalitis. CSF lymphocytic pleocytosis is typically associated with viral encephalitis. However, it is also a non-specific marker of neurovascular inflammation and has been reported in sporadic case reports of acyclovir-induced encephalopathy. Acyclovir is dialyzable and this fact can be used exploited for therapeutic purposes.

A CASE OF ANKYLOSING SPONDYLITIS PRESENTING FEVER AND ENTHESITIS IN UNCOMMON LOCATIONS

Ryo Sasaki[1]; Naoki Kanda[2, 1]; Dai Akine[1]; Ayako Kumabe[1]; Yu Yamamoto[1]; Shuji Hatakeyama[1]; Masami Matsumura[2, 1]. [1]Jichi Medical University, Shimotsuke, Japan; [2]Jichi Medical University Hospital, Tochigi, Japan. (Control ID #2704190)

LEARNING OBJECTIVE #1: Diagnose ankylosing spondylitis based on history including past symptoms.

LEARNING OBJECTIVE #2: Recognize fever and enthesitis in uncommon locations as manifestations of ankylosing spondylitis.

CASE: A 58-year-old Japanese man presented with a two-month history of myalgia of the extremities accompanied with morning stiffness, bilateral temporal regions pain, and one-month history of fever exceeding 38 degrees Celsius. On physical examination, tenderness in temporal muscles, shoulders, and elbows was noted. Erythrocyte sedimentation ratio was 122 mm per hour. Antinuclear antibodies and rheumatoid factor were negative. We suspected polymyalgia rheumatica associated with giant cell arteritis. Head magnetic resonance imaging (MRI) disclosed no abnormality in temporal artery, but bilateral contrast enhancement of temporal muscles. Bilateral temporal artery biopsy showed no findings of vasculitis. We reevaluated the history and physical examination findings in detail. He reported that he had had refractory neck pain since his twenties and disturbed range of motion in neck and lumbar spine. The precise tender lesions in shoulders and elbows were biceps branchii tendon and triceps branchii tendon. MRI with contrast enhancement showed

enthesitis in the tendon of deltoid muscle, subscapularis muscle, and biceps and triceps branchii muscle. Computed tomography revealed abnormal ossification bridges connecting successive thoracic vertebral bodies and sclerosis in sacroiliac joint. He was diagnosed with ankylosing spondylitis (AS). The effect of non-steroidal anti-inflammatory drugs was insufficient. He was started on tumor necrosis factor inhibitor and discharged.

IMPACT: How did this case change my practice? In the diagnostic approach to fever of unknown origin (FUO), it drew attention to the fact that more attention must be paid to not only the present illness but also past symptoms.

DISCUSSION: An important clue to the correct diagnosis in patients with FUO is specific symptoms or signs other than fever. In this case, the clue to the diagnosis of AS was the patient's past symptoms, e.g., refractory neck pain and disturbed range of motion in his neck and lumbar spine. Fever is rarely associated with spondyloarthritis (SpA). The major feature of SpA is chronic low back pain. An enthesitis is thought to be a specific symptom for SpA, and it commonly occurs at the insertion of the Achilles tendon and plantar fascia in the heel. In this case, the enthesitis was noted in the tendon of deltoid muscle, subscapularis muscle, and biceps and triceps branchii muscle. Thus, the contrast enhancement of temporal muscles on MRI suggests temporal muscle enthesitis. To the best of our knowledge, there is no literature describing temporal muscle enthesitis. The present case showed rare manifestations of ankylosing spondylitis presenting as FUO and enthesitis in uncommon lesions. The clue to the correct diagnosis was listening to the past symptoms and precise physical examination in this case.

A CASE OF BLURRY VISION SHEDS LIGHT ON GAPS IN THE CARE OF TRANSGENDER PATIENTS Jill Zabih. University of Nebraska Medical Center, Omaha, NE. (Control ID #2692814)

LEARNING OBJECTIVE #1: Identify transgender-affirming hospital policies that are easily implemented to create safe and efficacious care for this patient population.

LEARNING OBJECTIVE #2: Understand which historical features and laboratory findings help differentiate between type 1 and type 2 diabetes in an adult with new-onset diabetes.

CASE: A 23 year-old male to female transgender woman presented with 10 days of blurred vision and progressive generalized weakness. Her medications included only estradiol and spironolactone which had been increased 2 weeks prior. She noted that she had progressive nausea and vomiting for the past week as well as increased thirst. She also noted increased urination since her spironolactone was increased. She had no other medical history aside from gender dysphoria. She had a long-term supportive male partner. She was noted to be mildly tachycardic but normotensive. She was a well-appearing African-American female. Her mucous membranes were dry with decreased salivary pooling. Her heart was regular, tachycardic, without murmur. Her visual acuity was normal but subjectively blurred. Her strength was 5/5 throughout but patient was fatigued by maneuvers. Her extremities were warm without any edema. Laboratory analysis revealed bicarbonate of 13 and an anion gap of 30. Glucose was 667. Subsequent laboratory analysis showed an A1c of 12.2. C-peptide was low at 0.5. Glutamic acid decarboxylase antibody was elevated at >250 consistent with a diagnosis of type 1 diabetes. Throughout this patient's hospitalization, male pronouns were accidentally used both in the electronic medical record and while referring to the patient which was understandably upsetting to her.

IMPACT: The impact of this case is two-fold. First, it serves as a reminder that although new-onset type 2 diabetes is more common in adults, it's important to consider the diagnosis of type 1 diabetes for which there is often a diagnostic delay. Secondly, more education regarding appropriate care and respect of transgender patients is needed. We must implement non-discrimination hospital policies as well as changes in our electronic medical record to help educate and alert staff to patient wishes.

DISCUSSION: New-onset diabetes is commonly encountered by the general internist. A methodical approach to differentiating between type 1 and type 2 diabetes is important as delaying insulin therapy in a patient with type 1 diabetes can be life-threatening. Important clues to type 1 diabetes include family or personal history of autoimmune disease, thin body habitus, diabetic ketoacidosis, low c-peptide, and/or positive autoantibodies. Transgender patients face many barriers to safe and equitable medical care including historical biases, lack of protective hospital policies, and lack of staff education. Strategies which can improve the care of this vulnerable patient population include adding transgender "flags" to the chart confirming preferred name and pronouns, room assignments consistent with patient's gender identity, and ongoing staff education.

A CASE OF CEFEPIME-INDUCED ENCEPHALOPATHY IN PATIENT WITH MULTIPLE SCLEROSIS Sahil K. Virdi; Christopher Andrade; Doris Yang; Colette Knight; Robert L. Goodman. Montefiore Medical Center, Wakefield Division, Bronx, NY. (Control ID #2701330)

LEARNING OBJECTIVE #1: Recognize cefepime as a potential cause of significant neurological adverse effects.

CASE: 48 year-old woman with multiple sclerosis, sacral ulcer with osteomyelitis, on suppressive antibiotic therapy and recurrent urinary tract infections with retention was admitted for abdominal pain and constipation. Physical exam showed suprapubic fullness and tenderness and spastic paralysis of the legs. Initial labs revealed leukocytosis: white blood cells: 14.1 k/uL, acute kidney injury: creatinine 2.82 mg/dL and pyuria: urine WBC >100/HPF. Abdominal CT revealed urinary obstruction and copious amounts of stool in the rectum, which resolved after catheterization and bowel regimen, respectively. Ceftriaxone was started for urinary tract infection. Urine culture had no growth, likely due to suppressive antibiotic therapy for sacral osteomyelitis. After catheterization, renal function improved, but leukocytosis failed to improve. Cefepime was initiated to cover possible *Pseudomonas*. Within 24 hours the patient developed hallucinations. Her neurologic exam was most significant for altered mentation, which worsened progressively. Her altered state could not be attributed to multiple sclerosis. Metabolic cause secondary to cefepime or underlying infection was suspected. Cefepime was held, no other antibiotic was started and she returned to baseline in two days.

IMPACT: Knowing the neurological adverse effects of cefepime and timely identification can decrease morbidity in patients.

DISCUSSION: Adverse effects of cefepime are considered mild, but neurotoxic effects, such as myoclonus, seizures and encephalopathy have been described in patients with renal insufficiency due to decreased clearance. Renal dysfunction also makes the blood brain barrier more permeable, facilitating influx of uremic neurotoxins, and possibly cefepime, into the brain, which can lead to these side effects. However, similar cases have been reported in patients with normal renal function. We describe cefepime-induced encephalopathy in a patient with multiple sclerosis. At the time cefepime was given, patient's renal function had normalized, eliminating decreased clearance as a cause of the neurotoxic effects. Multiple sclerosis is known to disrupt blood brain barrier, possibly promoting the influx of cefepime to the brain, leading to encephalopathy. This diagnosis was

also supported by the resolution of symptoms after discontinuation of the drug in a time frame similar to previously reported cases. In addition, infective etiology was unlikely as the patient was off antibiotics when the encephalopathy resolved. Cefepime has been implicated for serious neurological adverse effects. In this case, multiple sclerosis could have precipitated cefepime-induced encephalopathy. However, similar cases need to be reported to determine if there is a true association. Nevertheless, caution is advised when using cefepime in patients with neurological disorders.

A CASE OF CHOLESTASIS ASSOCIATED WITH TRIMETHOPRIM-SULFAMETHOXAZOLE ADMINISTRATION Mary Barrosse-Antle; Anna Moran; Jeffrey R. Jaeger. University of Pennsylvania School of Medicine, Philadelphia, PA. (Control ID #2702905)

LEARNING OBJECTIVE #1: Recognize trimethoprim-sulfamethoxazole as a potential cause of severe cholestasis

CASE: The patient is a previously healthy 29-year-old male who developed cholestasis after taking trimethoprim-sulfamethoxazole (T/S) that had been administered for treatment of a wound infection. He presented seven days after starting the medication with right upper quadrant pain, nausea, dark urine, pale stools, jaundice, pruritus, and weight loss. He denied fever, rash, or significant alcohol use. Liver function tests at presentation showed AST 104 U/L (13–39 U/L), ALT 263 U/L (7–52 U/L), alkaline phosphatase 292 U/L (34–104 U/L), and total bilirubin (TB) 12.2 mg/dL (0.3–1.0 mg/dL). After 21 days of worsening jaundice, he was admitted to the hospital, where his lab tests showed AST 30 U/L, ALT 44, alkaline phosphatase 257 U/L, and TB 26.3 mg/dL. ANA, ASMA, AMA, hepatitis A, hepatitis B, hepatitis C, CMV, and HIV were negative. CT abdomen showed a normal-appearing liver and collecting system with no ductal dilation. Liver biopsy showed marked cholestasis with mild portal and lobular chronic inflammation and no significant fibrosis. No bile duct atrophy was identified. Minimal steatosis, and mild reticuloendothelial stainable iron were seen. His pruritus was refractory to diphenhydramine, ursodiol, cholestyramine, and naltrexone but responded to rifampin. At the time of discharge, TB was 38.5, with minimal transaminitis and preserved synthetic function.

IMPACT: This case reinforced the importance of considering drug toxicity, especially T/S toxicity, in the differential diagnosis of cholestasis. It also expanded our repertoire of symptomatic treatments of pruritus to include rifampin.

DISCUSSION: T/S is an antibiotic that is rarely associated with clinically significant liver injury. Previously described patterns of hepatotoxicity include hepatocellular, cholestatic, and mixed hepatocellular-cholestatic injury. There are many variants of T/S-induced liver injury that encompass a wide pathologic and clinical spectrum. While the most frequently described injury is hepatocellular necrosus, some patients can have simple cholestasis with minimal inflammatory infiltrate and no fibrosis that resolves spontaneously. Among cholestatic reactions, the most serious variant is labeled "vanishing bile duct syndrome," and is marked by an early hepatitic phase followed by severe, prolonged cholestasis associated with significant loss of bile ducts on biopsy. T/S-induced cholestatic liver injury is characterized by onset of symptoms within 4 days to one month of start of therapy, with reported peak total bilirubin levels ranging from 2.5 to 40.4. Normalization of TB is the norm, occurring from several weeks to 1 year after discontinuation of T/S. However, patients with vanishing bile duct syndrome can require liver transplantation due to clinical deterioration. Our patient's symptoms,course, and pathologic findings are consistent with cases of simple T/S-induced cholestasis described in the literature.

A CASE OF CHRONIC TOPHACEOUS GOUT Katherine Ni; Maiko Kondo; Verity Schaye. NYU School of Medicine, New York, NY. (Control ID #2697996)

LEARNING OBJECTIVE #1: Recognize the clinical presentation and physical exam findings of chronic tophaceous gout

LEARNING OBJECTIVE #2: Discuss the management and complications of tophaceous gout

CASE: A 40 year-old man with no past medical history presented with 8 months of worsening pain and deforming growths in multiple joints. He first noticed intermittent pain and swelling in the heels of both feet 2 years prior to admission, which progressed to constant pain in his feet, knees, hands, and elbows. Starting 8 months ago, distinct nodules formed on the affected joints; these occasionally burst and released a "toothpaste-like" discharge. He increasingly had difficulty walking and using his hands. The patient had not sought any medical care since emigrating from Mexico 8 years ago, due to lack of insurance. On exam, he had diffuse subcutaneous nodules on the feet, ankles, knees, elbows, earlobes, and hands, most concentrated in the joint spaces. They were firm, non-tender, and yellow to white in color. One nodule was draining a chalky white exudate. He had numerous cyst-like lesions on the shaft of the penis, restricting movement of the foreskin. Range of motion was severely impaired in all extremities. He had a uric acid level of 10.4, alkaline phosphatase of 164, and C-reactive protein of 16.5. Rheumatologic serologies were negative. X-rays of the affected joints showed osteopenic bone, with areas of periarticular erosions, joint space narrowing, and subchondral sclerosis with overlying tophi, all consistent with advanced gout. Fluid from the draining tophus revealed large collections of monosodium urate crystals.

IMPACT: This case is a reminder that physicians should be prepared to recognize and manage not only acute gout flares, but also advanced presentations of chronic gout. Particularly when working in populations with limited healthcare access, the diagnosis and treatment of gout may be considerably delayed. Perhaps more importantly from an internist's perspective, recognizing and treating the sequelae and comorbidities of gout may reduce morbidity and mortality in these patients.

DISCUSSION: In gout patients, the presence of one or more tophi is an indication to begin urate-lowering therapy (ULT), using xanthase-oxidase inhibitors, which decrease production of urate, and uricosuric agents, which increase renal excretion of uric acid. ULT targets a serum urate of <6 mg/dL; in severe cases, a target of <5 mg/dL is often used. If serum urate remains elevated on both agents, the next step is to add pegloticase, a recombinant uricase that converts urate into the renally cleared allantoin. Even with optimal control of hyperuricemia, tophi may persist for years before disappearing. Notably, all gout patients are at increased risk for cardiovascular disease, metabolic syndrome, and renal disease. However, patients with tophi have additional complications of joint and bone destruction, compressive neuropathies, and ulceration and infection of the tophi. The presence of tophi is also an independent predictor of mortality.

A CASE OF CNS VASCULITIS IN A PATIENT WITH WALDENSTROM MACROGLOBULINEMIA Tanawan Riangwiwat[1]; Chris Y. Wu[1]; Beau Nakamoto[2]. [1]University of Hawaii, Honolulu, HI; [2]Straub Clinics and Hospital, Honolulu, HI. (Control ID #2701353)

LEARNING OBJECTIVE #1: Recognized Waldenstrom macroglobulinemia as a cause of vasculitis

LEARNING OBJECTIVE #2: Recognized treatment of vasculitis due to Waldenstrom macroglobulinemia

CASE: A 66 year-old woman with Waldenstrom macroglobulinemia (WM), hypertension, and hyperlipidemia presented with acute altered mental status. She had been diagnosed with WM by bone marrow biopsy and was treated with rituximab, then maintained on thalidomide until 2 months prior to presentation. Vital signs were normal. Patient was fully oriented. She was unable to spell the word 'WORLD' backwards, but had normal repetition. Cranial nerves II-XII, strength, sensation, cerebellar tests, and Babinski reflex were all intact. Non-contrast head CT was normal. MRI brain showed acute infarctions involving the cortical surface of the parietal lobes. Lumbar puncture showed mildly elevated proteins. WM labs showed elevated IgM of 2250 mg/dL [reference range 40–260], normal IgA level, low IgG of 236 mg/dL [reference range 741–1861]. Serum viscosity was 1.8 cP [reference range 1.1 - 1.8]. Infectious workup, autoimmune and systemic vasculitis workup (including cryoglobulinemia) were negative. Due to acute left hemiparesis, repeat brain MRI was obtained on the second day, which showed multifocal cortical infarctions. MRA showed small peripheral branches of the cerebral arteries, and cerebral angiogram confirmed multifocal small vessel vasculitis. Cyclophosphamide was added, and the patient's mental status and neurologic deficits gradually improved. Patient was discharged with prednisone and cyclophosphamide.

IMPACT: Our patient presented with multifocal acute cortical ischemic strokes after discontinuation of WM treatment for 2 months. The mechanism of WM causing stroke was previously described as vasculitis with the presence of cryoglobulins, immunoglobulins that precipitate at temperatures < 37 °C and that can lead to immune complex-mediated vasculitis. To my knowledge, WM causing central nervous system (CNS) vasculitis in absence of cryoglobulins and hyperviscosity syndrome has never been described.

DISCUSSION: WM is an indolent B cell lymphoproliferative disorder characterized by a monoclonal IgM protein in the serum. Neurologic complications in WM are mostly manifesting as peripheral neuropathy or as clinical symptoms of hyperviscosity. Our patient was negative for cryoglobulins, secondary causes of CNS vasculitis, and elevated serum viscosity. However, cutaneous and systemic vasculitis has been uncommonly associated with other lymphoproliferative disorders in the absence of cryoglobulins. It's plausible that WM may lead to CNS vasculitis independent of cryoglobulins. The termination of maintenance immunosuppressive therapy in our patient led to the development of CNS vasculitis as vasculitis is an autoimmune phenomenon. Importantly, our patient experienced stabilization and improvement of symptoms upon treatment with steroids and cyclophosphamide, both of which are also useful in managing WM.

A CASE OF DRUG-INDUCED HEMOLYTIC ANEMIA Shana Berwick; Jennifer M. Manne-Goehler. Beth Israel Deaconess Medical Center, Boston, MA. (Control ID #2706674)

LEARNING OBJECTIVE #1: Review key laboratory features of drug-induced hemolytic anemia (DIHA) and diagnose this condition in the appropriate clinical context

CASE: EL is a 57 year-old male who presented as an outpatient with 10 days of upper respiratory symptoms and was prescribed Augmentin. However, his fevers persisted. On admission his exam was notable for mild jaundice and labs were notable for anemia, reticulocytosis, elevated LDH, indirect hyperbilirubinemia and a low haptoglobin, consistent with hemolytic anemia. The work-up of this hemolytic anemia included a direct antiglobulin test (DAT) positive for C3 and negative for IgG, and a negative cold agglutinin screen. A comprehensive panel of inflammatory and autoimmune tests returned negative. After discontinuing Augmentin, the hemolysis quickly resolved.

IMPACT: Interpretation of the DAT in its clinical context is key to diagnosing DIHA as the DAT can be positive for IgG and/or C3. Despite a growing number of drugs associated with DIHA, the diagnosis is often overlooked as it requires a high index of suspicion, a consideration of chronology between drug administration and hemolysis, and an understanding of serologic results. As such, the incidence of DIHA is underestimated.

DISCUSSION: The DAT is a common tool for distinguishing between classes of hemolytic anemia. DAT uses monoclonal antihuman globulin to promote agglutination of erythrocytes that have IgG and/or complement bound to their surface. A positive DAT test confers a differential diagnosis of (1) alloimmune (transfusion related) hemolytic anemia, (2) autoimmune hemolytic anemia, or (3) drug induced hemolytic anemia. There are two mechanisms for DIHA: drug-dependent and drug-independent. In the first, the drug binds to the RBC creating an immunogenic surface that triggers IgG- or immune complex-mediated hemolysis only in the presence of the drug. By contrast, drug independent antibodies are those that bind to the RBC surface even in the drugs absence. Both processes can be mediated by either IgG or complement and thus DIHA can be DAT IgG and/or C3 positive. A literature review from 2007 implicates over 125 drugs involved in DIHA, of which 42% were antimicrobials, 15% were anti-inflammatory and 11% were anti-neoplastics [1]. Among antibiotics, cefotetan, ceftriaxone and piperacillin were the most common culprits. Interestingly, beta-lactamase inhibitors, as found in Augmentin, appear to facilitate the interaction of antibiotics with RBCs and catalyze DIHA [2]. In this case the presence of an anti-C3 antibody, a negative cold agglutinin screen in addition to the history of recent Augmentin usage narrowed the differential to drug-induced hemolytic anemia. [1] Garratty, G. Drug-induced immune hemolytic anemia. *Hematology Am Soc Hematol Educ Program*. 2009:73–9. [2] Gmur, J et al. Amoxicillin-induced immune hemolysis. *Acta Haematol*. 1985;74(4):230–3.

A CASE OF ECTOPIC CUSHING'S SYNDROME David W. Lin; Keerti Murari. Icahn School of Medicine at Mount Sinai, New York, NY. (Control ID #2706245)

LEARNING OBJECTIVE #1: Diagnose and manage Cushing syndrome (CS) due to ectopic adrenocorticotropic hormone (ACTH) secretion (EAS)

LEARNING OBJECTIVE #2: Assess the role of bilateral adrenalectomy in rapidly progressive EAS

CASE: A 79 YO F with PMH of atrial fibrillation, hypothyroidism, and type 2 DM presented with altered mental status. Exam on presentation was notable for hypertension and delirium, but weight gain, central obesity and striae were absent. Labs were notable for hypokalemia, hypernatremia, high AM cortisol 76 ug/dL, high ACTH 593 pg/mL, high 24-hour urine free cortisol >16,500 ug/d, and high chromogranin A 10,100 ng/mL. CT-HCAP showed no pituitary macroadenoma, but did reveal a sigmoid colonic mass with several masses in the liver likely representing metastases, and bilateral adrenal thickening. A colonoscopy with biopsy showed low-grade dysplasia suggestive of invasive adenocarcinoma, but the specimen was insufficient for a pathological diagnosis. She was kept on ketoconazole and surgery was consulted for bilateral

adrenalectomy. However, she soon developed sepsis likely due to an aspiration pneumonia and was started on empiric antibiotics. She then developed septic shock, was made DNR/DNI, and transferred to inpatient palliative care where she died 12 days after admission.
IMPACT: Our case highlighted the high morbidity and mortality associated with sepsis in patients with rapidly evolving EAS, and explores the role of urgent bilateral adrenalectomy in such patients. Additionally, there have only been a few case reports of colonic malignancies as sources for EAS.
DISCUSSION: There are approximately 300 new cases of EAS per year. The classic Cushingoid features are not always seen in patients with rapidly progressive EAS such as ours. Carcinoid and small-cell lung carcinoma are the most common malignancies associated with EAS. However, there are only a few case reports in the literature of colorectal tumors as sources of EAS. Persistently elevated serum cortisol levels in CS carry high morbidity and mortality due to impaired immunity and a predisposition to infections. In one study, EAS patients with serum cortisol concentrations above 40 mcg/dL or urinary cortisol excretion greater than 2000 mcg/day were likely to have severe infections. In another retrospective cohort study of 418 patients with CS at two large tertiary endocrine referral centers, infection/sepsis accounted for 21.6% of deaths, and patients with EAS had poor survival compared to other causes of CS with 77.6% probability of 5-year survival. Thus, rapid control of cortisol secretion with steroidogenesis inhibitors like ketoconazole, metyrapone, and mitotane is indicated, though they may be effective only for a short time in up to 50% of patients. In patients that continue to deteriorate despite medical management, there is evidence that urgent bilateral adrenalectomy may be lifesaving in severe and rapidly evolving EAS.

A CASE OF HAMMAN'S SYNDROME AFTER A PROLONGED LABOUR Sidra Khalid; Suryanarayan Mohapatra; Basem Haddad. Fariview Hospital - Cleveland Clinic, Cleveland, OH. (Control ID #2706670)

LEARNING OBJECTIVE #1: − to recognize Hamman's syndrome in the differential diagnosis of chest pain in postpartum patients
CASE: A 27-year-old female gravida 3, para 0 and 2 miscarriages in the past was 39 weeks pregnant when she delivered a viable female newborn through a spontaneous vaginal delivery in a right occipito-posterior position. Her labour was prolonged and during it she developed a non-radiating mild chest pain and crepitus over her upper chest and right chin. She is a non-smoker with a non-significant past medical and surgical history. She had history of second hand smoking from parents till age 17 years. There was no family history of any lung disease. Her vitals were temp. 36.9 °C, heart rate 83/min, respiration rate 18/min, blood pressure 118/66 mmHg, and SpO2 99% on room air. The rest of the physical examination was unremarkable, except for crepitus at the base of the neck and on the anterior chest wall. Her chest x-ray showed cervical subcutaneous emphysema with extensive pneumomediastinum and pneumopericardium. She was transferred to the intensive care unit for further monitoring. A CT scan chest was performed which revealed extensive pneumomediastinum with no evidence of tracheal or bronchial injury; extensive subcutaneous emphysema overlying the lower cervical neck and extending over the anterior right hemithorax. Esophagogram showed no evidence of esophageal rupture. Cardiothoracic surgery was consulted and expectant management was decided. As she continued to have improvement of her symptoms and with no evidence of cardiovascular collapse, she was observed clinically for the resolution of her pneumomediastinum.
IMPACT: Through this case, a rare cause of pneumomediastinum has been highlighted in a postpartum patient. Patients with prolonged or complicated vaginal deliveries, who present with chest pain and crepitus over the anterior chest wall, should be investigated further for pneumomediastinum. Awareness of this rare condition in this particular patient population will reduce morbidity and mortality, as in severe cases it can lead to cardiovascular collapse and death.
DISCUSSION: Hamman's syndrome is pneumomediastinum associated with subcutaneous emphysema. It occurs during labour with an incidence of 1 in 100, 000 vaginal deliveries. Its main symptom is severe chest pain and sign is crepitus in the chest and neck. Diagnosis is confirmed through a chest x-ray or CT scan of the thorax. It is a self-limiting condition, but it can lead to malignant pneumomediastinum in which the trapped air can lead to cardiovascular collapse. Management is a conservative approach in stable patients, which includes oxygen, analgesics, anti-tussives and anti-anxiety medications. It is an important to distinguish Hamman's syndrome from other life-threatening postpartum conditions such as pulmonary embolism, amniotic fluid embolism, aortic dissection, myocardial infarction, and pneumothorax.

A CASE OF ISOLATED ACQUIRED FACTOR VIII INHIBITOR Ranya Selim; Sarah A. Gorgis; Waleed Al-Darzi; Elsheikh Abdelrahim; Bruno Digiovine. Henry Ford Hospital, Detroit, MI. (Control ID #2701989)

LEARNING OBJECTIVE #1: Diagnose and manage the presence of factor VIII inhibitor.
CASE: We present the case of a 76-year-old lady with a history of breast cancer post mastectomy who was transferred to our Intensive Care Unit (ICU) for acute blood loss anemia. The patient had initially presented 3 weeks prior to an outside hospital (OSH) after a fall with a hemoglobin of 4.7 g/dL (from 11.7 g/dL), PTT at 73, creatinine at 3.8 mg/dL, and BUN at 55 mg/dL. CT demonstrated a large intramuscular hematoma anterior to the right femur and a retroperitoneal hematoma. She was given several units of blood, and hemoglobin remained stable. Femoral dialysis catheter placement was then attempted due to worsening renal function with resultant profuse bleeding. Given her persistent bleeding of unknown etiology, she was transferred for escalation of care. On arrival to the ICU, the patient required suturing of the femoral site. Workup of her elevated PPT was initiated. Monoclonal protein evaluation, cardiolipin antibodies, beta 2 glycoprotein were all within normal limits. ANA was mildly positive. Her Factor VIII levels were <1% with elevated inhibitor level. Mixing study was consistent with presence of an inhibitor. She was believed to have acquired factor VIII inhibitor. CT was done to rule out an associated malignancy and was negative. She was given 4 days of high dose decadron, followed by daily cyclophosphamide and prednisone, as well as intermittent doses of Novoseven (factor VII), Obizur (factor VIII), and later Feiba (longer acting factor VII). She did not require further doses as her hemoglobin remained stable with resolution of bleeding. She was discharged on low dose oral prednisone maintenance therapy.
IMPACT: Our case highlights the importance of consideration of other etiologies for coagulopathy, especially in patients with no known coagulopathic disorders. Though factor VIII inhibitor is uncommon, it could be an aqcuired disorder in adults with otherwise unexplained elevation in PTT.
DISCUSSION: Acquired Factor VIII inhibitor is a rare disorder that may present with severe bleeding episodes that may be life-threatening, with mortality rates up to 22%. The most commonly associated illnesses reported in the literature include autoimmune disorders and malignancy/pre-malignant

states. Diagnosis is made both clinically and based on laboratory evaluation; an isolated prolonged PTT (normal PT and platelets), and a mixing study consistent with the presence of an inhibitor, in the absence of heparin contamination and lupus anticoagulant. Factor VIII activity should be measured, and the strength of inhibitor quantified. Acute bleeding episodes with low-titer inhibitors can be treated using human factor VIII concentrates, whereas factor VIII bypassing agents (prothrombin complex concentrates or recombinant activated factor VII) are effective in the presence of high-titer inhibitors. The first-line treatment for the eradication of factor VIII autoantibodies is a combination of steroids and cyclophosphamide.

A CASE OF LIFE-THREATENING SEPTICEMIA FOLLOWING GLUTEAL AUGMENTATION Saliha Saleem; Dipen B. Khanapara; Marilou Corpuz. Montefiore Medical Center, Bronx, NY. (Control ID #2705793)

LEARNING OBJECTIVE #1: Recognize the severe complications of autologous gluteal augmentation.

LEARNING OBJECTIVE #2: Recognize potential pathogenicity of Propionibacteria following surgical manipulation.

CASE: A 34-year-old woman presented with left buttock pain and fever. She had undergone fat gluteal augmentation surgery two weeks before admission. She presented with fever, hypotension, tachycardia, and a 12 × 8 cm indurated area on the left buttock.Pertinent labs for her included WBC of 35.4 k/ul and lactic acid of 2.5 mmol/L. CT scan abdomen/pelvis revealed an ill-defined fluid collection within the left gluteus maximus. She was managed in ICU for septic shock. 175 ml of foul-smelling pus was drained; cultures grew Propionibacterium avidum. Despite broad spectrum antibiotics, she continued to have leukocytosis, fever, and progressive necrotizing cellulitis extending to her lower back and right buttock, which necessitated three additional sessions of incision and drainage. Tissue pathology revealed necrotic infection of the skin and soft tissue. Her hospital length of stay was two weeks.

IMPACT: Although labeled as low risk, cosmetic procedures like gluteal augmentation can cause extensive and life-threatening infection with subsequent disfigurement. It is critical that complications of necrotizing soft tissue infections be recognized early, as they require close monitoring with appropriate medical management and timely surgery.

DISCUSSION: Augmentation gluteoplasty has been reported to have increased by 3400% from 2002 to 2014. The American Society of Plastic Surgeons identified gluteal implants and lifts as the fastest-growing types of plastic surgery in the United States. Surgeries with silicone prostheses and autologous fat grafting have complication rates of 21.6 and 9.9%, respectively. Reported complications in autologous fat injections are seroma (3.5%), under-correction (2.2%), infection (2%), pain or sciatalgia (1.7%), lipo-necrosis, and fat embolism. There is a paucity of information in the literature on infectious complications with fat grafting. Reported infections were caused by Bacteroides, Enterococcus, and yeast. Our patient is a unique case of P. avidum necrotizing infection of the skin and soft tissue leading to severe sepsis. Propionibacteria are gram-positive anaerobic bacilli, usually considered as normal flora, and frequently found in pilosebaceous follicles of humid areas (axilla, groin, perianal region). Our patient's preceding surgery or trauma may have predisposed to P. avidum infection. With increasing popularity of cosmetic surgeries, physicians should be cognizant of these rare yet serious infections, and patients should be warned about these possible risks.

A CASE OF LISTERIA OSTEOMYELITIS CAUSED BY TNF-α INHIBITOR Takafumi Kubota[2]; Ivor Cammack[1]; Shadia Constantine[3]. [1]Keijinkai, Yoichi, Japan; [2]Teine Keijinkai Hosipital, Sapporo, Japan; [3]Teine Keijinkai Hospital, Sapporo, Japan. (Control ID #2704596)

LEARNING OBJECTIVE #1: Recognise that listeria can cause osteomyelitis in patients taking TNF-α inhibitors.

LEARNING OBJECTIVE #2: Recognise that treatment duration of Listeria osteomyelitis is variable, and ESR monitoring can be a useful guide.

CASE: A 73-year-old Japanese man presented with a 6 month history of a progressively enlarging mass located at his left ankle. He denied fever, weight loss, pain or pitting edema. His longstanding medical conditions include rheumatoid arthritis, ischaemic heart disease and dyslipidemia. He also has a past history of methotrexate induced lymphoproliferative disorder. His medications are adalimumab (a TNF-α inhibitor), methylprednisolone, aspirin, clopidogrel, lansoprazole and nicorandil. On physical exam, his vital signs were within normal limits He had classic signs of RA with rheumatoid nodules on his upper limbs, and swan-neck deformities of the hand. There was a well defined 4 cm mass superficial to the medial malleolus of his left ankle. It was not red or tender. There was joint involvement. The rest of his exam was normal. Blood results showed a normocytic anemia (Hb 8.4 g/dl), hyponatremia Na 130 mEq/L, WBC 16650 and CRP 176. Our initial working diagnosis was a flare of rheumatoid arthritis and he was treated symptomatically awaiting further investigation. Xray, CT and MRI images showed bony destruction of the tibia, talus and multiple granulomas around the left ankle. A biopsy was performed on day 10 which cultured listeria from the adjacent bone. A diagnosis of listeria osteomyelitis was made and he was started on intravenous ampicillin 2 g 6 hourly + gentamycin 90 mg 8 hourly. He underwent surgical resection of affected bone at the 4 week mark. The planned antibiotic duration was for 15 weeks, with weekly ESR monitoring.Treatment was ceased early at the 14 week mark as his ESR had reduced to 40 mm/hr.

IMPACT: This case highlighted the risk of infection from uncommon pathogens in patients on TNF-α inhibitors. We were surprised to make a diagnosis of osteomyelitis in this patient 14 days into his admission. The culture results made the diagnosis seem obvious, but I learnt that this is an important diagnosis not to miss. Also of interest was the granuloma formation which made us suspect tuberculosis, but in fact his culture came back as pyogenic granuloma without bacteria and Listeria osteomyelitis.

DISCUSSION: TNF-α inhibitors have become increasingly popular in the suppression of autoimmune conditions, but it is important to be aware of the increased risk of infections with intracellulcar organisms such as *Mycobacterum tuberculosis* and *Listeria monocytogenes*. Listeria osteomyelitis, a rare condition, is treated with surgical resection of infected bone and prolonged courses of antibiotics. To determine the duration of the antibiotics therapy, we found weekly ESR measurements to be useful.

A CASE OF MICROSCOPIC POLYANGIITIS COMPLICATED BY DIFFUSE ALVEOLAR HEMORRHAGE Aravdeep Jhand[1]; Blake Titterington[2]; Jeffrey Macaraeg[1]; Vishisht Mehta[1]; Gene Pershwitz[1]; Venkata Andukuri[1]. [1]Creighton University, Omaha, NE; [2]Creighton University School of Medicine, Omaha, NE. (Control ID #2707314)

LEARNING OBJECTIVE #1: Recognize clinical manifestations of Microscopic Polyangiitis.

LEARNING OBJECTIVE #2: Identify the indications for empiric immunosuppressive therapy.

CASE: A thirty-seven year old Caucasian male presented with a 3-week history of productive cough with blood-tinged sputum and wheezing. Patient also reported 80 lbs. of unintentional weight loss over the last year. At initial presentation, his blood pressure was 138/80 mmHg, pulse rate 84 per minute, respiratory rate 16 breaths per minute and body temperature 37° C. Physical examination showed a young and healthy male in no acute distress. A petechial rash was noticed bilaterally on the soles of his feet. Initial lab work-up revealed hemoglobin of 7.9 gm/dl and hematocrit of 24.2%, blood urea nitrogen 28 mg/dl, serum creatinine 3.87 mg/dl. Urinalysis was positive for hematuria and bilateral infiltrates were seen on plain radiograph of the chest. A high resolution computed tomography scan revealed ground glass opacities in bilateral lower lobes of the lungs. Serological testing for histoplasmosis was negative. Serum anti-nuclear antibody was negative and complement levels (C3 and C4) were normal. Further testing for potential vasculitis was undertaken which was positive for p-ANCA (1:160) but negative for myeloperoxidase (MPO) and anti-glomerular basement membrane antibody. A renal biopsy was performed for confirmatory diagnosis. While waiting for the results of the biopsy, patient underwent bronchoscopy with alveolar lavage (BAL) which was consistent with Diffuse Alveolar Hemorrhage(DAH). Thus, urgent therapeutic plasma exchange was performed and induction immunosuppressive therapy with IV pulse steroids and Rituximab was initiated for presumed Microscopic Polyangiitis (MPA). Three sessions of plasma exchange were completed and patient was transitioned to oral steroids. Renal biopsy results later revealed crescenteric glomerulonephritis thus confirming the diagnosis of MPA. Two weeks after initiating treatment, his kidney function had improved and patient reported no hemoptysis.

IMPACT: This case highlights the importance of prompt recognition of DAH in patients suspected or diagnosed with ANCA associated vasculitis (AAV) since early initiation of immunosuppressive therapy can be life-saving. In clinical scenarios where suspicion for AAV is high, empiric treatment should not be delayed while waiting for confirmatory tissue biopsy.

DISCUSSION: MPA is a small vessel necrotizing vasculitis and can involve various organ systems including the lungs, kidneys, skin etc. Nearly 90% of patients are ANCA positive and it is primarily associated with MPO-ANCA. Biopsy remains the gold standard for diagnosis and should be performed in suspected cases. A presumptive diagnosis can be made based upon clinical findings such as DAH and ANCA positivity in cases where biopsy cannot be performed or is delayed. Treatment involves immunosuppressive drugs such as Glucocorticoids, Cyclophosphamide, Rituximab and Methotrexate.

A CASE OF MISTAKEN IDENTITIES: INAPPROPRIATE IV OPANA USE CAUSING TTP-LIKE ILLNESS

Amy D. Lu[2]; Edgar Raymund Ramirez[1]; Raquel A. Buranosky[2]. [1]UPMC, Pittsburgh, PA; [2]University of Pittsburgh Medical Center, Pittsburgh, PA. (Control ID #2703643)

LEARNING OBJECTIVE #1: Recognize clinical features of drug-induced thrombotic microangiopathy (DITMA).

LEARNING OBJECTIVE #2: Manage DITMA with supportive care and rare plasmapheresis.

CASE: A 53 year-old woman with a history of multiple sclerosis on interferon-beta, chronic pain on extended release oxymorphone (Opana®) presented after witnessed generalized tonic-clonic seizure. In preceding days, she was lethargic and confused. Her medications included interferon-beta at 30mcg per week and known to abuse IV injected Opana. On arrival, she was febrile to 38.4 °C, hypertensive to 204/119, tachycardic at 146 bpm, tachypneic to 36, and saturating at 94% on room air. She was obtunded with roving eye movements, no purposeful movements, and did not withdraw to noxious stimuli. She was subsequently intubated for airway protection. Serology showed white blood cell count of 26.8, hemoglobin of 11.7 gm/dl, and platelets of 18,000. Basic metabolic panel showed bicarbonate 17, BUN 46, and creatinine 2.58. LDH was elevated to 2541 IU/L with undetectable haptoglobin, and peripheral blood smear showed 5–10 schistocytes/hpf. Urine drug screen was positive for opioids. Brain MRI showed extensive, multilobar cortical and subcortical T2 hyperintensity and small bilateral thalamic hemorrhages consistent with posterior reversible encephalopathy syndrome (PRES). She was admitted to medical ICU for plasmapheresis. She received one round of apheresis with recovery of platelets to 57,000. ADAMTS13 autoantibody and activity were both normal. Given the clinical picture, a diagnosis of drug-induced TMA most likely due to IV Opana use was made. Full recovery was made within 5 days without further apheresis or steroids.

IMPACT: DITMA should be considered in anyone with new microangiopathic hemolytic anemia (MAHA), thrombocytopenia, and acute kidney injury (AKI) as AKI is less commonly seen in primary TTP. In light of the opioid epidemic, providers should be aware that inappropriate use of IV Opana may cause DITMA which can be generally managed without plasmapheresis.

DISCUSSION: TTP is a rare disorder that is classically defined as the pentad of fever, MAHA, thrombocytopenia, renal failure and neurologic abnormalities though only MAHA and thrombocytopenia are required for diagnosis. DITMA presents similarly to TTP but with a much higher incidence of AKI. Diagnosis of DITMA may be made with a combination of MAHA, thrombocytopenia, and history of implicated drugs such as chemotherapeutics, immunosuppressants, or quinine. Interferon has been associated with DITMA in a dose dependent manner with doses greater than 50mcg per week, which did not apply in our patient. Use of IV Opana has also been linked to DITMA via toxicity-mediated mechanism with range of clinical presentation from mild illness to multisystem organ failure. Plasmapheresis may be unavoidable initially in a clinically deteriorating patient who presents with concern for TTP, but DITMA generally has excellent prognosis with supportive care alone.

A CASE OF NONISCHEMIC DILATED CARDIOMYOPATHY IN A 26M WITH POLYSUBSTANCE USE DISORDER AND HISTORY OF INCARCERATION: INTRODUCING A STRUCTURAL VULNERABILITY CHECKLIST TO OPTIMIZE PATIENT CARE AND OUTCOMES

Kimberly Sue. Massachusetts General Hospital, Cambridge, MA. (Control ID #2698996)

LEARNING OBJECTIVE #1: To introduce clinicians to a new assessment tool to assess structural determinants of health (“structural vulnerability”) to include diagnostics and data regarding our patients’ upstream sources of ill health, including structures of power and oppression, in order that providers can better recognize their biases and optimize care for “socially complicated” patients.

LEARNING OBJECTIVE #2: Understand the sources of structural vulnerability, history, physical exam findings, differential diagnosis and possible treatments for a 26 M with history of substance use disorder and incarceration on presentation to the Cardiac Intensive Care Unit.

CASE: This is a case of a 26 M h/o polysubstance use (cocaine, marijuana), bipolar disorder, trauma who was admitted to a tertiary care hospital with signs

and symptoms of decompensated heart failure. TTE revealed EF of 10%. He underwent both diagnostic workup at that time for his profound heart failure as well as tailored therapy. He was discharged with heart failure follow-up. Later, the patient was re-admitted to the hospital from jail where the medical team advocated for an ICD placement given that a LifeVest was deemed technically difficult for the patient given his complex circumstances. He was again admitted with signs and symptoms of volume overload and his erratic behavior was cited as argument against his transplant candidacy. The patient's significant cardiovascular pathology compounded with co-morbid psychiatric and behavioral problems presented challenges for all care teams involved. Using a structural vulnerability checklist (see Bourgois, Holmes, Sue, and Quesada, 2016, Academic Medicine) can help front line clinicians to identify the most significant barriers to providing optimal care outside of technical diagnostic criteria that still heavily influence the well-being and ultimate outcomes of patients. Utilizing this checklist for this particular patient would reveal several sources of ongoing structural vulnerability contributing to this patient's poor outcomes.

IMPACT: This case bring the perspective of medical anthropology theory to illustrate the way in which we must incorporate social determinants of health into our initial and ongoing assessments and plans for patients. Clinicians should be empowered with the framework and language to prioritize and address these critical social measures as part of comprehensive medical assessments.

DISCUSSION: Here we present a difficult medical case in a patient whose care has significant ethical and psychosocial overlays. Frontline clinicians can utilize a structural vulnerability assessment checklist as presented here to identify sources of ongoing barriers to health. We believe the implementation of such a tool in medical schools, emergency rooms and on the wards can have significant benefits if the tool is integrated into routine care. We hope to pilot the use of this project at Harvard and UCSF among medical students for both feasibility and ease of understanding for clinicians.

A CASE OF POST-OPERATIVE DEEP VEIN THROMBOSIS IN A HYPERCOAGULABLE PATIENT ON APIXABAN Sasha-ann K. East; Sheetal Patel. Rutgers Robert Wood Johnson Medical School, Highland Park, NJ. (Control ID #2705136)

LEARNING OBJECTIVE #1: Hypercoagulable disorders pose an increased lifetime risk of developing venous thromboembolic events (VTE). It is established that patients with these disorders usually need lifelong anticoagulation once they have more than one thromboembolic event. With the emergence of novel oral anticoagulants (NOAC), management of these patients has been streamlined. However, in times of medical illness or surgery, NOACs may not be optimal. These patients may require more aggressive individualized therapy to prevent VTE.

CASE: This case involves a 48-year-old gentleman with a past medical history of a prothrombin gene mutation complicated by two episodes of provoked VTE four and ten months prior. He had been taking Apixaban, a NOAC, indefinitely as a result. He elected to undergo total hip replacement for osteoarthritis. At the time of the operation, the patient had stopped taking Apixaban for 48 h under the advisement of his hematologist. The patient tolerated the surgery well without any bleeding complications. Apixaban 5 milligrams (mg) was restarted within six hours after surgery and continued twice daily. The next day, the patient underwent physical therapy and tolerated early ambulation. However, he started to have right lower extremity pain and swelling. An ultrasound of the right lower extremity was significant for an acute proximal deep vein thrombus. Apixaban was then increased to 10 mg twice daily. The patient's symptoms and leg swelling improved over the next two days and he was discharged on the higher dose of Apixaban.

IMPACT: It may be best to transition high risk patients to LMWH therapy peri-operatively and early post-op until NOACs are proven to be an effective alternative.

DISCUSSION: NOACs are a mainstream method of anticoagulation for various types of pro-thrombotic illnesses and predispositions. This is due to their ability to be therapeutic at onset, the convenience of not requiring periodic monitoring of drug levels, shorter half-lives, and ease of compliance. However, hypercoagulable patients may not respond to the standard doses of NOACs during times of stress. Unfortunately, there are not many studies testing the effectiveness of NOACs at different dosage levels in preventing VTE among high risk populations. Furthermore, the standard coagulation assays have not been reliable measurements of NOAC activity. Studies have primarily focused on heparin products and vitamin K antagonists for VTE prevention. Across multiple studies, low-molecular-weight heparin (LMWH) seems to provide better outcomes for high risk surgical and medically ill patients. This is especially true, when therapy is guided by monitoring Factor Xa levels. The patient in this case is a high risk for VTE complications due to his prothrombin gene mutation and the type of surgery he underwent. Despite every precaution to limit the interval off Apixaban and encourage early ambulation, he still developed a DVT in-hospital.

A CASE OF PULMONARY NODULOCYSTIC AMYLOIDOSIS IN A PATIENT WITH LYMPHOMA Sandheep Venkataraman[2]; Sahil K. Virdi[2]; Saad B. Jamil[2]; Olena Slinchenkova[1]. [1]Montefiore Medical center, Brooklyn, NY; [2]Montefiore Medical Center, Wakefield Division, Bronx, NY. (Control ID #2706702)

LEARNING OBJECTIVE #1: Recognize the features of localized pulmonary amyloidosis and the possible association with lymphoma.

CASE: A 58 year old woman with a history of breast cancer status post mastectomy, recently diagnosed mucosa-associated lymphoid tissue (MALT) lymphoma at the Ampulla of Vater, and human immunodeficiency virus (HIV) infection, presented with fever and lightheadedness. She was febrile (temperature of 102 F), tachycardic, and had decreased bilateral breath sounds. Her WBC and CD4 counts were normal. HIV viral load was undetectable. Chest CT revealed bilateral large thin-walled cystic lesions with diffuse ground glass nodules. Infectious work up was unremarkable. Fine-needle biopsy revealed light chain amyloidosis with lambda plasma cell infiltration. Serum protein electrophoresis showed high gamma globulins and low albumin/globulin ratio. PET scan revealed multiple bilateral lung opacities, metastatic disease involving Ampulla of Vater, lymph nodes, gastrointestinal tract and spleen. Further workup was deferred by the patient.

IMPACT: Pulmonary amyloidosis should be considered in the differential for nodular/cystic lesions of the lungs, especially in a patient with a hematological malignancy. Tissue biopsy is essential is making a diagnosis.

DISCUSSION: Amyloidosis is the extracellular deposition of fibrillar proteins in Beta-pleated sheets, showing green birefringence on Congo red staining. It is divided into: AL (primary/light chain amyloidosis) and AA (secondary amyloidosis). AL is the most common form seen in developed nations and involves the deposition of monoclonal immunoglobulin light chains. In the United States, approximately 4,500 new cases are diagnosed every year. It predominantly affects males between ages 50 and 80. It can present with a variety of symptoms as it can involve multiple organs. The kidney and liver are involved in 70% of the cases, the heart is involved in 60%, and the lungs in 50% of the

patients. Lung involvement can be localized or as part of systemic amyloidosis. The main patterns of respiratory tract involvement are tracheobronchial, nodular parenchymal, diffuse alveolar septal, and lymphatic. The clinical presentation and imaging findings are nonspecific. However, the localized nodular form, as seen in our case, presents as a solitary nodule or as multiple nodules of varying size, and can be easily mistaken for lung cancer. Tissue diagnosis is thus essential to establish the diagnosis. Though pulmonary amyloidosis can occur alone, there have been reports of an association with multiple myeloma, extra-nodal B-cell MALT lymphoma of the gastrointestinal tract, and lymphoproliferation of pulmonary origin. Localized pulmonary amyloidosis is relatively benign with a good prognosis. However, the prognosis with systemic involvement is poor. Localized deposition does not require chemotherapy. Local therapy in the form of surgical/laser excision and radiotherapy may be needed in patients developing obstructive symptoms.

A CASE OF PURPLE URINE BAG SYNDROME IN AN ELDERLY WOMAN WITH A CHRONIC UNILATERAL NEPHROSTOMY

Elizabeth Cummings; Kevin Chen. Yale School of Medicine, New Haven, CT. (Control ID #2706032)

LEARNING OBJECTIVE #1: Recognize purple urine bag syndrome and its treatment

LEARNING OBJECTIVE #2: Assess the relationship between purple urine bag syndrome and related urologic and renal pathology

CASE: A 67-year-old woman presented with one day of abdominal pain and vomiting. Her medical history was notable for chronic kidney disease, nephrolithiasis secondary to right ureteral stricture with a chronic right-sided nephrostomy tube, and constipation from methadone use. Starting one month prior to admission, she had noticed intermittent flank pain around her nephrostomy site, decreased total urine output, and increased urinary frequency without dysuria. On examination, she was afebrile and her nephrostomy tubing and collection bag were noted to be dark purple. Laboratory studies were notable for no leukocytosis and urine studies showing clear yellow urine, pH 8.0, positive for bacteria, leukocyte esterase, and nitrites. Urine culture was not performed during this admission due to ceftriaxone administration in the emergency department, but urine cultures from her nephrostomy during multiple previous admissions had consistently yielded mixed gram-positive and gram-negative flora, consistent with colonization. She was given three doses of ceftriaxone, which was then discontinued due to low suspicion for infection. Her nephrostomy tubing and bag were changed, and the purple bag discoloration resolved.

IMPACT: Purple urine bag syndrome (PUBS) is a rare phenomenon that, while often benign, can also be associated with difficult-to-treat urinary tract infection. This case demonstrates the syndrome in the setting of a unilateral nephrostomy tube rather than a bladder-dwelling catheter—an occurrence very rarely reported- and emphasizes the need for clinical context in case-by-case determination of its management.

DISCUSSION: The mechanism by which PUBS occurs is not fully understood, but it is thought to occur when certain bacteria metabolize compounds in the urine into red and blue pigments, which then mix in a catheter bag to create a purple color. Risk factors for PUBS include female gender, advanced age, having an indwelling urinary catheter, constipation, and dehydration. While the color of the catheter bag can be alarming, PUBS can represent benign colonization. However, PUBS can also indicate underlying complicated urinary tract infection. It is thus important to carefully consider each case individually and to closely monitor patients with PUBS. In addition, indoxyl sulfate, a metabolite of dietary tryptophan that is later metabolized by gut bacteria to produce pigment compounds, may have adverse effects in patients with chronic kidney disease. For PUBS without underlying infection, regular exchange of catheters or nephrostomy tubes, if still needed, may resolve the issue. For PUBS associated with urinary tract infection, treatment of the infection as well as exchange of catheters is recommended.

A CASE OF RESPIRATORY INFECTION COMPLICATED BY EUGLYCEMIC DIABETIC KETOACIDOSIS IN A PATIENT ON EMPAGLIFLOZIN THERAPY Emi Okamoto. Hospital University of Pennsylvania, Philadelphia, PA. (Control ID #2703952)

LEARNING OBJECTIVE #1: Understand the concept of euglycemic diabetic ketoacidosis (euDKA) and recognize it in patients taking SGLT2 inhibitors

CASE: VW is a 70 year-old male with a history of hypertension, type 2 diabetes mellitus, and paroxysmal atrial fibrillation who initially presented to the hospital with 2 days of dyspnea and productive cough. His prescription medications included glipizide and empaglifozin-linagliptin for diabetes control. In the emergency department, he had increased work of breathing with a respiratory rate of 26 per minute, a heart rate of 115 beats per minute, and temperature of 100.7. His lung sounds were course diffusely. His blood gas was pH 7.30, pCO2 29, pO2 75 on room air and initial laboratory results included glucose 146 mg/dL, anion gap of 16, and lactic acid 1.4 mmol/L. His chest radiograph was concerning for multifocal pneumonia. He was given vancomycin, cefepime, and azithromycin and one liter of normal saline. He was put on bi-level positive airway pressure (BiPAP) for increased work of breathing and admitted to the medical intensive care unit. When his work of breathing continued deteriorating, he was intubated with a high minute ventilation. A beta-hydroxybutyric acid was checked and was 2.42 mmol/L (normal < 0.27 mmol/L). Urinalysis showed >1000 glucose and positive for ketones. He was started on an insulin drip with dextrose 5% with ½ normal saline and subsequently his acidosis corrected. He uneventfully extubated around 12 hours after intubation to nasal cannula. Respiratory PCR showed Haemophilus parainfluenza. He was discharged after a course of ceftriaxone on room air.

IMPACT: This case demonstrates a rather unique case of diabetic ketoacidosis (DKA) where the patient had otherwise an acceptable range of blood glucose for a hospitalized patient. His work of breathing was increased to achieve a compensatory respiratory alkalosis, however given his respiratory infection he was unable to maintain this and required intubation. An early recognition of the euglycemic DKA, along with quick action to reverse it, may have prevented the need for intubation.

DISCUSSION: Diabetic ketoacidosis (DKA) is a well-known entity and a common reason for hospitalization which internists and intensivists routinely manage. DKA is precipitated by an absolute insulin deficiency, causing decreased glucose utilization and thus increased fat oxidation. It is often recognized easily by a concomitant severe hyperglycemia. With the advent of the sodium glucose cotransporter 2 (SGLT2) inhibitors like empagliflozin there has been a rising number of cases of euglycemic diabetic ketoacidodis (euDKA), or cases with only relatively mild increases in serum glucose <300 mmol/L. The SGLT2 channel is in the proximal tubule of the kidney and responsible for glucose reabsorption, and inhibition decreases serum glucose by inducing glycosuria. Thus there is less stimulation for insulin secretion, which may predispose a patient to an absolute insulin deficiency causing DKA.

A CASE OF SEVERE AUTO-IMMUNE HEMOLYTIC ANEMIA WITH PANCYTOPENIA: A RARE PRESENTATION OF COBALAMIN DEFICIENCY Raagini Jawa[2]; Katherine Zeitler[1]. [1]Boston Medical Center, Boston, MA; [2]Boston University Medical School, Plaistow, NH. (Control ID #2706640)

LEARNING OBJECTIVE #1: To recognize Vitamin B12 deficiency as being on the differential for pancytopenia and hemolytic anemia.

LEARNING OBJECTIVE #2: To understand that prompt management of Vitamin B12 deficiency leads to complete resolution of clinical signs and symptoms

CASE: 45 year old Honduran female with past medical history of type 2 Diabetes, hypertension, hyperlipidemia, menorrhagia presented with two months of progressive lightheadedness and one episode of pre-syncope on day of hospital admission. She also complained of new drenching night sweats for the past several weeks, painful lower extremity paresthesias. She denied any loss of consciousness, shortness of breath, chest pain, unintentional weight loss, fevers, chills, lack of energy. She had no personal or family history of malignancy, abnormal bleeding/ bruising/clotting. She reported heavy irregular menstrual cycles. She ate three non-vegetarian meals a day and was recently started on Metformin. On exam she was found to have conjunctival pallor, atrophic glossitis. Her labs were significant for wbc 1.8, Hg 5.1, HCT 15, platelets 75 (57% lymphocytes, many schistocytes) MCV 109, AST 63 ALT 32, LDH: 2739, Iron 72, TIBC 221, Tsat 32%, Ferritin 120, Retic count: 2.0. Peripheral smear showed leukopenia, hypersegmented neutrophils, thrombocytopenia, and many shistocytes. She was transfused 2 units packed red blood cells. The rest of her labs were significant for Homocysteine 73, MMA 5920, Gastric Parietal Ab: 51.6, negative Coombs, DIC panel, and Flow cytometry for acute leukemia. Given her elevated MCV, Folate: 13, Vit B12 < 146 she was started on immediate repletion with parenteral Vitamin B12 and continued with regular repletion for life. Her Metformin was also discontinued and she was started on alternative oral hypoglycemic agents.

IMPACT: This case serves to broaden our differential for a patient presenting with night sweats and pancytopenia. Cobalamin deficiency is important to recognize as complete resolution clinical signs and symptoms can be achieved with prompt recognition and appopriate management.

DISCUSSION: Severe vitamin B12 deficiency takes a long time to develop and can be due pernicious anemia, infections like HIV or H Pylori, inadequate dietary intake and certain medications. In severe cases of B12 deficiency, the patient can present with profound pancytopenia due to bone marrow suppression and poor quality RBCs leading to intramedullary hemolysis. Typical clinical exam findings include weight loss, progressive anemia, atrophic glossitis, paresthesia/numbness/ tingling/ataxia which can progress to severe neurologic weakness, spasticity, clonus, paraplegia. Since our patient had elevated high MMA, Homocysteine, and positive Gastric Parietal Ab, the diagnosis of Pernicious Anemia was made. Metformin use has been associated with B_{12} deficiency so this medication was discontinued. After initiations of parenteral Vitamin B12, patient had symptomatic improvement of lightheadedness, paresthesias and resolution of her anemia.

A CASE OF SEVERE, BUT ASYMPTOMATIC HEPATITIS

Mary Michaels; Danielle Jones. Emory University, Atlanta, GA. (Control ID #2706540)

LEARNING OBJECTIVE #1: Review etiologies and patterns of markedly elevated liver enzymes

LEARNING OBJECTIVE #2: Examine the relationship between HIV and chronic HBV infection

CASE: A 38 year old white male with past medical history of HIV and extensive vascular repair of his LLE following a traumatic laceration of his left femoral artery and associated non-healing wounds presented with spontaneous bleeding from his chronic wounds of his left leg. Patient admitted to taking substantial amounts of unknown analgesics containing acetaminophen recently, as well as several herbal supplements. He recently stopped taking his ARVs due to cost. Social history revealed consumption of 2–4 alcoholic beverages per day. Vital signs were normal and physical exam was unremarkable aside from eschars on his left lower leg. Labs showed AST/ALT of 2153/870 U/L, total bilirubin of 2.5 mg/dL, INR of 1.7, and normal alkaline phosphatase. He had a normal serum acetaminophen level, but patient was given N-acetyl cysteine for concern for acetaminophen toxicity with rising LFTs. Patient was admitted and remained asymptomatic. AST/ALT continued to rise and peaked at 6317/3838 U/L. Hepatitis serologies returned with a positive HBV core antibody and positive HBV E antibody. HBV DNA was present at 1315 IU/mL, but HBV surface antigen was negative. Smooth muscle antibody was also weakly positive at 1:20. He continued to be asymptomatic receiving only supportive care and was discharged with LFTs close to normal.

IMPACT: This is an unusual presentation of a reactivation of chronic HBV in the setting of HIV.

DISCUSSION: Our patient had an acute, severe hepatocellular pattern of LFT elevation in the setting of multiple risk factors, but was surprisingly asymptomatic. Differential diagnosis of this acute elevation (in this case was >100 times the upper limit of normal) include ischemic injury (>10-50 × ULN), toxic injury (>10 × ULN), and acute viral hepatitis (>10 × ULN). RUQ ultrasound was negative for vascular disease and he was not hypotensive following the bleeding from his leg. Recent discontinuation of ARVs likely precipitated a flare in his chronic HBV infection, and the severe increase in LFTs was compounded by alcohol and acetaminophen use. His smooth muscle antibody was only weakly positive at 1:20. A level of >1:80 is generally accepted as positive for autoimmune hepatitis, and lower titers can be caused by acute viral hepatitis. HIV-HBV coinfection is common, and the progression to chronic HBV is more frequent in patients with HIV. It was unusual that our patient had HBsAg negative viremia, but it is possible for HIV positive patients to lose the HBsAg positivity and have reactivation with positive HBV DNA in the serum. HIV also changes the natural history of chronic HBV by causing faster progression to fibrosis and cirrhosis, a lower rate of spontaneous seroconversion to the HBe and HBs antigens, and a greater risk of reactivation in inactive carriers, which is likely what happened in this case.

A CASE OF STREPTOCCUS PYOGENES SEPTIC JOINT SECONDARY TO PHARYNGITIS Jeffrey A. Schwartz; Keerti Murari; Aveena Kochar. Icahn School of Medicine at Mount Sinai, New York, NY. (Control ID #2706409)

LEARNING OBJECTIVE #1: Recognize septic arthritis as a complication of S. pyogenes bacteremia and the importance of early medical and surgical intervention

CASE: 64 YO M with PMH of type 2 DM presented with a 1-week of sore throat, fever, chills, and neck swelling. Initially the patient was febrile (40.4 C) and tachycardic (106) with a tender left-sided neck mass and mucosal edema of the left posterior pharyngeal wall on exam. Labs were notable for WBC of

32,000, ESR 55, and CRP 186. CT-imaging of the neck revealed a 4.5 cm mass in the left neck suspicious for a suppurative lymph node. Our patient soon developed severe right knee pain with decrease range of motion. Joint aspiration of the knee showed gram positive cocci in pairs and 88,500 nucleated cells (83% PMNs). Blood cultures grew pan-sensitive S. pyogenes. He was started on ceftriaxone and vancomycin and subsequently narrowed to ceftriaxone alone. He underwent arthroscopic knee drainage for septic joint. A repeat CT of his neck revealed interval development of a multiloculated abscess or necrotic lymph node deep to the left sternocleidomastoid. He was discharged on a 2 week course of amoxicillin with follow-up for CT-guided biopsy to evaluate for possible underlying malignancy.

IMPACT: This case increased our awareness of the potential risks posed by untreated strep pharyngitis, especially in patients with risk factors such as DM II, immunodeficiency, or malignancy. This case suggests that patients with such risk-factors should receive more intensive care than the general population.

DISCUSSION: While GAS represents only 0.6% of all cases of bacteremia reported (Meggel et al., 2006), GAS bacteremia has been associated with higher morbidity due to complications of necrotizing fasciitis, septic shock, DIC, and ICU admission compared to other types of strep bacteremia. Therefore, early recognition and management are critical to prognosis (Schattner et al., 1998). An estimated 57% of cases of invasive GAS evolve into Systemic Toxic Shock Syndrome (STSS) with an eventual mortality rate of 33% (Gotto et al., 2014). Secondary joint infection is commonly seen with S. aureus, S. pneumonia or gonoccocal infections with GAS septic joints representing only 1.7% of all cases. These patients typically have more severe clinical presentations than their GBS and GCGS counterparts (Gotto et al., 2014). Our case demonstrates that GAS pharyngitis can result in systemic infection especially in the context of known risk-factors such as DM II and malignancy. In cases of bacteremia, intensive antibiotic therapy is required to prevent complications such as septic joint and STSS. Antibiotic regimens should include a beta-lactam agent with the possible addition of clindamycin. In addition, GAS septic joint requires early arthrosopic surgical drainage to prevent further joint damage and decrease risk of mortality.

A CASE OF TEA-AND-TOAST DIET CAUSING SEVERE HYPONATREMIA Lauren Roles[1]; Rodolfo Batarse[2]; Hanna Mendoza[3]; Richard Loftus[1]. [1]Eisenhower Medical Center, Rancho Mirage, CA; [2]Dept. Nephrology, Eisenhower Medical Center, Rancho Mirage, CA; [3]UC Riverside School of Medicine, Riverside, CA. (Control ID #2706737)

LEARNING OBJECTIVE #1: Recognize the clinical features of hyponatremia secondary to low solute intake

LEARNING OBJECTIVE #2: Manage 'tea-and-toast' hyponatremia without rapid over-correction of sodium

CASE: Mr. R was a 26-year-old, developmentally delayed male with spina bifida, hydrocephalus status-post VP shunt, and hypertension. After a diagnosis of chronic kidney disease 10 weeks prior, his mother was instructed to restrict his salt intake, which unintentionally resulted in severe caloric restriction to 1/3 of his usual diet. Meanwhile, fluid intake increased to more than 3 L daily. Following 48 hours of lethargy, Mr. R was admitted to an outside hospital with serum sodium of 90 mmol/L and creatinine of 2.6 mg/dL. He was given an unclear amount of normal saline IV (at least 500 cc) and transferred to our regional medical center, where initial sodium was 93 mmol/L and creatinine was 2.6 mg/dL. Initial urine studies showed creatinine 19.8 mg/dL, sodium <20 meq/L, BUN 122 mg/dL, osmolality 103 mOsm/kg, and protein-to-creatinine ratio of 20.05. Urinalysis and culture were consistent with urinary tract infection due to *Candida albicans* in the setting of an indwelling Foley catheter. Blood cultures were negative throughout admission. CT head showed no acute intracranial processes or VP shunt abnormalities. Subsequent tests found TSH, cortisol, and urate within normal limits. Mr. R was treated with normal saline IV, increasing his sodium from 93 to 106 mmol/L by hospital day 3, at which time he had a generalized seizure and was started on levetiracetam, which was discontinued in favor of phenytoin 3 days later. Over 22 days, Mr. R's hyponatremia resolved with administration of normal saline and placement of a G-tube allowing adequate nutrition. His mental status returned to baseline.

IMPACT: To the best of our knowledge, Mr. R's initial sodium is amongst the lowest documented survived serum sodium levels in the medical literature. We found only one case with lower survived sodium, 74 mmol/L, which resulted from acute absorption of distension medium during hysteroscopy and was corrected within hours.[1] Mr. R's case contributes to the medical literature by demonstrating survival of an exceptionally severe, non-acute, hyponatremia with a sodium of only 90 mmol/L.

DISCUSSION: As is well documented in cases of beer potomania, patients with limited access to solute and excessive fluid intake are at risk of overwhelming the renal capacity to maximally dilute urine and therefore produce sufficient urine volume to maintain normal serum sodium [2]. This results in a euvolemic hyponatremia that rapidly corrects due to the resulting diuresis that occurs with re-introduction of solute, such as normal saline. These patients are at high risk of over-rapid correction of hyponatremia, with resulting osmotic demyelination syndrome[2]. As demonstrated by the case of Mr. R, severe hyponatremia may occur via the same mechanism in non-alcoholic patients at risk for poor dietary intake ('tea-and-toast' diet) with high volumes of fluid intake[3].

A CASE OF TUBERCULOUS PYOMYOSITIS Alejandra Bustillo[2]; Schuyler D. Livingston[1]. [1]Emory University School of Medicine, Decatur, GA; [2]Emory University School of Medicine, Atlanta, GA. (Control ID #2706446)

LEARNING OBJECTIVE #1: Diagnose tuberculous pyomyositis as a rare, but treatable manifestation of extrapulmonary tuberculosis

CASE: A 60 year-old, HIV-positive, incarcerated man presented with two months of progressive right forearm swelling and redness. Three days prior to presentation, he had developed fevers, night sweats, and chills but denied cough or weight loss. He had a history of pulmonary *M. fortuitum* that was treated six years prior. He was not on antiretroviral therapy. Vitals signs were: BP: 98/69, HR 109, RR 18, Temp 38°C, SpO2: 98% on room air. Exam was significant for right forearm warmth, induration, and erythema without drainage, with intact distal pulses and neurologic function. Labs were significant for: WBC 8.9×10^3/mcL, CD4 count 37/mcL, CRP 9.56 mg/dL, ESR 80 mm/hr. CT of the arm showed a large multi-loculated, septated fluid collection extending from the humerus to the anterior ulna suspicious for abscess or hematoma, as well as diffuse decreased muscle enhancement concerning for myonecrosis. A CXR showed a new left upper lobe nodularity. He underwent surgical debridement which showed purulent fat necrosis on the subcutaneous planes between the biceps and brachioradialis muscles. He was started on broad spectrum antibiotics, yet he continued to spike fevers. One day after surgery,

the tissue cultures stained positive for AFB. He was started on empiric RIPE therapy and placed on respiratory isolation while awaiting sputum cultures and MTB-PCR on the tissue specimen. PCR and culture results confirmed the diagnosis of disseminated tuberculosis.

IMPACT: Though tuberculous pyomyositis is the least frequent location of extraspinal musculoskeletal TB reported in the literature, it is important to be aware of its existence since prompt identification and treatment result in better outcomes. In evaluating patients with indolent, soft tissue masses, it is important to consider tuberculosis as a culprit, especially in immunocompromised, high-risk patients.

DISCUSSION: Pyogenic myositis has three classical clinical stages: invasive, purulent, and systemic. Tuberculous pyomyositis, on the other hand, may present as indolent, soft tissue masses that do not respond to typical treatment. In this case, a nontuberculous mycobacterial infection was initially considered given the history of pulmonary *M. fortuitum*. Patients with AIDS not only face an increased risk of TB, but have a higher rate of extrapulmonary disease. With the advanced immune deficiency and new apical lung nodule, the positive AFB stain of the tissue indicated a high probability of tuberculosis. The diagnosis of tuberculous pyomyositis may be delayed due to imaging similarities to abscesses or pyogenic myositis. Initiation of RIPE therapy, even after effective surgical drainage, is critical to prevent recurrence. When considering slow-growing soft tissue masses in patients with a high-risk for TB, it is important to involve specialists early in order to guide empiric therapy while awaiting confirmatory testing.

A CASE REPORT OF EPSTEIN - BARR VIRUS (EBV) MUCO-CUTANEOUS ULCER OF THE COLON SECONDARY TO AGE-RELATED IMMUNOSENESCENCE PRESENTING AS INFLAMMATORY MASS.

Mohammed Osman[1, 2]; Mohammed Al Salihi[1, 2]; Emad Abusitta[1, 2]; Samer Al Hadidi[1, 2]. [1]Hurley Medical Center, Flint, MI; [2]Michigan State University, Flint, MI. (Control ID #2688834)

LEARNING OBJECTIVE #1: Recognize the new entity of EBV associated muco-cutaneous ulcer as part of the spectrum of EBV lymphoproliferative disorders.

LEARNING OBJECTIVE #2: Recognize that EBV muco-cutaneous ulcer can present as inflammatory colonic mass.

CASE: A 64 year old Caucasian female presented to the hospital referred from her Gastroenterologist for further investigations with the main concern of carcinoma of the colon or chronic bowel ischemia. Initially she presented to her Gastroenterologist with the complaints of abdominal pain and intermittent diarrhea of one year duration. The patient described colicky abdominal pain, poorly localized to the left side of the abdomen, increased in intensity after meals. She reported losing ten pounds over the past 6 months. Abdominal examination revealed tenderness over the left upper quadrant with normal bowel sound. The patient lab investigations were significant for Hemoglobin of 10.8 (Ref: 12-16G/DL), MCV 85(Ref: 80–100 Fl), MCH 27(Ref: 26–34 PG). The patient had a colonoscopy which showed partially necrotic, ulcerated, soft, tumor obstructing the lumen of the proximal transverse colon. Multiple biopsies were taken and she was then transferred to the hospital. At the hospital the patient had a Computed tomography (CT) of the abdomen which showed wall thickening of the cecum and terminal ileum and mildly prominent mesenteric lymph nodes. The results of biopsies which were taken during colonoscopy showed focal ulceration with granulation tissue formation. The patient was continued to be managed conservatively but her symptoms persisted so a decision was made to go for exploratory laparotomy, during the procedure there was an inflammatory mass at the cecum. Due to the finding it was decided to procced with right hemicolectomy. After the surgery the patient symptoms improved. The results of the histopathology came back as EBV positive lymphoproliferative disorder best classified as EBV positive muco-cutaneous ulcer.

IMPACT: The case will add to the literature the fact that a rare presentation of EBV muco-cutaneous ulcer can be associated with inflammatory mass which can mimic cancer.

DISCUSSION: EBV-positive muco-cutaneous ulcer (EBVMCU) was first described and proposed as a distinct clinical entity in 2010 by Dr. Elaine Jaffe's group at the National Cancer Institute. They described 26 cases in which patients exhibited a common clinical presentation of muco-cutaneous ulcers that had a unique histology and immunophenotype among EBV-associated lymphoproliferative disorders. Since then many case reports described (EBVMCU) usually in the setting of immunosuppression which can be primarily, Iatrogenic or age related immunosenescence. Most of these ulcers have an indolent course, although in some cases it can progress to other forms of EBV lymphoproliferative disorders. In our case we describe an unusual presentation of (EBVMCU) which created confusion and raised the concern of cancer due to associated inflammatory mass and subsequently led to invasive intervention.

A CLOSTRIDIAL CONSEQUENCE OF COLONOSCOPY

Jonathan Feld; Andrew J. Hale. Beth Israel Deaconess Medical Center, Boston, MA. (Control ID #2708276)

LEARNING OBJECTIVE #1: Identify spinal infection as a source of back pain after lower gastrointestinal endoscopic procedures

LEARNING OBJECTIVE #2: Recognize *Clostridium perfringens* as a rare pathogen causing discitis and spinal osteomyelitis

CASE: A 65 year-old woman presented with one month of worsening lower back pain. Ten months prior to admission she developed severe lower back pain, and was found to have L5 nerve root impingement on magnetic resonance imaging. She had mild improvement with conservative management. She then developed hematochezia one month prior to admission, and colonoscopy showed bleeding from internal hemorrhoids. On presentation, the patient developed acute worsening of her lower back pain. Vital signs were significant for tachycardia. On exam, the lumbar spine was tender and warm, and she had pain with movement. She had no sensory deficits or incontinence of the bowels or bladder. She denied any intravenous drug use or spinal procedures. Labs were significant for an erythrocyte sedimentation rate of 95 and C-reactive protein of 146 mg/L. Magnetic resonance imaging of the spine showed discitis and osteomyelitis at L1-L2. She was started on broad-spectrum antibiotics and on hospital day three she underwent an L1-L2 vertebrectomy with fusion. Bone cultures grew *C. perfringens*. Antimicrobials were narrowed to ceftriaxone and metronidazole, and she completed an eight-week course. At two-month follow-up, the patient was ambulating without back pain and at her baseline functional status.

IMPACT: In managing lower back pain, many practitioners are familiar with red flag signs that suggest more timely imaging is necessary. Of importance, colonoscopy is absent as a risk criterion in common guidelines. Here we present an atypical vector for a rare pathogen causing osteomyelitis, presenting as acute on chronic lower back pain. Clinicians should maintain suspicion for underlying infection in patients with lower back pain who have recently had lower gastrointestinal endoscopic procedures.

DISCUSSION: In this case, we present a 65 year-old woman who developed a *C. perfringens* discitis and osteomyelitis after a colonoscopy performed one month earlier. The proposed mechanism of infection is iatrogenic subclinical damage to the colon, in which *C. perfringens* likely was residing and was able to cause bacteremia with consequent seeding of her spine. Vertebral osteomyelitis is a rare presentation for *C. perfringens*. Prior work has demonstrated that post-procedural bacteremia occurs in 2.2% of colonoscopies, though it is typically clinically insignificant. The patient's longstanding back injury likely meant she had abnormal spinal anatomy, which may have predisposed her to bacterial seeding of the site. Lower back pain is the second most common reason for all physician visits in the United States. Additionally, colonoscopy is one of the most common medical procedures. Although the differential diagnosis for lower back pain is broad, complications related to recent colonoscopy are rarely ever reported or considered.

A COMMON UNCOMMON CAUSE OF CARDIAC ARREST

Richard J. Silvera; Darlene LeFrancois. Montefiore Medical Center, New York, NY. (Control ID #2707400)

LEARNING OBJECTIVE #1: Recognize anaphylaxis as an atypical cause of cardiac arrest

LEARNING OBJECTIVE #2: Identify a characteristic presentation of Indolent Systemic Mastocytosis (ISM)

CASE: 57 year old woman presented with abdominal pain for 5 days accompanied by non-bloody diarrhea "too numerous in episodes to count", subjective fevers, and nausea with 2 episodes of vomiting. She has a history of recurrent prolonged episodes of abdominal pain and diarrhea over the last 4 years reportedly diagnosed as diverticulitis, a severe NSAID and aspirin allergy (immediate pruritus and pre-syncope), memory complaints, and "migraine" headaches. Her exam was only notable for mild generalized abdominal tenderness. Imaging revealed diffuse colitis. Soon after cefoxitin, metronidazole, and morphine she experienced nausea, chest pain, and shortness of breath, became pale, and unresponsive. Advanced cardiac life support was initiated for pulseless electrical activity; return to spontaneous circulation was achieved in 10 min. Serum tryptase 4 hours post-event was 150 ng/mL; subsequent measurements 2 and 11 days later were 29 ng/mL and 35 ng/mL. Bone marrow biopsy revealed the *KIT* D816 mutation and elevated mast cell count, yielding a diagnosis of ISM.

IMPACT: Anaphylaxis, often associated with allergy, can also be caused by systemic mastocytosis. In addition, chronic mast cell mediator release can yield chronic gastrointestinal, musculoskeletal, and neuropsychiatric complaints.

DISCUSSION: SM is an uncommon disease characterized by dense infiltration of mast cells in the bone marrow or another tissue with elevated serum tryptase, *KIT* D816 mutation, atypical mast cells, or atypical function of peripheral mast cells. The most common subtype of SM, ISM, represents 60% of cases and generally follows a benign course, conferring neither elevated risk of hematologic malignancy nor tissue destruction. SM typically presents in adults with symptoms of acute (explosive "allergic") and/or chronic mast cell mediator release, or mast cell infiltration of various organs. Acute mast cell degranulation symptoms include flushing, pruritus, nausea, vomiting, diarrhea, muscle pain, palpitations, syncope or near-syncope, headache, and fatigue. A variety of triggers may precipitate release: exercise, temperature extremes, alcohol, infection, emotional distress, insect stings, and medications including antibiotics, opioids, muscle relaxants, and iodized contrast. Chronic mast cell release can yield chronic gastrointestinal complaints like abdominal pain and diarrhea (reported in 80% of SM patients), neuropsychiatric issues with memory, mood, or headaches, and musculoskeletal problems such as bone pain or osteoporosis. This case represents a characteristic presentation of ISM. We theorize that this patient's symptoms of colitis, headaches and memory issues, recurrent anaphylaxis-like episodes with NSAIDs, and her acute vascular collapse were likely triggered by medications; all secondary to mast cell mediator release due to ISM.

A COMPLICATED CASE OF P. OVALE MALARIA…YES IT CAN HAPPEN! Nabila S. Azad; Paul Long; Edward C. López. Boston Medical Center, Boston, MA. (Control ID #2704078)

LEARNING OBJECTIVE #1: Diagnose delayed-onset *Plasmodium ovale* malaria in a returning traveler.

LEARNING OBJECTIVE #2: Recognize pancytopenia as an unusual presentation of *Plasmodium ovale* infection.

CASE: A previously healthy 27-year-old female nurse presented to the hospital with eight days of fevers, chills and malaise. She had returned from a two-year trip to Zambia and Tanzania about six months prior, where she had taken prophylactic antimalarials for part of her stay. She presented to her primary care physician's office three days prior to admission where she tested negative for influenza A/B and EBV. Because of worsening symptoms, she presented to the ER. Initial vitals were notable for temperature of 101 F, blood pressure 76/45 mmHg, and pulse 120 beats per minute. Physical exam was remarkable for pallor and splenomegaly. Labs showed total white blood cell 1700/UL, hemoglobin 10.7 g/dL and platelets 35,000/UL. Work-up for infectious causes including HIV infection, anaplasmosis, ehrlichiosis, Lyme disease and babesiosis was negative. Although, malaria antigen was also negative, blood smear was positive for 0.9% parasitemia. She was started on oral artemether-lumefantrine. Despite therapy, pancytopenia worsened, notably for an absolute neutrophil count of 500/UL. Her bloodstream parasites were identified as *Plasmodium ovale* (*P. ovale*) and later confirmed by the Centers for Disease Control and Prevention. She was discharged after a three day course of artemether-lumefantrine. She was readmitted to another hospital within two weeks with fevers and was empirically treated with oral atovaquone-proguanil. Of note, during the second admission her blood counts were within normal limits and serial blood smears were negative for malaria. She later successfully completed a fourteen day course of primaquine.

IMPACT: This case emphasizes the importance of a detailed travel history when evaluating patients with fever and hematologic abnormalities, as *P. ovale* malaria can present late. Rarely, *P. ovale* can cause marked pancytopenia and these patients require close monitoring in the hospital.

DISCUSSION: It is important to be aware of species of Plasmodium that can remain latent for weeks to months, such as *P. ovale*, *P. vivax* and *P. malariae*. Cases of delayed primary *P. ovale* attack have been reported as late as 4 years after exposure. The delayed presentations of *P. ovale* are more commonly seen in travelers previously exposed to antimalarial agents. There are case reports of *P. ovale* causing mild leukopenia and thrombocytopenia. However, cases with neutropenia and severe thrombocytopenia with platelets <50,000 are rare. Although pancytopenia is not part of the criteria used to define severe malaria, its presence raises the question about the parasite burden in infected patients. Currently, the mechanism of pancytopenia in malaria remains unknown. A hyper-inflammatory state leading to bone marrow suppression and/or cellular destruction in response to the parasites may play a role in producing pancytopenia.

A CURIOUS CASE OF CONSTANT SNACKING Nicholas Hendren[1]; Timothy J. Brown[1]; Thalvinder Sangha[1]; Jonathan Weissler[2]. [1]University of Texas-Southwestern, Irving, TX; [2]University of Texas-Southwestern, Dallas, TX. (Control ID #2700273)

LEARNING OBJECTIVE #1: Manage a medical regimen for hypoglycemia due to an insulinoma

LEARNING OBJECTIVE #2: Recognize Whipple's triad

CASE: A 53 year-old woman presented with two years of worsening episodic tremors, sweating, weight gain and confusion that rapidly improved with juice (Whipple's triad). This led to nearly constant snacking. Labs revealed elevated levels of serum insulin, serum proinsulin and serum C-peptide. Computed tomography (CT) of the abdomen revealed a pancreatic tail mass and numerous masses in the liver measuring up to 10 cm concerning for metastatic malignancy. Upon review of prior CT scans, it appeared the pancreatic mass was present for at least six years. Given her symptoms consistent with Whipple's triad, an elevated endogenous insulin level and abdominal masses, she was diagnosed with a metastatic insulinoma. A liver biopsy was consistent with a well-differentiated neuroendocrine tumor (WHO grade 2). The burden of her disease precluded surgical management, necessitating medical management. Her blood glucoses were initially stabilized with subcutaneous octreotide injections and diazoxide tablets. At endocrinology follow-up, she was transitioned to monotherapy with pasireotide long-acting release 60 mg subcutaneous monthly injections which provided sustained control of her blood sugars at one month clinc follow-up.

IMPACT: Insulinoma-induced hypoglycemia is a rare, but important condition that should be considered in the differential of hypoglycemia that is readily identified classically by Whipple's triad. Insulinoma-induced hypoglycemia treated with long-acting pasireotide injections has rarely been described in the literature. Our case demonstrates a classic case of symptomatic hypoglycemia managed with monthly pasireotide injections with an adequate clinical response.

DISCUSSION: Insulinomas have an incidence of 4 cases per 1 million patient-years and are benign in more than 90% of cases. Curative treatment of these tumors is usually surgical, with medical therapy available for those who are not surgical candidates. Such patients typically have a median survival of less than two years. In patients presenting with symptomatic hypoglycemia, medical therapy must be initiated. Frequent carbohydrate meals and diazoxide is effective in reducing hypoglycemic symptoms in 50–60% of patients. Unlike benign insulinomas, 70% of malignant insulinomas express a somatostatin receptor and respond to somatostatin analogues. Lanreotide and octreotide are somatostatin analogues that have demonstrated efficacy in reducing hypoglycemia. Metastatic insulinomas are rarely treated with long-acting pasireotide injections to control hypoglycemia with sparse literature documenting clinical use. Pasireotide could potentially improve glycemic control compared to shorter-acting analogues given the difference in half-life and reducing medication burden for patients. This clinical case supports further investigation of pasireotide for management of symptomatic hypoglycemia due to an insulinoma.

A CURIOUS CUTANEOUS CASE FROM CENTRAL AMERICA Rahul Kamath; Ekta Kakkar; Stephen B. Greenberg; Laila Woc-Colburn; Rosa Schmidt. Baylor College of Medicine, Houston, TX. (Control ID #2702271)

LEARNING OBJECTIVE #1: Recognize, diagnose, and manage patients with cutaneous leishmaniasis

CASE: A 28-year-old male Cuban immigrant with no past medical history presents to the emergency department (ED) with a chronic, worsening wound on his left knee. The lesion began as a papule three months prior to admission during travel through several Central and South American countries including Panama and grew into an ulcer associated with occasional pruritus. Treatment with oral and topical antibiotics in Panama was ineffective. At initial presentation in the ED, physical exam revealed a 7.5 centimeter × 6.0 centimeter diameter painless, crusted ulcer with surrounding induration and firm plaques. He was subsequently seen in Dermatology clinic four days after initial presentation, where a punch biopsy revealed non-caseating granulomatous dermatitis. Dermatology suspected he had a deep fungal or mycobacterial infection, but treatment with empiric minocycline and fluconazole failed to resolve the lesion. Ultimately, acid-fast bacilli and fungal cultures were negative and bacterial cultures were positive only for coagulase negative staphylococci susceptible to minocycline. Suspicion for cutaneous leishmaniasis was high and tissue specimen from a repeat biopsy sent to the Centers for Disease Control and Prevention yielded a positive real-time polymerase chain reaction (PCR) for *Leishmania* with DNA sequencing positive for *Leishmania panamensis*. Treatment was initiated with liposomal amphotericin B at three mg/kg/day for five days. He was to return for two further infusions but was unfortunately lost to follow-up.

IMPACT: Cutaneous leishmaniasis should always be on the differential for patients with skin wounds and recent travel in Central and South America, especially when antibiotics do not improve the lesion. New world cutaneous leishmaniasis, which includes infection by *L. panamensis*, has a prolonged course and increased severity compared to old world cutaneous leishmaniasis. Biopsy for diagnosis has a high specificity but low sensitivity for diagnosis, and can reveal dermal inflammation, granulomas, and sometimes the amastigotes themselves. Confirmation by PCR is often necessary.

DISCUSSION: The *Viannia* subgenus of *Leishmania*, which includes *L. panamensis* and *L. braziliensis*, are the most common causes of New World mucocutaneous leishmaniasis. Studies show that mucocutaneous leishmaniases can present months to years following a cutaneous lesion, perhaps supporting the need for early systemic therapy. Thus, while treatment guidelines for leishmaniasis remain unclear, speciation can aid in determining treatment type and modality. While local therapy with paromomycin ointment or intralesionsal antimonials is an option, the size of our patient's lesion and the species' association with mucosal leishmaniasis led us to choose systemic therapy. WHO guidelines recommend pentamidine, pentavalent antimonials, miltefosine, or liposomal amphotericin B; we chose the latter due to its ready availability.

A DEADLY COMPLICATION OF CONSTIPATION - STERCORAL COLITIS Shana T. Rakowsky; Andrew J. Hale. Beth Israel Deaconess Medical Center, Boston, MA. (Control ID #2709517)

LEARNING OBJECTIVE #1: Stercoral colitis is an important complication of chronic constipation and can result in significant morbidity and mortality

LEARNING OBJECTIVE #2: Constipation and stercoral colitis should be considered in elderly patients with altered mental status or sepsis

CASE: A 95 year-old woman residing in a nursing home presented with altered mental status and fevers. Per report, she had not passed a bowel movement for the preceding three days. Her physical exam was remarkable in that she was lethargic, had dry mucous membranes, and tenderness to palpation across her lower abdomen with a firm mass appreciated. She was

started on intravenous fluids and broad-spectrum antibiotics. Extensive infectious work-up was negative. Due to concern for malignancy given the firm mass in her abdomen, a computed tomography scan was obtained. This revealed a massively distended rectosigmoid colon with stool impaction and perirectal stranding, consistent with severe stercoral colitis. Manual disimpaction and a bowel regimen were attempted. However, despite these interventions, she had ongoing septic physiology. Surgery was consulted and felt a hemi-colectomy may be needed given the degree of ischemia. After extensive discussions, the family opted for non-invasive management and the patient's care was transitioned to comfort focused measures.

IMPACT: Constipation is a common occurrence among adults older than 50 years and is commonly encountered in both primary care and the inpatient setting. Risk factors for developing constipation in this population include female gender, increasing age, living in institutionalized setting, frequent hospitalizations, and depression. Constipation can manifest as delirium in the elderly patient and can lead to severe complications.

DISCUSSION: Stercoral colitis is an important complication of constipation and can be life threatening. Stercoral colitis occurs when a large amount of stool becomes impacted in the colon, causing distention of the colonic lumen and resultant necrosis. Diagnosis can be made with computed tomography scan showing large fecal load associated with bowel wall edema or pericolonic fat stranding. Initial management includes manual disimpaction and bowel cleansing. In addition, endoscopy has a unique role to allow for direct visualization, breakdown, and lavage to encourage passage of stool. However, stercoral colitis is associated with a significant risk of mortality given the subsequent development of sepsis secondary to necrosis, ulceration or perforation. In these more severe cases, surgical intervention, such as bowel resection, is required to prevent serious consequences. Our patient presented with sepsis and altered mental status that was found to be from stercoral colitis, related to chronic constipation. Ultimately, this was a terminal condition without surgical intervention, which was not within our patient's goals of care. This case highlights that constipation, if left untreated, can result in significant morbidity and mortality.

A DEADLY CULTURE CLASH TO SAVE SOME CASH: TOXIC INGESTION OF FORAGED FOOD Andrew Simmelink. Carolinas Medical Center, Charlotte, NC. (Control ID #2706390)

LEARNING OBJECTIVE #1: Assess cultural traditions in immigrant populations affecting public health

LEARNING OBJECTIVE #2: Recognize the symptoms and severity of toxic food ingestion

CASE: A 28yo Burmese female presents with painless jaundice. One week after arriving in the U.S. she developed joint pain, fatigue, and vomiting, progressing in 1 week to jaundice and dark urine, denying any sick contacts, confusion, diarrhea, drug, tobacco, alcohol, prescribed or OTC meds including herbals. Examination revealed a fully alert and oriented Asian lady with stable vitals, ocular jaundice, and a soft, nontender, nondistended abdomen without hepatosplenomegaly. Labs included: an unremarkable CBC, INR 1.2, unremarkable BMP, lactic acid 5.0 mM, albumin 2.9 g/dL, total bilirubin 12.8 mg/dL, direct bili 7.8 mg/dL, ALP 242, ALT 2102, AST 1728, GGT 127, Ferritin 1039 ng/mL, negative hepatitis panel, HIV, EBV, & CMV PCRs, positive ANA 1:640 speckled pattern, negative anti-mitochondrial Ab and anti-smooth muscle-Ab, and normal alpha-1-antitrypsin and ceruloplasmin levels. RUQ ultrasound showed a normal gallbladder without pericholecystic fluid, ductal pathology, or ascites, with a patent portal vein, and a normal liver. Liver biopsy showed a cholestatic liver with portal & lobular inflammation, ceroid-laden microphages, and apoptotic hepatocytes without biliary proliferation, iron, PAS globules, and trichrome stain with focal sinusoidal fibrosis. Not until discharge did she admit scavenging mushrooms prior to symptom onset, due to similar appeance of safe mushrooms in Burma.

IMPACT: This revealed the broad geographic area Aminata phalloides thrives in, and to keep in mind cultural traditions as catalysts for sickness

DISCUSSION: This patient suffered from toxin-induced acute liver injury. Though the exact cause is unknown, clues exist. Pathology showed patterns of acute toxin induced liver injury, while autoimmune/infectious etiologies were less likely due to testing. Next is the scavenging timeline and recognition of the mushroom. The suspected culprit aminata phalloides "death cap" accounts for >90% lethal ingestions. However, >50% have no symptoms even if ingested, resulting in >85% ingestions undiagnosed. Amanita has a wide distribution spanning Europe, Asia, Africa, and the entire Americas, with 28 species. Two main toxins include amatoxin & phalloidin: phallotoxin disrupts enterocyte membranes, while amatoxin inhibits hepatocyte protein synthesis. Aminata induced acute liver failure survival is 85%, with 46% spontaneous, while toxin-induced acute liver injury has 100% survival, with 80% spontaneous not requiring liver transplant (LT). Treatment is supportive, with adjuncts of dialysis, N-acetylcysteine (NAC), high-dose penicillin and silibinin, and LT in severe status 1 UNOS cases. Nearly 90% receive NAC for reactive oxygen species reduction despite skant evidence. Despite resected livers demonstrating 0-30% viability, many cases of multi-system organ failure survive without LT, emphasizing an optimal strategy is still not defined.

A DEADLY MUCOR AFFECTING AN IMMUNOCOMPETENT PATIENT Naomi Habib[2]; Mohit Pahuja[1]; Samir Allos[2]; Andrew Little[3]; Salaheddine Tomeh[4]; Omar Gonzalez[2, 5]. [1]St. Josephs Hospital and Medical Center, Phoenix, AZ; [2]St Joseph's Hospital and Medical Center/Creighton University Medical School, Phoenix, AZ; [3]Barrows Neurological Institute, Phoenix, AZ; [4]St Joseph's Hospital and Medical Center, Phoenix, AZ; [5]St. Joseph's Hospital and Medical Center, Phoenix, AZ. (Control ID #2706725)

LEARNING OBJECTIVE #1: Recognize that *Apophysomyces spesis* (*AS*) is a rare form of mucor that can cause devastating disease and preferentially affects immunocompetent individuals.

CASE: A 44-year old male farmer developed facial edema, fevers and chills after a dental procedure in Mexico, progressing to left eye blindness despite antibiotics. On presentation, he had left side proptosis with fixed left pupil, absent extraocular movements, and trismus. Laboratory revealed WBC = 31,300. MRI head showed infected paranasal sinuses involving left orbital, temporomandibular joint and masticator spaces with soft tissue edema, in addition to ischemic optic neuritis, orbital cellulitis and abscess posterior to the pituitary gland. He underwent left maxillary antrostomy and ethmoidectomy followed by left eye enucleation. He received broad-spectrum antibiotics and dual antifungal coverage (Isavocunazomium and liposomal Amphotericin B). In the next 24 hours, his soft palate became necrotic and he lost right eye vision and pupillary reflex. An MRI revealed right orbital abscess and right optic infarct. He underwent right eye exenteration, tracheostomy and radical upper maxillectomy. Surgical specimens submitted for microbiology and pathology revealed the presence of mucormycosis (MS), with *AS* confirmed by polyfungal DNA analysis. Despite treatment with

double antifungal agents his mental status remained compromised and a follow-up MRI demonstrated extensive vasculitis with cavernous sinus thrombosis, left internal carotid stenosis and worsening cerebritis. He required an endovascular neurosurgical intervention. His current clinical status remains stable; he is now on isavocunazonium monotherapy due to renal insufficiency with liposomal Amphotericin B (received 4 weeks).

IMPACT: Clinicians should maintain a low threshold of suspicion for *AS* in the setting of rapidly progressive necrotizing infection in immunocompetent patients, as this is a medical-surgical emergency with high mortality.

DISCUSSION: MS is the second most common cause of fungal infection in immunocompromised patients with 40–70% mortality despite treatment. In 70–80% of cases, MS is caused by *Rhizopus*, *Mucor*, and *Lichtheimia* strains. *AS* occurs in <1% of cases, and is unique in that it affects mainly immunocompetent individuals (50–75%). Though rare, it is ubiquitous in soil and vegetation. Infections occur most commonly with traumatic inoculation, and 11 iatrogenic *AS* infections have been reported (secondary to surgery, IM or SC injections, and skin tests). Our patient is a farmer who worked in direct contact with vegetation, and hence it is unclear whether he self-introduced the infection or it was iatrogenic. MS is an angio-invasive disease that causes thrombosis and ultimately tissue necrosis. Nerve invasion is reported with AS. Common infection sites reported with AS are cutaneous and subcutaneous, mainly in the thorax and extremities. Rhino-orbital infections are less common but occur more frequently in immunocompetent patients.

A DECEPTIVELY ORGANIZED LUNG MASS Cuong H. Quach; Sarah Lagedrost; Sheira Schlair. Albert Einstein College of Medicine/Montefiore Medical Center, Bronx, NY. (Control ID #2703860)

LEARNING OBJECTIVE #1: Recognize organizing pneumonia (OP) as a cause of lung mass.

LEARNING OBJECTIVE #2: Describe the clinical features and management of OP.

CASE: A 73 year-old man presented to the hospital with 1–2 months of progressive dyspnea on exertion. History was notable for a 68 pack-year smoking history, COPD, and PVD. He had decreased breath sounds at the right middle and lower lung fields, and rales in the left lower field. Chest x-ray revealed a large free-flowing right-sided pleural effusion. Thoracentesis drained 1.1 L of serous fluid with 30,000 RBCs and LDH of 491 U/L, consistent with an exudate. Cytology showed rare atypical cells thought likely reactive mesothelial cells. Chest CT demonstrated a heterogeneous necrotic mass in the right hemithorax, as well as right upper lobe nodules and a left lung opacity, accompanied by slightly enlarged para-aortic, paratracheal, hilar and subcarinal lymph nodes. CT-guided core needle biopsy demonstrated repeat cytology negative for malignant cells, and showed no carcinoma or granulomas but revealed bronchiolitis, focal intraalveolar hemorrhage, foamy macrophages and reactive pneumocytes. Stain for acid fast bacilli was negative; the impression was organizing pneumonia (OP).

IMPACT: Lung mass is a frequent clinical problem, and maintaining a broad differential is imperative to obtain an accurate diagnosis. In this patient, pleural fluid cytology did not reveal malignancy, and biopsy revealed OP. While this patient may ultimately be diagnosed with malignancy with secondary OP, this case illustrates the broad differential diagnosis of lung mass, as well as the need to consider underlying etiologies of OP when it is discovered.

DISCUSSION: OP is a nonspecific inflammatory reaction, sometimes secondary to such conditions as connective tissue disease, malignancy, drugs, infection, or pulmonary infarction. When there is no identifiable underlying cause, as in many cases, it is classified as cryptogenic OP. Features of OP include fibroblastic buds of granulation tissue and foamy macrophages in the bronchioles and alveolar ducts and spaces. On high resolution CT, its distribution is often patchy and peribronchiolar; however, a subset of OP termed "focal organizing pneumonias" may be radiographically indistinguishable from primary and metastatic lung tumors. Such focal OP may appear on chest CT as round or oval nodules or masses with irregular margins. Cryptogenic and secondary OP can be diagnosed with BAL and transbronchoscopic biopsy, and also with video-assisted thoracoscopic surgery if needed. Focal OP usually requires biopsy to rule out malignancy. Many patients treated with steroids for cryptogenic and secondary OP typically do well, although those with secondary OP require a longer course. Focal OP does not require steroid therapy. General practitioners should consider organizing pneumonia as a possible etiology of lung mass, and a diagnosis of organizing pneumonia should generate a search for underlying causes.

A DEFICIENCY IN Z59.0 Amir Meiri[1]; Matthew Moll[4]; Amresh D. Hanchate[3]; Michael Paasche-Orlow[2]. [1]Boston Medical Center, Boston, MA; [2]Boston University, Boston, MA; [3]Boston University School of Medicine, Boston, MA; [4]Brigham and Women's Hospital, Boston, MA. (Control ID #2702583)

LEARNING OBJECTIVE #1: Describe the implications of failing to include homelessness in the CMS readmissions penalty risk adjustment

CASE: A 65-year-old homeless Hispanic male presented with 2 days of productive cough and fever. His physical exam was notable for: RR 24 br/m, O2 sat 88% on 4 L NC and crackles in his lung bases. His labs were notable for: WBC 11.9×10^9 cells/L, lactate 2.4 mg/dL, BNP 161 pg/mL and negative troponins. The CXR showed diffuse lung opacities, suspicious for multifocal pneumonia, and the CT pulmonary angiogram was negative for pulmonary emboli. The patient has been homeless for 10 years and moved to Boston from Miami four months earlier. He was discharged two days prior with improving pneumonia symptoms after IV antibiotics and a prescription for oral antibiotics; however, his medications were stolen at the shelter. The patient was discharged again with antibiotics in hand, but no further contingencies.

IMPACT: The case illustrates a limitation of the Hospital Readmission Reduction Program (HRRP), due to the absence of homelessness in the risk adjustment calculation. It provides an opportunity to introduce a national health policy concern and potential remedies for improvement.

DISCUSSION: This case demonstrates how homelessness can cause early hospital readmission, and reflects the implications of billing and coding. The Boston homeless population is 3.8 times more likely to return within 30 days compared to housed Medicaid patients. This case highlights an important limitation of CMS's Hospital Readmissions Reduction Program (HRRP). Under the HRRP CMS penalizes hospitals with the highest rates of 30-day readmissions. The calculation CMS uses to compare hospitals adjusts for age, sex, and comorbidities but fails to include homelessness. The absence of homelessness in the calculator unfairly penalizes safety-net hospitals, as seen with higher rates of penalization for these hospitals post-ACA. Safety-net hospitals need more funding to care for such patients - not less. The example of homelessness is an extreme exhibition of this problem. The absence of homelessness from the CMS calculation contributes to an unintended consequence of this program as currently administered - worsening health equity. HRRP runs primarily off billing codes. The calculator could be modified by incorporating ICD-

10 code Z59.0, homelessness and its variants. The extent to which providers report this code is unclear. However, inclusion of Z59.0 into the risk adjustment would incentivize hospitals to report this status, triggering improved screening and coding for homelessness and reduce unfair penalties for safety-net hospitals. This would be a step in the right direction, but would likely be insufficient to reduce avoidable readmissions for homeless patients. A combined approach of correcting the risk-adjustment algorithm and incentives for safety-net hospitals to improve post-discharge services for homeless patients is likely to decrease readmissions, cost, and improve health equity and outcomes.

A DEMYELINATING DRUG Nabil D. Baddour; Ahmed G. Mohiuddin; Jenny M. Ngo. Tulane University, New Orleans, LA. (Control ID #2705128)

LEARNING OBJECTIVE #1: Recognize the association of demyelinating disease and TNF α-inhibitors

LEARNING OBJECTIVE #2: Demonstrate the diagnostic difficulty of distinguishing demyelinating disorders

CASE: A 35-year-old man with a history of rheumatoid arthritis (RA) developed lower extremity weakness for 5 days. Symptoms progressed to include bowel and bladder incontinence. Medications included weekly adalimumab for the previous 8 months. On exam, he described numbness from his hips downward and a positive Lhermitte's sign. Motor strength in the lower extremities was diminished with positive clonus bilaterally and decreased rectal tone. MRI of the brain and spine revealed multiple non-enhancing lesions scattered throughout the hemispheric white matter and all levels of the spine. CSF analysis yielded elevated IgG, total protein and oligoclonal bands. A diagnosis of demyelinating disease secondary to TNF α-inhibition was suspected. Adalimumab was discontinued and a 5-day course of IV methylprednisolone followed by oral prednisone taper was initiated. The patient was discharged to inpatient rehab for 3 weeks with complete resolution of symptoms.

IMPACT: TNFα-inhibitors have greatly improved clinical outcomes for patients suffering from rheumatologic disease. While neutropenia and increased risk of opportunistic infections are well-known side effects of these medications, there are an increasing number of reports of demyelination and multiple-sclerosis (MS) type syndromes.

DISCUSSION: In the past ten years, TNFα-inhibition associated demyelination has been reported in the literature. While the appearance of demyelination is evident on imaging, differentiating between MS-like demyelination and overt MS remains problematic. Pre-treatment MRI is not routinely obtained, so it is unclear whether these clinical findings are a result of a new process or unmasking of latent MS. A link between RA and MS has been suggested, but supporting data for this association comes primarily from the incidence of MS-like syndromes following TNFα-inhibition as described above. Our patient uniquely demonstrated this difficulty in diagnosis. Diagnostically, he demonstrated neurologic symptoms and multiple non-enhancing lesions in space, but not in time, thus failing to meet McDonald criteria for a diagnosis of MS. This case demonstrated a high likelihood of causal relationship based upon temporal association, improvement with removal of the medication, and biologic plausibility of TNFα-inhibitor induced demyelination. Given the efficacy of these drugs, internists should be aware of potentially adverse neurologic events in patients and discontinue TNFα-inhibitors should such ccomplications arise. Also internists may consider an MRI in patients prior to the initiation of therapy.

A DIAGNOSIS OF RARE SOFT TISSUE TUMOR PRESENTING AS UNILATERAL INGUINAL MASS Pojchawan Yampikulsakul[1]; Norbert Sule[2]; Pichapong Tunsupon[1]. [1]State University of New York at Buffalo, Buffalo, NY; [2]Roswell Park Cancer Institute, Buffalo, NY. (Control ID #2683889)

LEARNING OBJECTIVE #1: Discuss the differential diagnoses and malignant features of inguinal mass

CASE: 36 year-old man presented for evaluation of a left groin mass for a week. Patient concerned of an inguinal hernia as he had history of right inguinal hernia repair 10 years ago. He denied constitutional symptoms, unprotected sexual intercourse, dysuria or urethral discharge. Physical exam revealed a mobile, non-reducible left groin mass approximately 3 cm in diameter on both supine and upright position, firm consistency with mild tenderness to palpation. There was no cutaneous erythema or ulceration. Genital exam was normal. Neurological exam of the lower extremities was intact. HIV antibody test was negative. Patient was prescribed doxycycline for treatment of presumed infectious lymphadenitis. Further work up ultrasound of the left groin demonstrated 4 × 5 cm solid ovoid lesion with internal blood flow. Computed tomography of the abdomen demonstrated subcutaneous soft tissue mass at the superior aspect of the left inguinal region measuring 5 × 6 cm. The consistency of the lesion was homogeneous with area of focal hypodensity. Other inguinal and pelvic lymph nodes were normal. The left inguinal mass continued to enlarge despite treatment with antibiotic. The biopsy of the lesion revealed high-grade undifferentiated pleomorphic sarcoma. Patient was referred to oncologist for further evaluation.

IMPACT: The delayed diagnosis of soft tissue sarcoma is not uncommon because most of the etiologies of soft tissue mass are benign and painless. The delayed work up due to assumption of benignity will subsequently lead to poor outcome.

DISCUSSION: Inguinal mass is one of the most common chief complaints in primary care setting. The differential diagnoses include benign etiologies e.g. inguinal hernia, reactive lymphadenopathy, aneurysm and malignant tumor e.g. sarcoma, metastatic carcinoma, melanoma or lymphoma. In our case, the finding of non-reducible and firm consistency of the mass with the ultrasound finding are incompatible with inguinal hernia. The reactive lymphadenopathy is less likely, as there are no signs of infection. Thus, malignant tumor is highly suspicious. Pleomorphic sarcoma is a rare and aggressive tumor found predominantly in male gender age 30–80 years (mean 59 years). The United Kingdom Department of Health recommends urgent referral when 1) the soft tissue mass is more than 5 cm in diameter, 2) rapidly growing mass, 3) painful mass, 4) deep muscle fascia involvement, and 5) recurrence of a soft tissue mass after surgical resection. Among these factors, the depth of the tumor involvement was the most sensitive marker of malignancy, followed by size more than 5 cm and a history of rapid growth, all of which present in this patient. The most common anatomic distribution of soft tissue sarcoma is thigh, buttock and groin accounting up to 46%. Internists must be cognizant of the malignant features of the inguinal mass and prompt referral to diagnostic specialist.

A DIAGNOSTIC CONUNDRUM IN A CASE OF BACK PAIN
ShihFan Sun. UCLA, Los Angeles, CA. (Control ID #2701609)

LEARNING OBJECTIVE #1: Recognize the insidious nature of discitis/osteomyelitis caused by HACEK organisms.

CASE: An 89 year old female with hypertension, hyperlipidemia, presented to emergency room with 6 days of low back pain without clear inciting event. The

pain persisted at rest, worsened with movement and limited her mobility. NSAIDs or norco provided minimal relief. She denied symptoms suggestive of radiculopathy, cauda equina, or infection. Her medications included atorvastatin and amlodipine. She had no prior surgeries, volunteered at the hospital, and denied tobacco, alcohol and drug use. Her vital signs were within normal limits. Physical exam was notable for tenderness to palpation on right superior iliac crest, no midline tenderness, negative straight leg raise test, and no focal neurological deficits. Her initial labs showed leukocytosis to 15, otherwise unremarkable. CT abdomen and pelvis with contrast showed multilevel degenerative disc disease at the thoracolumbar spine without acute fracture or evidence of infection. Her urinalysis and chest x-ray were unremarkable. Her back pain was presumed to be musculoskeletal but was difficult to control. She was overly sedated on oxycodone and dilaudid. She was febrile on day 2 and 4 of hospitalization, which were attributed to aspiration pneumonitis in the setting of over sedation from narcotics. She was empirically treated with vancomycin and zosyn for one day. Her leukocytosis downtrended even before initiating antibiotics. TTE showed no vegetation. She was discharged on day 6 of hospitalization with stable pain regimen. Her blood cultures were negative to date on discharge. She was readmitted 10 days after discharge for Aggregatibacter Aphrophilus bacteremia, which resulted from previous blood cultures 6 days after collection. MRI lumbar spine with and without contrast showed L1-L2 discitis osteomyelitis with superimposed right psoas abscess without epidural abscess. She was treated with 6 weeks of ceftriaxone without complications.

IMPACT: This case raised my awareness of HACEK infections. This patient could have presented to a clinic without overt signs of infection, and been sent home with treatment for musculoskeletal pain. This case has challenged me to reevaluate my threshold in ordering further tests to differentiate benign and malignant causes of back pain in certain patient populations.

DISCUSSION: HACEK organisms are uncommon human infections, but are known to cause bone and joint infections, and infective endocarditis involving native valves. In one study, only 39% of patients with Aggregatibacter Aphrophilus infection recalled having recent dental procedure. Since back pain is a very common complaint in both inpatient and outpatient settings, it is important to recognize the insidious nature of HACEK infections, maintain a high index of suspicion for such infections, especially in older patients with refractory back pain, and follow up these patients closely so that timely treatment can be initiated if needed.

A DRESS TO IMPRESS Ashley Kang; Lynn Zaremski; Kimberly Cartmill. Montefiore Medical Center, Bronx, NY. (Control ID #2706751)

LEARNING OBJECTIVE #1: Identify cephalexin as a potential causative agent in DRESS.

LEARNING OBJECTIVE #2: Recognize the presentation and management of DRESS.

CASE: A 60 year-old woman presented to the hospital with five days of fever, odynophagia, dyspnea, and cough. A month prior to presentation, she was treated with IV antibiotics for cellulitis and discharged on cephalexin. Two weeks later, she developed a waxing and waning pruritic rash. On admission, the patient was febrile, tachycardic, and hypotensive (90/47) with a diffuse erythematous maculopapular rash. Labs included WBC 12.3, eosinophils 1.1, ALT 42. Levaquin, Flagyl, and vancomycin were started for suspected pneumonia. A week later she developed respiratory failure requiring intubation, biventricular heart failure, and acute kidney injury. Repeat labs showed WBC 25.2, eosinophils 7.0, and ALT 74. Methylprednisolone IV was started for drug reaction with eosinophilia and systemic symptoms (DRESS).

IMPACT: Cephalosporins are not commonly known to cause DRESS. In this case, cephalexin was new to the patient and fit the timeline of events. This case highlights that uncommon but life-threatening reactions can occur with initiation of any new drug.

DISCUSSION: DRESS is an immune response to a specific drug that typically presents two to eight weeks after the offending agent is ingested. Antiepileptics and sulfonamides are most commonly implicated, but antiretrovirals, antidepressants, and NSAIDs have also been reported. This case of DRESS with multi-organ involvement highlights cephalexin as a causative agent. The patient met RegiSCAR criteria for DRESS with fever over 38C, internal organ involvement, blood abnormalities, hospitalization, and rash with presumed inciting agent. While not fully understood, the pathogenesis involves an immune reaction by activated T cells. Visceral organ involvement occurs in approximately 90% of cases. Liver injury is most common (50–60%) and in severe cases can cause fulminant hepatic failure. Cardiac complications occur in up to 24% of patients, manifesting as hypersensitivity myocarditis or acute necrotizing eosinophilic myocarditis. Both can result in heart failure. The management of DRESS includes rapid identification and discontinuation of the inciting agent. However, patients may present with symptoms even after discontinuation. The cornerstone of treatment involves immunosuppression with corticosteroids. In more severe cases, IVIG and cytotoxic agents can be used. Complete recovery may take up to several months. Our patient was admitted with an initial diagnosis of severe sepsis, and anchoring bias may have delayed the initiation of corticosteroids. Physicians should recognize that cephalexin can cause DRESS and have a high clinical suspicion of this potentially deadly disease in any patient with rash, systemic involvement, and initiation of a new drug within the time frame.

A FAILURE OF COMMUNICATION IN A CASE OF TUBERCULOSIS PERICARDITIS Colleen Tenan. Weill Cornell Medical College, New York, NY. (Control ID #2703965)

LEARNING OBJECTIVE #1: Recognize the challenges and failures of communication with low English proficiency (LEP) populations, especially with regard to hospital discharge.

LEARNING OBJECTIVE #2: Assess how language barriers may hinder a patient's quality of care and adherence with follow-up.

CASE: A 49 year-old Mandarin-speaking man with a recent diagnosis of tuberculosis (TB), complicated by two recent admissions to an outside hospital (OSH) for pericarditis s/p pericardial window and peritonitis, presented with increasing SOB and lower extremity swelling. Physical exam was notable for tachycardia, decreased breath sounds at the R base, abdominal distention and 3+ pitting edema of bilateral lower extremities. The diagnosis of constrictive pericarditis was made on echo and cardiac MRI. OSH records noted a diagnosis of pulmonary TB based on sputum cultures, however the patient denied knowledge of this diagnosis. The patient's discharge paperwork, which provided crucial information regarding his discharge medications and clinic follow-up, was written exclusively in English. There was no record of the patient following-up with the infectious disease, liver or cardiology clinics, and although the Department of Health confirmed that the patient was started on RIPE therapy, he was off of his TB medications for one week prior to admission for unknown reasons.

IMPACT: Despite Section 1557 of the Affordable Care Act (ACA) mandating that qualified interpreters must be offered to all LEP patients (for both oral and written information), utilization of these services remains low in practice. Considering the number of important topics discussed with patients during discharge, it is especially crucial that pertinent discharge information be communicated to LEP patients in a manner he or she can understand.

DISCUSSION: Despite approximately 25.1 million people in the US classified as LEP, documented utilization rates of professional interpreter services among healthcare providers are frequently less than 50%. Multiple studies have demonstrated that LEP patients have an increased odds-ratio of being readmitted than English-speaking patients, and that LEP patients who have documented use of interpreter phones have, on average, shorter length of stay than those with no interpreter use. Additionally, it has been demonstrated that language barriers and inability to communicate with staff contribute to feelings of alienation and decreased likelihood of LEP patients vocalizing concerns while hospitalized. In response to this widespread problem, the ACA mandates that qualified interpreters be provided to all LEP patients and recommends against the use of friends/family members as interpreters. In practice, more funding is necessary to implement protocols for interpreter use with LEP patients, which will improve the quality of healthcare delivered to populations who have historically had limited access to care.

A FATAL CASE OF HEPARIN-INDUCED THROMBOCYTOPENIA COEXISTING WITH SECONDARY ANTIPHOSPHOLIPID SYNDROME. Tolulope Ogriki; Barry Fomberstein. Montefiore Medical Center, Bronx, NY. (Control ID #2706171)

LEARNING OBJECTIVE #1: Recognize the diagnostic dilemma associated with thrombotic vasculopathies.

LEARNING OBJECTIVE #2: Recognize the clinical features of Catastrophic Antiphospholipid Syndrome (CAPS).

CASE: A 65 year-old African American woman presented with 3 weeks of shortness of breath and reduced urine output. Blood pressure was elevated at 210/78 mmHg. Lung and extremity exams revealed bilateral crackles and pitting pedal edema, respectively. Labs were suggestive of Acute Kidney Injury requiring Hemodialysis. Hospital course was complicated by atrial flutter, splenic infarct, and thrombosis involving the skin, arteries, and veins. Intravenous Heparin was initiated, but was switched to Argatroban after she developed Heparin Induced Thrombocytopenia (HIT), confirmed by positive serotonin release assay, one month into admission. She also developed lower extremity ulcers and gangrene requiring right above knee amputation. Histology of the ulcers confirmed thrombotic vasculopathy with cutaneous infarcts. Immunology revealed positive antinuclear antibody, antismith antibody, Lupus anticoagulant, and Beta2 Glycoprotein IgA antibody, diagnostic for Systemic Lupus Erythematosus (SLE) and suggestive of Antiphospholipid Syndrome (APS). She received intravenous steroids for SLE. Intravenous Immunoglobulin (IVIG) and plasmapheresis were considered but not initiated as she did not quite meet the diagnostic criteria for CAPS. She continued to develop necrotic skin lesions and later developed sepsis, shock, respiratory failure, and died.

IMPACT: In clinical practice, some patients fail to meet the diagnostic criteria for APS and CAPS. Terms like “Probable CAPS” and “CAPS-like disease” have been used in literature for such patients. Treatment should be aggressive as soon as CAPS is suspected because delay may result in death. There may also be two disease entities existing together.

DISCUSSION: Hallmarks of APS are vascular thrombosis in the presence of antiphospholipid antibodies: Anticardiolipin antibodies (IgG +/− IgM), Anti-beta2 glycoprotein (IgG +/− IgM), and lupus anticoagulant. APS is confirmed if these antibodies remain positive twelve weeks after initial testing. APS may occur primarily or secondary to autoimmune diseases like SLE. CAPS describes a frequently fatal course seen in patients with APS; it causes widespread thrombosis, often leading rapidly to multi-organ failure. Other features are stroke, endocarditis, pulmonary embolism, glomerulonephritis, and osteonecrosis. An important differential diagnosis of CAPS is HIT because both are characterized by widespread thrombosis. HIT, however, causes thrombocytopenia in the setting of heparin exposure. It is crucial to make the distinction between HIT and CAPS as treatment is different. In HIT, heparin must be discontinued and another anticoagulant initiated instead. CAPS is treated with anticoagulants, glucocorticoids, plasma exchange, and IVIG. Rituximab and eculizimab may also be used. Mortality is significantly reduced if aggressive treatment is instituted promptly.

A FOCUSED PHYSICAL EXAMINATION: WHERE THE ANSWER LAY Ryuichi Sada[2]; Yuji Nishihara[2]; Sandra Y. Moody[1]. [1]Kameda Medica Center & UCSF/SFVAMC, Kamogawa City, Japan; [2]Kameda Medical Center, Kamogawa, Japan. (Control ID #2702990)

LEARNING OBJECTIVE #1: Remitting seronegative symmetrical synovitis with pitting edema (RS3PE) is frequently concurrent with malignancy.

LEARNING OBJECTIVE #2: Focused physical examination usually reveals important clues to the cause of illness even in the case of paraneoplastic rheumatic syndrome.

CASE: A 74-year-old male farmer with diabetic nephropathy and hypertension presented with a high fever, joint pain, and morning stiffness in both hands and shoulders. Daily fevers with difficulty walking and grasping items developed three weeks before admission. He performed his farm work without difficulty previously. One week before admission, he visited our clinic and reported 5-kg weight loss, anorexia, and bilateral leg edema. His medications included nifedipine, candesartan, omeprazole, metformin, sitagliptin, glimepiride, and acetaminophen. Sitagliptin was stopped because it can cause severe joint pain. On follow-up visit a week later, he had no improvement in his symptoms and was admitted for evaluation. On physical examination, he appeared uncomfortable. His temperature was 38.9 °C, blood pressure 114/54 mmHg, heart rate 101 per minute, and respiratory rate 16 per minute. He had a positive painful arc sign in both shoulders and a positive Prayer sign in both hands. He also had moderate (2+) pitting edema in both legs. Temporal artery palpation, skin, and heart sounds were unremarkable. Laboratory data revealed an alkaline phosphatase of 711 IU/L, serum creatinine 1.74 mg/dl, C-reactive protein 9.17 mg/dl, and HbA1c 6.8%. Urinalysis showed 1+ protein. Additionally, two sets of blood cultures, rheumatoid factor, anti-citrullinated protein antibodies, antinuclear antibody, and anti-neutrophil cytoplasmic antibody were negative. His presentation was compatible with RS3PE. However, we performed a focused physical examination to look for signs of malignancy and noted an enlarged submental lymph node (2 × 2 cm). Prostate exam was normal. Computed tomography confirmed enlarged submental lymph nodes. Upper and lower endoscopy was negative. Submental lymph node biopsy showed marginal zone B cell

lymphoma (MZBCL); bone marrow biopsy was negative. We started three cycles of rituximab 375 mg/m^2 and prednisolone 15 mg/day. He achieved clinical remission of both diseases after one year.

IMPACT: This case highlights the importance of malignancy screening in patients with RS3PE. A focused physical exam and judicious malignancy workup can aid in detecting concurrent malignancy in patients suspected of RS3PE.

DISCUSSION: To our knowledge, this is the first report of MZBCL mimicking RS3PE. RS3PE frequently presents as paraneoplastic rheumatic syndrome. Solid organ tumors involving genitourinary and gastrointestinal tracts mainly occur with RS3PE. Moreover, hematologic malignancies including lymphoma have also been reported as a main cause of paraneoplastic RS3PE. Clinicians should be aware of the risk of concurrent malignancy in patients with RS3PE.

A GOOD CONVERSATION STARTER: USING GONOCOCCAL PHARNYGITIS TO IDENTIFY MSM PATIENTS WHO MAY BENEFIT FROM PREP Elijah Douglass. NYP Cornell, New York, NY. (Control ID #2706366)

LEARNING OBJECTIVE #1: Diagnose gonococcal pharnygitis

LEARNING OBJECTIVE #2: Identify high risk patients who would benefit from PrEP

CASE: 28 y/o MSM presented to clinic with CC sore throat. He was seen at urgent care 1 week prior where he was diagnosed with strep pharyngitis and prescribed 1 week of amoxicillin. He continued to have a sore throat and odynophagia without evidence of systemic infection. Since his last clinic visit 3 months prior he had had 2 new sexual partners with whom he had unprotected receptive and insertive oral and anal intercourse. His last sexual contact was 2 weeks prior to the visit with a man he did not know. He had no known medical problems except genital chlamydia treated several years earlier and took no medications. Social history was significant for having sex with men, inconsistent condom use, and occasional use of MDMA and cocaine. Exam was notable for normal vitals, pharyngeal exudates and oropharyngeal erythema with no cervical lymphadenopathy. There were no genital or perianal lesions and no urethral discharge. Pharyngeal and rectal chlamydia swabs, GC/Chlamydia urine NAAT, RPR, and HIV RNA PCR were sent. He was empirically treated with single doses of IM ceftriaxone and PO azithromycin. Several days later his pharyngeal swab resulted positive for gonorrhea. The remaining labs, including HIV RNA PCR, were negative. At that time he was asked to return for a follow up visit to discuss pre-exposure prophylaxis (PrEP) and was eventually started on Tenofovir/emtricitabine (Truvada).

IMPACT: Gonorrhea is an uncommon cause of pharyngitis and should help identify a patient who is at high risk for other STIs. Initiation of PrEP should be discussed with MSMs at high risk for contracting HIV.

DISCUSSION: The CDC recommends offering/initiating PrEP in patients who are at increased risk of contracting HIV. The patient described above has multiple risk factors including: MSM status, multiple sexual partners, inconsistent condom use, drug use, and history of STIs. LGBT patients are less likely to interface with the healthcare system and providers should be sure to discuss PrEP once increased risk has been identified. Deferring to future visits leaves patients at high risk – PrEP may reduce the rate of HIV transmission by more than 95%. The decision to start PrEP should be a joint decision between provider and patient. It is important to discuss the routine monitoring required and to remind patients that while PrEP may decrease their risk of HIV it will not impact their risk of contracting other STIs and condoms are still the most effective way to prevent them. Follow up is recommended every three months for HIV, GC/chlamydia, syphilis, and, when appropriate, HCV testing. Serum creatinine should be measured initially and then every 6 months in patients without risk factors for renal disease. Gonorrhea is an uncommon cause of pharyngitis but should remain on the differential in patients at high risk. Treatment is the same as for genital infection: one time doses of IM ceftriaxone and PO azithromycin.

A GRAVE CASE OF JAUNDICE Nicholas F. Stienstra; Michael Schwartz; Lily Yan; Fausto Ortiz. Boston Medical Center, Boston, MA. (Control ID #2701035)

LEARNING OBJECTIVE #1: Identify the differential diagnosis for cholestatic hepatotoxicity

LEARNING OBJECTIVE #2: Treat thyrotoxicosis when thionamides are contraindicated

CASE: A healthy 35-year-old male presented with one week of painless jaundice. He reported pruritus, acholic stools, weakness, and palpitations. He denied fevers, abdominal pain, significant alcohol use, intravenous drug use, and high risk sexual behaviors. Examination revealed diffuse icterus, an enlarged thyroid, a fine tremor with outstretched arms, and no hepatosplenomegaly or abdominal tenderness. Labs revealed AST 135, ALT 270, alkaline phosphatase 370, total bilirubin 15.4 (direct 10.4), and INR 1.79. Work-up for intrahepatic etiologies was negative for viral infection, autoimmune hepatitis, primary biliary cirrhosis, Wilson's disease, and hemochromatosis. Abdominal ultrasound, CT, and MRCP showed no portal vein thrombosis, primary sclerosing cholangitis, choledocholithiasis, or neoplasm. Thyroid studies revealed an undetectable TSH (<0.01) and elevated T3, free T4, and thyroid stimulating immunoglobulin (596, 6.9, and 287 respectively). Thyroid ultrasound revealed an enlarged, hyperemic thyroid gland, consistent with Graves' disease. Methimazole and propylthiouracil were not initiated as thionamides can cause cholestatic and hepatocellular injury. Instead, alternative treatments were used: dexamethasone to inhibit peripheral conversion of T4 to T3, cholestyramine for pruritus and to lower circulating thyroid hormone, and potassium iodide to suppress thyroid hormone synthesis through the Wolff-Chaikoff effect (1,2). These medications normalized his thyroid hormone levels and LFTs which allowed for methimazole initiation as a bridge to definitive management with outpatient thyroidectomy.

IMPACT: This case teaches that endocrinopathies such as Graves' disease must be considered in the differential diagnosis of a patient with abnormal liver enzymes. Additionally, when thionamides are contraindicated due to cholestasis, thyrotoxicosis can be managed with glucocorticoids, potassium iodide, and cholestyramine.

DISCUSSION: Severe liver injury due solely to Graves' disease is rare. Cholestasis and hepatotoxicity have a broad differential which includes infection, autoimmune conditions, toxins, malignancy and genetic disorders. This case illustrates that hyperthyroidism must also be considered. In cases of preexisting liver injury precluding use of thionamides, alternative therapy with glucocorticoids, potassium iodide, and cholestyramine may be used as a bridge to definitive treatment. 1. Panzer C, Beazley R, Braverman L. Rapid preoperative preparation for severe hyperthyroid Graves' disease. J Clin Endocrinol Metab. 2004 May;89(5):2142–4. 2. Mercado M, Mendoza-Zubieta V, Bautista-Osorio R, Espinoza-de los Monteros AL. Treatment of hyperthyroidism with a combination of methimazole and cholestyramine. J Clin Endocrinol Metab. 1996 Sep 1;81(9):3191–3.

A GUT FEELING: THE DUNBAR SYNDROME Shelly Kakar[2]; Nikhil Seth[2]; Adam Slivka[2]; Amar Kohli[1]. [1]UPMC, Mars, PA; [2]University of Pittsburgh Medical Center, Pittsburgh, PA. (Control ID #2702978)

LEARNING OBJECTIVE #1: To think beyond the usual algorithm for functional chronic abdominal pain.

LEARNING OBJECTIVE #2: Recognize the management and treatment for median arcuate ligament syndrome.

CASE: A 59 year-old female with a known history of type 2 diabetes mellitus and chronic abdominal pain who was evaluated for a one-day history of severe, constant abdominal pain. Her pain was acute, diffuse and radiated to her back. Of note, patient had multiple previous hospital admissions with similar presentations and was diagnosed as pain secondary to fibromyalgia/visceral abdominal pain. On exam, she was afebrile, hemodynamically stable, and in no distress. Her abdominal exam revealed mild diffuse tenderness and no abdominal bruit was auscultated. Lipase was elevated to 2296 IU/L. CT revealed peripancreatic inflammation and a hyper-dense blush concerning for an inferior pancreaticoduodenal artery pseudoaneurysm rupture. An angiogram was pursued, revealing a pseudoaneurysm of the inferior pancreaticoduodenal artery along with celiac axis compression. This finding was consistent with Dunbar Syndrome, also known as median arcuate ligament syndrome (MALS). Subsequently, she underwent coil embolization of the gastroduodenal artery (GDA). She had complete resolution of abdominal pain afterward and was discharged the following day.

IMPACT: Median arcuate ligament syndrome should remain on the differential for anyone presenting with recurrent abdominal pain without a comprehensive work up. Definitive treatment is surgery and most patients will respond immediately and chronic abdominal pain symptoms will resolve.

DISCUSSION: MALS is a rare syndrome, occurring in 0.4% of the population, and is most often seen in females between the ages of 30–50. It is characterized by postprandial pain, weight loss, and occasionally an abdominal bruit. MALS is thought to be due to external compression of the celiac artery by a fibrous attachment, the median arcuate ligament. In nearly 10–24% of cases, this ligament crosses anteriorly to the celiac artery, causing compression and pain over time. The pathophysiology of pain is unclear but thought to be related to foregut ischemia as a result of poor gastric arterial flow. In a case review, collateralization of the GDA can lead to pseudoaneurysm formation in 3–18% of patients. The risk of rupture has yet to be established but there is no correlation between the size of an aneurysm and rupture.The diagnosis of MALS is with imaging, usually through CT angiography displaying focal narrowing of the celiac axis. Conventional imaging would have missed this diagnosis therefore; advanced imaging is warranted in certain clinical scenarios. Treatment is surgical, involving diversion of the celiac artery from the MAL. In conclusion, MALS is a rare syndrome, with a constellation of vague foregut symptoms and characterized by compression of the celiac artery on contrast-enhanced imaging. Pseudoaneurysm formation and rupture is the most common complication and best managed with angiographic intervention.

A HAITIAN MAN WITH TONGUE SWELLING: CLINICAL REASONING AND DIAGNOSTIC CHALLENGES IN RURAL HAITI Kenneth Pettersen[1]; Jacquelin Pierre[1, 2]; Manoucheka Canlatte[2]; Robin S. Goldman[1, 2]. [1]UCSF-HEAL Initiative, San Francisco, CA; [2]Zanmi Lasante, Hinche, Haiti. (Control ID #2706282)

LEARNING OBJECTIVE #1: Recognize ways that academic teaching hospitals can partner with low-income countries to overcome diagnostic challenges

LEARNING OBJECTIVE #2: Appreciate the shifting global burden of disease from infectious to non-infectious causes

CASE: A 52-year-old Haitian man presented to a hospital in rural Haiti with 3 months of progressive swelling of the throat, lips, and tongue, followed by a papulonodular facial rash. He denied sick contacts, night sweats or fevers but endorsed weight loss, 5 months of low back pain, paresthesias in his leg and numbness in his hands. He had no past medical history and worked locally as a merchant. Exam revealed severe macroglossia, cheilitis and firm submandibular swelling without erythema or tenderness. Diffuse, hypopigmented papules and nodules were present across the entire face and axilla. Lesions were not pruritic, anesthetic, or painful. There was asymmetric, 2+ pitting edema of all extremities and polyarthritis of the wrists, MCPs, and PIPs. 4/5 strength was noted in the upper extremities with decreased sensation in the distribution of the bilateral median nerves and right posterior tibial nerve. Limited workup revealed a hemoglobin of 8.4 g/dL (MCV 78), a creatinine of 0.6 mg/dL and a normal urinalysis. He was HIV, PPD, and RPR negative. Chest X-ray was normal, and lumbar X-ray revealed compression fractures of L3-5 vertebrae. Given the presence of leonine facies, a skin biopsy and clinical summary were sent to a referral hospital in Boston for AFB stains to evaluate for leprosy, which were negative. Subsequent workup showed positive Congo red stain, suggesting the diagnosis of amyloidosis, likely AL subtype.

IMPACT: Amyloidosis was highly consistent with the findings of this case, including leonine facies, polyneuropathy, cheilitis, and macroglossia. If this patient presented to a hospital in the US, amyloidosis would have been high on the differential. Yet, biases toward infectious diseases likely led to a diagnostic delay. The shifting prevalence of disease in low-income countries towards non-infectious causes should be better reflected in the differential diagnoses.

DISCUSSION: This case highlights the importance of creative utilization of diagnostic testing and expertise through collaboration to help solve clinical problems in resource-limited settings. Despite the lack of pathologists in Haiti, a diagnosis was made with the help of organizational ties between our partnering organization, Zanmi Lasante (ZL), and Brigham and Women's Hospital (BWH). The pathologists at BWH helped broaden the differential diagnosis prior to a pathological diagnosis. This highlights the role that academic hospitals can have in supporting healthcare practitioners in resource limited settings. Formalizing means of communication, such as online portals or email exchanges, could improve this process.

A LITTLE BIT HIGHER PLEASE! REPOSITIONING PRECORDIAL LEADS ON AN ELECTROCARDIOGRAM TO UNMASK BRUGADA SYNDROME. Teresa Ratajczak[2]; Ahmed El-Moghraby[1]; Amy L. Stacey[1]; Rey F. Arcenas[3]. [1]wright state university, Beavercreek, OH; [2]Wright State University, Dayton, OH; [3]Wright State University, Veteran Affairs Medical Center, Dayton, OH. (Control ID #2701728)

LEARNING OBJECTIVE #1: Recognize the utility of moving precordial ECG leads superiorly to unmask life-threatening arrhythmias like, Brugada syndrome.

CASE: A 42 year old male with history of epilepsy, hyperlipidemia and hypertension presented to the emergency department with complaints of weakness, fatigue and tunnel vision of two hours duration. His vitals and physical exam were unremarkable. Labs were within normal limits. An ECG showed nonspecific ST-T wave changes in the precordial leads. The patient was discharged home with the diagnosis of atypical seizure. The cardiologist

assigned to read the ECG noted that there was a suggestion of early repolarization or perhaps an incomplete Brugada pattern. The patient was evaluated in the cardiology clinic due to the suspicious ECG findings and seizure history. He relayed that he was diagnosed with epilepsy in 2011 and had been on Lamictal with adequate seizure control, suffering one or two breakthrough seizures yearly. An ECG was repeated. The right precordial leads V1-V3 were positioned superiorly in the 2nd-3rd from the 4th-5th intercostal spaces respectively. The characteristic Brugada type 1 pattern of coved ST segment elevations emerged. A diagnosis of Brugada syndrome was made. A loop recorder was implanted to see if patient's seizures are precipitated by syncope, characteristic of this disease, as it may require a cardioverter defibrillation implantation (ICD) in the future. The patient is followed closely.

IMPACT: Consider channelopathies, like Brugada syndrome, in the differential diagnosis for syncope. Enhance awareness that simple ECG maneuvers can uncover the Brugada pattern, resulting in potentially life-saving maneuvers to improve patient outcomes.

DISCUSSION: BrS is a familial channelopathy, with prevalence of 1–5 per 10,000 persons. The 2013 Heart and Rhythm Society guideline requires only the typical ECG changes for diagnosis. BrS type 1 requires demonstrating typical coved ST elevation with at least 2 mm J-point elevation and gradually descending ST segment, followed by a negative T-wave on ECG in the right precordial leads V1-V3. This can occur spontaneously or be elicited with provocative testing in the electrophysiological (EP) lab by intravenous administration of Class I antiarrhythmics. An alternative procedure does not require advanced cardiology training. By positioning the precordial leads superiorly in the 2nd-3th intercostal spaces, the condition can be unmasked. Patients with BrS are at risk for syncope and sudden cardiac death, which makes diagnosis of this disease crucial. In survivors of cardiac arrest or documented spontaneous sustained ventricular arrhythmia with or without syncope, ICD implantation is recommended. Education of healthcare providers about this diagnostic option is imperative.

A MALIGNANT COUGH IN A PATIENT WITH HIV/AIDS

Nupur Agrawal; Dr. Harsha Mudrakola. Baylor College of Medicine, Houston, TX. (Control ID #2704007)

LEARNING OBJECTIVE #1: Differentiate shortness of breath in patients with HIV/AIDS using a systematic approach

LEARNING OBJECTIVE #2: Recognize the cutaneous and extracutaneous manifestations of Kaposi sarcoma

CASE: A 29 year old male with HIV/AIDS only intermittently taking antiretroviral therapy (ART), *Pneumocystis jirovecii* pneumonia actively being treated with trimethoprim-sulfamethoxazole and prednisone, and cutaneous Kaposi sarcoma all diagnosed one month ago at an outside clinic presented to the hospital with worsening cough and shortness of breath. Initial vitals were notable for low grade fever of 99.9 °F, tachycardia to 130 s, and hypoxia with saturation of 88% on room air, which improved to 95% on two liters nasal cannula. Physical exam was notable for a cachectic, ill-appearing male with prominent cervical lymphadenopathy and numerous violaceous plaques of varying sizes present over the face, chest, abdomen, and back (photographed) and inside the oral cavity. Pulmonary exam revealed diffuse rhonchi along with absent breath sounds and dullness to percussion in the left lower lung field. CD4 count was 262/μL. Chest x-ray showed a large left hydropneumothorax, which was drained. Pleural studies showed an exudative effusion but were negative for bacterial, mycobacterial, fungal, and pneumocystis infection. Fluid cytology was negative for malignancy. The effusion rapidly reaccumulated, so bronchoscopy was performed. Numerous violaceous hyperpigmented lesions consistent with Kaposi sarcoma were seen in the trachea and bronchial tree (photographed), confirming a diagnosis of pulmonary Kaposi with pleural involvement.

IMPACT: Research advancements in HIV have rapidly improved available treatment options, but complex social situations create significant barriers to achieving medication adherence even with simplified ART regimens. While HIV-associated opportunistic infections and malignancies have declined in prevalence, this case poignantly illustrates the unique diagnostic and management challenges of untreated HIV and the need for physicians to obtain a thorough history and build a broad differential diagnosis.

DISCUSSION: The differential for shortness of breath in HIV-positive patients unable to tolerate ART is broad, and pulmonary Kaposi is rare even in this susceptible population; pulmonary involvement is reported in only 5 to 8% of cases of AIDS-related Kaposi sarcoma. In our patient's case, a CD4 count above 200/μL made certain opportunistic infections less likely, but an initial infectious workup was both warranted and performed given the sepsis-like nature of the patient's presenting symptoms. Negative infectious studies led to more invasive testing, which ultimately confirmed the diagnosis of pulmonary Kaposi. The patient's symptoms improved with pegylated liposomal doxorubicin. Gleaning an accurate history of intermittent ART use, performing a thorough physical exam, and using a systematic diagnostic approach enabled us to reach an accurate diagnosis in an efficient manner despite the rarity of the disease.

A MARROWING CASE OF PORTAL HYPERTENSION

Michael Massaro[1]; Christopher Caulfield[2]. [1]University of North Carolina, Chapel Hill, NC; [2]University of North Carolina School of Medicine, Chapel Hill, NC. (Control ID #2690372)

LEARNING OBJECTIVE #1: Recognize myelofibrosis as an underappreciated cause of portal hypertension.

CASE: 42 year old male immigrant from Mexico with no medical history presented with two weeks of abdominal distention, lower extremity swelling and jaundice. Around this time patient had an acute febrile illness with cough, rhinorrhea that resolved without intervention. States that associated with his symptoms he had malaise and fatigue. The patient did not take any medications or over the counter supplements besides green and black teas. He states he believed he may have had some type of parasitic infection as a child that resolved with an unknown medication. His physical exam was significant for jaundice, scleral icterus with abdominal distention and positive fluid wave with lower extremity edema. Laboratory data was significant for an elevated creatinine of 1.5, a total bilirubin of 1.6, alkaline phosphatase 1531, and a GGT of 541. The CBC revealed hemoglobin of 6.7 and platelet count of 105. Further studies revealed a positive ANA with titer 1:640 in a speckled pattern and negative hepatitis serologies. A liver ultrasound showed normal liver echotexture with patent vasculature. With his positive ANA he was started on prednisone for presumed autoimmune hepatitis while awaiting liver biopsy results. During his hospital course, he developed oliguric renal failure requiring dialysis. The biopsy returned with evidence of extramedullary hematopoiesis leading to hematology consult to pursue bone marrow biopsy which showed primary myelofibrosis.

IMPACT: This case emphasizes the necessity to consider other etiologies of common presentations such as portal hypertension when the clinical history or

data do not fully support the original presumptive diagnosis and the pitfalls of anchoring in clinical reasoning. This clinical case illustrates the need to consider other systemic disorders that affect the liver as an important cause when evaluating new cases of portal hypertension.

DISCUSSION: Idiopathic noncirrhotic portal hypertension is defined by the clinical syndrome of portal hypertension in the absence of liver disease with signs such as ascites, varices, edema. It is classically divided into five main categories including chronic infection, exposure to medications or toxins, immunologic disorders, thrombophilias, and genetic disorders. Primary myelofibrosis is a rare cause of noncirrhotic portal hypertension but a large percentage of patients with primary myelofibrosis have complications associated with the portal venous system as well as splenomegaly and hepatomegaly. Clinically evident hepatic disease usually occurs secondary to thrombotic complications in myelofibrosis but less commonly disease can develop without thrombosis due to extramedullary hematopoiesis in the hepatic sinusoids leading to portal hypertension.

A MYSTERIOUS CAUSE OF CHEST PAIN Zaid Abdel-Rahman[1]; Yaser Alkhatib[2]; Vrushali Dabak[2]. [1]Henry Ford Health System, Detroit, MI; [2]Henry Ford Health system, Detroit, MI. (Control ID #2701635)

LEARNING OBJECTIVE #1: Recognize the clinical features of primary cardiac tumors

LEARNING OBJECTIVE #2: Manage chest pain by ruling out the most serious and fatal etiologies first

CASE: A 42-year-old African American male with a past medical history significant for previously treated non-medullary thyroid carcinoma presented to our hospital with acute onset pleuritic chest pain and dyspnea on exertion. Initial workup revealed a slightly elevated Troponin-I along with a diffuse ST-segment elevation on electrocardiogram. Left sided heart catheterization with coronary angiogram did not show any obstructive lesions. No evidence of pulmonary embolism was seen on computed tomography (CT) angiogram. A transthoracic echocardiogram showed a large right atrial mass, which was further evaluated by a cardiac magnetic resonance imaging (MRI) and found to be involving the right atrial wall and pericardium with evidence of central necrosis on T2 signal. Patient underwent gross total resection of the mass, pathology showed areas of spindle cells and vascular spaces which stained positive for CD31 and CD34 indicating vascular differentiation consistent with angiosarcoma. Staging CT scan of the chest, abdomen and pelvis did not show evidence of distant metastasis. Patient received adjuvant chemotherapy with adriamycin and ifosfamide, post-chemotherapy cardiac MRI showed a possible evidence of persistent disease for which he received external beam radiation therapy (EBRT) to the remnant mass. Patient has been stable since then with no evidence of active disease for 2 years.

IMPACT: Chest pain is a common presenting complaint in many patients, while the etiology is benign in several occasions, the clinical approach would differ for each particular case depending on several factors which should be incorporated to formulate a specific diagnostic approach and subsequent therapy plan. Younger patients with chest pain should be investigated thoroughly after ruling out deadly cardiac, pulmonary or vascular conditions.

DISCUSSION: Primary cardiac tumors are very rare; based upon data from 22 large autopsy series the approximate frequency is 0.02%, corresponding to 200 tumors in 1 million autopsies. Malignant tumors constitute around one quarter of these with the majority being sarcomas. Cardiac angiosarcoma typically affects middle aged males and it usually involves the right atrium with pericardial, caval and tricuspid-valve invasion. Metastases are usually found at time of presentation in up to 89% of cases with lungs being the most common site. Presentation is variable depending on the site of involvement. It can be incidentally discovered or might cause symptoms secondary to embolization, direct invasion of adjacent structures or hemodynamic instability due to obstructing cardiac flow. The mainstay of treatment for cardiac tumors remains surgical resection, however chemotherapy and in some occasions radiation therapy are essential adjuvant modalities to achieve cure.

A NUMBING CASE OF ACQUIRED METHEMOGLOBINEMIA

Hawkins Gay. McGaw Medical Center, Northwestern University, Chicago, IL. (Control ID #2671950)

LEARNING OBJECTIVE #1: Recognize and diagnose acquired methemoglobinemia

LEARNING OBJECTIVE #2: Understand the treatment of acquired methemoglobinemia

CASE: A 55-year-old male presented to the hospital complaining of fevers, dyspnea and a productive cough. On admission examination he was noted to be febrile, tachypnic, and tachycardic, but alert and fully oriented with a normal blood pressure. He had decreased breath sounds in the right lung base, without rales or wheezing, and the rest of his examination was unremarkable. He was initially treated with cefepime and azithromycin for presumed pnuemonia, but shortly after admission develped new onset hypoxia and hypotension with altered mental status. He was transferred to the medical intensive care unit where laboratory analysis revealed a lactic acid of 6.1 mMol/L and an initial arterial blood gas (ABG) returned a pH of 7.40, pCO2 of 25 mmHg, pO2 of 85 mmHg, and measured O2sat of 94%. Given his increasing lactic acidosis, the decision was made to intubate the patient. During intubation, the patient was treated with endobronchial lidocaine as well as etomidate and succinylcholine for rapid sequence intubation. Roughly two hours post-intubation the patient became increasingly hypoxic while on 100% FiO2. A repeat ABG was notably brownish in color and returned a pH of 7.21, pCO2 of 25 mmHg, pO2 of 413 mmHg, and measured O2sat of 49%. Cooximetry was requested given the divergence in pO2 and O2sat, which revealed a methemoglobin level of 53%. IV methylene blue was delivered and subsequent ABGs, at one and two hours post administration, showed methemoglobin levels of 12 and 9%, with return of O2sat to greater than 90 and bright red coloration to the ABG sample. Unfortunately, despite recovery from acute methemoglobinemia, the patient ultimately succumbed to sepsis.

IMPACT: This case highlights the association of methemoglobinemia and topical anesthetics, of which we were previously unaware. These are commonly used agents on the medical wards and all side effects should be considered before administration.

DISCUSSION: Although rare, methemoglobinemia secondary to local lidocaine administration is well documented and described in the medical literature. Treatment of methemoglobinemia includes withdrawal of the offending agent (including removal of any remaining topical applicant), supportive care with 100% O2 therapy and circulatory support, as well as reversal of methemoglobin back to hemoglobin. The former therapy is generally accomplished through the administration of methylene blue which acts as a reducing agent converting ferric iron to ferrous iron. This case highlights the clinical and laboratory features of methemoglobinemia, a well-described, though rare and poorly recognized, side effect of topical lidocaine administration. Early recognition of methemoglobinemia is of primary importance as the condition is rapidly reversible with correct treatment, but can be serious, and even fatal, if left untreated.

A NUTTY CAUSE OF CHRONIC COUGH Juan N. Lessing[1]; Nicholas M. Mark[2]. [1]University of Colorado, Denver, CO; [2]University of Washington, Seattle, WA. (Control ID #2708433)

LEARNING OBJECTIVE #1: Understand common causes of chronic cough and initial steps for diagnosis and treatment.

LEARNING OBJECTIVE #2: Recognize when higher level referral and advanced diagnostics are necessary.

CASE: A 64-year-old man came to clinic with 6 years of cough. History was notable for several bouts of pneumonia and hospital admissions. His cough was occasionally productive though never with hemoptysis. He denied fever, weight loss, dyspnea, orthopnea or heartburn. Trials of acid suppressant, bronchodilator, and inhaled steroid did not improve symptoms. He previously smoked cigars. Vital signs were normal and he appeared well, with few auscultated focal expiratory wheezes. Remainder of exam and all basic labs were normal. Pulmonary function tests showed 20% volume loss. On further questioning, he recalled a specific day in 2009 when his cough began. A CXR and then CT scan revealed collapse of the right middle lobe (RML) with irregularities within the airway leading to it. Bronchoscopy demonstrated inflamed tissue surrounding a foreign body in the RML. The object was removed and determined to be a pistachio shell. Bronchial wall biopsies returned as squamous metaplasia without malignancy. Asking again about the day his cough began, he recalled choking while eating pistachios.

IMPACT: Cough, commonly encountered by general internists and specialists alike, is one of the most common reasons patients present to clinic. Defined as cough lasting longer than 8 weeks, the differential for chronic cough includes hundreds of etiologies, however the majority of cases are explained by 3 most common diagnoses: postnasal drip, asthma and gastroesophageal reflux disease. History often points to a likely culprit. Patients with typical presentations of chronic cough in the absence of "red flag" warning signs (e.g., weight loss or hemoptysis) can be safely followed while trying lifestyle modifications and acid suppressive and antitussive medication. Trial of short-acting beta agonist for obstructive lung disease is also usually appropriate. In the absence of a clear underlying cause, pulmonary function tests and CXR are reasonable first steps. Patients with risk factors for malignancy, those with warning symptoms, lack of symptom improvement, or radiographic abnormality require further work-up including consideration of computerized tomography. If abnormalities are seen on imaging or if work-up is unrevealing, bronchoscopy should be considered.

DISCUSSION: In this case, a man aspirated a pistachio shell that caused chronic airway irritation and inflammation causing over half a decade of chronic cough. Failure to recognize that lack of symptom improvement merits broadened diagnostic consideration led to diagnostic delay and potential for more grave consequences. Squamous metaplasia from chronic irritation is a risk factor for malignant transformation, and merits follow-up. Fortunately for our patient, shell removal led to rapid cough resolution and repeat bronchial biopsy six months later confirmed inflammation resolution.

A PATIENT WITH A BRAIN ABSCESS: WHAT IS TO BE DONE? Mariko Harada[2]; Yurika Iwasawa[2]; Sandra Y. Moody[1]; Eiichiro Sando[2, 3]; Yoko Tomoda[2]; Tetsuya Kobayashi[2]; Ryuichi Sada[2]; Makito Yaegashi[2]. [1]Kameda Medica Center & UCSF/SFVAMC, Kamogawa City, Japan; [2]Kameda Medical Center, Kamogawa, Japan; [3]Graduate School of Biomedical Sciences, Nagasaki University, Nagasaki city, Japan. (Control ID #2701852)

LEARNING OBJECTIVE #1: Find underlying etiologies, including pulmonary arterial-venous malformation (pAVM), in a patient with a brain abscess

LEARNING OBJECTIVE #2: Treat pAVMs with feeder arteries of greater than 3 mm in diameter to prevent cerebral ischemic events and brain abscesses

CASE: A 77-year-old woman with hypertension and hyperlipidemia presented with a two-day history of generalized pain and fever. On the day of admission, she was taken to an outside hospital by ambulance for altered level of consciousness. On physical examination, the patient was moderately altered with a Glasgow Coma Scale of E4V2M5. Other than a temperature of 40.4 °C, her vital signs were stable. She was found to have nuchal rigidity and a swollen warm tender left wrist, which was exacerbated by movement. Her cerebrospinal fluid (CSF) was consistent with bacterial meningitis with a white blood cell count of 295/mm^3 (86% polys, 14% monocytes), a glucose of 0 mg/dL, and total protein 299 mg/dL. The Gram stain of the CSF revealed gram-positive diplococci, suggestive of *Streptococcus pneumoniae*. After administration of ampicillin, ceftriaxone, and vancomycin, she was transferred to our hospital. Ceftriaxone and vancomycin were continued. On the fifth hospital day, despite improvement in her level of consciousness, her left upper extremity weakness persisted. Brain MRI revealed right temporal lobe and right ventricular abscesses. The antibiotics were changed to penicillin G since her blood and CSF cultures grew penicillin-sensitive *S. pneumoniae* (of note, she had received the 23-valent pneumococcal polysaccharide vaccine [PPSV23] the previous year). On the 28th hospital day, a chest computed tomography was performed to evaluate a cough, and a pAVM of the right lower lobe was incidentally found. Because the feeder artery was 6 mm in diameter, she underwent percutaneous embolization with sixteen coils, which successfully obliterated the feeder artery. Subsequently, a six-week course of intravenous antibiotics was completed after confirming regression of the brain abscess. The *S. pneumoniae* was serotype 7C, which is not covered by the PPSV23.

IMPACT: In a patient with a brain abscess of unknown origin, consider right-to-left arteriovenous shunting such as pAVM. Pulmonary AVM embolization may prevent cerebrovascular events and brain abscesses when the feeder artery is greater than 3 mm (Am J Roentgenol 2010;195:837–845).

DISCUSSION: Patients with brain abscesses may have underlying etiologies including pAVM. Finding pAVMs is of paramount importance since treatment could result in prevention of recurrent brain abscess and cerebrovascular accident with percutaneous embolization. Most (70–90%) cases of pAVM are associated with hereditary hemorrhagic telangiectasia (HHT) in western countries. Whereas in Japan, pAVMs are less frequently associated with HHT (8.4%). Thus, actively seeking pAVMs in patients with brain abscesses in the absence of HHT is an important consideration in Japan.

A PRESSING ISSUE WITH PROSTATIC RHABDOMYOSARCOMA Nicholas J. Kiefer[2]; Elise Coulson[1]; Jason Moran[1]. [1]Beth Israel Deaconess Medical Center, Boston, MA; [2]Beth Isreal Deaconess Medical Center, Brookline, MA. (Control ID #2701700)

LEARNING OBJECTIVE #1: Describe the pathophysiology of posterior reversible encephalopathy syndrome (PRES)

LEARNING OBJECTIVE #2: Recognize patients at risk for PRES

CASE: A 25 year old male with a PMH of migraines presented to the ED with a headache. He was found to have mildly elevated BP and a normal head CT, so he was discharged with PCP follow-up. He then re-presented one day later with left arm shaking, visual aura, and whole-body shaking concerning for seizure.

Additionally, he complained of lower abdominal pain and decreased urinary frequency. At that time, his vitals were notable for BP 191/125, and his labs were notable for a creatinine of 10.8. He had an MRI brain that showed multiple foci of cortical and subcortical vasogenic edema involving bilateral occipital lobes as well as right parietal and frontal lobes concerning for PRES. He was admitted to the MICU for further management. There, he was started on a diltiazem drip for BP control, and he had a CT that showed a large pelvic mass originating from the prostate gland and obstructing his ureters. He had bilateral percutaneous nephrostomy tubes placed with improvement of his kidney failure. Biopsy of a lymph node revealed rhabdomyosarcoma. As his BP improved through his course, his PRES symptoms resolved. He was transferred to a hospital near his hometown to initiate chemotherapy for his rare cancer.

IMPACT: This case illustrates that younger patients without a history of hypertension are more at risk for PRES in the right clinical setting. Additionally, despite the name of the syndrome, it need not be solely posterior and it may not even be reversible.

DISCUSSION: There are no formal diagnostic criteria for PRES, but the diagnosis is suggested in a patient with neurologic symptoms (headache, visual symptoms, seizures) and radiographic findings of symmetrical white-matter edema in the posterior cerebral hemispheres (particularly parieto-occipital regions) similar to our patient. Since risk factors include hypertensive disorders, renal disease, and immunosuppressive therapies, the pathogenesis of PRES seems to be related to cerebrovascular autoregulation and endothelial dysfunction. The cerebral arterioles dilate and constrict to maintain constant cerebral blood flow (CBF) through an auto-regulatory range of systemic blood pressures. However, there is an upper limit of systemic pressure at which point the cerebral arterioles can no longer constrict to maintain normal CBF. The elevated pressure in the cerebral circulation thus causes breakdown of the blood–brain-barrier (BBB) and results in hydrostatic edema. This auto-regulatory range is higher in patients with long-standing hypertension, so children and younger patients like the young man in this case are vulnerable to PRES at lower blood pressures. The BBB is also more susceptible to breakdown when there is endothelial dysfunction, such as with vasculitis or with chemotherapy.Thus, this patient will be at increased risk of re-occurrence of PRES during chemotherapy for his malignancy.

A PUZZLE OF A DIFFUSE RASH SOLVED WITH A FINAL PIECE

Andres Barrera; Leslie Cler. Methodist Dallas Medical Center, Dallas, TX. (Control ID #2694641)

LEARNING OBJECTIVE #1: Diagnose a disseminated gonococcal infection in an at risk teen

LEARNING OBJECTIVE #2: Distinguish between the causes of a diffuse macular rash

CASE: An 18 y/o female with no significant past medical, social, or surgical history presented to the emergency department with left wrist and left ankle pain and swelling that began three days before presentation and was progressive to the point that her left ankle and wrist became immobile due to pain. She has also noted the appearance of a palpable erythematous macular rash along her hands, feet, arms, and legs. She denied any fever, chills, night sweats, weight loss, diarrhea, appearance of mouth ulcers, vaginal discharge, dysuria or history of previous joint pain. She reported only one sexual contact with her boyfriend a month prior and claimed to be in a monogamous relationship. She had recurrent episodes of “sore throat” about once every two months last year for which she was treated for with ibuprofen and oral steroids. She was admitted for concerns of reactive arthritis versus possible rheumatic fever and was started on steroid therapy. Rheumatic fever was considered given the presence of one major criteria (polyarthritis), one minor criteria (markedly elevated CRP/ESR) and an elevated streptozyme titer of 600 stz units. An echocardiogram revealed a small posterior pericardial effusion. ANA, Rheumatoid Factor and C3/C4 came back negative. ANCA titer returned slightly positive at 1:20, but PR3 ABS and MPO ABS negative at 0.197 and 0.115 respectfully. Hepatitis and HIV antibody testing was negative. Gonorrhea and Neisseria Amplified DNA on urine returned negative. Synovial studies from the left wrist joint showed a mostly bloody fluid with WBC count of 430 and no crystals. Blood cultures were negative and initial gram stain on the synovial fluid revealed no organisms, so the decision was made to treat the patient for rheumatic fever. Our patient was initiated on penicillin V 500 mg BID, aspirin 2000 mg BID, and protonix. She was set to complete a treatment for rheumatic fever when, on the day of discharge, the synovial fluid culture grew Neisseria gonorrhoeae. Discharge was held and a diagnosis of disseminated gonococcal infection was made. Therapy was switched to IV ceftriaxone for two weeks with doxycycline overlapping for one week.

IMPACT: The CDC estimates that young people aged 15–24 years aquire half of all new STDs. Given this, the importance in identifying disseminated gonococcal infections especially in the young population cannot be understated.

DISCUSSION: This case shows the importance in casting a wide diagnostic net when faced with a puzzling rash and arthropathy. Although rheumatic fever was a possibility, it was ultimately disproven with the growth of gonorrhea in the synovial fluid. The importance of following up final culture results before finalizing a treatment course was also illustrated.

A RAPIDLY GROWING ORAL LESION

Eric Wang; Elena Lebudska. University of Coloardo, Denver, CO. (Control ID #2701731)

LEARNING OBJECTIVE #1: Develop a differential of the most common oral lesions

LEARNING OBJECTIVE #2: Recognize features of Diffuse Large B Cell Lymphoma (DLBCL)

CASE: A 55-year-old African American male with medical history of gout and chronic sinusitis presented to clinic with a painful oral lesion that had been growing rapidly over the preceding week. He denied fevers/chills but did report difficulty with swallowing solid foods and approximately 5–10 pound weight loss over the previous month. He was formerly a heavy drinker and denied any history of tobacco product use. He used no other illicit drugs and had no family history of oral cancers. He also denied any history of HSV or other oral infections, and had no recent sexual contacts. On exam, he was noted to have a 2 × 2 cm ulcerated lesion on his right upper palate with right sided non-tender cervical adenopathy. Due to the rapid progression of this lesion, an infectious cause was highest on the differential. He was provided oral lidocaine for symptomatic control and a swab was sent for viral HSV PCR, and serum HIV/Hep C were sent and all were found to be negative. Over the following week his oral lesion continued to grow with worsening pain and increasing dyspnea, particularly when lying flat. He went to the emergency department where CT head and neck confirmed right tonsillar mass with central area of necrosis and cervical lymphadenopathy. Biopsy of the lesion revealed DLBCL.

IMPACT: This case represents the need to develop a comprehensive approach to oral lesions, a common complaint with an expansive differential. Further,

this case demonstrates an atypical presentation of the most common Non-Hodgkin Lymphoma.

DISCUSSION: Oral lesions are a common complaint prompting patients to seek medical advice and care. There is an expansive differential for oral lesions encompassing three main categories: infectious, malignant and autoimmune. The most common oral lesions are infectious and include more common pathogens like candidiasis and herpes simplex virus. These are often differentiable by symptoms, appearance, and location. Of the malignant oral lesions, the most common oral cancer is squamous cell carcinoma making up greater than 80% of oral cancers. In this group risk factors include: tobacco use, alcohol consumption, Human papilloma virus (HPV), infection, and Epstein-Barr Virus (EBV). Autoimmune processes such as lupus and bullous pemphigoid can also manifest orally and are often associated with a classic set of systemic symptoms. DLBCL is the most common lymphoma and the most common of the Non-Hodgkin lymphomas. DLBCL will typically present as a rapidly developing mass and will frequently be associated with B symptoms. While the most typical presentation is intranodal, extranodal involvement Is common and as this oral mass demonstrates can occur in most tissue types. This case demonstrates an uncommon presentation of the most common lymphoma and establishes the important historical features and symptoms to help discern a diagnostic approach to oral lesions.

A RARE CASE OF AN ISOLATED DISTAL METASTATIC EXTRA-HEPATIC CHOLANGIOCARCINOMA Bryan Doherty[1]; Rebecca Cody[2]; Vinod E. Nambudiri[1]; William C. Palmer[3]. [1]Grand Strand Medical Center, Myrtle Beach, SC; [2]Coastal Cancer Center, Myrtle Beach, SC; [3]Mayo Clinic, Jacksonville, FL. (Control ID #2694557)

LEARNING OBJECTIVE #1: Describe a case of isolated metastatic extra-hepatic cholangiocarcinoma

LEARNING OBJECTIVE #2: Discuss the differential diagnoses of abdominal wall masses

CASE: A 77-year-old Caucasian female was referred to her gastroenterologist for colonoscopy following mild episodes of hematochezia for several months. Her medical history included an incidental extrahepatic cholangiocarcinoma (CCA) diagnosed 7 years prior on pathological evaluation of her gallbladder following open cholecystectomy. At that time, she had undergone partial liver resection and resection of lymph nodes without further evidence of disease. She had been followed with frequent visits and laboratory studies including CEA levels, all of which had been stable. On colonoscopic workup of her hematochezia, a large rectal mass was found. Biopsies were consistent with a benign villous adenoma. Upon follow-up, she also endorsed a new left lower quadrant abdominal mass. The mass was approximately 5 cm, tender, and lacked signs of skin involvement. Given the clinical findings, she underwent a CT scan, which suggested an abdominal wall mass arising near the umbilicus. The patient underwent exploratory laparotomy with transrectal excision of the rectal villous adenoma and separate excision of the abdominal wall mass, which was noted on laparoscopy to be invading the peritoneum and incorporated into abdominal adhesions. Frozen sections of the abdominal wall mass obtained during surgery revealed adenocarcinoma. Further pathological evaluation with H&E stained slides showed a well-differentiated adenocarcinoma consistent with her prior extrahepatic CCA. The rectal villous adenoma was benign. Additional workup revealed no further sites of metastatic disease.

IMPACT: Metastatic CCA to the abdominal wall is uncommon; most occurrences reported involve cutaneous lesions following percutaneous hepatobiliary drainage. This case adds to the literature an instance of metastatic disease at the site of adhesions after cholecystectomy.

DISCUSSION: CCA is a rare biliary adenocarcinoma. Extrahepatic CCA comprises approximately 75% of all cases with the vast majority located in the peri-portal region or in the gall bladder, as in our patient. Distal CCA, a subtype of extrahepatic CCA, tend to have distant metastases occur late in the course of the disease and are most often found in the liver, lungs, and peritoneum. Metastatic disease to the abdominal wall is rare and has been reported following percutaneous hepatobiliary drainage. During the workup for her abdominal wall mass, differential diagnoses included a bowel hernia, an abdominal wall hematoma, or a benign tumor, all of which are more common. The 5-year overall survival reported for stages 3 and 4 CCA are 10 and 0%, respectively. CEA is found to be elevated in 85% of patients with cholangiocarcinoma; levels were normal in our patient. She continued to follow with oncology and has no further recurrence of her metastatic CCA 11 years after resection of her abdominal wall mass.

A RARE CASE OF COMBINED HYPOCOMPLEMENTIC URTICARIAL VASCULITIS SYNDROME (HUVS) AND SLE. Azka Ali; Ali Ataya. University of Florida, Gainesville, FL. (Control ID #2705887)

LEARNING OBJECTIVE #1: Recognize the clinical features of HUVS

LEARNING OBJECTIVE #2: Recognize that combined HUVS and SLE is an underdiagnosed condition because of its rare nature, and its pathophysiology is not completely understood

CASE: A 25-year-old African American female presented complaining of a worsening rash in her back, arms, shoulder, and thighs, fatigue, and arthritis in feet, wrists and knees. Physical exam revealed faint, erythematous, hyperpigmented plaques on right upper arm and back. Musculoskeletal exam showed normal range of motion in all joints without synovitis. Her past medical history was also relevant for episodes of neck swelling on multiple occasions of unclear etiology, SLE, gastroesophageal reflux disease, and anxiety. Her surgical history included pericardial window and tooth extraction. Family history included hypertension in mother. Her medications were biotin, folic acid, hydroxycholoroquine, levothyroxine, and mycophenolate. Complements C3 (52), C4 (8), and C1q (102) were checked and were low. She underwent a punch biopsy of right upper back that showed urticarial vasculitis with lymphocytic infiltration confirming the diagnosis of hypocomplementemic urticarial vasculitic syndrome.

IMPACT: This case introduced us to an extremely rare syndrome that I was previously unaware of. HUVS is a rare disease that may mimic other autoimmune conditions such as SLE, there is even a smaller subset of patients that have combined SLE and HUVS syndrome. These patients meet American College of Rheumatology criteria as well as criteria for HUVS. These patients can have extensive renal and pulmonary involvement and need routine monitoring of their laboratory and pulmonary functions. This case emphasizes the significance of exploring an alternative diagnosis when unexpected findings such as urticarial vasculitis and history of angioedema are present.

DISCUSSION: Urticarial vasculitis (UV) can be divided into three forms: normocomplementemic vasculitis which is a self limited hypertensivity vasculitis, HUV which is not associated with a systemic illness and finally, HUVS which is a severe form of UV associated with a systemic illness. Some experts

consider HUVS as an independent disease from SLE while some consider it related to SLE. The diagnostic criteria include two major criteria (which is recurrent urticaria in more than 6 months and hypocomplementemia) and at least two minor criteria (arthralgias or arthritis, glomerulonephritis, ocular inflammation, abdominal pain, positive skin biopsy, positive C1q-test with decreased C1q level). Our patient met both major and at least two minor crtieria (arthritis, positive skin biopsy, and low C1q) (1). There is no specific treatment for HUVS. In our patient, since patient was on SLE therapy, she was treated briefly with steroids and had dapsone added to her regimen. 1. Buck A, Christensen J, McCarty M. Hypocomplementemic Urticarial Vasculitis Syndrome: A Case Report and Literature Review. *The Journal of Clinical and Aesthetic Dermatology.* 2012;5(1):36–46.

A RARE CASE OF GLOMERULONEPHRITIS Abiramy Maheswaran. University of Massachusetts School of Medicine, Worcester, MA. (Control ID #2670705)

LEARNING OBJECTIVE #1: Recognize the presentation of anti-glomerular basement membrane syndrome

LEARNING OBJECTIVE #2: Prognosticate patients with anti-glomerular basement membrane syndrome

CASE: A 62-year-old woman with hemochromatosis presented with one month of rashes, cyclic fevers, dyspnea, and edema. Imaging showed bilateral pleural effusions and ascites. Lab work revealed a creatinine of 1.77 mg/dL (baseline normal) and a leukocytosis of 22.3/mm^3. She became increasingly oliguric and developed uremia. Despite hydration, her creatinine worsened to > 6 mg/dL. Hemodialysis improved her edema and dyspnea. Anti-glomerular basement membrane (GBM) IgG antibody titers were > 800.0 units. A tunneled catheter was placed for urgent plasmapheresis. High dose methylprednisolone and cyclophosphamide were initiated. Renal biopsy revealed 100% crescents and 60–70% fibrotic changes. Despite achieving an anti-GBM titer of 22.8 units, she failed steroid taper and relapsed with a repeat anti-GBM titer of > 800.0 units. She was discharged on ongoing plasmapheresis, dialysis, methylprednisolone, and cyclophosphamide.

IMPACT: From symptom onset, one month lapsed before the patient was diagnosed. With the mindset of "common things are common", rare syndromes tend to be overlooked. Without therapy, patients with anti-GBM syndrome have survival and dialysis-free rates of 4 and 2% respectively at 12 months. A delay in diagnosis can be devastating. Early detection of rare entities is crucial to improving prognosis.

DISCUSSION: In anti-GBM syndrome, autoantibodies attack type IV collagen in the GBM of the kidneys. Patients present with systemic symptoms and signs of renal failure. Dyspnea is due to volume overload and improves with dialysis as in our patient. In Goodpasture syndrome, anti-GBM antibodies attack type IV collagen in the kidneys and the lungs. Presenting features include renal failure, hemoptysis, alveolar infiltrates due to hemorrhage, and dyspnea due to direct lung involvement. Anti-GBM syndrome presents in the fifth and sixth decades while Goodpasture syndrome affects younger males. Diagnosis is based on positive anti-GBM antibodies and a renal biopsy, which shows glomerular crescents and IgG deposition along capillaries. Patients with 100% crescents are unlikely to be weaned off dialysis. Those with < 30% crescents have better prognoses. Presenting creatinine < 5.7 mg/dL corresponds with better survival. Dialysis requirement within 72 hours, oliguria, or anuria correspond with worse survivals[1]. Empiric therapy includes plasmapheresis, steroids, and cyclophosphamide. Patients with poor prognostic factors are less likely to respond to therapy. Despite an initial creatinine of 1.77 mg/dL and not needing dialysis within 72 h, our patient's development of oliguria and 100% crescents on biopsy heralded her progression to dialysis-dependent end stage anti-GBM syndrome. 1. Levy JB et al. Long-Term Outcome of Anti-GBM Antibody Disease Treated with Plasma Exchange and Immunosuppression. Ann Intern Med. 2001;134:1033–1042.

A RARE CASE OF LYMPHOMA Binyue Chang. Providence Hospital, Columbia, SC. (Control ID #2672683)

LEARNING OBJECTIVE #1: Recognize an atypical presentation of lymphoma

CASE: A 67 year old Caucasian female presented to emergency department for increasing weakness and fatigue. She was healthy until a few months ago, during which she had cholecystitis and received cholecystectomy. After that, she had failure to thrive with chronic diarrhea and was diagnosed with clostridium difficile and celiac disease. She was on vancomycin and gluten-free diet and discharged to nursing home for rehabilitation. However, it was compromised by increasing weakness and fatigue and she was sent back to hospital. 2 days after she was hospitalized, she was found to have altered mental status with generalized abdominal tenderness. CT of abdomen and pelvis showed intra-abdominal free air and free fluid concerning for bowel perforation. Dilatation of the proximal small bowel with relative decompression of the distal small bowel concerning for obstruction. Surgery was consulted and patient had an emergent laparoscopy followed by laparotomy and partial resection of Jejunum. Post operation, patient had severe sepsis with WBC of 42000 and venous lactate of 12.4. She required maximum pressure support with norepinephrine, phenylephrine, vasopressin and epinephrine. Despite aggressive treatment, patient passed away 2 days later. Biopsy of resected bowel was positive for Enteropathy associated T cell lymphoma (EATL).

IMPACT: Enteropathy associated T cell lymphoma (EATL) is a rare tumor that accounts for less than 5 percent of all gastrointestinal lymphomas and less than 1 percent of all non-Hodgkin lymphomas. Patients typically presented with abdominal pain. Often, it is associated with intestinal obstruction, perforation, or bleeding. Celiac disease or deterioration of celiac disease despite compliance with a gluten-free diet is a less common presentation.

DISCUSSION: Enteropathy associated T cell lymphoma (EATL) is a T cell lymphoma that arises in the gastrointestinal tract and is highly associated with celiac disease. It is an aggressive lymphoma with a poor prognosis and is usually diagnosed by the pathologic evaluation of resected small bowel. Patients with EATL are commonly malnourished at the time of diagnosis and have a poor performance status. Treatment consists of combination chemotherapy used for other aggressive T cell lymphomas. Patients who are candidates for autologous hematopoietic cell transplantation (HCT) may benefit from HCT in first remission

A RARE CAUSE OF SPLENOMEGALY IN A PATIENT WITH AIDS. Faraz Fiazuddin; Ritik Tiwari; Kanapa Kornsawad. University of Texas Health Science Center - San Antonio, San Antonio, TX. (Control ID #2687951)

LEARNING OBJECTIVE #1: To identify IRIS as a possible complication of iniitiating ART.

LEARNING OBJECTIVE #2: To identify manifestations of visceral KS in the setting of IRIS.

CASE: A 20 year-old man with history of untreated HIV presented with one month of left lower quadrant abdominal pain that radiated to the left groin. Review of systems was notable for oral intolerance, nausea, vomiting, and weight loss. His abdomen was diffusely tender and he also had multiple areas of tenderness bilaterally along the inguinal region. Labs showed a CD4+ count of 40 cells/mm3 with viral load of 222,000 copies/mL. CT abdomen revealed mesenteric and bilateral inguinal lymphadenopathy with no splenomegaly. An inguinal lymph node biopsy was obtained which revealed Kaposi sarcoma (KS). Meanwhile, he was started on antiretroviral therapy (ART) and discharged. The patient presented two weeks later with worsening abdominal pain and a palpable spleen. His viral load had decreased to 16,300 copies/mL with a stable CD4+ count. CT abdomen demonstrated an increase in spleen size from 11 cm to 17 cm. A spleen biopsy was performed which also revealed KS. The patient was now diagnosed with disseminated KS, prompting initiation of chemotherapy. This progression of KS was attributed to immune reconstitution inflammatory syndrome (IRIS) given the rapid reduction in viral load and recent initiation of ART.

IMPACT: Our case highlights a paradox that may be seen by hospitalists who admit AIDS patients recently started on ART. They can be deceived by lab values, such as HIV viral load and CD4+ count, which rapidly improve while the patient clinically worsens due to the deadly sequelae of IRIS.

DISCUSSION: Progressive KS is a potential sequela of IRIS that is associated with recent ART. The risk and severity of IRIS depends upon the extent of CD4+ T cell immune suppression prior to ART therapy and the degree of viral suppression or immune recovery once ART is initiated. In a retrospective case review of 196 patients, KS was one of three most common opportunistic infections in HIV positive patients. Incidence of IRIS was highest in patients with KS (29%), and patients with IRIS-associated visceral KS had 100% morbidity and mortality.

A RARE GIST TUMOR PRESENTING AS A BENIGN MASS ON ENDOSCOPY Marisa C. Terino; Eileen Plotkin. University of Connecticut Health Center, Farmington, CT. (Control ID #2700884)

LEARNING OBJECTIVE #1: To identify rare causes of gastrointestinal bleeding.

CASE: A 35 year-old female presented with nausea, vomiting and epigastric pain over 4 months. She denied any change in stool, weight loss or NSAID use. Medical history was significant for iron deficiency anemia. Physical exam demonstrated epigastric tenderness to palpation. A rectal exam was significant for brown, heme-positive stool. Laboratory results were consistent with an iron deficiency anemia; hemoglobin was 5.0 gm/dl. Chemistries and liver function tests were normal. An EGD was performed and identified a large fungating, submucosal mass with ulcerations within the gastric fundus and body. Biopsies of the lesions were without malignancy yet positive for H. Pylori infection. A CT scan showed multiple mass lesions present within the stomach, several with calcific densities. Extraluminal mesenteric extension was also present with adjacent adenopathy. No metastatic lesions were appreciated. A EUS visualized the mass originating from the intramural wall along the greater curvature of the stomach. It measured at least 7.5 cm in thickness with well-defined borders. An FNA demonstrated a small blue cell neoplasm. There were aggregates of small epitheloid cells without mitotic figures and both CD34 and CD117 were positive. One mutation in exon 18 was appreciated, resulting in an up regulation of tyrosine protein kinase (TPK) activity. Additionally, succinate dehydrogenase (SDH) was deficient. These findings were consistent with a rare variant of a gastrointestinal stromal tumor (GIST). A large exophytic and intraluminal mass was removed surgically. Grossly, the maximum tumor dimension was 13.5 cm and histologically the surgical specimens were consistent with that of the FNA. Adjuvant imatinib therapy was begun and the patient has been without recurrence after nearly one year.

IMPACT: This case posed a diagnostic challenge, as initial workup did not reveal significant pathology given negative biopsies. Additionally, it posed a treatment challenge given its rare oncogenic mechanism.

DISCUSSION: GISTs are the most common mesenchymal neoplasm of the alimentary tract, commonly seen in the stomach of males and females between 50–70 years of age and represent less than 1% of gastrointestinal malignancies. They arise from the interstitial cells of Cajal, which are the functional intermediates between smooth muscles cells and neural tissue. Typically, GISTs are driven by TPK receptor activating mutations, although approximately 10% of tumors will lack this finding (wild type). These wild type tumors are deficient in SDH, identified as the tumors' oncogenic mechanism. Although uncommon, it's typically seen in pediatric patients and it may pose a treatment dilemma as tumors do not respond to TPK inhibiting therapy unless an additional TPK activating mutation is present. Treatment strategies at this time are puzzling given the complexity which arrise when SDH is deficient, however surgical resection remains the mainstay of initial therapy.

A RARE NEUROLOGICAL PRESENTATION OF A HEMATOLOGICAL CONDITION Arundati Rao; Chandana Shekar. University of Connecticut School of Medicine, Farmington, CT. (Control ID #2705617)

LEARNING OBJECTIVE #1: Identification of Chorea as a presenting symptom of Polycythemia Vera

CASE: A 78 year old African American male presented to the hospital for restlessness and sudden onset involuntary movements of extremities two days prior to presentation. Review of systems was positive for bilateral conjunctival redness, two episodes of headache and intermittent generalized pruritus; all of which succeeded chorea. Physical examination revealed bilateral conjunctival injection, involuntary movements of all extremities and rashes all over the body secondary to scratching. Remaining examination including a complete neurological exam was unremarkable. Initial blood work revealed Hemoglobin 22.2 gm/dL, Hematocrit 77%, MCV 72 fL, Red cell Distribution Width 21%, Lactate Dehydrogenase 927 U/L, Hemoglobin A 97.2%, Hemoglobin A2 2.8%, Uric acid 9.4 mg/dL. JAK2 V617F mutated DNA was detected and measured at 11% of total JAK2 DNA. Erythropoietin level was 1.0mIU ml. Chemistries were significant for acute kidney injury with a creatinine of 1.5 mg/dL. Chest X ray showed cardiomegaly with tortuous thoracic aorta. Computed Tomography of the head showed congested cerebral vessels. Computed Tomography of the abdomen was negative for hepatomegaly, splenomegaly or tumors. He was diagnosed with polycythemia vera and evaluated by the hematology team. He underwent daily phlebotomy therapy with target hematocrit ≤45 and was subsequently started on hydroxyurea. He was evaluated by neurology and had no metabolic or anatomical cause for the chorea. Magnetic Resonance Imaging of the Brain did not show basal ganglia infarcts. Choreiform movements resolved with phlebotomy. He follows with hematology and has not had choreiform movements or needed phlebotomy ever since.

IMPACT: Polycythemia vera is a rare condition with prevalence of 44–57 per 100,000 in the USA. A thorough history to include subtle presentations can

guide diagnosis. This case demonstrates the importance of a wide differential to avoid missing a diagnosis. Literature suggests that lack of prompt treatment of chorea could lead to permanent neurological damage. Early recognition and treatment is critical to prevent significant morbidity and mortality. Given the rarity of polycythemic chorea, our case will be a valuable addition to literature.
DISCUSSION: Polycythemia vera is a myeloproliferative disorder of increased red blood cell mass. Neurological features include headache, blurred vision, paresthesia and slowed mentation. Chorea is a rare (0.5–5%) complication of polycythemia and when occurs, is common in females above 50 years of age. Pathophysiology of polycythemic chorea is unclear and has been suggested to be due to sluggish blood flow particularly around the basal ganglia, as an inverse relationship exists between packed cell volume and cerebral blood flow. It has been suggested that there is a reversible alteration in the corticobasal ganglia metabolism and disturbed dopaminergic function. Treating the underlying polycythemia vera will eventually resolve the chorea.

A RARE PRESENTATION OF ACUTE MYELOID LEUKEMIA PRESENTING WITH RAPIDLY PROGRESSIVE LEUKEMIC ASCITES
Meytal Shtayer[1]; Devi Sampat[1]; Yuji Yamada[1]; Ilan Shapira[2]. [1]Mount Sinai Beth Israel, New York, NY; [2]The Beth Israel Medical Center, New York, NY. (Control ID #2706429)

LEARNING OBJECTIVE #1: Recognizing granulocytic sarcoma and leukemic ascites as a feature of acute myeloid leukemia
CASE: A 46 year-old healthy man presented to an urgent care center with 4 weeks of abdominal distension, epigastric pain and a 10lbs weight loss. CT of the abdomen and pelvis showed a soft tissue mass at the root of the mesentery, thought to be a granulocytic sarcoma, with a large amount of ascites, thickening of the omentum, and enlarged retroperitoneal nodes. The patient was sent to the hospital for further work up which was significant for a white blood cell count of 26,300 with 20% myeloblasts and LDH level of 4127u/L. Paracentesis revealed predominance of myeloblasts in the ascitic fluid. Bone marrow biopsy showed hypercellular marrow with nearly complete replacement by myeloblasts, confirming the diagnosis of acute myeloid leukemia (AML) with cytogenetics significant for inversion 16 and trisomy 22. The patient was started on induction chemotherapy with Cytarabine for 7 days and Idarubicin daily for 3 days. Bone marrow biopsy at day 16 showed no residual leukemia. At day 33 the biopsy showed complete remission with normal male karyotype (46,XY). He then completed 4 cycles of consolidation chemotherapy with high-dose Cytarabine and has remained in complete cytogenetic and molecular remission with no evidence of disease since then.
IMPACT: In many cases with findings of bloating, ascites and a mass on imaging studies a diagnosis of solid tumor malignancy is favorable. It is important to obtain ascitic fluid sample to differentiate between the different possible causes. In our case the finding of myeloblasts in the ascetic fluid confirmed the diagnosis of AML.
DISCUSSION: This case highlights two rare manifestations of AML, granulocytic sarcoma (GS) and massive leukemic ascites. GS is usually present in 2–8% of patients with AML. It is associated with specific cytogenetic abnormalities, such as inversion 16, which is the most recurrent cytogenetic abnormality in AML and trisomy 22, which is the most common secondary chromosomal abnormality in patients with inversion 16. Together both cytogenetic abnormalities are favorable prognostic factors for relapse free survival in patients with AML and these patients are generally treated with chemotherapy alone, without allogeneic stem cell transplantation. Massive leukemic ascites, on the other hand, are very rare to find in patients with AML and their prognostic significance is not well understood. This case of AML with leukemic ascites and GS associated with 16 and trisomy 22 is particularly unusual and only one other case has been reported to our knowledge. The World Health Organization classification divides AML into distinct disease entities based on the underlying morphology, cytogenetic, immunophenotype and clinical data. While inversion 16 and trisomy 22 are considered favorable prognostic factors more data is needed to assess the prognostic significance of leukemic ascites and whether it should alter treatment recommendations.

A ROCK AND A HARD PLACE: CNS LYMPHOMA WITH ACTIVE TUBERCULOSIS
Kristopher R. Koch[1]; Darrell Nettlow[2]; Anthony Hartzler[1]. [1]University of Texas Health Science Center, San Antonio, TX; [2]San Antonio Military Medical Center, San Antonio, TX. (Control ID #2707478)

LEARNING OBJECTIVE #1: Manage CNS lymphoma with active tuberculosis
CASE: A 66 year old male with primary CNS large B-cell lymphoma, hepatitis C, presented from his rehabilitation center for 2 day history of increased left lower extremity swelling and erythema. Physical exam was notable for a left lower cellulitis and left sided paraplegia. Labs were significant for Wct 17.55, AST 72, ALT 132, Tbili 1.0, ALP 127 and negative for HIV. He was started on Keflex for a 7-day treatment. During early stage of his inpatient admission for cellulitis, he was found to have CT findings concerning for tuberculosis (TB). Sputum had 4+ acid-fast bacilli staining (AFB) and was initiated on rifampin, isoniazid, pyrazinamide, ethambutol (RIPE). Upon initiation of RIPE therapy, headaches increased in intensity, were unresponsive to pain medications. Dexamethasone dosing was increased. A head CT demonstrated stable size of the tumor with increased surrounding edema. He was determined not to be a candidate for radiation treatment due active tuberculosis and would receive radiation when his AFBs were negative. He was transitioned to prednisone 120 mg daily and began a steroid taper to aid in TB clearance, eventually decreasing to 60 mg daily. Headaches and left muscle sided muscle spasms worsened with titration, despite supportive treatment. AFBS were 4+ positive after 3 weeks of RIPE therapy. Headaches worsened with loss of vision and repeat imaging demonstrated worsening intracranial CNS lymphoma with midline shift. High dose steroids were reinitiated. LFTs continue to worsen and peaked with AST 206, ALT 147 and Tbili 8.5 and RIPE therapy was discontinued after one month. Social work assisted in placing patient for radiation of his CNS lymphoma. Patient was unable to go to the regional cancer center, due to no institutional policies in place for patients with TB and staff not fit-tested for N95 masks. Ultimately, a national cancer center approved radiation therapy for the patient's CNS Lymphoma and he was transferred for treatment.
IMPACT: Radiation therapy should be offered early in patients with tuberculosis and CNS lymphoma to improve tumor burden and decrease need for steroids. Institutional policies are needed for addressing tuberculosis in cancer patients requiring radiation therapy.
DISCUSSION: We report the difficulty of managing a patient with primary CNS large B-cell lymphoma, tuberculosis and hepatitis C. Rifampin induces CYP450 resulting in increased metabolism of prednisone, resulting in higher doses of steroids needed to reduce vasogenic edema. Steroids can lead to immunosuppression and decrease the tissue inflammatory effect, leading to decreased tuberculosis clearance and a prolonged course of active tuberculosis. Isoniazid, rifampicin and pyrazinamide are hepatic toxic and may lead to

worsening liver function, further complicating care. In patients with B-cell CNS lymphoma with active tuberculosis, radiation should be available to decrease steroid use and improve tuberculosis clearance.

A SECOND LOOK: THE UTILITY OF ABDOMINAL IMAGING AS SURVEILLANCE AFTER PANCREATIC CANCER RESECTION

Jeremiah J. Johnson. Penn State College of Medicine, Hummelstown, PA. (Control ID #2705627)

LEARNING OBJECTIVE #1: Recognize the limitations in current guidelines for pancreatic cancer screening post-surgical resection and the need for additional research.

CASE: A 76 year old male with a history of pancreatic cancer status post resection 2 years ago presented with a fever of 38 °C for 3 days. Further questioning revealed 2 days of mild stomach pain and a recent loss in appetite. On admission he had a temperature of 37.3 °C, a heart rate of 101, a blood pressure of 103/51, and a respiratory rate of 30. He had rales in both lower lung fields and pain on suprapubic palpation. Initial laboratory results included a WBC count of 14.9 K/mm^3 (81.1 neutrophils and 11.3% lymphocytes) and a glucose of 224 mg/dL. Due to his previous history of pancreatic cancer, a CA 19–9 was ordered and found to be elevated at 762.1 units/mL so an unenhanced CT of the abdomen was ordered. The CT showed increased pancreatic calcifications consistent with recurrent local pancreatic cancer. These findings were new compared to his surveillance serum CA 19–9 level 6 months ago and his abdominal CT 40 days ago which showed no signs of recurrence. It was determined that the patient was not a candidate for surgery and so, after a discussion of his medical options, he elected to pursue home hospice care where he died 13 days later.

IMPACT: Only 15–20% of those diagnosed with pancreatic cancer are candidates for a potentially curative surgical resection. In those cases, it is recommended by the National Comprehensive Cancer Network (NCCN) that CA 19–9 levels and CT scanning be done every 3–6 months to monitor for reoccurrence. This patient adhered to the accepted guidelines for pancreatic cancer screening but, despite this adherence, his clinical trajectory was not impacted.

DISCUSSION: In an era where good stewardship of healthcare resources is becoming increasingly essential, the question of whether or not routine scans for pancreatic cancer reoccurrence post-resection has an impact on survival is important. The risk for recurrence post-resection is 66-92 and the current recommendations by the NCCN for surveillance are based on the opinions of experts. In a study involving 2,217 patients who had undergone a surgical resection for pancreatic cancer, Witkowski et al. found that amongst the 10% of patients with superior survival, no substantial benefit was found for those who received regular CT scans compared to those that did not. Examining the cost-effectiveness of post-operative surveillance, Tzeng et al. found that beyond CA19-9 testing and clinical evaluation, more frequent CT use did not confer a significant survival benefit but did increase cost. This case demonstrates the potential limitations of imaging after pancreatic cancer resection and the need for additional research.

A SHEEPISH EXPLANATION FOR A LUNG MASS: A CASE OF PULMONARY ECHINOCOCCUS

Shiyun Chua; Paul Long. Boston Medical Center, Boston, MA. (Control ID #2703840)

LEARNING OBJECTIVE #1: Recognize pulmonary echinococcus as a cause of recurrent hemoptysis in an immigrant patient

LEARNING OBJECTIVE #2: Understand workup and management options for Echinococcosis

CASE: A 70-year-old male, former smoker, presented from Morocco with 3 months of daily small-volume hemoptysis associated with fever and chills. He had undergone prior workup, including a CT thorax showing a right lung mass, negative TB but bronchoscopy was unsuccesful. As symptoms persisted despite a long course of oral antibiotics, he came to the US for further care. Of note, he lived in rural Morocco and was a farmer of sheep. Exam was notable for a well-appearing male with scattered wheezing. Basic labs, including Hgb and WCC, were unremarkable. CT thorax showed a large right middle lobe (RML) rounded opacity with cavitation and associated RML collapse. He was admitted under airborne isolation. Subsequent workup including AFB, aspergillus, β-d-glucan and galactomannan was negative. Echinococcus and Filiaria serologies were sent. Hospital course was complicated by large-volume hemoptysis, for which he underwent IR-guided embolization of bronchial artery. After 5 days, Echinococcus IgG resulted and was positive. Abdominal ultrasound ruled out hepatic cysts. He was started on Albendazole prior to RML lobectomy. Although confirmatory Western blot was negative for Echinococcal IgG, pathology confirmed diagnosis. He remained well after 4 weeks of post-op Albendazole.

IMPACT: This case reminded me to consider all aspects of the patient's history in generating his illness script, maintaining a high level of suspicion for uncommon diagnoses like Echinococcus in a patient from an endemic country.

DISCUSSION: This case illustrates the importance of maintaining a broad differential, extending beyond pulmonary tuberculosis and malignancy, for patients presenting with recurrent hemoptysis from areas endemic for less common infections. For this patient, proximity to sheep and prior negative work-up in Morocco raised concerns for pulmonary echinococcus. Echinococcosis, caused by tapeworm E.granulosus or E.multilocularis, occurs where sheep live due to its life cycle. While liver and lung cysts are typical, the infection is most commonly asymptomatic, with patients being infected in childhood with latent disease for decades. Our patient displayed typical features of pulmonary Echinococcus with a cavitary lung cyst. Serologies can be useful both for diagnosis and follow-up. Studies have shown IgG ELISA to be most sensitive (84–94%) and specific (99%) as screening, though negative tests do not rule out pulmonary cysts (65% sensitive) which tend to elicit an antibody response less frequently than liver cysts (90% sensitive). After liver cysts were ruled out, our patient was treated with Albendazole as an optimizing measure prior to cyst resection. Current guidelines recommend resection as definitive treatment for pulmonary cysts, though a case report from South Africa showed complete resolution of bilateral cysts with medical treatment alone.

A SIMPLE URINARY TRACT INFECTION BUT WHAT LIES BENEATH?

Robert Chao; Denis Yusupov; Zohirul Islam. New York Presbyterian Brooklyn Methodist Hospital, New York, NY. (Control ID #2706168)

LEARNING OBJECTIVE #1: Recognize a ruptured hepatic cyst as a differential diagnosis in patients with acute anemia and abdominal pain

LEARNING OBJECTIVE #2: Manage hepatic cyst rupture

CASE: A 87-year-old female with a history of dementia and hyperthyroidism presented with lower abdominal pain, altered mental status and decreased appetite for two days. On physical examination, she was afebrile, normotensive, but had suprapubic tenderness on palpation and decreased skin turgor. Laboratory results revealed hemoglobin of 9.4 g/dL (baseline 11.9 g/dL two

months prior), mildly elevated transaminases and no leukocytosis. Urinalysis showed white blood cells and moderate leukocyte esterase. She was started on IV antibiotics for a presumed urinary tract infection. During her hospital course, her abdominal pain worsened and she began to have abdominal guarding and rebound tenderness on examination. Her hemoglobin continued to decrease to 6.9 g/dL. Hemolysis along with gastrointestinal and genitourinary sources of blood loss were ruled out. An intra-abdominal hemorrhage was suspected and a computed tomography of the abdomen revealed multiple simple cysts within the liver, most notably a 10 cm × 11 cm × 11 cm hematoma within a cyst along with ascites consistent with hemorrhage. No acute surgical interventions were necessary and the patient was managed conservatively for a spontaneous ruptured hepatic cyst with blood transfusions and close monitoring as she remained hemodynamically stable.

IMPACT: This case adds to the medical literature because hepatic cyst rupture is not only rare but is easily misdiagnosed and difficult to manage. This is in part due to the sparsity of literature on the subject but also due to its vague and non-specific signs and symptoms.

DISCUSSION: Congenital hepatic cysts have a prevalence of 2–5%, and are dilated remnants of aberrant intrahepatic bile ducts formed during embryogenesis. Other types of cysts include parasitic or neoplastic. Complications include compression, intracystic hemorrhage, infection, and rarely, rupture with very few case reports existing around the world. Symptoms of cystic rupture may mimic acute abdomen and are attributable to blood loss and the space occupying nature of these lesions. Patients typically complain of abdominal pain, loss of appetite, nausea, and alteration of mental status. Our patient was managed conservatively with supportive treatment as she was hemodynamically stable, allowing blood to clot with a potential to tamponade the source of bleed. Other treatment strategies include percutaneous aspiration with injection of sclerosing agents, laparoscopic deroofing, or liver resection. A ruptured hepatic cyst should be considered as a differential diagnosis in the proper setting, especially in patients with symptoms mimicking acute abdomen. Timely diagnosis will expedite treatment and significantly reduce mortality and improve patient's quality of life.

A SINISTER CASE OF RECURRENT ASTHMA EXACERBATIONS: EOSINOPHILIC GRANULOMATOSIS WITH POLYANGIITIS

Lakshmi Kallur; Nanette Bentley; Adel El Abbassi. East Tennessee State University, Johnson City, TN. (Control ID #2706561)

LEARNING OBJECTIVE #1: Diagnosing vasculitis syndromes with initial presenting symptoms of recurrent asthma exacerbations in combination with underlying major system involvement and eosinophilia

CASE: A 34-year-old, non-smoker, female with a past medical history of bronchitis and sinusitis was referred to pulmonary clinic for cough, wheezing and dyspnea for one year. On physical exam, patient had a hoarse voice, non-productive cough, and diffuse wheezes. PFT showed FEV1 52% with 32% improvement in response to bronchodilator. A diagnosis of asthma was confirmed and she was given albuterol and combivent. In 9 months, patient was admitted to the hospital for pleuritic positional chest pain and dyspnea. On physical exam, she had sinus tachycardia and bilateral rales. Labs showed elevated troponins (2.67, 1.93, 2.98), peripheral eosinophilia of 44 and negative autoimmune panel. CT angiogram of the chest was indicative of bilateral infiltrates and a pericardial effusion. An echocardiogram showed a normal left ventricular ejection fraction. Due to high concerns of a cardiac event, a cardiac catheterization was performed, which was within normal limits, with high clinical suspicion of pericarditis. A diagnosis of eosinophilic granulomatosis with polyangiitis (EGPA) was made. A prolonged course of oral corticosteroids were initiated. Upon discharge, repeat office follow up at 3 months then 6 months revealed interval then complete resolution of pulmonary infiltrates, pericarditis and her remaining symptoms.

IMPACT: Clinicians have the opportunity to recognize EGPA earlier in the clinical course if suspicion remains high and before irreversible vasculitic consequences occur. New onset adult asthma that is persistent and non-refractory to medications should be investigated further.

DISCUSSION: EGPA was defined by the American College of Rheumatology by the presence of six criteria: asthma, eosinophilia of more than 10% in the peripheral blood, paranasal sinusitis, pulmonary infiltrates, histological proof of vasculitis with extravascular eosinophils and mononeuritis multiplex or polyneuropathy. The presence of four or more criteria yields a sensitivity of 85 and a specificity of 99.7%. EGPA comprises of three phases: 1 - a prodrome allergy phase marked by recurrent asthma, allergic rhinitis and recurrent sinusitis, 2 - eosinophilia and infiltration of major organs including heart, lung and gastrointestinal tract, and 3 - vasculitis commonly involving lungs, skin, and the peripheral nervous system. Treatment for EGPA remains to be immunosuppression through corticosteroids. Due to EGPA's predilection for affecting the lungs, a lung biopsy is considered gold standard for the diagnosis. The patient declined this invasive procedure due to a good response to steroids. We stress the importance of gathering a thorough history on presentation and correlating symptoms of recurrent asthma and eosinophilia in achieving a diagnosis of EGPA.

A STICKY SITUATION: HYPERMUCOVISCOUS KLEBSIELLA PNEUMONIAE CAUSING ALTERNATIVE PYOGENIC ABSCESS

Michelle Lo[2]; Alicia Cowley[1]; david wei[1]. [1]New York University, New York, NY; [2]new york university, New York, NY. (Control ID #2705337)

LEARNING OBJECTIVE #1: Recognize hypermucoviscous Klebsiella pneumoniae (hvKP) as an emerging strain in the US

LEARNING OBJECTIVE #2: Distinguish the criteria for diagnosis and treatment of hvKP compared to classic Klebsiella pneumoniae

CASE: A 49-year-old Malaysian female with chronic hepatitis B was admitted with one day of fever, chills, abdominal pain, and nonbloody, nonbilious vomiting. Admission vital signs showed fever to 39.3° Celsius, heart rate of 95 beats per minute, and blood pressure of 98/59 mmHg. Remarkable exam findings were diaphoresis and right upper quadrant tenderness with positive Murphy's sign. Labs were notable for leukocytosis of 14.4 × 10^3 cells/mcL, total bilirubin of 2.7 mg/dL with direct bilirubin of 1.3 mg/dL, and undetectable hepatitis B viral load. Patient underwent fluid resuscitation and was started on intravenous piperacillin-tazobactam for a presumed biliary infection. Computed tomography revealed an enlarging, heterogenous, septated mass with reticular enhancement concerning for hemangioma or malignancy. Later magnetic resonant cholangiopancreatography showed subsequent increase in the size of the mass and no evidence of biliary obstruction. The patient's persistent sepsis was attributed to the mass being an abscess, and a drain was placed. Cultures grew monomicrobial Klebsiella pneumoniae sensitive to ceftriaxone. Antibiotics were switched and supportive care was provided until the patient's fevers resolved and laboratory values returned to baseline.

IMPACT: Pyogenic liver abscess was previously an uncommon polymicrobial complication of intra- abdominal or biliary tract infection.

However, recently, cases of liver abscess containing hvKP have been observed. This case illustrates the need for improved understanding of hvKP disease reservoirs, transmission, and treatment.

DISCUSSION: Endogenous to the Asian Pacific Rim (Taiwan, Korea, Vietnam, Japan) and well studied in Taiwan, cases of hvKP are now increasingly being reported in the rest of the world. hvKP is semi-defined by a positive string test, whereby a bacteriology inoculation loop generates a viscous string greater than 5 mm in length when bacterial colonies are stretched on an agar plate. K1 or K2 capsular serotype may promote bacterial entry and survival. Risk of infection has been associated with relative immunodeficiency, such as in alcoholic and diabetic patients. Computed tomography is the preferred imaging modality for diagnosis, showing a solitary, septated abscess with a solid appearance. Unlike classic Klebsiella pneumoniae, which has recently become multi-drug resistant, including to extended spectrum beta-lactamases or carbapenamases, hvKP is susceptible to parenteral cephalosporins or aminoglycosides and is often associated with good clinical response and low mortality. However, lack of vigilance and delays in treatment may predispose patients to metastatic infections with multiorgan abscesses involving eyes, brain, spleen, and musculature.

A STRONG CASE OF DYSPNEA WITH EOSINOPHILIA Rachel Hammer; Michael Sciaudone. Tulane University, New Orleans, LA. (Control ID #2705749)

LEARNING OBJECTIVE #1: Recognize strongyloidiasis as a cause of non-ischemic cardiomyopathy.

LEARNING OBJECTIVE #2: Differentiate treatment for uncomplicated cases versus hyperinfection syndrome in the immunocompromised.

CASE: A 48 year-old man with no prior history was evaluated for hypertensive urgency of 200/130. The man reported an intermittent non-productive cough of approximately one year's duration and one month's worsening dyspnea on exertion, orthopnea, and lower extremity swelling. Of note, he emigrated from Honduras twenty years prior. He had no history of alcohol or drug use. Blood pressure normalized with administration of furosemide in the ED. Physical exam revealed rales in lung bases bilaterally, jugular venous distension, lower extremity pitting edema with serpiginous patches of erythema and excoriation, and a cardiac gallop. Labs showed peripheral eosinophilia, thrombocytopenia, elevated creatinine, hyperrbilirubinemia, hyperglycemia, and mild transaminitis. Transthoracic echocardiogram revealed a dilated left ventricle with global hypokinesis and severely depressed systolic function with an ejection fraction less than 15%. The patient was sufficiently diuresed, and subsequent left and right heart catheterizations were unremarkable. CT of the chest showed a small nodule in the right upper lobe. Tests for Coccidiosis, Trypanosoma cruzi, and Mycobacterium tuberculosis were negative, however the acid fast bacilli culture grew Mycobacterium fortuitum. A Strongyloides stercoralis antibody test was positive, and the patient was treated with two doses of oral ivermectin with one dose of intravenous ceftriaxone, and discharged. Two months later, his eosinophilia resolved, but he remained symptomatic with productive cough and weight loss, and was started on an outpatient course of oral ciprofloxacin and trimethoprim-sulfamethozole for M. fortuitum.

IMPACT: Strongyloides-infected patients may carry the parasite for years without prominent symptoms. Strongyloides persists in its hosts through a lifecycle of autoinfection, which increases parasite burden over time and can lead to hyperinfection syndrome.

DISCUSSION: Endemic throughout South America, Stronglyoides has a prevalence of up to one quarter of the population. In hyperinfection syndrome, filiariform larvae penetrate organ tissue, which most commonly is the heart, central nervous system, lungs and liver. We suspect chronic eosinophilia and disseminated filiaria to be the etiology of the non-ischemic dilated cardiomyopathy in this patient. Standard treatment of strongyloidiasis is ivermectin; however, mortality owing to transient bacteremia in the setting of hyperinfection syndrome is high. Therefore, bacteremia prophylaxis with gram negative rod coverage should be considered before antiparasitic agent initiation.

A SURPRISING CONNECTION Qiyuan Liu. University of South Alabama, Mobile, AL; Medstar Georgetown University Hospital, Washington, DC. (Control ID #2673770)

LEARNING OBJECTIVE #1: Recognize rheumatoid meningitis as a paraneoplastic syndrome of diffuse large B-cell lymphoma (DLBCL).

CASE: A 40-year-old male presented to emergency department with paresis and paresthesia for three weeks. Because of a recent history of thrombosis of abdominal aorta status post thromboendarterectomy, an abdominal CT angiogram was performed, showing patent blood flow in the aorta and an incidental finding of hepatomegaly with multiple areas of abnormal attenuation concerning for malignancy. However, triple-phase CT scan of the liver revealed areas of scattered hyper-density in the arterial phase, thought to be secondary to atypical infection. Biopsy of the liver lesions was thus not initially pursued. During the admission, the patient developed confusion and seizures. Cerebrospinal fluid (CSF) analysis showed 33 nucleated cells/mcL (72% lymphocytes), protein 813 mg/dL, and IgG 322 mg/dL with negative cytology for malignancy. Contrast-enhanced MRI brain showed extensive leptomeningeal enhancement, consistent with meningitis. MRI of spine was unremarkable. Dural biopsy showed dense fibroconnective tissue with scattered inflammatory cells. Serology tests showed positive rheumatoid factor (RF) and markedly elevated anti-cyclic citrullinated peptide (CCP) antibody, but negative for antinuclear antibody. A diagnosis of rheumatoid meningitis was made, and the patient was treated with intravenous immunoglobulin and prednisone. Since the paresis significantly improved and paresthesia resolved, the patient was discharged on hospital day 39. However, the patient was re-admitted with unexplained fever shortly after discharge. An underlying malignancy was suspected, and biopsy of the liver lesions showed DLBCL. Unfortunately, the patient's condition deteriorated quickly, and he expired on re-admission hospital day 20.

IMPACT: Rheumatoid meningitis is a rare disease that has not been reported as a paraneoplastic syndrome. Herein we report a case of rheumatoid meningitis arising as a paraneoplastic manifestation of DLBCL.

DISCUSSION: The clinical manifestations of rheumatoid meningitis are seizure, confusion, paresthesia, and paresis, all of which were manifested in this patient. CSF studies and brain MRI are helpful to support this diagnosis, as are positive RF and anti-CCP antibodies. Pathology of the meninges may demonstrate three different patterns: meningeal infiltration (as manifested in this patient), rheumatoid nodules, or vasculitis. The pathogenesis of paraneoplastic rheumatic disease is complex. Previous studies have found the higher prevalence of anti-CCP antibody in DLBCL patients compared to healthy controls though the significance of anti-CCP antibody was unknown. To our knowledge, this case is the first report of rheumatoid meningitis as a paraneoplastic syndrome. Recognition of rheumatoid meningitis that prompts further evaluation of underlying malignancy is important for the physician caring for a patient presenting with aseptic meningitis.

A SWEET DIAGNOSIS FOR A NON-RESOLVING RASH

Jian Liang Tan[1]; Kshitij Thakur[1]; Kah Poh Loh[2]; Edward Chan[1, 3]; Arezoo Ghaneie[1]; Shafinaz Akhter[1]; Sandiya Bindroo[1]. [1]Crozer-Chester Medical Center, Upland, PA; [2]University of Rochester Medical Center, Rochester, NY; [3]Hospital of the University of Pennsylvania, Philadelphia, PA. (Control ID #2671057)

LEARNING OBJECTIVE #1: Recognize the clinical features & diagnostic criteria of subcutaneous Sweet's syndrome.

CASE: A 74-year-old Caucasian female presented with fever, fatigue, and painful erythematous nodules. Her oncologic history was significant for myelodysplastic syndrome (MDS) diagnosed 3 years ago and was on Azacitidine. On initial presentation, her temperature was 101.4 °F. Physical examination was significant for anemia, tender erythematous vesicles on her right face and bilateral ear lobes extending to the right periocular area, and tender erythematous nodules on her buttocks. Complete blood count showed pancytopenia (WBCs of 2.0×10^9/L with ANC of 1500/mm^3, hemoglobin of 8.1 g/dL and platelet count of 16×10^9/L). Concerning for sepsis, she was started on antibiotics and antiviral agents. Despite that, she was persistently febrile with worsening of her plaque and nodular rash. Subsequently, a skin biopsy of her rash over the right shoulder showed subcutaneous lobular and septal infiltrates of neutrophils, sparing the dermis, consistent with neutrophilic panniculitis (NP). Special staining for bacteria, mycobacteria, and fungi infections were negative. Bone marrow biopsy did not show evidence of transformation of her MDS to acute myeloid leukemia (AML). A diagnosis of subcutaneous Sweet's syndrome (SSS) was made. She was started on prednisone 60 mg/day and had marked clinical improvement with resolution of fever within 24 hours.

IMPACT: Patient with a history of MDS presenting with fever and erythematous rashes not responding to antimicrobials, internists should consider SS as part of the differential diagnosis given the availability of effective treatment.

DISCUSSION: Myelodysplastic syndromes are clonal hematopoietic stem cells disorders, characterized by hematopoiesis failure, with increased risk to evolving into AML. A wide range of cutaneous lesions has been associated with MDS such as Sweet's syndrome (SS), pyoderma gangrenosum and erythema nodosum. Cutaneous involvement may signify the progression of underlying MDS to AML. Von den Driesch proposed two major criteria to define SS: 1) sudden onset of painful erythematous nodules and dense neutrophilic infiltrates in the dermis without leukocytoclastic vasculitis; 2) two or more of the minor criteria (fever >38^{0}C, association with underlying hematologic malignancy, excellent response to treatment with systemic steroids or abnormal laboratory value: ESR >20; CRP positive; WBCs >8000; >70% neutrophils). Our patient fulfilled the diagnostic criteria of SS with the exception that the neutrophils infiltration is within the subcutaneous tissue and not the dermis. Guhl et al. proposed that subcutaneous Sweet's syndrome (SSS) is a rare variant form of SS, clinically characterized by erythematous plaques or nodules, which has a histopathologic pattern of primary NP. Primary NP is characterized by neutrophilic infiltrates exclusively in the subcutaneous fat with minimal or no dermal involvement. Hence, the diagnosis of SSS was established.

A WINTER CASE OF WEST NILE ENCEPHALITIS WITH PECULIAR NEUROMUSCULAR AND NEUROIMAGING FINDINGS

Mahveen Sohail; Orhue Odaro; Kinjal Desai; Chethan Rao; Dipaben Modi. Baylor College of Medicine, Houston, TX. (Control ID #2705995)

LEARNING OBJECTIVE #1: Recognize that West Nile Neuroinvasive Disease can present with rare temporal lobe neuroimaging, sensory involvement, and autonomic instability.

LEARNING OBJECTIVE #2: Recognize that West Nile fever and West Nile Neuroinvasive Disease may present together in winter.

CASE: A 73-year-old Texan man with diabetes mellitus presented with acute onset confusion and witnessed seizure in November. A week prior to admission, patient complained of severe headache, fever, diarrhea and lower extremity weakness after a fishing trip, and eventually became unresponsive. He required mechanical ventilation for airway protection and anti-epileptics. On exam, patient was febrile to 102 °F with mosquito bites on his arms. Neurological exam was significant for comatose state, absent brainstem and deep tendon reflexes, and flaccid paraparesis. He developed autonomic instability with labile blood pressures. Lumbar puncture revealed 13 white blood cells/mm^3 (monocyte predominance), 23 fresh red blood cells/mm^3, glucose 99 mg/dL, elevated protein of 82 mg/dL, and a positive West Nile virus (WNV) IgM antibody; gram stain, HSV PCR, and the paraneoplastic and autoimmune panels were negative. Electroencephalograms showed severe diffuse brain slowing without seizures. MRI brain had T2 Flair and DWI changes in right hippocampus and posterior limb of internal capsule. Electromyography described severe subacute sensorimotor axonal polyneuropathy without prolonged distal latencies and normal conduction velocities. He received 5 days of IVIG without improvement and was terminally extubated.

IMPACT: West Nile Neuroinvasive Disease (WNND) may present with nonspecific physical exam and imaging findings. To our knowledge, this is the first case of WNND involving the temporal lobe in adults with neuroimaging suggestive of limbic encephalitis. Our patient also presented in the winter and developed autonomic instability and sensory deficits, which are all rare findings in WNND. Physician awareness of unusual presentations of WNND is paramount for early diagnosis and avoidance of unnecessary treatments.

DISCUSSION: Our patient presented with both clinical entities of West Nile: WN fever and WNND (present in less than 1% of cases). WNND causes a polio-like asymmetric paralysis with brainstem and respiratory involvement with or without encephalitis. Usually, sensory systems are spared in WNND. However, our patient had axonal polyneuropathy with paralysis which is likely due to inflammatory changes in the white matter tracts affecting spinal sensory pathways. Sympathetic ganglia involvement likely caused the autonomic instability, another very rare manifestation of WNND. We attribute his presentation in November to a warmer Texas winter. Further epidemiologic studies may be warranted if more such cases are reported. WNND can be very subtle in its early presentation due to its involvement of a myriad of neurological subsystems. High suspicion is mandated, especially given the similarities in its presentation to HSV and other viral encephalitides.

A WOMAN SEEKING ASYLUM WHO WAS SUBJECTED TO FEMALE GENITAL CUTTING (FGC) Katherine C. McKenzie; Monica Ferrer Socorro; Mytien Nguyen. Yale School of Medicine, New Haven, CT. (Control ID #2692801)

LEARNING OBJECTIVE #1: Recognize that women who have experienced female genital cutting legal have precedent for being granted asylum in the United States. Understand the legal and historical basis that supports asylum in this circumstance. Review World Health Classifications of (FGC).

LEARNING OBJECTIVE #2: Note the existence of FGC in some immigrant women who seek primary care. Review the physical findings and potential long-term complications of FGC in this population

CASE: AD was a 28-year-old woman who was forced to undergo FGC as a 12-year-old girl. The procedure was performed by non-medically trained elders in her community with unsterilized instruments. She experienced severe pain and fear while it was occurring. She bled heavily in the acute setting and was not able to walk without pain for 2 weeks. As an adult, she has chronic pain with intercourse and has experienced no pleasure with sex. Her exam revealed that the clitoris was absent. There was a faint, irregular scar extending from the anterior commissure of the labia majora to an area approximately 2 mm above the urethral opening. The labia minora was absent. These findings were consistent with a classification of World Health Organization type II FGC. (1) A medico-legal affidavit was written which documented the history of FGC, the physical findings and her long-term complications in AD. She was granted asylum for persecution based on "membership in a particular social group."

IMPACT: According to a recent UNICEF report, FGC is practiced in 30 countries, and at least 200 million girls and women alive today have undergone FGC. (2) Women who have experienced FGC are eligible to be granted asylum based on legal precedent in the US. (3) There are no health benefits from FGC. FGC is used as a way to safeguard a girl's virginity before marriage and promote fidelity in marriage. It is in direct opposition to the Universal Declaration of Human Rights. It is often condoned by parents who adhere to this long tradition in the community. In addition, girls, women and families may be socially and financially ostracized if they do not agree to the practice. Women who undergo FGC are at risk acutely for bleeding, infection and death and chronically for recurrent urinary infections, dyspareunia and childbirth complications.

DISCUSSION: For those physicians who evaluate asylum seekers it is important to understand the legal criteria upon which cases will be judged, the cultural context in which FGC occurs and the physical findings expected on exam. General internists who live in communities with immigrants will benefit from knowledge of the practice of FGC and its rationale as well as the physical findings and complications in patients for whom they care. 1. Organisation WH. Female genital mutilation. In: Fact sheet N°241 2014. http://www.who.int/mediacentre/factsheets/fs241/en/. 2. UNICEF. Female Genital Mutilation: A Global Concern. 2016. 3. Matter of Kasinga, Board of Immigration Appeals, Interim Decision 3278 (13 June 1996). International journal of refugee law. 1997:213.

ABDOMINAL DISTENTION AS THE PRESENTING MANIFESTATION OF AORTO-CAMERAL FISTULA Natasha Adlakha[2]; Paul Leis[1]; Craig Basman[2]; Ala Eltom M.D.[2]; Chad Kliger[2]. [1]Lenox Hill Hospital, Brooklyn, NY; [2]Lenox Hill Hospital, New York, NY. (Control ID #2704232)

LEARNING OBJECTIVE #1: Recognize aorto-cameral fistula (ACF) as an important sequelae of cardiothoracic surgery or endocarditis

CASE: A 56 year old female presented to the emergency room from her primary physician with increased abdominal distention and outpatient computed tomography (CT) significant for moderate ascites. She also complained of dyspnea on exertion, and lower extremity swelling. She had a past medical history of a Gerbode defect (left ventricular to right atrial shunt) complicated one year prior by infective endocarditis requiring aortic and mitral valve replacements with patch repair of the Gerbode defect and placement of a dual-chamber pacemaker for complete heart block. Her general appearance was older than her stated age and frail. Exam was remarkable for ascites, a loud, continuous murmur at the right-upper sternal border, jugular venous distention to her mandible, lower extremity edema. Labs significant for thrombocytopenia (94,000 K/uL), mild transaminitis, serum pro-Brain Natriuretic peptide 2176 pg/mL. Paracentesis was performed with straw colored fluid, negative for infection and serum albumin protein gradient of 1.8, total protein fluid 3.0 g/dL. A transthoracic and transesophageal echocardiogram revealed ejection fraction of 40%, pulmonary artery systolic pressure 50 mmHg, and a communication from proximal aortic root into the right atrium with high velocity left to right shunting (3.5 meters/second), suggestive of an aorto-cameral fistula. Cardiac CT demonstrated connection from the noncoronary aortic sinus to the right atrium.The patient was deemed to be a poor surgical candidate and a decision was made for percutaneous closure with improvement of symptoms at one month follow-up.

IMPACT: With an increasing survival of patients from cardiac surgery, it is important to recognize this complication and an aorto-cameral fistula should remain in the differential diagnosis in patients presenting with unexplained right heart failure symptoms and a history of infective endocarditis (IE). This case highlights the occurrence of an uncommon complication of infective endocarditis where delay in diagnosis can lead to significant morbidity and mortality.

DISCUSSION: An aorto-cameral fistula is an abnormal communication between the ascending aorta and a cardiac chamber, with variable presentation of unexplained acute pulmonary edema or right heart failure. It is a rare but important condition of the aorta that may occur secondary to aortic dissection, infective endocarditis, post surgical, or trauma with fistula formation. ACF has been reported anywhere from months to 30 years after IE with valve replacement. The incidence is extremely low with many cases only being diagnosed post mortem. In patients with native valve IE, the incidence of ACF is less than 2.2%. Treatment options include surgery, percutaneous closure, or conservative management.

ABDOMINAL PAIN COMING FROM THE VEIN Pei-hsing Lai; Tzu-hao Lee. Koo Fundation Sun Yat-Sen Cancer Center, Taipei, Taiwan. (Control ID #2687984)

LEARNING OBJECTIVE #1: Test for occult myeloproliferative neoplasm in patients with splanchnic vein thrombosis in the absence of cirrhosis and malignancy

LEARNING OBJECTIVE #2: Prescribe long term vitamin K antagonist for non-cirrhotic and non-malignant patients with splanchnic vein thrombosis

CASE: A 31-year-old otherwise healthy Asian man presented with two-week long progressive post-prandial abdominal cramps without other symptoms or signs, or clues of infections or liver disease. On physical exam, only moderate tenderness over epigastrium was noted. Lab tests showed only elevated ALT (78 U/L). Blood counts were normal. Abdominal ultrasound showed splenomegaly. Computerized tomography (CT) scan revealed diffuse thrombosis in portal, splenic, and superior mesenteric vein with engorged collateral veins in hepatic hilum and splenomegaly. Esophagogastroduodenoscopy confirmed no varices or ulcer. Positron emission tomography scan verified absence of abnormal hypermetabolic lesion. Tumor markers, hereditary thrombophilia work-up and anti-phospholipid syndrome antibodies were unremarkable. We prescribed therapeutic dose of low-molecular-weight heparin (LMWH), which was later switched to warfarin with a target international normalized ratio between 2 and 3, leading to gradual resolution of his symptoms. No bleeding occurred throughout his treatment. His follow-up CT 3 month later still showed thrombus with residual hepatosplenomegaly and mesentery edema, indicating

possibility of lifelong use of anticoagulants. Janus kinase 2 (JAK2)V617F mutation test was ordered and the result was positive, which is consistent with Philadelphia-chromosome negative myeloproliferative neoplasms (MPN)

IMPACT: Even though the prevalence of JAK2V617F mutation in Chinese non-malignant and non-cirrhotic patients with splanchic vein thrombosis is low, the test should not be overlooked despite the normal blood counts. Although in our case, the test result would not have changed the treatment decision or short-term outcome, it will affect longterm treatment, follow-up and prognosis.

DISCUSSION: The leading causes for splanchnic vein thrombosis (SVT) are liver cirrhosis and cancer. Non-malignant, non-cirrhotic causes make up 0.3% cases of portal vein thrombosis (PVT) and investigations for prothrombotic disorders are mandatory. We ordered the JAK2V617F mutation given the strong association between MPN and SVT, which made the final diagnosis. Our patient represented that SVT may be the first clinical manifestation of MPN. Treatment for SVT requires anticoagulation, with LMWH or unfractionated heparin in acute phase. Long-term vitamin K antagonist (VKA) is recommended in all SVT patients with MPN-related permanent prothrombotic state. Our patient demonstrated that VKA resolved thrombus in non-cirrhotic and non-malignant SVT patient without increasing bleeding. Direct oral anticoagulants may be an alternative in managing MPN related SVT

ACCIDENTAL FINDING OF ASYMPTOMATIC PULMONARY EMBOLISM IN PATIENT WITH ULCERATIVE COLITIS. Anthi Katsouli. Loyola University Medical Center, South Barrington, IL. (Control ID #2700479)

LEARNING OBJECTIVE #1: Recognizing that patients with inflammatory bowel disease (IBD) have an increased risk of venous thromboembolism.

LEARNING OBJECTIVE #2: Treating patients with active ulcerative colitis and pulmonary embolism poses a challenge to the physicians since anticoagulation therapy can increase the risk of bleeding.

CASE: A 55-year-old African American female with no past medical history presented with fever of 103 and abdominal pain with bloody diarrhea. Patient denied any recent travel or any antibiotic use. On physical examination, the temperature was 103.1 °F, the blood pressure was 115/71 mmHg, the pulse 138/min, the respiration rate was 24/min and oxygen saturation was 95% on room air. There was mild diffuse abdominal tenderness to palpation without rebound or guarding. Rectal examination revealed the presence of red blood but no palpable masses or hemorrhoids. Laboratory studies revealed hemoglobin 10.6 g/dl with a mean corpuscular volume of 91 fl, leukocyte count of 7,500/μL; serum biochemistry tests and liver enzymes were normal. Fecal leukocytes were present, but stool analysis was negative for infection or Clostridium difficile toxin. CT scan of the abdomen showed changes of segmental colitis involving the rectosigmoid colon. The lower chest was visualized as well which showed possible pulmonary thromboembolism to the medial basilar segment of the right lower lobe and CT chest angiography confirmed the segmental and sub segmental pulmonary artery embolism. Bilateral lower extremity venous ultrasound was negative for deep venous thrombosis. Hypercoagulable work up was negative. Colonoscopy and surgical pathology of colon biopsy confirmed the diagnosis of ulcerative colitis. She received bridging anticoagulation therapy with low molecular weight heparin. Her hemoglobin dropped to 7.5 g/dl after the initiation of anticoagulation but it was stabilized at 10 after transfusion of two units of packed red blood cells.

IMPACT: It is essential the role of mechanical and pharmacological prophylaxis. However, thromboprophylaxis in IBD patients, although guideline-recommended is still poorly implemented because of concerns about its safety and, over all, the lack of awareness of the magnitude of thrombotic risk in these patients.

DISCUSSION: Patients with active IBD have a threefold risk of deep vein thrombosis or pulmonary embolism compared to the general population. This risk is higher during disease flares with an "inflammatory burden" and during hospitalization due to multiple prothrombotic risk factors.The prevention of venous thromboembolism involves the correction of modifiable risk factors and the implementation of early thromboprophylaxis. The therapeutic management of these patients is challenging because massive hemorrhage is seen in 3% of patients with ulcerative colitis and requires emergency colectomy. If there is no indication for thrombolysis, low molecular weight heparin is the ideal treatment.

ACETAMINOPHEN RELATED CARDIOTOXICITY Ahmed Saleh; Ahmed Maher Abdelfattah; Kashif Chaudhry; Sachin Shah. Lahey Hospital & Medical Center, Burlington, MA. (Control ID #2706202)

LEARNING OBJECTIVE #1: Recognize myocardial necrosis as one of the possible complications of acetaminophen toxicity.

CASE: 24 year old female with history of bipolar disorder presented to an outside hospital after ingesting 300 tablets of acetaminophen for attempted suicide, and transferred to our institution. She arrived comatose and intubated with an acetaminophen level of 296 ug/mL (Ref. range:<=30 ug/mL). The course was complicated by fulminant hepatic failure followed by distributive shock with elevated lactic acid. Initial therapy included N-acetylcysteine, vasopressors and broad spectrum antibiotics. However, she continued to deteriorate. On day 2 of hospitalization, about 62 hours after acetaminophen ingestion, ST segment changes appeared on telemetry. ECG was remarkable for new anterolateral and inferior ST elevations, associated with a Troponin level > 50 ng/mL. Bedside echocardiogram revealed diffusely decreased left ventricular systolic function with ejection fraction of 40%. This was consistent with acute myocardial injury, speculated to be most likely secondary to acetaminophen toxicity. Given her worsening clinical status, it was decided not to undergo emergent cardiac catheterization. About 20 hours later, she passed away. Family declined autopsy.

IMPACT: Cardiotoxicity is a rare manifestation of acetaminophen toxicity with only few cases described in literature. Our case illustrates the possible cardiac effects of acetaminophen overdose and raises awareness for this rare presentation.

DISCUSSION: Myocardial necrosis from severe acetaminophen toxicity has been reported in literature. For instance, a case report from 2008 describes a 23 year old woman with a similar presentation. The patient's declining clinical status precluded cardiac catheterization and the patient died within 72 h. Autopsy revealed patent coronaries, and cardiac tissue histology displayed patchy sub-endocardial necrosis and hemorrhage in the ventricles and septum probably due to direct acetaminophen toxicity. Proposed mechanisms by which acetaminophen causes cardiac toxicity include depletion of sulfhydryl groups, thereby inhibiting nitric oxide and endothelial derived relaxing factor resulting in functional coronary ischemia. In addition, acetaminophen was shown to induce expression of genes involved in oxidative stress and apoptosis in the heart of rats. Finally, acetaminophen hepatotoxicity can cause metabolic derangements resulting in secondary cardiotoxicity. In summary, we report a case of acetaminophen overdose in a young patient who passed away after suffering from metabolic acidosis, distributive shock and myocardial injury. Although hepatotoxicity is the most common manifestation of acetaminophen overdose, cardiotoxicity can also take place and can be severe. This occurs

through various mechanisms, including functional coronary ischemia and direct myocardial damage. Early administration of N- acetylcysteine may be crucial to prevent cardiotoxicity.

ACHROMOBACTER XYLOSOXIDANS INFECTION PRESENTING AS NATIVE VALVE ENDOCARDITIS: A CASE REPORT AND UPDATED LITERATURE REVIEW. Shawhin Karimi[1]; Mohamed H. Yassin[2]; Jusjit Lalli[1]. [1]UPMC Mercy, Pittsburgh, PA; [2]UPMC, Pittsburgh, PA. (Control ID #2699854)

LEARNING OBJECTIVE #1: Recognizing Achromobacter xylosoxidans as a cause of infective endocarditis in at risk populations.

LEARNING OBJECTIVE #2: Assessing the possibility of chemotherapy infusions as being the source of infection and contacting the department of health and CDC when appropriate.

CASE: 73-year-old male with a history of COPD, type 2 DM, squamous cell carcinoma of the lung status post lobectomy, and marginal zone lymphoma currently receiving palliative chemotherapy presented with a complaint of shortness of breath and productive cough for one day. He otherwise denied any other symptoms. His last Rituximab infusion was 18 days prior to admission for his marginal zone lymphoma, and he recently received his first infusion of paclitaxel and carboplatin for palliative chemotherapy of his progressive lung cancer 8 days prior. The patient was hemodynamically stable. Physical examination revealed diffuse wheezing in the lungs but all other systems were otherwise benign. Laboratory workup revealed a creatinine 1.48 mg/dL, WBC of 3.3 K/μl, ESR 40 mm/h, and a negative troponin I. CT of chest revealed multiple lung nodules with scattered areas of atelectatic changes. Blood cultures returned positive for Achromobacter Xylosoxidans. TEE revealed a hyper-mobile 1.8 × 0.8 cm vegetation attached to one of the cordae tendinae of the mitral valve. Given his limited prognosis, surgery was deferred. Decision was made to start the patient on piperacillin/tazobactam and ciprofloxacin for 6 weeks duration and subsequent transition to oral Bactrim for life-long suppressive therapy. Due to the possibility of his chemotherapy infusion being the source of infection, department of health was contacted and no other source or contaminated patients associated with this particular organism were found.

IMPACT: The case made us aware of the implications of an infection with this bacteria and the potential sources that may nned to be investigated to prevent further spread.

DISCUSSION: Achromobacter xylosoxidans is a gram-negative bacilli known to be resistant to several classes of antibiotics. It is believed to be an opportunistic, low virulent organism, which flourishes in aqueous environments, causing various types of nosocomial infections and bacteremia. The case mortality of this organism has been reported by some literature to be as high as 64% in adult cases with endocarditis. A search of prior cases of endocarditis presumed to be secondary to A. xylosoxidans revealed 15 reported cases including ours, between 1981 and 2016. The mortality rate amongst the reported cases was found to be approximately 47%, with 75% of those cases being treated with antibiotics alone. Endocarditis and especially native valve endocarditis from Achromobacter xylosoxidans is extremely rare and requires careful antibiotic selection and early surgical intervention if appropriate. Careful consideration should be made to as to possible sources of the infection as well in order to protect other vulnerable patients from becoming infected.

ACQUIRED PORPHYRIA CUTANEA TARDA FROM UNDERLYING GENETIC DISEASE Janelle Duah[2, 1]; Kathleen White[1]; Rebecca Brienza[1, 2]. [1]VA Connecticut Healthcare System, West Haven, CT; [2]Yale University, New Haven, CT. (Control ID #2705762)

LEARNING OBJECTIVE #1: Recognizing key characteristics of porphyria cutanea tarda

LEARNING OBJECTIVE #2: Diagnosing possible underlying causes of PCT

CASE: 64-year-old Caucasian man with a PMH of hypertension, impaired fasting glucose, and mild alcohol use disorder presented for routine primary care visit with concern of "water-filled blisters" on his hands. The blisters appeared "randomly" over the past several years, less often in the wintertime. He reported that they would appear 2–3 times per month and would take 2–3 weeks to heal. He denied blistering anywhere else. He also reported dark colored urine. He denied work in rose bushes, contact with poison ivy, or changes in soaps, detergents, lotions, or colognes. Social history was significant for drinking 8–10 drinks 2–3×/wk but was negative for high risk sexual activity or IVDU. Family history was significant for his sister dying at the age of 50 from hepatic cirrhosis. Medications included fluticasone nasal spray, ibuprofen, lisinopril, loratadine, metformin SA, and sildenafil.Exam was significant for a very tanned appearing gentleman with several 2–5 mm pink scaly papules, few scattered round-oval superficial erosions, and few sclerotic pink patches on the dorsums of both hands. Labs revealed the patient to be HIV and HCV negative, but with increased iron saturation of 60% with a ferritin of 790. HFE gene analysis showed the patient to be homozygous for H63D mutation. Woods' Lamp fluorescence of his urine showed amber coloring, corresponding to urine fractionated porphyrins that were elevated. The patient's blisters were diagnosed as acquired Porphyria Cutanea Tarda (PCT), secondary to Hereditary Hemochromatosis (HH). The patient was referred to dermatology, hematology, genetics, hepatology, and mental health for alcohol abstinence.

IMPACT: This case illustrates the power of observation and need for continued curiosity. This patient presented routinely, but his concern ended up being life-changing. At a symposium, it was briefly mentioned that patients with hep C could acquire PCT, which can result in increased iron and tanned skin. My patient did not have hep C. When I saw my patient was tanned in October, I linked the diagnoses of HH and PCT together. This ultimately had a huge impact on my patient.

DISCUSSION: PCT affects 1 in 25,000 individuals in the US. PCT is caused by reduced activity of uroporphyrinogen decarboxylase (UROD) in the heme biosynthetic pathway. PCT results in failure to break down porphyrins which are transported from liver to skin, causing blisters on sun-exposed areas. Increased iron increases susceptibility to PCT by reducing UROD activity. This patient has the rarest genotype of HH, as <1% are homozygous for the H63D mutation. Other risk factors include alcohol use, HCV, HIV, estrogen exposure and smoking. This patient was taking NSAIDs and metformin, also linked with pseudoporphyria. The key in distinguishing pseudoporphyria from PCT lies in urine testing, which came back positive in this patient.

ACROMEGALY: A MASQUERADE Daniel J. Hindman; James H. Miller. Johns Hopkins, Baltimore, MD. (Control ID #2707073)

LEARNING OBJECTIVE #1: Diagnose acromegaly early in its clinical course.

LEARNING OBJECTIVE #2: Recognize the role of non-medical staff members in facilitating diagnosis.

CASE: A 31-year-old Hispanic female with a history of carpal tunnel syndrome presented with 3 months of unilateral, throbbing headaches accompanied by nausea, emesis, and photophobia. She had no prior personal or family history of migraines. Her medical history was notable for bilateral carpal tunnel syndrome (CTS) diagnosed 3 years prior, though she had symptoms for over 7 years. Her CTS was attributed to her work in food preparation at a restaurant. She had sequential carpal tunnel release in the year prior to her visit, with improved CTS symptoms. At the time of presentation to our clinic, her neurologic exam was unremarkable. She was prescribed a triptan with plans for close follow-up. At follow-up, she noted progression of her headaches, which were now waking her from sleep, and no response to medication. She also noted that her rings no longer fit and her shoe size had increased. Upon asking about changes in her appearance, her medical interpreter interjected that she had trouble recognizing the patient, despite having worked with her previously. The patient denied any visual changes or menstrual irregularities. Physical exam was notable for prominent supraorbital ridges, a broad nasal bridge, normal visual fields, and wide, doughy hands and feet without edema. Lab testing revealed an elevated insulin-like growth factor-1 level, 2.7 SD above the median value for her gender. MRI demonstrated a left pituitary macroadenoma. She was evaluated by Endocrinology and Neurosurgery, and had a transphenoidal resection of her adenoma.

IMPACT: Acromegaly is an easily missed diagnosis and can masquerade behind non-specific symptoms in a primary care setting. We suggest considering the diagnosis of acromegaly earlier in patients with bilateral CTS, especially when other factors predisposing to CTS are absent.

DISCUSSION: Acromegaly is a rare condition with an incidence of 3–4 cases per million persons per year. The disease course is slow and progressive. The vast majority of acromegaly cases are caused by pituitary adenomas. There is often a delay in diagnosis, with an average delay of 7–10 years from initial symptoms. The diagnosis is further confounded by the relatively non-specific symptoms at initial presentation. Classically, acromegaly is associated with the late findings, including enlarged hands and feet, coarsened facial features, and bitemporal hemianopsia. Early symptoms are more non-specific and include headaches (60–80% of cases), bilateral carpal tunnel syndrome, arthropathy, fatigue and obstructive sleep apnea. In the case of our patient, she lacked continuity with one provider who may have noticed her changing physical appearance. Notably, it was a non-medical staff member who had previously translated for the patient at visits with other providers who assisted in providing history to help make the diagnosis.

ACUPUNCTURE-INDUCED-PNEUMOTHORAX Anjanet Perez-Colon[1]; Leslie L. Seijo[2]; Mariana Mercader[2]; Ana I. Velazquez[2]. [1]Icahn School of Medicine at Mount Sinai Beth Israel, New York, NY; [2]Mount Sinai Beth Israel, New York, NY. (Control ID #2707573)

LEARNING OBJECTIVE #1: Common and serious complication of alternative medicine.

CASE: 36y/o non-smoker woman with hypothyroidism presented with 6 days of dyspnea. Days before she had acupuncture for neck pain; where needles were placed below the base of the skull, lower neck and in the shoulder above the spine of the scapula. Immediately after the procedure she started to feel shortness of breath but didn't seek medical attention until developed concomitant chest tightness and left-sided pain with radiation to the left arm. Vital signs were: temperature 98.6 °F, heart rate 58 beats per minute, respiratory rate 13 per minute, blood pressure 99/63 mmHg and oxygen saturation 90–94% at room air. Physical exam was significant for patient speaking in full sentences and decrease breath sounds at the apex of the left lung. An arterial blood gas revealed a pH of 7.37, Pco2 of 51 mm Hg, and Po2 of 89 mm Hg on room air. A chest x-ray showed a small to moderate 25% left pneumothorax with small basilar component, small left basal pleural effusion and midline trachea. The patient was placed on supplemental oxygen nasal cannula and underwent bedside pigtail catheter placement. Air leak stopped the next day and pigtail catheter was removed. Given patient's good clinical response she was discharged home. No complications reported up to this moment.

IMPACT: Given the popularity of alternative medicine physicians must be aware of complications. Although acupuncture is considered relatively safe, and a study found that physicians have positive attitudes toward acupuncture as a therapeutic method, is important to be aware of common and serious complications. Knowledge of anatomy and depth of insertion of the needle is crucial to prevent complications. A chest x-ray and supplemental oxygen should not be delayed in a patient presenting with dyspnea after acupuncture since pneumothorax is a potentially life-threatening complication.

DISCUSSION: Is believed that acupuncture was developed in China hundreds of years ago and to the present continues to play an important role in China's medical system. It has spread to other countries and it uses include treatment of chronic pain. Although mechanisms are not clear, fine needles serve as instruments of "healing". Complications of the procedure include delay of diagnosis due to treatment of pain, inoculation of infections, nerve damage, trauma, retained needle, and puncture of body cavities with associated complications such as pneumothorax. Iatrogenic pneumothorax after acupuncture is believed to be an underreported common complication, and actually, the lung is the most common organ injured after the procedure. The clinical course of iatrogenic pneumothorax after acupuncture ranges from spontaneously resolved to fatal acupuncture induced pneumothorax. Incidence can be higher in patients with underlying lung disease such as COPD. Treatment of pneumothorax depends on the severity and includes supplemental oxygen, aspiration, chest tube or video-assisted thoracoscopic surgery.

ACUTE ENCEPHALOPATHY RESULTING FROM IFOSFAMIDE TOXICITY Jennifer Schwenk. George Washington University, Washington, DC. (Control ID #2689488)

LEARNING OBJECTIVE #1: Recognize the importance of researching common side effects of chemotherapy treatments so they can be promptly managed

LEARNING OBJECTIVE #2: Diagnose the side effects of chemotherapy regimens in an efficient manner while avoiding the "shotgun" approach

CASE: Ms. P was a 59-year-old woman with history of diabetes, hypertension, and diffuse large B-cell lymphoma, who presented with abdominal pain and vomiting. She had received three different combination chemotherapies, but her disease progressed. Computed tomography (CT) scan revealed a large abdominal mass compressing her duodenum. She received fourth line chemotherapy with rituximab, ifosfamide, carboplatin, and etoposide. The next day, she had confusion, which progressed to lethargy, and then stupor. Chemotherapy infusion was stopped. Relevant labs included leukocytes 13.64 mg/dl and normal values for arterial blood gas, electrolytes, glucose, liver panel, thyroid-stimulating hormone, B12, folate, ammonia, lactate dehydrogenase, and urinalysis. Blood and urine cultures had no growth. A CT scan of the brain had no acute changes, and bedside EEG showed evidence of diffuse encephalopathy

without seizure activity. On neurologic exam, she opened her eyes to stimuli but did not follow commands. Corneal and gag reflexes were normal. Pupils were equal and reactive, and she withdrew to pain. All reflexes were 2+. Remaining physical exam was unremarkable. The care team discussed initiation of methylene blue for ifosfamide toxicity, but it was ultimately deferred due to improvements in mentation. During a period of 24 h, the patient gradually recovered, and was back to her previous baseline, alert and conversant, at 36 hours.

IMPACT: This case reminded me to thoroughly review the side effects of the chemotherapy regimens being used while caring for oncology patients. I will use a more targeted and research-driven approach to diagnose complications based on the primary diagnosis and treatment regimen, rather than employing a wide-ranging search that may be appropriate for other medical inpatients.

DISCUSSION: Caring for oncology patients on the medical ward presents unique challenges for internal medicine residents and hospitalists. It is especially important to familiarize ourselves with the most common side effects of our patients' chemotherapy. Ifosfamide is an alkylating agent that is used in chemotherapy regimens to treat sarcomas, lymphomas, and other malignancies. Common side effects include hemorrhagic cystitis, nephropathy, cytopenias, and neurotoxicity. The incidence of ifosfamide-induced encephalopathy has been estimated to range between 20–60%. Mental status changes in a patient receiving ifosfamide should prompt the clinician to discontinue the therapy immediately and order EEG monitoring to evaluate for status epilepticus. A "shotgun" approach to evaluate all causes of altered mental status is likely not necessary in this setting, and most patients will improve within 48–72 hours of discontinuation of the medication.

ACUTE HEART FAILURE- TERMINAL EVENT IN THROMBOTIC THROMBOCYTOPENIC PURPURA vimalkumar R. patel[1]; abdulwahab Hritani[2]; rupesh prasad[1]; Federico Sanchez[2]. [1]Aurora HealthCare, Milwaukee, WI; [2]Aurora Healthcare, Milwaukee, WI. (Control ID #2706233)

LEARNING OBJECTIVE #1: Diagnose TTP in absence of the classic PENTAD (fever, thrombocytopenia, microangiopathic hemolytic anemia, elevated creatinine, and neurologic symptoms).

LEARNING OBJECTIVE #2: Distinguishing between anemia and thrombocytopenia caused by autoimmune overlap syndrome and thrombotic thrombocytopenic purpura.

CASE: A 72-year-old female with a past medical history of primary biliary cirrhosis, autoimmune hepatitis, scleroderma, and lymphoplasmacytic vasculitis presented to the hospital with one-week complaint of weakness, headache and nausea. Her physical examination was unremarkable. Her labs showed a hemoglobin of 7 (down from 13), platelets of 22 (down from 364), INR of 2 and a Cr of 0.6. The patient received 2 units of blood, and was started on Methyprednisone along with IV immunoglobulin for the suspicion of autoimmune overlap syndrome. On day 2, she was found to have elevated serum proteins, IgG 5760, for which bone marrow biopsy was planned to exclude lymphoplasmacytic lymphoma. The patient had negative Coombs test which may be from chronic steroids for primary biliary cirrhosis.On hospital day 3, the patient developed chest pain, diaphoresis and hypoxia requiring high flow oxygen, her troponin levels rose to 13.2 ng/ml. she was diagnosed with non ST segment elevation myocardial infarction and a subsequent echocardiogram showed moderate left ventricular hypertrophy, severely decreased left ventricular systolic function, severe mitral valve regurgitation with reduced ejection fraction to 15%. Cardiology was consulted but given the patient health status no acute interventions were performed. By hospital day 4, she had developed acute hypoxic respiratory failure that required intubation. The patient continued to do worse and passed away on the same day. Her ADAMTS 13 came back after her death with levels < 5%. Autopsy report was consistent with TTP and showed diffuse platelet thrombi in the coronary arteries.

IMPACT: This case illustrates the dire need to recognize the signs and symptoms of patients with TTP even in absence of the classic PENTAD of TTP. Also, fact that it is very important to rule out TTP in patient with other confounding diagnosis especially patients with other autoimmune disease, which may present in similar fashion. This case will help other physicians recognize acute heart failure as one of the presenting complaints of TTP. This case demonstrates that the untreated TTP can be detrimental and the autopsy report from this patient will add to the literature as the pathology report demonstrate the classic presentation of TTP.

DISCUSSION: This case signifies the potential for misdiagnosis of TTP in light of patients having other autoimmune disease that may cause hemolytic anemia and thrombocytopenia. Additionally, this case demonstrates that acute heart failure is rare but fatal complication in patients with TTP. Also, providers must realize the pentad of TTP is present in < 20% of cases. Recognition of this syndrome is critical to initiate appropriate therapy to reduce mortality.

ACUTE HEPATITIS WITH MIXED PATTERN IN THE SETTING OF PRIMARY EPSTEIN-BARR VIRUS (EBV) INFECTION IN A 43-YEAR-OLD WOMAN

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LEARNING OBJECTIVE #1: Recognize EBV infection as a primary cause of acute hepatitis

CASE: A 43-year-old woman with no history of liver disease presented with 4 weeks of malaise, nasal congestion, and fevers for which she was taking 4–5 g acetaminophen (APAP) daily. Two days prior she began taking amoxicillin for presumed sinusitis. She had previously tolerated the drug as prophylaxis for dental procedures. She denied sore throat, alcohol use, and sick contacts. She was afebrile. Physical examination was remarkable for small tender cervical lymph nodes and diffusely tender abdomen. White cell count was normal with 22% neutrophils and 71% lymphocytes. Hemoglobin was 11 mg/dl. Blood and urine cultures were without growth. Liver enzymes revealed ALP 745 U/L, ALT 688 U/L, and AST 573 U/L. Total bilirubin was 1.6 mg/dL and INR was 1.1. The testing for hepatitides A, B, and C was negative. The APAP level was 4 mcg/mL (normal). The PCR testing for respiratory syncytial virus, influenza A and B, parainfluenza, and adenovirus was negative. The right upper quadrant ultrasound was negative for cholelithiasis, cholecystitis, and biliary dilatation. A CT of the abdomen and pelvis revealed periportal edema. Autoimmune tests for AMA, ANA, smooth muscle, liver-kidney microsomal, and mitochondrial antibodies were negative. Subsequent cytomegalovirus (CMV) PCR was negative. EBV PCR was positive with the viral load of 3,829 copies/mL. The EBV viral capsid antigen (VCA) IgM was positive while VCA IgG and EBV nuclear antigen IgG were negative. Monospot was positive. Liver biopsy revealed portal, lobular, and sinusoidal lymphocytes with EBV. Liver enzymes improved over 6 days with

supportive care but ALP remained elevated (AST 47, ALT 165, ALP 612), which prompted treatment with ursodiol.

IMPACT: Although EBV is a less common cause of acute hepatitis, it should be included on the differential and tested for in all patients presenting with nonspecific symptoms such as profound fatigue, fever, and cervical lymphadenopathy as it may be underdiagnosed.

DISCUSSION: EBV is an often overlooked cause of acute hepatitis. A patient with no prior liver disease presented with a prolonged course of constitutional symptoms, and was found to have a mixed pattern of hepatocellular injury and cholestasis with AST and ALT nearly 20-fold above the upper limit of normal (ULN), and ALP 5-fold ULN. The finding of lymphocytosis and exclusion of hepatitides prompted testing for CMV and EBV. EBV serologies and a liver biopsy confirmed EBV hepatitis. The mechanism of cholestasis in the setting of EBV-related liver injury is due to cytokine-induced disruption and subsequent stagnation of bile flow within the sinusoidal and canalicular transport systems (1). Our case highlights the importance of suspecting acute hepatitis as a possible presenting feature of an EBV infection, and the importance of testing for an EBV infection. Reference 1) Shaukat A, et al. Hepatol Res. 2005;33(1):24–29.

ACUTE ISONIAZID TOXICITY: AN UNCOMMON CAUSE OF METABOLIC ACIDOSIS REQUIRING A UNIQUE TREATMENT

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LEARNING OBJECTIVE #1: Recognize the clinical features and unique treatment of acute isoniazid (INH) toxicity.

CASE: A 33-year-old Nepalese male being treated for latent tuberculosis (TB) with INH, presented with vomiting and depressed mental status. In the ED, he suffered from a generalized tonic-clonic seizure that was aborted with IV lorazepam. The family expressed concern that the patient had intentionally overdosed by taking multiple days worth of INH. His vitals were significant for mild tachycardia, but otherwise were within normal limits. He appeared post-ictal and lethargic, but responsive on physical exam. He was assigned a Glasgow Coma Scale score of 12 out of 15 (eye opening to voice, groaning, purposeful movement). Initial labs revealed a serum pH of 7.1, anion gap 32, lactic acid 28 mmol/L, WBC 19.2 × 103 per mL, potassium 3.1, glucose 178 mg/dL and creatinine 1.48. The CK level was normal at 297 U/L. Hepatic function studies were normal. EKG showed sinus rhythm with a QTc of 435. Serum ethanol and acetaminophen levels were unremarkable. Chest x-ray and CT head were unremarkable. He was initially treated with 100 mg of pyridoxine, 40 mEq KCL, and normal saline. He was admitted and treated with an additional 2 g of IV pyridoxine and Lactated Ringer's solution. The INH was held. Over the next 48 hours, the patient's mental status returned to normal, his labs normalized, and he experienced no further seizures. Once his encephalopathy resolved he admitted to taking a one-month supply of INH. He was transferred for inpatient psychiatric care.

IMPACT: This case differentiates chronic INH toxicity, which is commonly recognized by medical students and clinicians to present as peripheral neuropathy and hepatotoxicity, from acute INH toxicity. It also familiarizes clinicians with the high dosage of pyridoxine used as an antidote.

DISCUSSION: A presentation of altered mental status, seizures, coma, and metabolic acidosis should raise clinical suspicion of acute INH toxicity, especially in those with a history of TB. Acute INH toxicity depletes pyridoxine stores, which is critical in forming the inhibitory neurotransmitter GABA. GABA deficiency can lead to severe seizures. Recognition of acute INH toxicity is crucial as the seizures are frequently non-responsive to benzodiazepines alone, which potentiate the effects of available GABA. Both benzodiazepines and high dose pyridoxine (one gram per gram of INH ingested up to 5 g) should be given. Though INH toxicity is a relatively uncommon cause of metabolic acidosis and seizures, this case serves to remind clinicians to remain vigilant and to consider INH toxicity in the differential diagnosis. Making the correct diagnosis is imperative, as the high dosage of pyridoxine needed for effective treatment may be life saving.

ACUTE MYOCARDIAL INFARCTION FOLLOWING INITIATION OF ATRA + ARSENIC FOR TREATMENT OF ACUTE PROMYELOCYTIC LEUKEMIA Ryan Bober. Weill Cornell Medical College, New York City, NY. (Control ID #2702798)

LEARNING OBJECTIVE #1: Review complications of APL therapy, including differentiation syndrome

LEARNING OBJECTIVE #2: Recognize other rare complications of APL therapy including cardiac sequelae

CASE: An 83 y/o female p/w HTN, mild aortic regurgitation, fatigue was found to be pancytopenic. Marrow biopsy was consistent with acute promyelocytic leukemia (APL). Initial therapy was all-trans retinoic acid (ATRA) therapy with prophylactic dexamethasone for prevention of differentiation syndrome (DS). She required transfusions for coagulopathy. On day two, chest x-ray revealed new bilateral patchy opacities and pulmonary edema concerning for DS. Twelve hours after dose escalation of steroids and initiation of arsenic trioxide (ATO), she required oxygen by facemask and received furosemide and meropenem for presumed pulmonary edema and multi-lobar pneumonia. Repeat EKG was consistent with a non-ST myocardial infarction pattern. Troponin was 4.43, and she later died.

IMPACT: This case illustrates that ATRA + ATO may not be as benign as once thought with documented cases of myocardial insults increasingly common. It is important for clinicians to recognize the potential for cardiac ischemia early and expand the differential beyond pulmonary edema, pneumonia, and differentiation syndrome given the potential lethality of the complication, particularly for patients in DIC. Furthermore, this case demonstrates the increased thrombotic risk of therapy, even in patients with few traditional cardiac risk factors.

DISCUSSION: APL is a form of acute myeloid leukemia (AML) that develops from a retinoic-acid receptor translocation, accounting for 5–20% of cases of AML. Initial therapy is ATRA with ATO. ATRA induces differentiation of the atypical promyelocytes into mature neutrophils. The addition of ATO adds a synergistic apoptotic effect and has improved remission rates. A significant complication of treatment is DS, characterized by fever, pulmonary opacities, and hypoxemia thought to result from promyelocyte inflammatory cytokine release. Other major complications of therapy include coagulopathy, hyperleukocytosis, and QT prolongation (from ATO). To date, there are limited case reports of myocardial infarction in patients initiated on these therapies. Differentiation syndrome has only been reported to be associated with acute MI in two case reports, both of which were after at least 10 days post therapy in patients with no known cardiac risk factors. Furthermore, the risk was attributed to ATRA monotherapy. This is among the first reported cases with rapid development of myocardial injury following initiation of ATRA and arsenic in this time frame. Further research is needed to elucidate the pathophysiologic role behind the increased thrombotic risk of ATRA, and whether ATO compounds that risk to patients in need of urgent APL therapy. Physicians must be cognizant of the risk of these rarer complications of therapy.

ACUTE PANCREATITIS AND HYPERTHERMIA: AN UNUSUAL CASE OF RHABDOMYOLYSIS

Richard H. Zou; Joseph S. Bednash. University of Pittsburgh, Pittsburgh, PA. (Control ID #2706577)

LEARNING OBJECTIVE #1: Describe the differential diagnosis, evaluation, and medical management of non-traumatic rhabdomyolysis

CASE: A 45 year-old male with a history of hypertension and back pain presented with one day of sudden-onset epigastric pain with radiation to his back. He denied fevers, chills, or recent illness. He had no history of pancreatitis, gallstones, or alcoholism. He was initially afebrile with stable vital signs. His exam revealed mild abdominal distension with epigastric tenderness without rebound or guarding. Initial labs were remarkable for WBC 24.7 with 82% neutrophils, amylase 1162 U/L, lipase 7846 U/L, TBili 0.7 mg/dL, and CPK 3153 IU/L. CT abdomen revealed extensive peripancreatic fluid and fat stranding without evidence of necrosis. He received aggressive fluid resuscitation, pancreatic rest, and antibiotic therapy. Over the ensuing days, he became persistently febrile between 101–106 F and was subsequently intubated due to hypoxemic respiratory failure secondary to hypervolemia. His CPK rose to a peak level of 90627 IU/L. There was no evidence of compartment syndrome. Multiple family members confirmed that the patient did not use alcohol, illicit drugs, or nutritional supplements. His medications included longstanding atorvastatin and hydrochlorothiazide; both were held at admission. There was no recent exertional activity. Serologic testing for ANA, anti-Jo-1 antibody, anticardiolipin, and antiphospholipid were negative. He developed severe oliguria with peak creatinine of 6.9 mg/dL, and was started on daily hemodialysis. CPK and creatinine returned to baseline, and he was extubated on day 19 of admission.

IMPACT: There are several reports associating acute pancreatitis with non-traumatic rhabdomyolysis managed conservatively. This case highlights an association between acute pancreatitis-induced systemic inflammation and persistent hyperthermia with rhabdomyolysis and acute renal failure, successfully managed with aggressive fluid resuscitation and hemodialysis.

DISCUSSION: Non-traumatic rhabdomyolysis can be a life-threatening condition associated with elevated CPK, electrolyte derangements, and acute renal failure. Common etiologies include marked physical exertion, medications, infections, thermal extremes, toxins, and rheumatologic disorders. Drug-drug interactions, especially with statins, macrolides, gemfibrozil, or cyclosporine, should be assessed. Bodybuilders should be inquired about nutritional supplementation. It is important to rule out acute compartment syndrome and thyroid disorders, as both are reversible causes. Medical management of non-traumatic rhabdomyolysis focuses on aggressive fluid resuscitation, correction of electrolyte abnormalities, and reversal of underling etiologies. Urine alkalinization with bicarbonate has been suggested to minimize myoglobin breakdown into nephrotoxic metabolites, although with unproven benefit. Heme pigment-induced acute kidney injury with subsequent renal failure warrant hemodialysis or continuous hemofiltration.

ACUTE STEMI IN THE SETTING OF LEFT VENTRICULAR THROMBUS

Joan Bosco; Stephen Z. Peeke; Patricia Dharapak. Mount Sinai Beth Israel, New York, NY. (Control ID #2693520)

LEARNING OBJECTIVE #1: Consider an embolic source as a cause of myocardial infarction (MI), even in patients without atrial fibrillation.

LEARNING OBJECTIVE #2: Recognize the importance of vigilance in the days after a left ventricular (LV) thrombus is diagnosed.

CASE: A 43 year-old man with history of alcohol abuse presented with progressive shortness of breath. He was found with severe pneumonia and subsequently developed cardiac arrest. Initial EKG suggested anteroseptal infarct, age undetermined; troponin was elevated with a peak of 0.188 ng/mL (normal <0.031 ng/mL). A left heart catheterization (LHC) revealed non-obstructive coronary artery disease and increased LV end diastolic pressure. A transthoracic echocardiogram (TTE) showed severely reduced global LV systolic function, an ejection fraction (EF) of 10%, and LV dilatation with suggestion of a thrombus. The patient was aggressively diuresed, started on enoxaparin and continued on aspirin with high-dose statin. On hospital day 10, he developed crushing substernal chest pain and diaphoresis, and became hypotensive to 60/40 mm Hg. EKG showed new inferior lead ST segment elevation. An emergent LHC found 100% occlusion of the posterolateral branch of the right coronary artery; troponin peaked at 26.3 ng/mL. After successful balloon angioplasty, the patient was bridged to and discharged on warfarin as well as aggressive medical management. Repeat TTE 7 months later showed an improved EF of 40 and no LV thrombus.

IMPACT: We describe an uncommon cause of ST elevation myocardial infarction (STEMI), suspected secondary to embolization of an LV thrombus. Our case demonstrates the importance of considering an embolic etiology of MI, especially in the setting of a known LV thrombus, and of remaining vigilant in the days after an LV thrombus is diagnosed.

DISCUSSION: Studies show enoxaparin to be effective in resolving LV thrombi, with a mean treatment duration of 13 days. In our patient, enoxaparin was initiated just 2 days prior to his MI. The literature notes that most systemic emboli occur within the first weeks of thrombus discovery. Therefore, close observation is recommended during this period given the continued risk of embolization and MI even with timely initiation of anticoagulation. This case also highlights an uncommon but life-threatening event. In one study of 'first' MIs, 2.9% were due to embolism, most commonly in the setting of atrial fibrillation. This distinction is important because, while the 30-day mortality rate for those with MI from embolism is similar to other MI patients, the 5-year all-cause and cardiac death rates are significantly higher. An embolic source of MI should be considered even in patients without atrial fibrillation, especially if the patient has known cardiomyopathy, lacks cardiac risk factors or has had a prior LHC showing non-obstructive disease. Early identification of thrombus and rapid initiation of anticoagulation can be life-saving.

ADENOVIRUS-ASSOCIATED ASCENDING FLACCID PARALYSIS AND RECURRENT FEVER IN A LONG TERM HIV PATIENT

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LEARNING OBJECTIVE #1: To include adenovirus and poliovirus (from OPV reactivation) in the differential diagnosis when evaluating immunocompromised patients with ascending flaccid paralysis, polymyelitis and fever of unknown origin.

CASE: G.L. is a 48 year old female with past medical history of HIV infection (diagnosed more than 20 years ago, on HAART, CD4 count was 167 two months prior to admission, no detectable HIV viral load) and cervical intraepithelial lesion of undetermined significance, who presented with progressive, ascending upper and lower proximal muscle weakness, fever and night sweats over the past five months, to the extent that she was unable to walk and became bedbound. Patient continued to have fevers up to 103 F throughout hospitalization. She was

evaluated by ID, Neurology, Rheumatology, Psychiatry and Hematology for a full work up of her unexplained weakness and fever, including negative findings in various tests (CT & MRI head, MRI cervical/thoracic/lumbar spine, CT & MRI of abdomen and pelvis, lumbar puncture, JC virus, lyme, CMV, West Nile virus IgM, Toxoplasmosis IgM, Cryptococcus, HSV 1 &2, parvovirus IgM, Chlamydia, Gonorrhea, Syphilis, blood/urine/spinal fluid culture, drug screen, ANA, RF, antibodies for Myasthenia Gravis, EMG, echocardiogram, muscle biopsy and bone marrow biopsy). Patient was diagnosed with HIV-induced myopathy and discharged home with physical therapy. During a post-discharge outpatient visit 6 weeks later, her clinical condition deteriorated and she had respiratory muscle weakness. This prompted a literature search with emphasis on ascending paralysis in an HIV patient. Citations were found on polymyelitis from reactivation of Poliovirus from oral polio vaccine. Polio titer was checked and confirmed immunity. A literature search for other causes of flaccid paralysis showed adenovirus may be a causative agent. Adenovirus PCR (stool specimen) was checked by NYS Virology Lab and confirmed positive adenovirus (subtype is pending at this time), in the absence of gastrointestinal symptoms. IVIG was suggested for treatment of adenovirus-associated ascending flaccid paralysis.

IMPACT: With early initiation of HAART, there is an increasing population of long term immunocompromised HIV patients. These patients are susceptible to rare viral infections with atypical presentations. This case broadens the differential diagnoses to include poliovirus and adenovirus when evaluating flaccid paralysis in this population, despite presenting in a Polio-free era.

DISCUSSION: We learned that with review of medical records, collaboration with other specialties, literature search and maintenance of board differentials, a correct diagnosis of adenovirus-associated ascending flaccid paralysis in an HIV patient was made.

ADULT-ONSET STILL DISEASE COMPLICATED BY MACROPHAGE ACTIVATION SYNDROME

Elizabeth Meyer[1]; Maya Appley[1]; Benjamin Bailey[1]; Catherine Jones[2]. [1]Tulane University, New Orleans, LA; [2]Tulane University SOM, New Orleans, LA. (Control ID #2705715)

LEARNING OBJECTIVE #1: Recognize adult onset Still disease as a cause of fever of unknown origin

LEARNING OBJECTIVE #2: Identify adult onset Still disease and its known complications

CASE: A 23-year-old Honduran man presented with 2 weeks of fevers and myalgias, with associated sore throat, pleurisy, and non-productive cough. Prior to symptom onset, he was healthy, with no significant family history, recent travel, sexual contacts, new medication or environment exposures. On presentation, he was ill-appearing, febrile, tachycardic and tachypneic. Bibasilar crackles, hepatomegaly and an evanescent salmon colored rash on the anterior chest were noted. Laboratory studies revealed WBC 34,000, 93% segs, 3% bands, Hgb 10.6, platelets 120,000, normal electrolytes, alkaline phosphatase 163, ferritin >15,000, ESR 105, CRP 34, triglycerides 488, fibrinogen > 700, normal CK and TSH, negative HIV, hepatitis panel, ANA, RF, ENA, CCP, RPR, T-spot, Influenza, Strep, Mono, urinalysis, urine, respiratory and blood cultures. CT was suggestive of an interstitial lung disease process. Echocardiogram showed an ejection fraction of 20–25%. Cardiac MRI revealed myocarditis. IL-6 was elevated to 94 and IL-2 was normal. He was diagnosed with adult-onset Still disease (AOSD). Additionally, bone marrow biopsy revealed few scattered hemophagocytes, suggesting macrophage activation syndrome (MAS) complicating AOSD.

IMPACT: Fever may be due to any number of infectious and non-infectious causes. When multi-organ dysfunction is present, fever is likely due to a systemic illness and can include rheumatologic diseases.

DISCUSSION: Recognition of AOSD as a cause of fever of unknown origin and its complications is vital to the internist. AOSD is a clinical diagnosis. The most sensitive, specific and widely used classification system is the Yamaguchi criteria. Diagnosis requires the presence of five or more criteria, of which at least two must be major criteria. Major criteria include intermittent fever ≥39 °C for 1 week, arthralgias or arthritis for 2 weeks, characteristic evanescent rash, and WBC ≥10,000 with neutrophils ≥80%. Minor criteria include pharyngitis or sore throat, lymphadenopathy, hepatomegaly or splenomegaly, liver enzyme abnormalities and negative RF and ANA. Exclusion criteria include absence of infection, malignancy or inflammatory diseases. Exceptionally high serum ferritin levels are also a common feature of both AOSD and MAS. This case is notable for demonstrating multiple rare, life-threatening complications of AOSD, including MAS, parenchymal lung involvement and myocarditis. While patients with milder disease generally respond to NSAIDS or steroids, treatment for severe disease is not well-defined. Treatment typically involves high-dose steroids with adjunctive immunosuppressive therapy. In patients with MAS, only case reports exist to guide treatment. Continued research into targeted treatment is critically needed to improve outcomes.

ADVANCED THERAPY FOR HIGH CLINICAL SUSPICION PULMONARY EMBOLISM

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LEARNING OBJECTIVE #1: Recognize signs of massive pulmonary embolism (PE)

LEARNING OBJECTIVE #2: Consider advanced therapy early in suspected cases

CASE: A 74-year-old man, with chronic kidney disease and multiple prior left ankle surgeries with hardware, presented with three days of left ankle pain and shortness of breath. His physical exam revealed hypotension, hypoxia, and respiratory distress. Laboratory workup showed initially normal platelet counts that decreased significantly throughout the hospital stay as well as *Staphylococcus aureus* bacteremia. Imaging of the left ankle showed extensive deep venous thrombosis (DVT) and likely osteomyelitis. A ventilation-perfusion (V/Q) scan showed low probability for PE. A transthoracic echocardiogram showed new, severe right heart strain with normal left ventricular (LV) function. The patient received pressor support, antibiotics for presumed septic shock due to osteomyelitis and infected hardware, and heparin infusion for the DVT. A few days after initial presentation, the diagnosis of massive PE was contemplated due to continued deterioration and the clinical findings. Intravascular ultrasound (IVUS) was used to evaluate the pulmonary arteries (PA). IVUS of the proximal main PA did not reveal an embolus; however, the mean PA pressures were markedly elevated, 50 mm Hg. Pigtail catheters with tissue-plasminogen activator (t-PA) were placed in the main PA. After 16 h of therapy, the catheters were removed. The patient had worsening hypotension again and suffered multiple pulseless electrical activity arrests resulting in death.

IMPACT: The patient's initial diagnosis was sepsis, and possible obstructive shock due to massive PE was overlooked given the V/Q scan result. However, the patient had multiple concerning signs: hypoxia, DVT, and new right heart strain. High clinical probability with a low-probability V/Q scan is indeterminate,

with the chance of PE ranging from 6 to 88%. With high clinical suspicion, PE should remain on the differential, especially in critically ill patients when advanced therapy may provide early hemodynamic improvement.

DISCUSSION: Systemic fibrinolysis is the most studied advanced therapy for massive or submassive PE, defined as PE with hemodynamic instability or right ventricular dysfunction, respectively. With the risk of intracranial hemorrhage though, there is growing interest in targeted fibrinolysis. A recent study of intra-catheter t-PA in 150 patients with massive or submassive PE showed reduction in both RV/LV diameter and mean PA systolic pressure at 48 h. In contrast to the patients in this study, our patient did not have a proximal PE confirmed on IVUS. However, given his elevated PA pressures, high clinical suspicion, and risk of perioperative mortality with such high right heart strain, intra-catheter TPA was administered. Further research is needed to better define the role of targeted TPA in acute PE. This case highlights the importance of weighing risks and benefits in complex patients and early consideration of advanced therapy.

AFOP'S FABLE Saamia Faruqui[1]; Jessica Berman[1]; Irene Grundy[2]. [1]Tulane University, New Orleans, LA; [2]Veterans Affairs/Tulane University SOM, New Orleans, LA. (Control ID #2705780)

LEARNING OBJECTIVE #1: Recognize hilar masses other than malignancy

LEARNING OBJECTIVE #2: Understand a rare interstitial pneumonia pattern

CASE: A 66-year-old woman with rheumatoid arthritis, COPD, and HTN presents with worsening oral pain and ulcers following a dental cleaning. She denied any chest pain or dyspnea. Home medications included methotrexate, prednisone, anti-hypertensive medications and inhalers. She had a fever of 100.5 °F with normal heart rate and blood pressure. Physical exam demonstrated a normal cardiopulmonary and a 3-cm oral ulceration inside her lower lip. Chest x-ray showed left perihilar fullness and opacity. A chest CT showed a new left hilar mass - not present on a previous CT done three months prior (routine lung cancer screening). The new mass was concerning for malignancy versus infection. Ceftriaxone and azithromycin were started; acyclovir was started for presumed HSV oral infection. Blood cultures and sputum cultures were negative. On day three of admit, she developed left sided pleuritic chest pain, respiratory distress, and hypoxemia responsive to oxygen. Fever persisted and physical exam was significant for left lower lobe crackles. Pulmonology performed a bronchoscopy and pathology showed acute fibrinous and organizing pneumonia in the setting of connective tissue disease. Pulmonology recommended a 4-week course of prednisone. On the higher dose of prednisone, her symptoms improved and she weaned from oxygen. She followed up in Pulmonology clinic and is on prednisone daily with plans to transition to mycophenolate.

IMPACT: With an increase in availability and use of CT scans, hilar masses may be easily discovered. An internist should consider other causes than malignancy. This case is an example of an alternative diagnosis.

DISCUSSION: This case highlights an unusual pulmonary complication associated with rheumatic disease. Acute Fibrinous and Organizing Pneumonia (AFOP) was defined in 2002 as a possible histologic variant from the already established cryptogenic organizing pneumonia (COP) and eosinophilic pneumonia (EP). The dominant histopathological finding was the presence of "fibrin balls," or intra-alveolar fibrin in a patchy distribution without hyaline membranes. The majority of cases of AFOP are idiopathic; however there may be an association with rheumatic diseases such as SLE and undifferentiated connective tissue disease. Other similar entities such as COP and EP have been associated with rheumatic diseases. Previously documented treatments for AFOP have included steroids, antibiotics, and cyclophosphamide. In one study, a good clinical response was observed with mycophenolate and corticosteroids. Mycophenolate can preserve lung function in connective tissue disease related interstitial lung diseases, making it a good treatment option for those with rheumatic disease. AFOP, while rare, has a seemingly high mortality rate (up to 50%) and should considered for any patient with rheumatic disease and pulmonary complaints.

ALL THAT FLUSHES IS NOT MENOPAUSE: HOW TO FLESH OUT FLUSHING Pooja Mehra; Rachel H. Kon. University of Virginia, Charlottesville, VA. (Control ID #2706100)

LEARNING OBJECTIVE #1: Generate a differential diagnosis for flushing in an adult and order appropriate testing.

LEARNING OBJECTIVE #2: Recognize symptoms of carcinoid syndrome.

CASE: A 59-year old female presented with flushing and sweating for 1 year with 30 episodes per day of suddenly feeling hot and sweating over her neck and face. She had intermittent diarrhea. A trial of paroxetine to treat presumed vasomotor symptoms provided no relief. She had been on HRT since TAH/BSO 20 years ago, but this was stopped 2 years. Past medical history included chronic back pain on narcotics, recurrent pancreatitis, hypertension, and hypothyroidism. She was on a fentanyl patch, HCTZ, metoprolol, and levothyroxine. Examination confirmed diaphoresis. TSH was normal. One month later, she was still having more than 30 flushing episodes per day. Urine 24 h 5-HIAA was normal. MRI to evaluate abdominal pain showed several bibasilar pulmonary nodules. Biopsy revealed spindle cell carcinoid. Chromogranin A level and Octreoscan were both normal. EGD and colonoscopy did not find GI carcinoid. Since she remained severely symptomatic, octreotide was started by Oncology despite the negative serologic and secretory workup. Flushing decreased to 3 episodes per day and nodules decreased slightly in size.

IMPACT: Knowing the sensitivity of the screening test can help determine if further workup is needed. When the urine 5-HIAA test returned normal, carcinoid syndrome was felt to be unlikely. However, she had a high enough pretest probability due to typical symptoms to pursue the diagnosis.

DISCUSSION: The evaluation of a patient with flushing starts with a detailed history and physical exam, including a flushing diary. Specific questions should include presence of diarrhea, headache, palpitations, wheezing, shortness of breath, or urticaria; correlation with fever or blood pressure change; and triggers (diet, alcohol, or strong emotion). The differential can be broken into two parts: autonomic versus vasodilation. Autonomic mediated flushing includes thermoregulatory flushing as seen in fevers and exercise, post-menopausal hot flashes, emotional flushing, and flushing caused by certain neurologic disorders. Vasodilator mediated flushing includes medication side effect (vasodilators, nicotinic acid, steroids, hormonal therapy, and narcotics). Further workup should include urine 5-HIAA for carcinoid syndrome; histamine, prostaglandin D2, and tryptase for systemic mastocytosis; and fractionated metanephrines for pheochromocytoma as these are the most common systemic causes of flushing. If negative, then referral to Endocrinology for workup of rare causes is necessary. This patient had a seronegative, non-secreting carcinoid tumor and her symptoms were likely related to this, owing to decrease in flushing with octreotide. Sensitivity of the urine 5-HIAA test is 90% for carcinoid syndrome, but bronchial carcinoids can produce severe flushing through release of vasoactive peptides that will not be detected in the urine 5-HIAA test.

ALLOPURINOL-INDUCED DRESS SYNDROME WITH CHOLESTASIS Preeyanka R. Sundar[1]; Amani F. Sargios[2]. [1]Berkshire Medical Center, Assonet, MA; [2]Berkshire medical center, Wappingers falls, NY. (Control ID #2681581)

LEARNING OBJECTIVE #1: Recognizing signs, symptoms, and understanding the pathophysiology of DRESS syndrome (DS)

LEARNING OBJECTIVE #2: Recognize diagnostic modalities for DS

CASE: 54 year old male with past medical history of gout, asthma, status post gastric bypass graft presented after 3 days of fever, chills, and subcutaneous abscess of his right foot. Admitted for necrotizing fasciitis complicated by sepsis, AKI with creatinine of 4, and hemodynamic instability that required below knee amputation of his right leg, he post operatively developed acute gout flare of his right knee and was prescribed colchicine. Weeks after discharge he presented with gout flair with hemoglobin of 6.8, complicated by an episode of hematemesis. EGD was performed which revealed a 3 cm bleeding marginal ulcer and he had pre-renal azotemia in the setting of acute blood loss. He was started on allopurinol with tapering dose of prednisone by his rheumatologist. One month later, he complained of 4 days chills, swollen tongue with oral cavity and posterior wall pharynx raised flat-topped lesions with difficulty swallowing, and morbiliform, infiltrated erythematous skin eruption began on his face and spread to his chest over 24 hrs with scrotal tenderness and swelling. Negative Nikolski sign. Allopurinol was stopped, but the rash continued to spread, which necessitated admission. Labs showed ALP 881, AST 70, ALT 201, ESR 80 mm/hr, with eosinophilia of 0.9 K/uL, CMV IgG was elevated at 72 although Herpes Virus 6 DNA PCR was less than 500 copies/mL. CT abdomen and pelvis showed biliary sludge without evidence of acute cholecystitis, dilatation of proximal common bile duct of 12 mm, and distally CBD measured 9 mm. Skin biopsy confirmed DRESS demonstratin spongiosis with microvesicles overlying perivascular lymphohistiocytic infiltrates with eosinophils. Treatment with methylprednisone 60 mg Q6h tapered to oral dose of prednisone over 6 weeks showed improvement of rash, systemic symptoms, and lab results.

IMPACT: Drug-Reaction with Eosinophilia and Systemic Symptoms (DRESS) also known as Drug-Induced Hypersensitivity Syndrome (DIHS) is a rare, severe cutaneous adverse reaction, first introduced by Bocquet in 1996. Several common drugs may induce DS including anti-epileptics, antibiotics, NSAIDs, allopurinol, sulfonamides, carbamazepine, biologics and phenobarbital.

DISCUSSION: DS/DIHS begins 2–6 weeks after drug initiation and is characterized by fever, morbilliform-type or maculopapular rash, lymphadenopathy, eosinophilia, with or without leukocyte abnormalities, with internal organ involvement in the form of acute kidney failure with elevated creatinine, liver toxicity characterized by transaminitis with no obstruction. A type IV late hypersensitivity reaction, DS evidences of interaction between immune system, the offending drug, and reactivation of HHV-6, CMV, and EBV. Incidence is between 1:1,000, and 1:10,000 patients, mortality rate up to 10%. Corticosteroid-resistant DRESS is treated with IVIG, valganciclovir, cyclosporine, and immunosuppressants.

AMBULATORY BLOOD PRESSURE MONITORING: SHOULD WE BE DOING THIS MORE FOR OUR PATIENTS? Galina S. Tan. Cambridge Health Alliance, SOMERVILLE, MA. (Control ID #2702266)

LEARNING OBJECTIVE #1: Use a patient case to illustrate a common clinical conundrum related to management of hypertension and white coat hypertension

LEARNING OBJECTIVE #2: Review the rationale and evidence behind ambulatory blood pressure monitoring (ABPM)

CASE: 50 year old female in primary care clinic for hypertension follow up. Past medical history includes resistant hypertension, type 2 diabetes, and obesity. Closely followed over the past year for poorly controlled hypertension, with a negative workup for secondary hypertension. She is compliant on diet and 3 antihypertensives, and checks her blood pressure regularly at home. She is unhappy with the number of pills she has to take, and notes that her clinic blood pressure readings are always much higher than her home blood pressure readings. Clinic BP: 164/96 at the time of visit (no signs/symptoms of hypertensive crisis). BP range 122-170/80-102 over the past year. Home BP: 120 s/70s every morning before breakfast and medications, over the past few months per patient's logbook.

IMPACT: Questions from case: Why the discordance in clinic vs. home BP readings? Could it be due to bad technique, false home blood pressure recordings, white coat hypertension? Would ambulatory blood pressure monitoring (ABPM) be useful in this patient's case and help change management? ABPM is often cited on the medical board exams and clinical guidelines as being an important diagnostic tool in hypertension, yet it is seldom done in practice. What exactly is the rationale and evidence behind this recommendation?

DISCUSSION: This case was presented at Cambridge Health Alliance's (CHA) Medicine grand rounds, which involved a thorough review of the background and literature behind ABPM as well as discussions with cardiologists and members of the hypertension task force at CHA. - ABPM gives an unparalleled breadth of patient blood pressure data outside the artificial clinic setting, and has also been shown to be better predictors of longterm cardiovascular outcomes compared to clinic blood pressure readings. While this gives it potential to be a great tool for diagnosing/managing HTN, it is highly unpractical given the current limitations of insurance coverage, contract quality metrics, and logistical barriers. - It is also important to remember the important goal of improving meaningful patient outcomes, not just treating the numbers (BP readings), when managing hypertension. ABPM may lead clinicians to be biased towards treating the numbers. - The most obvious benefit of ABPM is in identifying patients with white coat hypertension and thus leading to less prescription of unnecessary antihypertensive medications. However, it is interesting to note that there is increasing data suggesting that white coat hypertension is not as benign as previously thought. - Incremental benefit of ABPM over home blood pressure monitoring (HBPM) seems small, so it is unlikely that we are doing patients a huge disservice by not offering ABPM as long as we use a standardized approach to following home BP readings.

AMIOADARONE-INDUCED THYROTOXICOSIS Elizabeth Meyer; Kristin Bateman. Tulane University, New Orleans, LA. (Control ID #2705804)

LEARNING OBJECTIVE #1: Identify thyroiditis as cause of fever.

LEARNING OBJECTIVE #2: Recognize amiodarone as a cause of thyroiditis.

CASE: A 53-year-old woman with history of cardiac sarcoidosis (EF 25–30%) complicated by ventricular tachycardia on chronic prednisone and amiodarone presented with a three-week history of fever and chest pain. She had a temperature of 38.8 degrees celsius, sinus tachycardia, and a non-palpable thyroid. Cardiac exam revealed a regular rate and rhythm. Pulmonary exam was clear to auscultation. Pertinent labs included normal WBC, elevated ESR and CRP, markedly decreased TSH with elevated free T4 and rT3. ECG showed sinus tachycardia with premature ventricular contractions. Extensive infectious and non-infectious

work-up was completed and negative, including lumbar punctures, chest CT angiography, CT abdomen and pelvis, stool studies and blood, urine and stool cultures. Thyroid ultrasound showed a heterogeneous echogenic thyroid. Thyroid uptake scan showed diffuse decreased uptake consistent with thyroiditis. She was diagnosed with destructive thyroiditis due to amiodarone use.

IMPACT: Fever without a source is commonly encountered by the internist. Initial work-up is directed towards infection, venous thromboembolism, malignancy, and autoimmune. If initial testing is non-revealing, noninfectious inflammatory diseases, such as thyroiditis should be considered.

DISCUSSION: Painless thyroiditis is autoimmune-mediated or after exposure to certain drugs, such as amiodarone. Manifestations of amiodarone-induced thyrotoxicosis can be missed due to beta-blocking activity minimizing many adrenergic manifestations; common signs are arrhythmias, ischemic heart disease or heart failure exacerbation, weight loss, restlessness or fever. Amiodarone-induced thyrotoxicosis is categorized as type 1 or 2. Type 1 is caused by active production of excessive thyroid hormone and associated with an underlying thyroid abnormality/disease. Thyroid Doppler shows an enlarged gland with increased vascularity; scanning with 99mTc-sestamibi shows normal to increased thyroid uptake. Proptosis and serum TSI are diagnostic of type 1. Treatment includes methimazole and perchlorate, which further blocks iodine uptake. Type 2 is the result of drug-induced lysosomal activation leading to destructive thyroiditis. Incidence rises as cumulative amiodarone dosage increases. Thyroid Doppler shows a normal sized gland without increased vascularity; scanning with 99mTc-sestamibi reveals no thyroid uptake. Discontinuation of amiodarone will not have an acute effect because of its storage and prolonged half-life (100 days). However, serum levels of interleukin-6 are usually quite elevated; thus patients are treated with a prednisone taper. Though amiodarone can have tremendous beneficial effect, it requires constant vigilance. Current recommendations include checking thyroid function tests prior to commencing amiodarone and monitoring every six months.

AN (INBORN) ERROR IN THE DIAGNOSIS: AN UNUSUAL PRESENTATION OF ALTERED MENTAL STATUS Poorvi Desai; Kellee Oller; Cuc Mai. University of South Florida, Tampa, FL. (Control ID #2706869)

LEARNING OBJECTIVE #1: Recognize that inborn errors of vitamin B12 metabolism can present initially in young adults.

LEARNING OBJECTIVE #2: Assess for disorders of cobalamin metabolism in young adults with macrocytic anemia and altered mental status despite normal B12 levels.

CASE: A 22 year-old woman with known mild cognitive delay attributed to infant hypoxia presented with progressive cognitive decline and regressive behavior. She lived independently until 8 months prior to hospitalization when she was diagnosed with pernicious anemia and hypothyroidism. Despite cyanocobalamin and levothyroxine adherence, her symptoms worsened to forgetting activites of daily living. Upon admission she was oriented only to person. Physical exam was remarkable for delayed speech, wide-based gait, atrophic glossitis, and a witnessed episode of brief cyanosis with emesis. Initial laboratory studies revealed macrocytosis with mean corpuscular volume of 135 femtoliters. Peripheral smear demonstrated hypersegmented neutrophils. RBC folate, cobalamin, and methylmalonic acid levels were unremarkable, but homocysteine was elevated at 124 umol/L. Extensive altered mental status workup was then undertaken. MRI brain showed confluent increased T2 and FLAIR signals in the periventricular white matter disproportionate to age. Electroencephalogram revealed moderate diffuse encephalopathy. Urine drug screen, TSH, whole spine MRI, HIV, CSF studies, and malignancy testing were unremarkable. Lastly, genetics evaluation was obtained. Serum oganic acid testing returned with low-normal plasma methionine and elevated free homocysteine. Homocysteinuria NextGen sequencing revealed two MTRR gene mutations known to cause Cobalamin E (CblE) deficiency. Hydroxocobalamin and betaine were begun, which aided in improvement, though she continued to require 24 h care.

IMPACT: This case adds to the literature of rare cases of young adults who present with inborn errors of cobalamin metabolism, contributing to the differential for altered mental status. Additionally, it provides a diagnostic strategy for internists who may otherwise make the easy mistake of anchoring onto the presumptive diagnosis of vitamin B12 deficiency in a patient with macrocyctic anemia and neurologic changes.

DISCUSSION: CblE Deficiency, an autosomal recessive disease of impaired methionine synthase, comprises less than 5% of disorders of intracellular cobalamin metabolism. The median age of presentation is 4 weeks old, but internists should be aware that patients can present atypically as adolescents or young adults. Not all states have incorporated it into newborn screening, and results may differ by laboratory technique. Our case highlights that with a clinical suspicion of vitamin B12 deficiency despite adequate supplementation, internists should consider screening for intracellular disorders of cobalamin metabolism. Treatment is focused on betaine and hydroxocobalamin, a precursor to cyanocobalamin, and prognosis for patients with late-onset varies after initiation of appropriate therapy.

AN ATYPICAL CASE OF AKI: WHEN CRYOGLOBULINS GO COLD Hani Rashid[1]; Phuong T. Nguyen[2]; Roberto Collazo-Maldonado[1]; Anas Saleh[2]. [1]Methodist Dallas Medical Center, Dallas, TX; [2]Medical City of Fort Worth, Fort Worth, TX. (Control ID #2688224)

LEARNING OBJECTIVE #1: Diagnose atypical causes of acute kidney injury

LEARNING OBJECTIVE #2: Recognize relationship between Sjogren's syndrome and cryoglobulinemia

CASE: A 30 year old Hispanic female with no past medical history presented with one week history of progressive dyspnea, lower extremity edema, orthopnea and nocturnal cough. She denied associated chest pain, nausea, or diaphoresis. Significant findings on physical examination were hypertension, bibasilar crackles and lower extremity pitting edema to the knees. Chest radiograph revealed bilateral pleural effusions and CT angiography was negative for pulmonary embolism. Echocardiography and abdominal ultrasound were unremarkable. Laboratory data revealed a creatinine of 1.3 mg/dL, as well as nephrotic range proteinuria (4.7 grams protein per 24 h period). The patient was started on intravenous furosemide in an attempt to overcome her volume overload, but this treatment failed and renal function continued to worsen. Autoimmune evaluation demonstrated positive anti-SSA antibody and rheumatoid factor with undetectable serum complement component C4. Kidney biopsy confirmed the diagnosis of Sjogren's syndrome-associated mixed cryoglobulinemic membranoproliferative glomerulonephritis. The patient completed a course of plasmapheresis, and was begun on therapy with rituximab and steroids. While she initially achieved remission following treatment, she has since had one relapse that was successfully treated with a course of cyclophosphamide.

IMPACT: Acute kidney injury is too often categorized as either pre-renal azotemia or acute tubular necrosis. This case emphasized that interpretation of

certain lab findings (e.g. an elevated creatinine) requires critical evaluation of potential etiologies. Specifically, this case illustrated the importance of maintaining a high degree of suspicion for cryoglobulinemia in patients with acute kidney injury and findings suggestive of rheumatologic disease.

DISCUSSION: Cryoglobulinemia is characterized by the presence of immunoglobulins that reversibly precipitate at low temperatures. This may result in a clinical syndrome of systemic inflammation and tissue damage commonly affecting kidneys and skin caused by cryoglobulin-containing immune complex deposition and complement activation. Patients with type II (mixed) cryoglobulinemia have rheumatoid factors associated with chronic inflammatory states such as SLE, Sjogren's syndrome, and viral infections. An internist must be able to recognize when acute kidney injury may be a manifestation of a rare underlying disease process, especially in young patients with no known contributing factors. Cryoglobulinemia is a rare disease entity that can result in devastating organ damage, including membranoproliferative glomerulonephritis. Patients with cryoglobulinemia are usually diagnosed in the inpatient setting, and often respond to immunosuppressive regimens.

AN ELUSIVE DIAGNOSIS REVEALED BY AUTOPSY Saroja Bangaru[2]; Amanda Strickland[3]; Stephen Dickson[2]; Nainesh Shah[1]. [1]UT Southwestern, Dallas, TX; [2]University of Texas Southwestern, Dallas, TX; [3]University of Texas Southwestern Medical Center, Dallas, TX. (Control ID #2700935)

LEARNING OBJECTIVE #1: Recognize HLH and its association with HHV-8

LEARNING OBJECTIVE #2: Appreciate the role of autopsy in postmortem diagnosis

CASE: A 45-year-old man with a history of AIDS (CD4 34) who recently restarted antiretroviral therapy after prolonged noncompliance presented with fever (40C) and diarrhea and was admitted for septic shock. His lab work was notable for hemoglobin 7.9, leukocyte count 3.6, platelets 126, and ferritin 2500. Infectious work-up including bacterial, fungal, and acid fast bacilli blood cultures; sputum, urine, and stool studies; and cytomegalovirus PCR was negative. He improved initially with fluids, empiric antibiotics, and steroids but his shock recurred two weeks later and was associated with rapidly progressive somnolence and transfusion-dependent cytopenias. A more extensive work-up was negative for EBV, disseminated HSV, parvovirus, HHV6, tuberculosis, disseminated histoplasmosis, cryptococcus, brucellosis, and bartonella. Computed tomography of chest, abdomen, and pelvis revealed hepatosplenomegaly and diffuse lymphadenopathy. He was started on empiric treatment for disseminated mycobacterium avium-intracellulare. Hemophagocytic lymphohistiocytosis (HLH) was considered given persistent fever, splenomegaly, low fibrinogen (106 mg/dL), high ferritin (7125 ng/mL), and severely elevated IL-2 receptor level (18,890 pg/mL (normal = <1033). Bone marrow biopsy did not show hemophagocytosis but was unable to rule out HLH, so high-dose dexamethasone was initiated to treat HLH. The patient did not improve, though, and his family elected for comfort care. He died two days later. Postmortem exam via autopsy revealed profound hemophagocytosis in the bone marrow, spleen and lymph nodes, affirming a diagnosis of HLH. It also revealed pulmonary Kaposi's sarcoma (KS) with scattered HHV-8 positive cells. HHV-8 serum PCR resulted 210,000 DNA copies/mL. The postmortem diagnosis was HLH secondary to HHV-8 and associated KS in the setting of advanced AIDS.

IMPACT: This case brings to attention HLH, a rare hematologic diagnosis that should be on the internist's early differential for a decompensating patient with poorly controlled AIDS. This patient's diagnosis adds to only a few reported cases of HHV8-associated HLH in the HIV population.

DISCUSSION: In HIV/AIDS patients, HLH is usually driven by an underlying infection or malignancy. The mainstay of management of secondary HLH is treatment of the underlying cause, but patients with HHV-8-associated HLH have benefited from steroids and chemotherapy. Autopsy rates have declined more than 50 percent over 4 decades, but in our case, HHV-8 positivity, KS, and HLH were all postmortem diagnoses, illustrating the power of autopsy to provide diagnoses that are complex and so, can evade clinical evaluation. Thus it maintains value in modern clinical medicine. As providers of end of life care and in an effort to advance medical knowledge, it is imperative for internists to discuss autopsy with patients' families when appropriate.

AN ESSENTIAL VITAMIN FOR EFFECTIVE HEMATOPOIESIS: A SIMPLE CURE FOR BONE MARROW FAILURE Adrienne N. Poon[1]; Hind Rafei[2]; William B. Ershler[3]. [1]George Washington School of Medicine and Health Sciences, Clifton, NJ; [2]George Washington University Hospital, Arlington, VA; [3]Institute for Advanced Studies in Aging, Falls Church, VA. (Control ID #2706959)

LEARNING OBJECTIVE #1: Diagnose pancytopenia as a presentation of severe vitamin B12 deficiency

LEARNING OBJECTIVE #2: Recognize indications of B12 screening and repletion

CASE: A 47 year old female with a history of carcinoid gastric tumor and anemia presented with a month of progressive generalized weakness, dizziness, fatigue, and 20 lb weight. She was transfused for symptomatic anemia a year prior. Medications included ferrous sulfate tablets. Vital signs were unremarkable. Examination was notable for a petechial rash on bilateral upper and lower extremities. Labs included: WBC 2,480/mm^3 with ANC 1,413; hemoglobin 6.1 g/dL with MCV 100.6 fL, RDW 39%, and 4/100 nucleated RBCs; platelets 67,000/mm^3; Tbili 3.6 mg/dL; AST 62 U/L; ALT 28 U/L; iron 88 ug/dL, TIBC 167 ug/d, and iron saturation 53%. Folate was normal at 14 ng/mL, however vitamin B12 was severely low at 54 pg/mL with a high methylmalonic acid of 2,700 nmol/L. She had high gastric parietal cell antibody of 80.3 U though intrinsic factor blocking antibody was negative. Parvovirus antibody and JAK2V617F were also negative. Peripheral blood smear revealed pancytopenia, occasional hypersegmented neutrophils, oval macrocytes and fragmented erythroid cells. Bone marrow biopsy to showed hypercellular marrow with trilineage hematopoiesis and megaloblastosis consistent with megaloblastic anemia. Flow cytometry was normal. CT abdomen was notable for splenomegaly. She was diagnosed with pernicious anemia and treated with 1000 mcg of intramuscular vitamin B12 for 7 days with improvement in her hemoglobin to 9.8 g/dL, MCV to 99.4 fL, RDW to 32%, and nucleated RBC to 2/100 WBCs. Tbili as marker of indirect bilirubin for intramedullary hemolysis from ineffective erythropoiesis improved to 2.6 mg/dL. She will continue intramuscular vitamin B12 indefinitely.

IMPACT: Screening B12 in the setting of macrocytic anemia is relatively low cost compared to more extensive and invasive evaluation often warranted in undiagnosed severe B12 deficiency as in this case. Early repletion of vitamin B12 leads to rapid reversal of symptoms, improvement in erythropoiesis, and prevents progression to severe disease.

DISCUSSION: Vitamin B12 deficiency is a reversible cause of bone marrow failure and a demyelinating nervous system disorder. Thus, early detection and

prompt treatment is essential. The severity of ineffective erythropoiesis that results also causes ineffective myelo and megakaryocytopoiesis as well, leading to the presentation of pancytopenia similar to this case. The presentation might be complicated by the presence of splenomegaly that mimics acute leukemia and mislead diagnosis. Ineffective erythropoiesis in the hypercellular bone marrow likely led to premature release of nucleated red blood cells that overwhelmed the spleen's ability to clear, which may have accounted for the splenomegaly. In this case, the presence of macrocytic anemia, anti-parietal cell antibodies, low B12, elevated MMA, bilirubin, and megaloblastosis on biopsy were suggestive of megaloblastic anemia.

AN INDECISIVE THYROID Kyle V. Keinath[1]; Jason Unger[1]; Joan B. Ritter[2]. [1]Walter Reed National Military Medical Center, Washington, DC; [2]Walter Reed National Military Medical Center, Bethesda, MD. (Control ID #2706247)

LEARNING OBJECTIVE #1: Tailoring management and assessment of thyroid conditions.

LEARNING OBJECTIVE #2: Recognize shifts in disease states in patients with thyroid diseases.

CASE: A 55 year old female presented to clinic with insomnia, frequent waking, feeling warm, and palpitations. She has a history of Hashimoto's Thyroiditis, diagnosed in 1997 with a Radiolabeled Iodine Uptake scan (RAIU) of 0 and positive Thyroperoxidase antibodies (TPO Abs), treated with 125mcg Synthroid. Physical exam proved a 2 cm small goiter. Blood work revealed a TSH <0.005 U/ml and free Thyroxine of 2.02 μg/ml. Synthroid was sequentially decreased. Serial labs revealed free Thyroxine (1.88, 1.96, 1.77 μg/ml) and decreased TSH (<0.005, 0.006, 0.007 U/ml). Further tests revealed a Thyroptropin Receptor Ab of 4.6 and a Thyroid Stimulating IgGs of 167%. RAIU revealed 18% uptake at 4 hours, 45% uptake at 24 hours. The pinhole images show homogeneous trapping without focal areas of accumulation, consistent with Graves Disease. She was treated with Methimazole 20 mg daily. She returned two months later with easy fatigue. Labs showed TPO Ab of 93 IU/ml, Thyroglobulin Ab of <1.0 IU/ml, Thyroxine of 0.88 μg/ml, and TSH of 4.830 U/ml. Methimazole was held, serial labs continued to be hypothyroidic, 25mcg Synthroid was instituted on which the patient remains.

IMPACT: We were unaware of the possibilty of shifting pathologies. In surviellance of my patients, we have been more proactive in lab work monitoring. In treating patients, we no longer immediately associate symptoms with Synthroid. This case adds to the literature in the nature of the stability of the patient treatment prior to acquiring Grave's Disease, the longest of researched cases, in addition to episodic nature of hyperthyroidism.

DISCUSSION: Hypothyroidism affects 1–2% of the global population[1]. The most common cause of iodine replete hypothyroidism is Hashimoto's Thyroiditis. In rare instances patients being treated for Hashimoto's Thyroiditis can develop Grave's Disease, the leading cause of hyperthyroidism[2]. It is theorized there is a paradigm shift in auto-antibodies occurs creating a conversion to Grave's Disease[3]. The case is an atypical pattern of thyroid disease. Complicating the clinical picture is the initial prolonged stability, a stable nineteen year clinical course. This case highlights the importance of not solely attributing thyroid changes to improper medication dosages, and to always consider that individuals with a history of hypothyroidism may actually have developed hyperthyroidism pathophysiology. [1] Vanderpump MPJ. The epidemiology of thyroid diseases. In: Braverman LE,Utiger RD, editors. Werner and Ingbar's The Thyroid: A Fundamental and Clinical Text. 9th edn. Philadelphia: JB Lippincott-Raven; 2005. p. 398–496. [2] Canaris GJ, Manowitz NR, Mayor G, et al. The Colorado thyroid disease prevalence study. Arch Intern Med 2000;160:526–34. [3] Furqan S, Haque N, Islam N: Conversion of autoimmune hypothyroidism to hyperthyroidism. BMC Research Notes 2014, 7:489.

AN INFECTIOUS HEMORRHAGE Yekaterina Kim; Phillip D. Zhang; Daniel Landau; Lewis A. Eisen. Montefiore Medical Center, Bronx, NY. (Control ID #2703732)

LEARNING OBJECTIVE #1: Recognize the differential diagnosis of intracerebral hemorrhage (ICH)

LEARNING OBJECTIVE #2: Recognize that herpes encephalitis can be complicated by ICH

CASE: A 72 year-old woman with a history of cerebral aneurysm clipping, seizures and hypertension presented with headache, confusion and lethargy for two weeks. She was febrile to 104 F, hypertensive and tachycardic. The patient was disoriented and had nuchal rigidity. CT head on admission was normal. Cerebrospinal fluid revealed total protein 72 mg/dL, glucose 79 mg/dL, red blood cells 1979/mm^3, and white blood cells 58/mm^3 with lymphocyte predominance. Polymerase chain reaction was positive for HSV-1. The patient was started on intravenous acyclovir. One week later, she had worsening confusion with new left sided hemiparesis. Repeat imaging revealed an acute right frontotemporal hemorrhage with mass effect on the right lateral ventricle and midline shift. CT angiogram ruled out any aneurysm or evidence of arteritis. Patient underwent supportive care and remained stable in the intensive care unit with slowly improving neurologic status.

IMPACT: Typical causes of ICH include hypertension, brain masses and vascular malformations. However, clinicians should also be aware of less common causes of ICH, such as HSV encephalitis.

DISCUSSION: Intracerebral hemorrhage (ICH) is the second most common type of stroke, trailing only ischemic stroke in frequency. Common causes include hypertension, cerebral amyloid angiopathy (CAA), brain tumors, and blood vessel abnormalities. Approximately 80% of cases of ICH are considered primary which include arterial hypertension and CAA. Cerebral hemorrhage associated with herpes simplex encephalitis (HSE) - a type of secondary ICH - is uncommon, with only several cases reported. HSE is the most common cause of fatal sporadic encephalitis in the United States, accounting for approximately 10–20% of annual cases of viral encephalitis. The temporal and frontal lobes are the most commonly affected areas in HSE. A common pathological feature is necrotizing infiltrate with foci of small hemorrhages. Mortality associated with HSE is 20–30% in treated patients and can reach up to 70% in the untreated patient. A rare complication of HSE is large territory ICH. It has been suggested that HSV induces small vessel vasculitis of the brain causing endothelial damage, followed by rupture of small vessels and formation of hematoma. Even after standard therapy with IV acyclovir, risk of hemorrhage continues to exist within one to two weeks of presentation. The role of neurosurgical intervention such as decompressive craniectomy remains unclear. Case reports demonstrate similar outcomes in patients who underwent neurosurgical intervention versus those who received supportive management. In patients with HSV encephalitis, when there is lack of clinical improvement or worsening of initial symptoms, clinicians should have a high index of suspicion for ICH.

AN OMINOUS CAUSE OF FACIAL PAIN AND NUMBNESS Layal S. Sayegh[2]; Dan Hunt[1]. [1]Emory University, Atlanta, Uganda; [2]Emory School of Medicine, Atlanta, GA. (Control ID #2697974)

LEARNING OBJECTIVE #1: Recognize features of fungal sinusitis.
CASE: A 30 year-old woman presented with three weeks of progressive right facial pain and headache. She described a constant burning, throbbing headache over the right frontal and peri-orbital region accompanied by right facial numbness, blurred vision in the right eye, photophobia and phonophobia. Other associated symptoms included fatigue and malaise. Percocet, Tylenol 3, Lortab or carbamazepine did not relieve her symptoms and she had been on a three-week course of azithromycin without improvement. Her temperature was 36.2, blood pressure was 114/72, heart rate was 58, respiratory rate was 16 and oxygen saturation was 100%. She had mild proptosis of the right eye; extraocular movements were intact with pain on movement of the right eye and photophobia of the right eye. Facial movements were symmetric bilaterally, but she had decreased sensation to light touch in all distributions of the right trigeminal nerve. Laboratory evaluation revealed white blood cell count 6500 and negative HIV antigen/antibody testing. CT revealed complete opacification of the right sphenoid sinus and mucosal thickening in the right posterior ethmoid and left sphenoid sinuses, consistent with acute on chronic fungal sinusitis. MRI was consistent with the CT findings with the addition of involvement of the right Meckel's cave and foramen ovale, suggestive of chronic fungal sinusitis with a possible invasive component. Tissue sampling revealed necrotic material with fungal elements. We initiated ampicillin/sulbactam to treat presumed co-existent bacterial sinusitis along with isavocanazonium/isavoconazole. Treatment resulted in improvement of her trigeminal neuropathy and returned home on long-term oral isavuconazonium. Cultures eventually grew *Schizophyllum commune*.
IMPACT: This young woman's course has been a reminder that significant neurologic findings in patients presenting with localized headache warrant neuroimaging and that imaging suggestive of possible fungal sinusitis should lead to multidisciplinary intervention.
DISCUSSION: Headache and facial pain is a commonly encountered problem for practicing internists. This case was suggestive of a trigeminal neuropathy. Common etiologies of trigeminal neuropathy include; trigeminal neuralgia, postherpetic neuralgia, acute herpes zoster, and post-traumatic trigeminal neuropathy. However, in this case MRI confirmed the presence of sinusitis consistent with fungal etiology and also showed direct extension to the foramen ovale along the V3 branch of the trigeminal nerve. This finding was consistent with her presenting symptoms and sensory findings on exam. Acute invasive fungal rhinosinusitis requires immediate evaluation by an otolaryngologist. Direct endoscopic visualization of the sinuses confirmed fungal sinusitis, allowed extensive debridement of the involved sinuses, and led to systemic antifungal therapy. *Schizophillum commune* is an under-recognized cause of bronchopulmonary disease and sinusitis.

AN ORDINARY FINDING COULD BE A CLUE TO THE SOLUTION Yuji Nishihara; Ryuichi Sada; Makito Yaegashi. Kameda Medical Center, Kamogawa, Japan. (Control ID #2700333)

LEARNING OBJECTIVE #1: Although an infection of a simple liver cyst is extremely rare, it could happen after endoscopic retrograde cholangiopancreatography (ERCP).
CASE: A 85-year-old man with a history of choledocholithiasis, cerebral infarction, and rheumatoid arthritis was transferred to our emergency center with a two-day history of high grade fever and difficulty in movement accompanied with fever, chill, and fatigue. He had no abdominal pain. About one year ago, he underwent ERCP and choledocholithotomy. At that time, he was found to have a simple liver cyst with the diameter of 60 mm. His regular medication included prednisolone 5 mg, bucillamine 300 mg, and furosemide 40 mg. On admission, he was hypotensive with his blood pressure of 80/40 mmHg, and his pulse rate of 90 beats per min. Although his physical examination was unremarkable, his laboratory data showed acute kidney injury, and elevated inflammatory markers with normal hepatic and biliary enzymes. His abdominal CT with contrast showed choledocholithiasis and intrahepatic bile duct dilatation, but his liver cyst revealed no sign of infection. We diagnosed acute cholangitis, and treated with piperacillin/tazobactam and endoscopic biliary drainage. Both his blood culture and his bile culture were positive for *Raoultella ornithinolytica*. He recovered from the septic shock rapidly, but his high grade fever persisted despite continuous drainage and appropriate antimicrobial coverage to susceptible organisms. His repeated work-up for the fever was unrevealing. His Abdominal ultrasound revealed no change in the existing liver cyst. On the day 6 of admission, his MRI showed an enlarged liver cyst with the diameter of 92 mm containing pus. After percutaneous transhepatic puncture, his condition improved dramatically.
IMPACT: To date, no case of simple liver cyst infection after ERCP was reported. This is the first case report of the matter. This is important, since it is really difficult to recognize the infection of simple liver cyst with few subjective symptoms. Identification of the infection might lead to the percutaneous drainage.
DISCUSSION: Simple cysts are found in up to 5% of the population. They develop congenitally from aberrant intrahepatic bile ducts, and don't communicate with the biliary tree. In this case, MRI revealed no connection of the cyst with bile ducts. In the patients of autosomal dominant polycystic kidney disease (ADPKD), liver cyst infection (LCI) usually causes abdominal pain and fever. In one report, sepsis developed in 75% of LCI episodes in ADPKD patients and the mortality was 25%. Since the rapid enlargement with pus in the cyst occurred just after the ERCP, the cyst infection could be caused by the ERCP. Negative culture of the pus might be due to preceding antibiotics. When a patient with simple liver cysts has a persistent fever after ERCP, we should investigate the existence of cyst infection.

AN OUNCE OF PREVENTION: A CASE OF A WOMAN AT RISK Adaugo Amobi. Massachusetts General Hospital, Brookline, MA. (Control ID #2704145)

LEARNING OBJECTIVE #1: Initiate PrEP treatment and monitoring.
LEARNING OBJECTIVE #2: Explain the available data on PrEP use in women.
CASE: Ms. V is a 29 yo F IV drug user presenting for her annual wellness visit. She has no complaints. Review of systems is negative. Social history is significant for sexual activity with 3 different male partners within the past month who are also IV drug users. She uses condoms infrequently. She injects heroin every other day and has shared needles twice in the past 2 months. Screening labs show she is HIV and HCV negative.
IMPACT: I learned how to counsel my patients about PrEP.
DISCUSSION: All patients with high risk of contracting HIV should be considered for pre-exposure prophylaxis (PrEP). This includes men who have

sex with men (MSM) with no or inconsistent use of condoms, high numbers of sexual partners, or recent bacterial STI; heterosexual women with inconsistent or no condom use with sexual partners who are at substantial risk of HIV infection (MSM or IV drug users) and IV drug users who share injection equipment or have recently been in drug treatment program. The Partners-PrEP trial examined use of PrEP in heterosexual serodiscordant couples and found 71% efficacy of tenofivir in women compared to placebo. Subsequent studies including FEM-PrEP and VICE compared the use of tenfovir alone and tenofovir-emtricitabine in reproductive age women. FEM-PrEP and VOICE trials did not show a definitive reduction in HIV incidence; post-hoc analysis suggests that this is likely explained by poor adherence. Less than 40% of women in all study arms of the two trials were adherent to the medication, qualitative analyses have identified participant beliefs and attitudes as a major cause. Based on the totality of data available on PrEP, the CDC and WHO recommend PrEP for women at high risk of contracting HIV. PrEP treatment consists of one combination pill daily of tenofovir disoproxil fumarate 300 mg and emtricitabine 200 mg (coformulated as Truvada). Patients with GFR <60 mL/min/1.73 m2 should not be given PrEP given the risk of renal dysfunction associated with tenofovir disoproxil fumarate. HBV serologies, pregnancy status and risk of osteoporosis should be evaluated before starting treatment as these may affect the decision to initiate treatment. Truvada is classified by the FDA as a Pregnancy Category B medication with no known fetal risks in humans. Patients should be willing to take the medication regularly and counseled about other risk reduction behaviors. Drug monitoring of PrEP consists of HIV and STD testing every 3 months and renal function monitoring at least every 6 months. Common side effects of PrEP treatment include nausea, diarrhea, fatigue, dizziness, headache, insomnia, depression, and rash. Patients initiated on PrEP should have ongoing evaluation about the need to continue prophylaxis at least annually. General internists should feel comfortable initiating PrEP treatment for all patients who are at high risk of becoming infected with HIV.

AN UN"COMMON" CAUSE OF BLEEDING Amanda Bisset; Ryan Satovsky. Tulane University Health Sciences Center, New Orleans, LA. (Control ID #2703798)

LEARNING OBJECTIVE #1: Review a diagnostic approach to bleeding disorders

LEARNING OBJECTIVE #2: Discuss a rare cause of coagulation disorders

CASE: A 27-year-old man presented with a painful left hand for 1 day. He recently had abdominal bruising after a fall at work the week prior. He reported that he and his brother had hemophilia with a factor IX deficiency. He used the last of a 3-factor prothrombin complex concentrate (II, IX, X) medication that he borrowed from his brother. Blood pressure was 99/55 and heart rate was 69. His left hand had diffuse swelling with tenderness to palpation and blue colored bruising to the dorsal side. Ecchymosis was noted on the right lower quadrant of the abdomen. Initial labs showed a prolonged PT, PTT and an elevated INR, hemoglobin of 12.2, and platelets of 184. Thrombin Time was 18.3 (14–21), with normal fibrinogen and negative D-dimer. He received 1 dose of factor IX. On the first night, he developed pain and bleeding in his right jaw - bleeding of the buccal mucosa, with swelling that extended into the right side of his jaw and neck. A CT of the soft tissue of the neck showed an uncompromised airway. Anticoagulation toxicity, DIC, liver disease, and vitamin K deficiency were ruled out. A mixing study demonstrated normalization of the PT, indicative of a factor deficiency as opposed to an inhibitor. Fibrinogen, Factor II, V, VIII, IX, X levels were drawn. The factor II level was undetectable, diagnostic of factor II (prothrombin) deficiency. Hematology was consulted. A 4-factor prothrombin complex concentrate (II, VII, IX, X) was administered along with Aminocaproic Acid. His bruising, bleeding and swelling improved. His hemoglobin remained stable and he was discharged with follow up in a hemophilia clinic.

IMPACT: To delineate bleeding disorders, knowledge of clot formation can assist the internist in interpreting the initial laboratory evaluation that includes a complete blood count with platelet count, peripheral blood smear, prothrombin time, and partial thromboplastin time.

DISCUSSION: The PT measures factors of the extrinsic and common pathways while PTT measures the factors of the intrinsic and common pathways. Our patient presented with non-traumatic soft tissue bleeding and a reported history of Hemophilia B. While his clinical presentation was consistent with Hemophilia, his labs did not support the diagnosis. Factor IX is a factor of the intrinsic pathway. Thus, Hemophilia B (Factor IX deficiency), has a prolonged aPTT, but not a prolonged PT. Prolongation of both the aPTT and PT is indicative of a defect in the common final pathway, which includes factors I (fibrinogen), II (prothrombin), V, and X. Our patient had an inherited prothrombin deficiency. This is a rare, autosomal recessive disorder, affecting about 1 in 2,000,000. Our case highlights the importance of a timely and accurate diagnosis of a bleeding disorder. Had our patient continued to receive only factor IX replacement, he may have continued to bleed, potentially leading to morbidity or mortality.

AN UNCHARACTERISTIC PRESENTATION OF ESSENTIAL THROMBOCYTHEMIA Nathan Wong; Victoria Heasley. Pennsylvania State University, Hershey, PA. (Control ID #2687658)

LEARNING OBJECTIVE #1: Recognize how arterial thrombi can be attributed to myeloproliferative disorders (MPDs) versus antiphospholipid syndrome (APS).

LEARNING OBJECTIVE #2: Stratify essential thrombocythemia (ET) patients into low, intermediate, and high risk for thrombotic events.

CASE: 42-year-old man with a past medical history of gout on allopurinol presented with acute right upper quadrant discomfort, left flank pain, and gross hematuria. He was found to have celiac, superior mesenteric, hepatic, and splenic artery thrombi with bilateral pulmonary emboli. Differential diagnosis includes hypercoagulable state versus malignancy versus thromboembolism. Deep venous thromboembolism with a patent foramen ovale were ruled out. CT imaging revealed numerous paraesophageal lymph nodes, which were biopsied and found to contain no malignant cells. A hypercoagulable workup including Factor V Leiden, Prothrombin G20210A mutation, anti-β2-glycoprotein and anti-cardiolipin antibodies were found to be negative. Anti-thrombin III deficiency and lupus anticoagulant (LA) antibody were false positives since these tests were performed while on a heparin drip. With a mildly elevated platelet count and normal red and white cell counts throughout his hospital course, a JAK2 V617F mutation test was sent. He was stabilized on IV heparin drip, transitioned to enoxaparin, and discharged on warfarin as empiric anticoagulation. Once his JAK2 V617F mutation was found weeks after being discharged, a diagnosis of ET was made.

IMPACT: Arterial thrombotic events are typically attributed to APS and MPDs. Given the unknown etiology of his arterial thrombi and no evidence of malignancy, empiric anticoagulation with warfarin was thought to

sufficiently prevent further thrombus formation during his continued workup. However, ET treatment is based on antiplatelet medications such as aspirin and hydroxyurea; warfarin is not recommended. Caution should be taken before prescribing medication for an unknown hypercoagulable state.

DISCUSSION: ET is a MPD associated with arterial thrombi. ET patients can be stratified into low, intermediate, or high risk for thrombosis depending on independent risk factors for thrombosis including age >60 years, history of thrombosis, presence of cardiovascular risk factors (diabetes, hypertension, smoking), and presence of JAK2 V617F mutation. Using this model, low, intermediate, and high risk categories had a 1.03 percent/year, 2.35 percent/year, and 3.56 percent/year risk of thrombosis, respectively. Our patient was <60 years old, had a history of thrombosis, no cardiovascular risk factors, and a JAK2 V617F mutation which places him at high risk for thrombosis. In patients treated with hydroxyurea with a goal platelet count below 600,000, the thrombotic rate was 3.6% compared to a rate of 24% in those treated without hydroxyurea. While hydroxyurea reduces platelet count and prevents thrombotic events in ET patients, care should be taken in younger patients since it is unknown if the drug increases the risk leukemia.

AN UNCOMMON CAUSE OF ANNULAR RASH Ana I. Velazquez[1]; Mariana Mercader[1]; Anjanet Perez-Colon[1]; Geeta Varghese[2]. [1]Mount Sinai Beth Israel, New York, NY; [2]Mount Sinai Beth Israel, First Avenue at 16th Street, NY. (Control ID #2707134)

LEARNING OBJECTIVE #1: Diagnose annular skin lesions.

LEARNING OBJECTIVE #2: Distinguish the differential diagnosis of annular skin lesions.

CASE: 68y/o male with treated Hepatitis C, atrial fibrillation, and + PPD was evaluated at our primary care clinic. The patient was born in Puerto Rico; he is a former IV drug abuser, and current smoker. No significant family history. Patient described nonpruritic skin lesions, which developed on his face and arms approximately 3 years prior. He denied fevers, night sweats, weight loss, or cough. No ill contacts or recent travel. Physical exam revealed multiple annular plaques, up to 5 cm in diameter, involving his face and a 7x10cm lesion on his right forearm. Lesions had raised erythematous borders, central clearing and atrophy. Patient was referred to dermatology and skin biopsies showed inflammation and fibrosis suggestive of granulomatous dermatitis. Given his 40-pack year smoking history a chest CT was obtained which revealed multiple calcified nodules diffusely involving both lung fields. Given these results and his history of + PPD, he completed a course of isoniazid for latent tuberculosis and PUVA treatment without improvement in lesions. Bacterial, fungal and AFB sputum cultures were negative. Lung nodule biopsy revealed noncaseating granulomas with negative AFB and fungal staining. Genprobe analysis showed Mycobacterium avium complex (MAC) for which he was started on rifampin, ethambutol, and azithromycin. Skin cultures and biopsy were performed given concern of disseminated MAC, however AFB and fungal skin cultures were negative. The second biopsy revealed interstitial infiltrate of histiocytes with surrounding connective tissue, elastic tissue loss, and fragmented elastic fibers within the cytoplasm of multinucleated giant cells with negative AFB, Fite, and PAS stains. Skin biopsy was diagnostic for elastolytic annular giant cell granuloma (EAGCG).

IMPACT: EAGCG is a rare granulomatous skin disease with unclear pathogenesis that has been mainly associated with UV-exposure and autoimmune diseases, such as diabetes and hypothyroidism. It has also been described in association with hematologic malignancies, as leukemias and lymphomas. While a causal or direct association is difficult to prove, to our knowledge this is the first case of EAGCG with concomitant MAC infection.

DISCUSSION: Among patients with granulomatous skin lesions it is vital to rule out common causes as granuloma annulare, necrobiosis lipoidica, and sarcoidosis among others. Particularly important in immunocompromised patients or those from endemic areas, as our patient, is considering tuberculoid and nontuberculoid infections, as potential etiology of rash. A good history, exam, and adequate testing including biopsy, specific stainings and cultures can differentiate and guide management. Particularly on EAGCG the presence of classic findings as centrifugal growth and photodistribution are key to diagnosis. Similarly, the presence of specific findings as elastophagocytosis on histopathology is confirmatory.

AN UNCOMMON CAUSE OF LACTIC ACIDOSIS Cecil A. Rambarat; Krista N. Larson; Mark Hankins; Dominique Broutin; Denise C. Schain. University of Florida, Gainesville, FL. (Control ID #2704109)

LEARNING OBJECTIVE #1: Recognize thiamine deficiency as a rare cause of unexplained lactic acidosis.

LEARNING OBJECTIVE #2: Recognize that chronic diarrhea can be a risk factor for thiamine deficiency.

CASE: A 66-year-old African American female presented to the emergency department (ED) with a 3-day history of progressively worsening diarrhea, emesis and malaise. Past medical history was notable for HIV which was well managed chronically on dolutegravir, lamivudine and stavudine and end stage renal disease for which a kidney transplant was performed one year prior. Physical examination revealed an afebrile, hypotensive and tachycardic female with hyperactive bowel sounds. Initial laboratory tests revealed an arterial blood gas pH and sodium bicarbonate of 6.99 and 12 mmol/L respectively, a creatinine level of 2.8 mg/dL, an anion gap of 18 and a lactic acid level of 2.9 mmol/L. On admission the patient was fluid resuscitated and placed on a continuous bicarbonate infusion which resulted in an improvement in her vital signs and correction of her arterial blood pH and sodium bicarbonate levels. After a thorough infectious work-up returned negative, the patient was initiated on loperamide for her diarrhea. Lactic acid levels continued to increase from 2.9 mmol/L to 6.9 mmol/L after 2-days of stable vital signs prompting further diagnostic studies. An abdominal CT scan was obtained which showed a normal appearing gastrointestinal tract and stavudine was discontinued. Despite this, lactic acid levels continued to increase to a maximum value of 8.2 mmol/L. At this point a thiamine level was obtained which was noted to be low at 48 nmol/L. Thiamine replacement was initiated which resulted in gradual resolution of the lactic acidosis by the time of discharge 3-days later. The patient was discharged on a HAART regimen which did not include stavudine.

IMPACT: This case serves to increase awareness of a potential lethal complication of thiamine deficiency in addition to highlighting a risk factor, chronic diarrhea, for thiamine deficiency. In practice, patients who experience chronic diarrhea as a medication side effect should be monitored and treated for thiamine deficiency.

DISCUSSION: This case illustrates two uncommon causes for lactic acidosis. One of these is medication side-effects. Antiretroviral drugs in particular have been implicated in cases of elevated lactic acid levels which usually takes weeks to resolve after the discontinuation of the causative agent. An even more rare cause of lactic acidosis is thiamine deficiency. Lactic acidosis due to thiamine

deficiency is caused by dysregulation of enzymes involved in aerobic carbohydrate metabolism and can be quickly corrected with thiamine supplementation. In our patient, the use of sirolimus led to chronic diarrhea which resulted in thiamine deficiency, causing elevated lactic acid levels which was quickly corrected with thiamine supplementation. Thiamine deficiency and medication side effect should be considered in otherwise unexplained cases of lactic acidosis.

AN UNCOMMON CAUSE OF SYNCOPE Islande Joseph[1]; Grant Jester[2]; De-Vaughn Williams[2]; Margaret C. Lo[3]. [1]Univeristy of Florida, Gainesville, FL; [2]University of Florida, Gainesville, FL; [3]University of Florida College of Medicine, Gainesville, FL. (Control ID #2705858)

LEARNING OBJECTIVE #1: Recognize the congenital development of cor triatriatum

LEARNING OBJECTIVE #2: Evaluate and manage cor triatriatum

CASE: A 48 years-old female with self-reported leaky valve syndrome and recurrent syncopal events presented with acute left vision loss after another syncopal fall. Patient had no recollection of any symptoms and only recalls waking up on the floor. Patient reported no prior workup for her recurrent syncope. Exam revealed decreased vision and superficial ulceration of left eye. Cardiac exam was normal without murmurs, gallops, JVD, or leg edema. Neurologic exam revealed no focal deficits. Outside MRI brain showed no acute intracranial hemorrhage or infarcts. Carotid US showed no arterial stenosis. CT sinus showed no fracture. Upon admission, Ophthalmology found no eye pathology to explain visual symptoms which since resolved. Additional syncope workup during admission was negative for serial troponins, telemetry, and EKG with normal QTc. TTE later uncovered an obstructing patent membrane in the left atrium but normal EF and pulmonary arterial pressure. This solidified a diagnosis of cor triatriatum which explained her recurrent syncope. Arrangements were made for TEE and cardiology clinic follow-up.

IMPACT: This case adds to the limited literature of cor triatriatum as a rare yet viable cause of syncope. This rare congenital cardiac anomaly is characterized by ventricular inflow obstruction due to abnormal septation within the atrium resulting in three atrial chambers subdivided by a thin membrane. It represents 0.1–0.4% of all congenital cardiac anomalies and may be associated with up to 50% of other cardiac defects i.e. atrial septal defect, patent foramen ovale. It is often mistaken for mitral stenosis or constrictive pericarditis. Suspect this diagnosis in young patients with recurrent cardiac symptoms but no other cardiovascular diseases.

DISCUSSION: The time course for manifestation of cor triatriatum depends on the degree of obstruction between the bisected atrial chambers of the abnormal atrium and the size of the communicating orifice. Earlier and more severe presentations occur in smaller communicating orifices. Patients may remain asymptomatic until the third decade of life or later, as true for our patient. The late onset of symptoms results from progressive increase in pulmonary artery pressure. Several anatomical variants of this anomaly exist and depending on the variant and degree of obstruction, syncope (as in this case), cyanosis, heart failure and sudden cardiac arrest have been reported. Thus, multimodal diagnostic modalities are vital for characterization and differentiation of anatomical variance. Although no treatment best practices are established for cor triatriatum, anticoagulation, balloon dilation or surgical correction of the membrane have been proposed depending on the anatomical variant. Females must be caution on the risk of pregnancy. Early diagnosis is important since surgical correction is curative

AN UNCOMMON CAUSE OF SYNCOPE - GET THE GIST?
Shradha A. Kulkarni. Baylor College of Medicine, Houston, TX. (Control ID #2707642)

LEARNING OBJECTIVE #1: Syncope has many varied etiologies, ranging from cardiogenic to neurologic phenomena. We present a case of a gastrointestinal (GI) tumor causing anemia and subsequent syncope in a patient with no clinical evidence of GI bleeding.

CASE: A 79-year-old Filipino female with sick sinus syndrome status-post pacemaker placement, atrial fibrillation on anticoagulation, history of a stroke with no residual deficits, and coronary artery disease presented to the hospital with a syncopal episode. Physical examination showed hemodynamic stability, negative orthostatic vital signs, and normal neurologic and cardiovascular findings. Electrocardiogram, computed tomography (CT) and CT angiography of the head and neck, bilateral carotid ultrasound, and pacemaker interrogation were unremarkable. Laboratory studies were significant for hemoglobin of 5.8 g/dL. Hemoglobin one month prior to presentation was 8.0 g/dL; an anemia work-up had not been performed previously. The patient denied abdominal pain, nausea, vomiting, melena, or hematochezia. She had never undergone a screening colonoscopy and denied a family history of GI malignancy. Upon further laboratory evaluation, ferritin was found to be less than 20 ng/mL, concerning for iron-deficiency anemia. Despite a discordant clinical history, in order to evaluate for a possible source of bleeding, upper and lower endoscopies were performed. Esophagogastroduodenoscopy (EGD) revealed a 3–4 cm oozing gastric mass. Biopsy confirmed gastrointestinal stromal tumor. CT imaging completed for staging purposes showed liver nodules suspicious for metastases, indicating likely stage IV cancer. The patient was deemed a poor surgical candidate given her co-morbidities and age, and treatment was initiated with imatinib.

IMPACT: This case demonstrates the importance of maintaining a broad differential when evaluating syncope, a common reason for admission to the hospital. It also demonstrates the need to investigate all abnormal laboratory values and consider further work up if warranted. In this patient, the only manifestation of stage IV GIST was syncope due to anemia, which was particularly unexpected in the absence of overt GI bleeding.

DISCUSSION: Gastrointestinal stromal tumors (GIST) are a rare and clinically diverse set of mesenchymal tumors of the GI tract, comprising only 1% of primary GI malignancies. Approximately one half of these tumors are located in the stomach and are primarily identified by histopathological staining of a mucosal biopsy. GIST shows no gender predominance and has a median age at diagnosis of sixty years. The highest incidence rates are seen in regions of East Asia, though interestingly, the only known identifiable risk factor is an association with neurofibromatosis type I.

AN UNCOMMON ETIOLOGY OF DYSURIA, HEMATURIA AND FLANK PAIN IN A YOUNG WOMAN Lauren N. Smith[1]; Oanh K. Nguyen[2]. [1]UT Southwestern, Dallas, TX; [2]UT Southwestern Medical Center, Dallas, TX. (Control ID #2699328)

LEARNING OBJECTIVE #1: Understand the diagnostic utility of hydronephrosis in diagnosing urolithiasis

LEARNING OBJECTIVE #2: Recognize arteriovenous malformation of the renal artery as an uncommon etiology of hematuria, flank pain and hydronephrosis

CASE: A healthy 32 year old woman presented to the emergency department (ED) with one week of dysuria, hematuria and flank pain and no fevers, chills,

frequency, or vaginal discharge. Previous evaluation at an outside facility was notable for right hydronephrosis on computerized tomography (CT) of her abdomen. She was treated with intravenous fluids and analgesics for a presumed diagnosis of urolithiasis with recurrence of symptoms one day after ED discharge. Ciprofloxacin was added for potential superimposed urinary tract infection. She returned to our ED for re-evaluation due to persistent symptoms despite medical therapy for several days. Physical examination was notable for normal and stable vital signs with a blood pressure of 132/83 mmHg and the presence of right costovertebral angle tenderness. Laboratory examination showed blood urea nitrogen 10 mg/dL, serum creatinine 0.85 mg/dL, and hemoglobin 10.4 g/dL with mean corpuscular volume 90.5 fL. Urinalysis showed red, turbid urine with 41+ RBCs/hpf, 3–5 WBC/hpf and no nitrites. Urine culture was unremarkable. A repeat CT abdomen demonstrated right hydronephrosis and a previously unobserved soft tissue attenuation in the proximal right ureter extending into mid-ureter. Cystoscopy with ureteral stent placement and biopsy showed no evidence of malignancy. Persistent intermittent post-procedure bleeding raised concern for an arteriovenous malformation (AVM). Subsequent CT angiogram showed a 1 cm pseudoaneurysm within the right kidney supplied by a branch of the right renal artery, consistent with an AVM. The patient underwent successful AVM embolization with complete resolution of symptoms.

IMPACT: Although urolithiasis is the most common cause of dysuria, hematuria, flank pain and hydronephrosis, vascular etiologies such as AVM should also be considered in individuals in whom malignancy has been excluded.

DISCUSSION: The presence of unilateral hydronephrosis in ED patients with dysuria and flank pain is modestly predictive of urolithiasis, with a likelihood ratio (LR) of 5.0 [1]. The presence of both hydronephrosis *and* hematuria is typically highly predictive of urolithiasis, with a LR of 20.1 [2]. Nonetheless, alternative diagnoses should be considered when symptoms are refractory to therapy. Renal AVMs are rare, with an estimated incidence of 0.04%. The vast majority (~75%) are acquired due to trauma or procedures. Presenting symptoms include hematuria, flank pain and hypertension. Diagnosis can be delayed by several weeks in the absence of a high index of suspicion. The mainstay of therapy is endovascular embolization, with resolution of symptoms in 60% of patients.

AN UNCOMMON PRESENTATION OF STREPTOCOCCUS PNEUMONIAE

Anish Vani; Man Hsuan M. Su; Patrick M. Cocks. NYU School of Medicine, New York, NY. (Control ID #2672030)

LEARNING OBJECTIVE #1: Describe the mechanism of septic arthritis

LEARNING OBJECTIVE #2: Recognize the epidemiology, risk factors, and prognosis of patients with septic arthritis caused by *Streptococcus pneumoniae*

CASE: A 43 year-old man with a history of Hodgkin's Lymphoma, treated with chemotherapy and radiation, complicated by avascular necrosis requiring bilateral hip replacements, and myelodysplastic syndrome requiring a splenectomy and stem cell transplant, presented with one month of productive cough, two days of myalgias, and acute on chronic bilateral shoulder and hip pain. On presentation to our institution, he was found to have profound leukocytosis with neutrophilia and bandemia and a computed tomography of the chest suggestive of a multi-lobar pneumonia. His physical exam was remarkable for a high fever, rigors, diminished breath sounds at the lung bases, and decreased range of motion in his right lower extremity due to right hip pain. He was treated empirically with intravenous vancomycin and piperacillin-tazobactam. Blood cultures grew pan-sensitive *S. pneumoniae* and his antibiotics were narrowed to intravenous ceftriaxone. His hospital course was complicated by persistent leukocytosis, fevers, and right hip pain. Magnetic resonance imaging and a gallium nuclear scan were performed, which suggested infection of his right hip. He underwent an arthrocentesis followed by a right hip wash out without prosthesis removal. He was discharged home on an extended course of antibiotics with resolution of his leukocytosis, fevers, and right hip pain.

IMPACT: Our case highlights a relatively uncommon phenomenon, which is septic arthritis caused by *S. pneumoniae*. Clinicians should be aware of predisposing factors that place patients at risk for developing a joint infection from this organism.

DISCUSSION: Septic arthritis occurs via bacterial invasion of the synovial membrane, most commonly by hematogenous spread, leading to an acute inflammatory response involving synovial membrane hyperplasia, local cytokine production, and cartilage destruction. Several studies report a widely disparate prevalence of septic arthritis caused by *S. pneumoniae*, with most studies reporting a low single digit prevalence. While relatively uncommon, *S. pneumoniae* arthritis should be considered in patients with extra-articular infections, such as pneumonia or meningitis, and predisposing factors, which include alcoholism, rheumatoid arthritis, immunosuppression, splenectomy, preexisting joint disease, or patients with prosthetic joints. Prosthetic joints pose a fifteen-time greater risk of infection by providing a surface for *S. pneumoniae* to multiply and form biofilms to defend against circulating leukocytes, complement, and antibiotics. Good functional outcome is seen in the majority of patients treated with appropriate antibiotic therapy and surgical intervention, and often patients with prostheses do not require removal.

AN UNDERLYING OUTLET

Stephen Z. Peeke. Mount Sinai Beth Israel, New York, NY. (Control ID #2707442)

LEARNING OBJECTIVE #1: Recognize the need for clinical reassessment after initial diagnosis

LEARNING OBJECTIVE #2: Diagnosis Effort-Induced Venous Thrombosis

CASE: A 27 year old right-handed male presented with bilateral forearm swelling. Six days prior the patient participated in a vigorous exercise session consisting of pull-ups and jumping rope. Swelling and stiffness of his forearms worsened over the week with associated weakness and cramps. Later, at an urgent care clinic, he was found to have a creatine kinase of 34,394 U/L and was sent to the ED. He had been diagnosed with thoracic outlet syndrome of his right arm 6 years ago while playing for his college baseball team. The diagnosis was made clinically without imaging and was successfully treated with rest and physical therapy. On exam there was non-pitting edema of the bilateral forearms from wrist to elbow, right minimally more than left without erythema or lacerations. He denied any shortness of breath or change in urination. The patient was treated with IV fluids to prevent rhabdomyolysis-induced kidney injury. His creatinine remained normal and his CK trended down. While hospitalized the patient's right forearm became noticeably more swollen than his left; the rate of IV fluids was decreased due to concern for developing compartment syndrome. An ultrasound of the upper extremities was performed and revealed multiple deep vein thromboses of the right subclavian and axillary veins. Imaging of the left arm was normal and the patient was started on IV heparin. A CT angiogram of the chest was negative for pulmonary embolism. The patient declined inpatient surgery and was transitioned to rivaroxaban for discharge.

IMPACT: Physicians should be wary of early closure after initial diagnosis. Through careful clinical monitoring, including oft-overlooked daily physical

exams, an underlying diagnosis was suspected and pursued. This case also adds to the expanding literature on exercise-induced rhabdomyolysis as the same demographic is also at risk for exercise induced thrombosis of the upper extremities.

DISCUSSION: While upper extremity DVT is rare overall[1], the diagnosis has become more common as rates of instrumentation have escalated. This is the secondary form; most primary cases are due to underlying malignancy[2] or the Paget-Schroetter Syndrome. Our patient presented with exercise-induced rhabdomyolysis, an entity increasing in frequency especially among the young and physically active[3]. This same group is at risk for effort-induced venous thrombosis which often occurs in the dominant arm due to repetitive strenuous activities[4]. The pathogenesis involves repeated microtrauma to the subclavian vein and upstream vasculature from nearby anatomical structures which cause inflammation, fibrosis, and intimal hyperplasia. Compartment syndrome is a known complication of rhabdomyolysis and impaired venous drainage may increase this risk. While the initial diagnosis seemed obvious, this case highlights the need for continuous reassessment.

AN UNEXPECTED CAUSE OF SEVERE HYPOCALCEMIA IN A PATIENT WITH METASTATIC CANCER Anne Linker[1]; Arjun Suri[1]; Jessica Beaman[2]. [1]UCSF, San Francisco, CA; [2]San Francisco VA Medical Center, San Francisco, CA. (Control ID #2706125)

LEARNING OBJECTIVE #1: Diagnose prolonged hypocalcemia in a patient treated with denosumab

LEARNING OBJECTIVE #2: Recognize risk factors for prolonged hypocalcemia in patients receiving denosumab

CASE: A 63 year old woman with stage IV cervical cancer (metastases to lung and bone) presents with subacute cough, fever, and malaise/fatigue. ROS is positive for pleuritic chest pain, nausea, vomiting, hip pain, and paresthesias in her hands. Medications included opiates and denosumab monthly (for 8 months). Her last denosumab injection was one month prior. She was afebrile with mild tachycardia. Exam was non-focal, without perioral numbness or Chvostek's sign. She had a mild leukocytosis and stable anemia. Ionized calcium was 0.73 mg/dL, phosphorus was 1.0 mg/dL, PTH was 545.7 pg/mL and 25-hydroxy vitamin D was 4.6 ng/mL (prior to denosumab it was 11.9 ng/mL). Imaging showed progression of her intrathoracic disease. With aggressive IV repletion of calcium and phosphorus her fatigue and paresthesias improved. Her serum calcium and phosphorus levels were initially refractory to repletion, but then slowly approached normal. Given the progression of disease and her goals of care, the patient transitioned to home hospice with plan for aggressive daily oral calcium, vitamin D and phosphorus repletion.

IMPACT: This case should empower non-oncology providers (PCPs, inpatient teams) to intervene if vitamin D and calcium levels are not being monitored in patients on denosumab, or if patients are vitamin D deficient before or during denosumab therapy. As a result of her condition, our patient was worried about initiating hospice care because of fear that her symptoms would recur, and we were concerned that electrolyte abnormalities might contribute to an earlier death.

DISCUSSION: Denosumab is a humanized monoclonal antibody that inhibits osteoclast-mediated resorption of bone. The FDA approved denosumab for the prevention of skeletal-related events (SREs) in patients with bone metastases from solid tumors. It can decrease the incidence of and delay the time to SREs. Hypocalcemia is a recognized toxicity of denosumab, though previously it was thought to be rare. As more patients receive denosumab for this indication, the incidence of this toxicity is increasing. In one of the largest series of such patients, Autio et al. found an incidence of 15% of severe hypocalcemia in patients with metastatic cancer treated with denosumab. Median time to calcium nadir from administration was 25 days, and median time to recovery was 17 days. Some patients required repeated hospitalizations and were severely symptomatic. Risk factors for developing severe hypocalcemia included vitamin D deficiency prior to initiation of therapy, increased disease burden, and corrected calcium levels in the low normal range prior to initiation of therapy. Autio, K. A. et al. Severe Hypocalcemia Associated With Denosumab in Metastatic Castration-Resistant Prostate Cancer: Risk Factors and Precautions for Treating Physicians. Clin. Genitourin. Cancer 13, e305-e309 (2015).

AN UNUSUAL BUT EASILY TREATABLE CAUSE OF SEVERE ABDOMINAL PAIN Emily Unger[1, 2]; Shirin Karimi[2, 1]; Priyank Jain[2, 1]. [1]Harvard Medical School, Somerville, MA; [2]Cambridge Health Alliance, Cambrdige, MA. (Control ID #2704802)

LEARNING OBJECTIVE #1: Distinguish abdominal wall pain from intra-abdominal causes of pain

LEARNING OBJECTIVE #2: Diagnose Anterior Cutaneous Nerve Entrapment Syndrome

CASE: Ms. C is a 53 year-old female with obesity, diabetes, asymptomatic ventral hernia, peripheral neuropathy, and a 2 week history of cardiac catheterization, who presented to the hospital with severe abdominal pain that began 2 days after the procedure. Pain was present in the right lower quadrant and right groin, close to the catheterization site. Patient described the pain as stabbing and constant, less when lying down, and worse with any movement or standing. Patient needed a walking aid due to the pain. Other GI or GU review of symptoms were negative. Ms. C was admitted for pain control and further diagnostic workup including a CT of abdomen/pelvis, Doppler of femoral vessels, MRI of Lumbar spine, and CBC/CMP/UA. Results were nondiagnostic and her pain persisted. On hospital day 3, a more detailed physical exam revealed that patient's pain was localized to a 2 cm sized area in the RLQ of her abdomen and this small area had reduced sensation to temperature and was numb. Patient had a positive Carnett's sign. The groin was non-tender. Ms C's physical examination suggested neuropathic pain of the abdominal wall, specifically Anterior Cutaneous Nerve Entrapment Syndrome (ACNES) as a probable diagnosis. She consented for diagnostic trial of local anesthetic injection in the abdominal wall. 2 min after the injection, her pain was barely noticeable and she was walking unaided. She was diagnosed with ACNES and discharged pain free.

IMPACT: When working up severe abdominal pain, our diagnostic reasoning focuses mainly on intra-abdominal causes of pain. However, with a careful history and exam it is important to differentiate abdominal wall pain from more serious causes of intra-abdominal pain. This differentiation can save a patient from a stressful, expensive and potentially risky work-up, and get them lasting pain relief as quickly as possible.

DISCUSSION: Ms. C's duration of severe abdominal pain, hospital stay, and numerous tests were avoidable. The first step in recognizing this diagnosis is distinguishing abdominal wall pain from intra-abdominal causes of pain. An abdominal wall etiology is highly suggestive if pain is relieved when lying down and worse when standing up; worse with tensing the abdominal muscles (Carnett's sign); and absence of other neuro/GI/GU symptoms. ACNES is a

cause of abdominal wall pain and may be responsible for 2% of patients presenting to the ED with abdominal pain. Abdominal wall pain is caused by the compression of abdominal cutaneous nerves within the rectus sheath and abdominal fascia. Patients have a discrete trigger point lateral to the Abdominus Rectus muscles. Diagnosis and treatment are the same: injection of point of maximal tenderness with Lidocaine and steroids. After injection, a patient with ACNES should have rapid pain relief.

AN UNUSUAL CASE OF ALTERED MENTAL STATUS IN A PATIENT WITH HIV John Chiosi[1]; David Mushatt[2]. [1]Tulane University, New Orleans, LA; [2]Tulane University, New, LA. (Control ID #2705896)

LEARNING OBJECTIVE #1: Recognize a cause of altered mental status in immunocompromised patients

LEARNING OBJECTIVE #2: Diagnose and treat CNS histoplasmosis.

CASE: A 43 year-old woman from central Louisiana with untreated HIV presented for 1 week of general malaise with 1 day of new-onset confusion. She became increasingly altered, requiring intubation. She was started on empiric antibiotics. Initial laboratory studies revealed a CD4 count of 7 cells/μL and HIV-1 RNA viral load of 640,000 copies/μL. Initial CSF studies: WBC 0, glucose 62, total protein 22, cryptococcal antigen negative. Despite antibiotics, she was persistently febrile and developed tonic-clonic seizures. CT head revealed diffuse cerebral edema. On day 4, a peripheral smear revealed PMNs with intracellular yeast. Serum histoplasma antigen was collected and she was started on liposomal amphotericin B. On day 10, the serum histoplasma antigen was positive, and later the CSF histoplasma antigen collected on admit resulted as positive. She developed septic shock requiring vasopressors, acute renal failure, and coagulopathy with bleeding from her mouth. A biopsy of oral mucosa revealed intracellular organisms on PAS and GMS stains consistent with histoplasmosis. An endotracheal aspirate revealed intracellular yeast forms. During the hospitalization, her mental status improved. Repeat CT head showed improvement of cerebral edema. Her coagulopathy and renal failure resolved.

IMPACT: CNS involvement can be seen in patients with disseminated histoplasmosis; however, histoplasmosis is not a commonly suspected agent in AIDS patients presenting with CNS disease.

DISCUSSION: Histoplasma capsulatum is a fungus endemic to regions of the Ohio and Mississippi River valleys, and extends throughout the Midwest, Southeast, and South Central US. Disseminated histoplasmosis is often seen as an opportunistic infection in AIDS patients in these regions. Disseminated histoplasmosis occurs in approximately 1 in 2000 patients with acute infection, and 5-10% of these cases can develop CNS disease. Our severely immunocompromised patient likely acquired pulmonary histoplasmosis where she lived in central Louisiana, which is moderately endemic for H. capsulatum. Immunocompromised patients may present with advanced disease causing obtundation, coagulopathy, shock, and organ failure. Diagnosis of CNS infection should be suspected in patients with disseminated histoplasmosis accompanied by altered mental status, abnormal CSF and/or abnormal findings on brain imaging. CSF antigen or anti-Histoplasma antibodies in the CSF can confirm diagnosis. Despite treatment with amphotericin B, mortality is close to 50% in these patients. The relapse rate of CNS histoplasmosis after amphotericin B is up to 50% after cessation of therapy. Current therapy involves induction with liposomal amphotericin B for 4–6 weeks followed by itraconazole for at least 1 year to prevent relapse.

AN UNUSUAL CASE OF CONFUSION AND WEAKNESS Nathalie Kolandjian[2]; Sujata Bhushan[1]. [1]Dallas VA Medical Center, Dallas,, TX; [2]UT Southwestern, Dallas, TX. (Control ID #2692948)

LEARNING OBJECTIVE #1: Recognize the clinical features of Creutzfeldt-Jakob Disease.

LEARNING OBJECTIVE #2: Distinguish Creutzfeldt-Jakob Disease from other neurodegenerative disorders.

CASE: A 74 year old male presented with non-syncopal falls and new lower extremity weakness. He denied recent travel, hunting or consumption of wild game or beef. CT head was negative for stroke. Several weeks later, he was re-admitted with worsening confusion and agitation. Exam showed lower extremity muscle wasting with hyperreflexia and diffuse fasciculations. EMG revealed severe peripheral neuropathy and CT neck showed myelomalacia. He became progressively less verbal and developed difficulty ambulating. MRI brain showed non-specific signs of inflammation. EEG showed diffuse slowing. The patient was discharged with the diagnosis of severe neurodegenerative dementia. One week later, the patient was re-admitted. He had become completely bedbound; unable to speak or follow commands, only opening his eyes and withdrawing from pain. Exam showed rigidity of all four extremities, bilateral positive Babinski's sign and diffuse fasciculations. He later developed myoclonic facial jerks. Repeat EEG showed a triphasic wave pattern. MRI showed T2 enhancement of the temporal lobe. Infectious and autoimmune CSF studies were negative. CSF results for Creutzfeld-Jacob protein 14-3-3 and RT-QuIC were positive. CSF T-tau protein level was elevated at 16092 pg/ml supporting the diagnosis of Sporadic Creutzfeld-Jacob Disease (CJD).

IMPACT: The clinical course of CJD can mimic many other diseases. This case illustrates the importance of maintaining a broad differential for patients with new-onset altered mental status with focal neurologic changes.

DISCUSSION: CJD is a human prion disease that is universally fatal with a median survival of 7–8 months. It causes rapid deterioration of cognitive and motor function. Initial psychiatric symptoms include memory impairment, anxiety, depression and sleep disturbances. Multiple brain systems are affected causing ataxia, and bradykinesia. Corticospinal Tract dysfunction causes hyperreflexia, spasticity and extensor plantar responses. Peripheral neuropathy can cause fasciculations as seen in ALS. Myoclonus is often seen later in the disease and patients in terminal stages often progress to akinetic-mutism. Typical MRI findings include increased T2 and Flair signal intensity in the putamen and head of caudate. These findings are often misinterpreted given the rarity of the condition. Characteristic EEG findings are of periodic synchronous biphasic or triphasic sharp wave complexes (PSWC). CSF specific biomarkers include protein 14-3-3, total tau protein and neuron specific enolase which act as surrogate markers for neuronal damage. Prion conversion assays like real-time quaking induced conversion (RT-QuIC) are highly sensitive and specific, however definitive diagnosis requires pathological examination of brain tissue.

AN UNUSUAL CASE OF DIARRHEA MISDIAGNOSED AS ULCERATIVE COLITIS Elizabeth Sprague[2]; Alina Brener[1]; Adam Schiro[2]; Shira Ronen[2]; Mohan Dhariwal[2]; Laura Michaelis[2]. [1]MCW, Milwaukee, WI; [2]Medical College of Wisconsin, Milwaukee, WI. (Control ID #2692350)

LEARNING OBJECTIVE #1: Recognize the clinical and pathologic features of Langerhans cell histiocytosis

LEARNING OBJECTIVE #2: Describe treatment strategies in Langerhans cell histiocytosis

CASE: A 67 year-old female with history of type II diabetes and hypertension presented with abdominal pain and diarrhea. The patient was diagnosed with UC one year prior after presenting with similar symptoms at which time a colonoscopy showed pan-colitis with biopsies revealing chronic inflammation. She was started on sulfasalazine but did not improve despite multiple courses of systemic steroids and repeated hospital admissions. She was admitted to our medical service with persistent diarrhea and dehydration felt to represent steroid-refractory ulcerative colitis. On admission her temperature was 100.3 °F and she had mild diffuse abdominal tenderness. A colonoscopy revealed large, deep ulcers with friability and spontaneous hemorrhage involving the entire colon. Biopsies showed active colitis with crypt architectural distortion consistent with chronic colitis such as UC. However, there was a mucosal and submucosal infiltration of cells characterized by abundant pale eosinophilic cytoplasm. These cells were positive for CD1a and S-100, consistent with a diagnosis of LCH. Sulfasalazine was stopped, and the patient was referred to oncology. She has been initiated on chemotherapy with modest improvement in her symptoms.

IMPACT: Less than 20 cases of LCH with gastrointestinal involvement in adults have been previously reported. As such, treatment for these patients is based upon case reports and small case series. In addition, new research shows that LCH is associated with a mutation in the BRAF gene, which is the specific target of a new molecular therapy, Vemurafenib. While it is only approved for use in late stage melanoma, case reports using this medication for LCH have been promising. Correct diagnosis of this disease may allow for targeted therapy in the near future.

DISCUSSION: LCH is a rare infiltrative disorder of myeloid dendritic cells with a childhood incidence of 3–5 per million and adult incidence estimated at 1–2 per million. The disease can affect any organ system, and can present with either single or multi-organ involvement. Most commonly, it presents in the bones with lytic lesions and bone pain, though is also commonly seen in skin, lymph nodes, or lungs, which present as rash, lymphadenopathy, and cough respectively. In its more severe form, LCH affects multiple organs; involvement of the liver, spleen, or bone marrow denotes a worse prognosis. No prospective trials have been conducted in adults so treatment is targeted to the involved organ and includes surgery, radiation, and/or chemotherapy. This case represents an unusual presentation of LCH involving the gastrointestinal tract and highlights the need to consider alternative diagnoses in patients with UC who are not responding to high-dose steroid therapy.

AN UNUSUAL CASE OF DIZZINESS Cody R. Gomez; Cynthia Woods; Hetendra Makanbhai. Methodist Dallas Medical Center, Dallas, TX. (Control ID #2703945)

LEARNING OBJECTIVE #1: Diagnose vertebral artery dissection by careful evaluation of patient history and appropriate diagnostic imaging

CASE: A 30 year old Hispanic female presented to the ER with a chief complaint of new onset dizziness. The patient denied pre-existing medical conditions, and prior to the dizziness had reported neck pain and headache starting several weeks ago. She had sought the aid of a chiropractor utilizing manipulation. Upon evaluation in the emergency room the patient was noted to have neck pain, an unremarkable head CT, and leukocytosis. Intact strength on exam. Left sided ataxia with no appreciable right sided ataxia noted. No papilledema noted. Multiple infarcts were identified on MRI - infarction involving both cerebellar (predominantly left) hemispheres, vermis, right occipital lobe and posterior thalamus. ECHO demonstrated a PFO. Bilateral doppler US of her lower extremities negative for DVT. Neurosurgery was consulted. A diagnostic cerebral arteriogram was performed, which yielded the diagnosis of bilateral vertebral artery dissection (significant stenosis limiting flow/dissection on right, and less than 70% stenosis/dissection on left). Given the history and symptom onset, it is believed that the manipulation was the likely etiology in her bilateral dissection and subsequent stroke. The patient was evaluated by PT/OT, placed on dual anti-platelet therapy, and discharged to follow up with outpatient repeat angiogram.

IMPACT: Death related to vertebral artery dissection and its subsequent complications may be as high as 10%[1]. Given the degree of mortality, it is important to remain vigilant in the search for a vertebral artery dissection when clinical suspicion is high. This case highlights the importance of a thorough history when evaluating patients with vague or nonspecific complaints. This case is fairly unique in that dissection of vertebral arteries (especially bilaterally related to trauma) is considered rare - such a diagnosis has been associated with automobile and sports injuries as well as iatrogenic causes in literature[2].

DISCUSSION: The frequency of this type of vascular event, in association with manipulation, occurs in 1 in 15,846,381 - other sources suggest 1 in 20,000. While imaging modalities such as magnetic resonance angiography are useful in evaluating multiple neurological conditions, it may not be able to detect such a dissection[3]. Digital subtraction arteriography should be considered[2]. Reference: 1. Nagurney, John et al. Unusual Visual Symptoms in a Patient with Bilateral Vertebral Artery Dissection: A Case Report. The Journal of Emergency Medicine. 2006. Volume 31. No. 2. pp 169–171. 2. Galtes, Ignasi et al. Traumatic bilateral vertebral artery dissection. Forensic Science International. Volume 214. Issue 1. 2012. e12-15. 3. Preul et al. Bilateral Vertebral Artery Dissection After Chiropractic Maneuver. Clinical Neuroradiology. 2010. Volume 20. Issue 4. pp 255–259.

AN UNUSUAL CASE OF HYDRONEPHROSIS DUE TO PERITONEAL CARCINOMATOSIS FROM METASTATIC PROSTATE ADENOCARCINOMA Corey R. O'Brien[1]; Christopher Sciria[1]; Kevin Ikuta[1]; Daniel G. Federman[2]. [1]Yale New Haven Hospital, New Haven, CT; [2]West Haven VA Medical Center, West Haven, CT. (Control ID #2702728)

LEARNING OBJECTIVE #1: Build upon the limited literature describing metastatic prostate cancer as a cause of peritoneal carcinomatosis

CASE: An 87 year-old man presented with a rise in creatinine (Cr) in the setting of bilateral hydronephrosis. His medical history was notable for DM2, CKD (baseline Cr 1.5 mg/dl), and prostate cancer (diagnosed 18 years prior, s/p external beam radiation). He initially presented to urology with a 1 month history of painless gross hematuria. CT scan showed bilateral hydronephrosis. Upon cystoscopy there was an abnormal prostate and right hydroureter; a foley catheter was placed. At that time Cr was 2.2.mg/dl; one week later Cr was 2.6 mg/dl, at which point he presented to the ED. Pertinent positives included hematuria and recent GU instrumentation. Pertinent negatives were dysuria and suprapubic pain. Medications were HCTZ, metformin, and oxycodone. He had no family history of renal disease. He had a 50 pack-year smoking history (quit >25 yrs ago) and was a retired salesman with no occupational exposures. A focused physical exam demonstrated an elderly male with no CVA tenderness and a foley catheter draining clear yellow urine. Laboratory studies showed a wbc 7.4 k/cmm, Cr 2.6 mg/dl (baseline 1.5), A1c 6.9 mg/dl, PSA 50 ng/ml, FEUrea 46%, urinalysis: 32 wbc's, 12 rbc's, 3+ LE, neg nitrite. A non contrast CT showed: worsening

bilateral hydronephrosis; peritoneal carcinomatosis; and pelvic bony metastases. He then underwent a peritoneal biopsy, which based on immunostains showed that tumor cells were scattered positive for PSA and PSAP; findings were consistent with metastatic adenocarcinoma of prostatic origin.

IMPACT: Prostate cancer is the 2nd most common cancer in men and one of the leading causes of cancer death. Prostate cancer typically metastasizes to the bone, lung, and liver (Bubendorf 2000 et al.). Peritoneal carcinomatosis is a cancer of the peritoneum, typically arises from metastasis from colon or ovarian cancer, and rarely presents as primary mesothelioma. There are only a few case reports describing metastatic prostate cancer leading to peritoneal carcinomatosis. To our knowledge, none describe peritoneal carcinomatosis as the presenting manifestation of a very late recurring prostate cancer. This case builds upon the limited literature describing prostate cancer as a cause of peritoneal carcinomatosis. Because the patient declined ADT (androgen deprivation therapy) we describe the natural history of peritoneal carcinomatosis secondary to prostate cancer.

DISCUSSION: We suspect that this patient had hydronephrosis and gross hematuria due to peritoneal carcinomatosis enveloping the genitourinary tract. Peritoneal carcinomatosis is often difficult to appreciate on CT and was likely present, although undetectable, on initial CT scan. Peritoneal biopsy was positive for prostate cancer. After multidisciplinary family meetings the patient decided to pursue comfort measures and declined ADT, palliative chemotherapy, and percutaneous nephrostomy tubes.

AN UNUSUAL CASE OF WEIGHT LOSS IN A 69 year OLD MAN

Emily Poppens; Mikhail Akbashev. Emory University, Atlanta, GA. (Control ID #2702034)

LEARNING OBJECTIVE #1: Recognize temporal arteritis as cause of unintentional weight loss

LEARNING OBJECTIVE #2: Identify atypical presentations of temporal arteritis

CASE: A 69 year old African American man presented with tachycardia and fever in the setting of subacute weight loss, fatigue, intermittent fevers and night sweats. He had a history of coronary artery disease, congestive heart failure, diabetes mellitus, depression, dementia and emphysema. Recent evaluations by his primary care physician included routine laboratory testing, esopho-gastro-duodenoscopy, colonoscopy, chest, abdominal and pelvic computed tomography scans that were unrevealing for a cause of his weight loss. His admission exam was pertinent for a cachectic man with bitemporal wasting and weight of 66 kilograms, a decline from 87 kilograms 2.5 years prior. Blood pressure was 108/53, heart rate 140 which improved to 110 with fluids, and he had a lone temperature to 39.4 Celsius. Initial laboratory evaluation revealed stable values from his baseline on the comprehensive chemistry and complete blood count. Electrocardiogram and chest x-ray had no pertinent changes. Upon further review of systems he noted left sided headache and symmetric pain in his hips and shoulders. He denied visual changes, jaw claudication and scalp tenderness. An erythrocyte sedimentation was extremely elevated at 111. Rheumatology was consulted for concern of temporal arteritis and polymyalgia rheumatica. Temporal artery biopsy revealed partially healed temporal arteritis. Ophthalmology did not find any evidence of ocular involvement. He was started on steroids for polymyalgia rheumatica and temporal arteritis. At follow-up with his primary care physician two months later, he reported improvement in headaches, shoulder and hip pain, and improved appetite without further weight loss.

IMPACT: This case highlights the importance of considering vasculitis as a source of unintentional weight loss.

DISCUSSION: Unintentional weight loss in older adults is a problem commonly encountered by the general internist and is associated with increased morbidity and mortality. While not the most common cause, rheumatologic etiologies account for 7% of unintentional weight loss in this population and can be easily missed. While the typical presentation of temporal arteritis is characterized by continuous temporal headache unresponsive to analgesics, jaw claudication and visual changes, it can also present with constitutional symptoms of fatigue, weight loss and night sweats or as a fever of unknown origin like our patient experienced. 40–60% of patients with temporal arteritis, including our patient, also have polymyalgia rheumatica, another rheumatic condition characterized by muscle pain and stiffness in the neck, shoulders and hips. A thorough rheumatologic review of systems and the initial work-up for weight loss, with an erythrocyte sedimentation rate, led to this cannot miss diagnosis.

AN UNUSUAL CAUSE OF CHEST PAIN AND SHORTNESS OF BREATH IN A YOUNG FEMALE Nurilign A. Bulcha; Fojas Antonio. Montefiore Medical Center, Bronx, NY. (Control ID #2707562)

LEARNING OBJECTIVE #1: Diagnose large B-cell lymphoma in a young female.

LEARNING OBJECTIVE #2: Recognize cardiac tamponade as a complication of large B-cell lymphoma

CASE: A 31 year old female presented with two weeks of shortness of breath and chest pain. Heart rate was 111 beats per minute. Blood pressure was 115/80 mm Hg. She had engorged neck veins, distant heart sounds and bilateral leg edema. Laboratory tests revealed a white blood cell count of 9,000 and hemoglobin of 12.8 g/dl. Transaminases were mildly elevated. Alkaline phosphatase, bilirubin and LDH were normal. A CT scan of the chest revealed a large pericardial effusion and an anterior mediastinal mass measuring 10.4 × 7.1 × 7.1 cm. An Echo revealed a large pericardial effusion with diastolic right ventricular collapse. Patient underwent emergent pericardiocentesis and 700 ml of hemorrhagic fluid was removed. A CT guided core biopsy revealed large B-cell lymphoma CD 20+ phenotype. Chemotherapy with R-EPOCH was started and patient has completed 3 cycles.

IMPACT: Early recognition and prompt treatment of Non Hodgkin's Lymphoma can dramatically improve patient outcomes and avoid often fatal consequences.

DISCUSSION: Diffuse large B cell lymphoma is the most common type of Non- Hodgkin's lymphoma and accounts for about 30% of all newly diagnosed NHL. It is more common in men older than 65. Patients usually present with a rapidly enlarging mass in the neck, mediastinum or abdomen with compressive symptoms. Patients may also have fever, weight loss and night sweats (B- symptoms). Up to half of the cases may not have elevated serum LDH. The most common site of extra -nodal involvement is the GI tract. Cardiac metastases may be found in 18 percent of patients of NHL. It often occurs late in the course of disease. Consequences of cardiac involvement include heart failure, arrhythmias or cardiac tamponade as in our patient. Early cardiac involvement in malignant lymphoma with cardiac tamponade is very rare especially in a young female. Cardiac tamponade is a consequence of accumulation of fluid in the pericardial space compressing the heart and causing diastolic dysfunction. Right ventricular collapse may be noted especially in the presence of hypovolemic conditions such as hemorrhage or over diuresis. Common etiologies include tumors, infections particularly tuberculosis and trauma. Acute cardiac tamponade occurring within min is life threatening and requires emergent fluid removal. Clinical findings include

hypotension/shock, engorged neck veins, distant heart sounds and pulsus paradoxus. Echocardiography and CT/MRI imaging are diagnostic. Pericardial fluid analysis may be helpful but pericardial window biopsy has better yield in determining etiology. In our case, the gender and age of the patient as well as early cardiac involvement with tamponade make the presentation of NHL very unusual. A thorough clinical evaluation is vital to make an early diagnosis especially in cases of cardiac metastasis and prevent lethal outcomes.

AN UNUSUAL DVT THREATENS LIFE AND LIMB

Sharanya Rajendra[1]; Sophia Paraschos[2]; Beth Ann Brubaker[2]. [1]University of North Carolina at Chapel Hill School of Medicine, Chapel Hill, NC; [2]University of North Carolina at Chapel Hill, Chapel Hill, NC. (Control ID #2692444)

LEARNING OBJECTIVE #1: Recognize hypovolemic shock and compartment syndrome as sequelae of phlegmasia cerulea dolens

CASE: A 34 year-old-man with bipolar disorder, diabetes mellitus type 1, multiple sclerosis, and DVT status post IVC filter 10 years ago, presented unresponsive in PEA arrest. ROSC was achieved after CPR and intubation. With an FiO2 of 100%, his arterial blood gas showed a pH of 6.86, pCO2 of 29 mm Hg, and bicarbonate of 5.2 mmol/L. Other notable chemistries included a lactate of >16 mmol/L, creatinine of 3.19 mg/dL, and creatinine kinase of 2,117 U/L that increased to 12,145 U/L after 24 h. He was anuric and started on emergent dialysis. Evaluation for cardiogenic, neurogenic, and septic shock was unrevealing. He had painful lower extremities that were edematous, cool and without palpable pulses. Dopplers revealed acute DVTs in the right and left common femoral veins and right popliteal vein. CT chest showed a new IVC thrombus superior to and abutting the apex of his IVC filter. His bilateral lower extremity compartment pressures were 70–90 mm Hg. He was diagnosed with phlegmasia cerulea dolens, a heparin drip was started, and he underwent emergent bilateral lower extremity fasciotomies with pharmacomechanical thrombectomies of the IVC, popliteal, femoral, common femoral, external and internal iliac veins. His fasciotomy sites were closed with skin grafts, and he was started on warfarin. He regained full neurovascular function of his legs. Hypercoagulability studies and investigations for malignancy were negative.

IMPACT: The most common precipitants for phlegmasia cerulea dolens (PCD) are malignancy and hypercoagulable states, especially antiphospholipid syndrome, although neither were ever identified in this patient. The most likely etiology of PCD in this case was propagation of clot from his IVC filter. It has been reported that 3-30% of patients with an IVC filter develop a new, obstructive thrombosis, thought to be due to the filter itself.

DISCUSSION: PCD is a rare, but dangerous consequence of DVT caused by venous obstruction of the major deep veins and collateral veins. The elevated venous hydrostatic pressures cause as much as 6–10 L of fluid to extravasate into the interstitium of the extremities in a matter of days. This can lead to acute compartment syndrome, venous gangrene, and rhabdomyolysis, as well as hypovolemic shock and cardiac arrest. Additionally, the high compartment pressures collapse arterial vessels, resulting in hypoperfusion and lactic acidosis, as described in the above case. The overall mortality from PCD is 20–40%, and among survivors there is a 12–50% amputation rate. PCD is a rapidly progressive and highly morbid condition that should be considered in any patient presenting with new onset leg pain, edema, and cyanosis. Complications including compartment syndrome, hypovolemic shock, and death can be avoided with timely diagnosis and thrombolysis. The condition should prompt investigation for underlying malignancy and hypercoagulable conditions.

AN UNUSUAL PRESENTATION OF HYPERTHYROIDISM Lei Lynn; Sripooja Satya; Kathryn Stigliano; Farida Izzi. George Washington University, Washington, DC. (Control ID #2703052)

LEARNING OBJECTIVE #1: Recognize rare cardiovascular and hepatic complications associated with hyperthyroidism.

CASE: A 49 year-old, previously healthy woman was sent from clinic for workup of a three-month history of symmetric lower extremity swelling and new-onset jaundice. She also endorsed generalized malaise, diffuse pruritus, and a 50 lb weight loss. Physical exam revealed scleral icterus, mild thyromegaly without palpable nodules, non-tender but distended abdomen, and 2+ pitting edema in bilateral lower extremities. Labs revealed anemia, thrombocytopenia, hyperbilirubinemia (Tbili 9 mg/dL) and low TSH (<0.015 mcIU/mL) with elevated T3 (19.7 pg/mL) and T4 (>6.99 ng/dL). Additionally, both TPO and TSI were elevated and thyroid ultrasound showed hypervascularity consistent with Grave's disease. Abdominal CT revealed hepatic steatosis and cirrhosis, which was confirmed on biopsy. Furthermore, echo showed dilated left and right atria and moderate pulmonary hypertension. Both lower extremity swelling and hyperbilirubinemia resolved after treatment with methimazole.

IMPACT: This case was unique in that this hyperthyroid patient presented with jaundice and evidence of cardiac decompensation in the setting of newly discovered pulmonary hypertension. The final diagnosis of Grave's disease was a reminder to always consider endocrine diseases in the differential.

DISCUSSION: Grave's disease is the most common cause of hyperthyroidism in iodine sufficient regions. Intrahepatic cholestasis seen on biopsy of our patient can be associated with Grave's disease. Jaundice in the setting of Grave's disease can develop either in a healthy patient or those with autoimmune liver disease, with variable manifestations ranging from hepatic congestion to gross hepatic decompensation. Treatment for Grave's disease is complicated in the setting of cholestasis given the hepatic side effects of thionamide drugs: methimazole can cause cholestasis and propylthiouracil can cause hepatocellular damage. However, when jaundice is associated with Grave's disease, methimazole has been found to be effective in treating hyperthyroidism and alleviate cholestasis. Hyperthyroidism has long been associated with cardiovascular sequelae such as tachycardia, hyperdynamic circulation, and decreased exercise capacity. Echo in our patient revealed dilated cardiomyopathy, which has been associated with Grave's disease in some cases. The proposed mechanism may be autoimmune in nature given the presence of TSH receptors in cardiomyopathy. Pulmonary hypertension is another uncommon complication. Our patient's lower extremity edema is likely the consequence of right heart insufficiency in the setting of pulmonary hypertension, which when associated with hyperthyroidism, can be reversible with proper treatment of hyperthyroidism. Thus, recognizing atypical presentations of hyperthyroidism is important in prompt diagnosis and effective treatment.

AN UNUSUAL REACTION TO A COMMON ANTIBIOTIC Ang Xu; David J. Hyman; Anoop Agrawal; Anthony wiseman; Justin Arunthamakun; Bhavish Manwani; Lee Lu. Baylor College of Medicine, Houston, TX. (Control ID #2707455)

LEARNING OBJECTIVE #1: To recognize the clinical features of drug induced AIN

CASE: Patient is a 67-year-old male with a history of well-controlled type 2 diabetes mellitus, hypertension, who was hospitalized a month prior for

Methicillin-sensitive Staphylococcus aureus and Group B Streptococcus bacteremia discharged on 2 g IV cefazolin q8h for 6 weeks who presented primarily for abdominal pain and distension. Since discharge patient had progressive nausea/ vomiting with inability to keep down any food. Notably, two weeks after patient was discharged with home IV cefazolin, patient's creatinine increased from a baseline of 1.3 mg/dL to 2.3 mg/dL. On physical exam vitals were stable. No jaundice was noted. Abdominal exam showed a distended abdomen that was diffusely tender to palpation with fluid waves. Extremities showed bilateral 2+ pitting edema up to the thighs. The rest of the physical exam was unremarkable. Patient had a normal leukocyte count; the differential was notable for eosinophilia (7.0%). Patient had elevated blood urea nitrogen (56 mg/dl) and elevated creatinine (1.8 mg/dL). Urine analysis showed 3+ protein, 2+ blood, 19 WBC and eosinophiluria. 24-hour urine analysis revealed 7.95 g of protein. Patient's PT, INR and PTT were elevated to 32.3, 3.1 and 49.8 s respectively. Given that the time course of the acute kidney injury coincided with the use of cefazolin, cefazolin was thought to likely be the culprit and was discontinued; steroids were started. Patient's coagulopathy resolved during hospitalization. Patient's serum creatinine improved from a high of 2.6 mg/dL to 1.9 mg/dL within 2 weeks of discharge. Patients proteinuria improved from 7.95 g to 142 mg within two months of discharge.

IMPACT: This is a case of a common antibiotic (Cefazolin) causing two rare reactions. Many drugs can cause AIN however only a select few have been known to cause AIN with nephrotic range proteinuria, the most well-established being NSAIDs. Additionally, in this patient, the cefazolin also caused an acute coagulopathy, which is a rarely reported side effect of cefazolin. To the best of our knowledge, cefazolin has not been reported in the literature to cause AIN with nephrotic range proteinuria.

DISCUSSION: Acute interstitial nephritis is primarily iatrogenic. AIN is classically thought to have a triad of rash, eosinophiluria and fever however more common signs are microhematuria and sterile pyuria. Treatment of drug induced AIN consists primarily of discontinuing the offending agent and supportive care. Steroids are often used however the evidence is mixed with some studies showing benefits. It is important for clinicians to recognize the clinical features of AIN especially if new medications coincide with the signs and symptoms of AIN.

ANAPHYLAXIS AS AN ADVERSE REACTION TO EMERGENCY CONTRACEPTION Victoria Menashy[1]; Ann Prokofieva[1]; Rebecca Mazurkiewicz[1]; Ronit Herzog[2]. [1]Lenox Hill Hospital, New York, NY; [2]New York University, New York, NY. (Control ID #2688200)

LEARNING OBJECTIVE #1: Oral contraceptives and emergency contraception such as levonorgestrel are commonly used forms of birth control among women. Ninety-nine percent of sexually active American women aged 15 to 44 have used a contraceptive method, with an increase use progressively over the years from 2002 to the present. However, to our knowledge, there are no reports of anaphylaxis to date. We report a case of acute systemic anaphylaxis to oral levonorgestrel. The case demonstrates the potential for severe allergic reaction to this commonly used emergency contraception.

CASE: A 38 year old female with past medica lhistory of depression presented with generalized skin pruritis and a rash, along with a sensation of swelling in her throat that started fifteen min after taking oral levonorgestrel at an urgent care facility. An epinephrine injection was administered, but it did not help her symptoms. Upon admission to the emergency room, the patient felt dizzy, short of breath and had acute urticaria. On physical examination, she was noticed to have tachycardia to 102, while the rest of her vitals were stable. The patient had uvula angioedema, no facial swelling and her lungs were clear. Blood testing with a cell blood count was normal. Her symptoms were alleviated by dexamethasone, diphenhydramine and famotidine intravenously. The patient had a similar episode of hives and anaphylaxis to the oral contraceptive, norethindrone-estradiol two years ago. Pertinent family history is notable for anaphylaxis to a bee sting in her father. Home medication includes sertraline for depression, which she has been taking for years. No other new medications were taken at this time. Patient denies eating any new foods, insect bites or exposure to any new chemicals. The patient denies alcohol, tobacco or illicit drug use. The review of systems was otherwise negative.

IMPACT: The patient's acute anaphylaxis was likely induced by the progesterone. Further studies are needed to evaluate the safety profile of this contraceptive and the predicting risk factors to the development of a systemic reaction.

DISCUSSION: The patient's acute anaphylaxis was likely induced by the progesterone. The patient did not eat anything before the levonorgestrel, therefore eliminating food related allergic conditions. Although she is on sertraline, this is not a new medication; thereby drug allergies may be excluded. The patient has no recent infections or chronic medical conditions that may be potential counfounding factors. There is one case report of acute urticaria following implantation of levonorgestrel and another report of autoimmune progesterone dermatitis 24 hours after insertion of levonorgestrel. The importance of reporting this case is to raise awareness of rare side effects of contraceptive pills. As a general practitioner, it is important while prescribing birth control medications to be aware of even the side effects of commonly taken medications.

ANCHORING ON THE NOSE Justin S. Louie. Kaiser Permanente San Francisco, Berkeley, CA. (Control ID #2692560)

LEARNING OBJECTIVE #1: Recognizing granulomatosis with polyangiitis as an uncommon, but clinically important disease, necessitating high clinical suspicion and rapid diagnosis

LEARNING OBJECTIVE #2: Reminder to avoid anchoring bias, especially when working in a multidisciplinary environment

CASE: A 70 year old male with type 2 diabetes and hypothyroidism was directly admitted to the hospital with a diagnosis of acute bacterial sinusitis, refractory to outpatient antibiotics. He originally had right sided facial pain, with full opacification of the right sinuses on CT. Care was managed by a multidisciplinary team including medicine, infectious disease, ophthalmology, and head and neck surgery (HNS). Treatment continued with IV antibiotics, but symptom progression prompted surgical evaluation with discovery of necrotic tissue. He ultimately required ICU admission, and 2 further debridements with removal of necrotic tissue. Unfortunately, his cultures were persistently negative. He was eventually discharged with additional antibiotics and follow up. Soon after discharge, his wife noticed he was tripping over his feet. Examination revealed right foot drop and he was referred to rheumatology. Labs returned with elevated PR3-ANCA (cANCA) and negative MPO-ANCA (pANCA), and he was diagnosed with granulomatosis with polyangiitis(GPA). He was treated with steroids and rituximab, with resolution of his nasal and neurologic symptoms.

IMPACT: This case is a classic presentation of GPA, masked by a pre-existing diagnosis of sinusitis. It illustrates the dramatic and morbid course of the disease, while also reinforcing the importance of avoiding anchoring bias by maintaining wide differentials and revisiting diagnoses when cases do not progress as expected. Earlier consideration of rheumatologic disease and other

vasculopathies, may have allowed the patient to avoid multiple surgical procedures and decrease the risk of developing long term complications.

DISCUSSION: Granulomatosis with polyangiitis is a systemic small and medium vessel vasculitis, mediated via autoimmune attack by abnormal antibodies, PR3 directed cANCA in 80–90% of cases. Early presentation is nonspecific, though rhinitis is a frequent initial complaint. Manifestations commonly involve multiple organ systems, and damage to the lungs and kidneys can be fatal. Before modern treatments, the average survival was five months, with 2-year mortality over 90%. There are multiple classification algorithms; however, in clinical practice, biopsy data in conjunction with clinical findings is the most definitive method of diagnosis. Presumptive diagnosis can be made in high probability situations with consistent clinical findings and positive serology. This allowance is made, because prompt diagnosis is important to permit initiation of immunosuppressive therapy which may be life-saving and organ sparing. GPA should be suspected in patients with upper and lower respiratory disease who develop consistent systemic symptoms and are poorly responsive to non-immunosuppressive treatments.

ANCHORS AWAY: ANCHORING BIAS, CONFIRMATION BIAS, AND PULMONARY EMBOLI Derek C. Mazique. NewYork-Presbyterian/Weill Cornell Medical College, New York City, NY. (Control ID #2700921)

LEARNING OBJECTIVE #1: Understand the reported failure rates of enoxaparin in medically ill hospitalized patients

LEARNING OBJECTIVE #2: Recognize anchoring bias and confirmation bias in the treatment of pulmonary embolism

CASE: HPI: Patient AD is a 75-year-old man with a PMH of CLL for years, on no treatment -Approx. 3 days of dyspnea, productive cough, subjective fever, and diarrhea -In the ED, VS T 37, RR 24, BP 138/79, HR 97, 97% on 4 L NC; uncomfortable appearing, tachypneic, but no other findings, and in no distress -Positive *L. pneumophila* antigen (urine) and rhinovirus PCR -Chest x-ray negative for acute pulmonary finding, EKG with RBBB unchanged from prior, troponin negative ×1 -Treated with azithromycin and oxygen, on prophylactic enoxaparin A Progression: On day 20, patient became acutely hypoxic with new tachypnea and tachycardia during ambulation, requiring escalation of O2 to 4 L -On exam, patient uncomfortable appearing, but otherwise similar to prior days of hospitalization -Given patient's continuous decline over weeks, patient considered to likely have subacute worsening of his already-established diagnosis -Bacterial superinfection strongly considered given narrow *Legionella* coverage and risk factors, despite lack of new infectious symptoms -ACS considered, but unlikely, given lack of cardiac risk factors, typical angina symptoms, or significant EKG changes -PE considered given CLL, worsening hypoxia, and new tachypnea but since on prophylactic enoxaparin, not pursued initially -Primary team broadened antibiotics and attributed presentation to worsening *Legionella* -With detrioration, CT Chest done next day with contrast revealed bilateral saddle emboli

IMPACT: −Treatment failure is a common complication of enoxaparin in medically co-morbid hospitalized patients -Confirmatory and anchoring bias can affect the diagnosis and prompt treatment of pulmonary emboli

DISCUSSION: −In research of hospitalized medically-ill patients, treatment failure with enoxaparin was approximately 3-5% -Among interests reporting 669 diagnostic errors, the most common missed diagnosis involved pulmonary emboli (26, 4.5% of total) -Cognitive errors arise when non-analytical reasoning (Type 1 processes) uses biases and heuristics to override analytical reasoning (Type 2 processes) i.e. based on objective clinical information -Among IM residents, anchoring and confirmation biases accounted for 87 and 48% of cognitive errors, respectively -Anchoring Bias: Anchoring on the diagnosis of worsening *Legionella* pneumonia or bacterial superinfection due to presence of prophylaxis, despite history of malignancy and new clinical change -Confirmation Bias: Pursuing diagnosis of infection (confirmation) despite lack of infectious symptoms, rather than pursuing other possibilities -Pulmonary emboli, given their often atypical presentation and risk for misdiagnosis, might be at elevated risk for cognitive bias and medical error -More research is needed for formal didactics on cognitive bias and recalibrating Type 1 processes in the setting of pulmonary embolism

ANEMIA AND HYPOTHYROIDISM; STOP THE THYROID INSANITY Arwa M. Elsheikh[2]; Yazan Samhouri[1]; James Bingham[1]; manuel matos[1]. [1]Rochester Regional Health/Unity Hospital, Rochester, NY; [2]Unity Hospital, Rochester, NY. (Control ID #2706731)

LEARNING OBJECTIVE #1: Be aware of the association between hypothyroidisim and anemia.

LEARNING OBJECTIVE #2: Recognize hypothyroidism per se as a cause of otherwise unexplained severe macrocytic anemia.

CASE: A 22-year-old lady with history of primary hypothyroidism presented to the emergency with worsening fatigue and dizziness over one week, associated with exertional dyspnea. She denied any blood loss, constipation or cold intolerance. She was off levothyroxine for over seven years due to non compliance. On physical exam: BP 85/50 mmHg, HR 111 bpm, BMI 24.1, she had bilateral conjunctival pallor, ejection systolic murmur, delayed relaxation phase of tendon reflexes and neck exam showed no palpable thyroid. Her Labs showed HB 3.6 gm/dl, HCT 11.8%, MCV 105.4, TSH 524.38 uIU/ml, FT4 0.2 (0.9-1.8 ng/dl) and T3 42.8 (60–180 ng/dl). She was admitted as a case of severe anemia and hypothyroidism. Further work up for the anemia showed normal iron studies, normal B12 and methyl malonic acid, normal folic acid and her hemolytic work up (T. bilirubin, Haptoglobin, corrected reticulocyte count, LDH) was negative. She received total of four units of PRBCs during her hospitalization. She did not meet the criteria for myxedema coma diagnosis and was started on oral levothyroxine replacement. Her anemia was attributed to severe chronic hypothyroidism by exclusion. Her symptoms improved over the next two days, her hemoglobin was 8.1 g/dl, she was discharged to follow up with endocrinology.

IMPACT: This case highlight the importance of recognizing hypothyroidism as a cause of anemia and the assessment of thyroid function as a part of workup of anemia of unknown etiology. Hypothyroidism can cause various types of anemia and comprehensive workup is essential to identify the underlying etiology and direct management. This case also adds to the sparse literature that reported severe macrocytic anemia secondary to hypothyroidism per se in the absence of vitamin B12 and folic acid deficiency.

DISCUSSION: Anemia is reported in 20–60% of the patients with hypothyroidism (overt and subclinical). Anemia in hypothyroidism is characteristically normochromic normocytic related to inhibition of erythroid colony development, reduction in oxygen distribution to tissues and low erythroprotein level in the absence of thyroid hormones. Normalization of hemoglobin level occur with replacement of thyroid hormone. Iron deficiency resulting from iron malabsorption and menorrhagia is the second common cause. Macrocytic anemia can occur secondary to vitamin B12 deficiency (pernicious anemia) or rarely to hypothyroidism per se. Association between the degree of severity

of the anemia and the severity of hypothyroidism has been a controversial issue and in our patient the severity of anemia and the macrocytosis can be explained by the long standing untreated hypothyroidism. Clinician should be aware of the association between anemia and hypothyroidism and suspicious for hypothyroidism should be raised in all cases of anemia of unclear etiology.

ANOTHER AMIODARONE SIDE EFFECT! A RARE CASE OF AMIODARONE INDUCED SIADH Katherine A. Markelz; Shakil Shaikh. Baystate Medical Center, Springfield, MA. (Control ID #2707138)

LEARNING OBJECTIVE #1: Identify amiodarone as a rare etiology for medication induced SIADH

LEARNING OBJECTIVE #2: Recognize the dose-dependent relationship between amiodarone and SIADH

CASE: A 72 year old male with a past medical history of biventricular heart failure and hypothyroidism presented to our facility with a four day history of progressive dyspnea. Upon arrival he was in atrial fibrillation with rapid ventricular rate in the setting of acute constrictive effusive pericarditis. Despite optimal medical treatment and pericardiocentesis, his heart rate remained elevated and irregular. Rhythm control was pursued with Amiodarone at 400 mg every 8 hours. The first day following amiodarone initiation, our patient developed abrupt hyponatremia, from 136 to 128. By day two, his sodium fell to 123. Urine studies revealed: sodium 49 and osmolality 336. Serum osmolality was 279. Despite fluid restriction, liberal salt intake, and euvolemic clinical state, sodium remained low. Further workup showed renin 12.2, TSH 9.12 (16.05 on admission), Free T4: 1.26, aldosterone 21.3, and morning cortisol: 28.1. The only acute change preceding the hyponatremia was addition of amiodarone. Despite rate and rhythm control, with our leading suspicion for amiodarone induced SIADH, amiodarone was discontinued. Sodium level resolved three days after his last high loading dose of amiodarone. He eventually restarted amiodarone on a reduced loading dose of 400 mg twice daily and was discharged on maintenance dose amiodarone, with stability in his sodium levels.

IMPACT: Our case illustrates the importance of monitoring sodium levels for patients on amiodarone therapy. It also raises questions regarding the optimal dosing for safety and efficacy of amiodarone therapy.

DISCUSSION: SIADH is a major cause of hyponatremia. Characteristic findings include high urine osmolality and high urine sodium in the absence of hypoadrenalism and hypothyroidism, as seen in our patient. While malignancy, and central nervous system disorders are common etiologies, drugs have also been described. Since 1996, there have been 12 cases reporting amiodarone induced SIADH.While the exact mechanism is unknown, possible theories include enhanced secretion of ADH, increased sensitivity of the aquaporin-2 channels to ADH, and channel modulation in renal or neural tissue. Prior case studies describe a a temporal and dose-dependent relationship between amiodarone and drug induced SIADH. Two of the aforementioned cases describe hyponatremia as early as three days from initial loading dose, with resolution after dose reduction. Seven of the cases had resolution of hyponatremia within 7 days of discontinuation of amiodarone. Our patient developed SIADH one day after he received a full loading dose of amiodarone, yet his sodium remained stable on a reduced loading and maintenance dose. This suggests that dose reduction may treat and possibly prevent amiodarone induced SIADH. While amiodarone induced SIADH is very rare, clinicians should be aware of this potentially serious complication.

ANTIACID OR ANTIRENAL - A CASE OF OMEPRAZOLE INDUCED ACUTE INTERSTITIAL NEPHRITIS Nosheen Sarwar; Hani Erian; Steven Lamontagne. Berkshires Medical Center, Pittsfield, MA. (Control ID #2690491)

LEARNING OBJECTIVE #1: To recognize proton pump inhibitors (PPIs) as a potential cause of acute intersitial nephritis (AIN).

CASE: An 82-year-old female with a past medical history significant for hypertension, hypothyroidism and degenerative joint disease presented to our institution with progressive fatigue, anorexia and confusion over the last 4 weeks. She also reported decreased urine output for the last 2 weeks. Her home medications included lisinopril, nifedipine, ibuprofen as needed, gabapentin, levothyroxine, and omeprazole - which had been started few weeks prior to presentation for nonspecific stomach discomfort. In the ER, she was found to be bradycardic with a heart rate of 50 and was given atropine. Her labs showed severe acute kidney injury with serum creatinine of 9.6 mg/dl (from baseline creatinine of 0.8 mg/dl), and severe hyperkalemia with potassium 6.9 mEq/l. Given symptomatic hyperkalemia (bradycardia) and presumed uremic encephalopathy she underwent emergent hemodialysis on the day of presentation. Diagnostic evaluation for her AKI included an unremarkable renal ultrasound and urinalysis showing significant eosinophilia without any cellular casts. Renal ultrasound showed heterogenous renal parenchyma consistent with medical renal disease. Renal biopsy was performed and showed an extensive interstitial infiltrate composed of plasma cells, lymphocytes and neutrophils consistent with severe interstitial nephritis. Given the temporal association of the start of omeprazole therapy and the patient's proven AIN, this medication was presumed to be causal and was discontinued. Treatment with prednisone (tapered over 2 weeks) was initiated. She continued to require hemodialysis for one week, but eventually had renal recovery and became dialysis-independent with a creatinine that progressively improved to 1.6 mg/dl over the following weeks.

IMPACT: Given the high prevalence of PPI use in the general population, physicians should be aware of and closely monitor for renal complications of these medications.

DISCUSSION: PPIs are one of the most commonly prescribed drugs worldwide, and as such deserve close scrutiny for potential adverse effects. AIN is a hypersensitivity immune reaction involving the renal interstitium. PPI use has been associated with the development of AIN, as well as chronic kidney disease. Case series have shown similar incidence in male and female patients. The average time between exposure and development of AIN is highly variable, ranging from 1 week to several months. Diagnosis of PPI induced AIN is complex due to concomitant use of other AIN causing agents including antibiotics and nonsteroidal anti-inflammatory drugs. Patients may present with fever, loin pain, nausea or signs/symptoms of uremia. Inactive urinary sediment in the absence of significant hematuria or proteinuria should make one suspect AIN. Keeping a high index of suspicion, timely stoppage of the potential offending agent and steroids are the mainstay of treatment.

ANTICOAGULANT THERAPY LEADING TO HEMOTHORAX OF THE MAJOR FISSURE Julie Worthington[1]; Charis Whitney[1]; Nisha Hariharan[2]; Sravanthi Ennala[1]. [1]Pinnacle Health System, Hummelstown, PA; [2]Pennsylvania State University College of Medicine, Hershey, PA. (Control ID #2706317)

LEARNING OBJECTIVE #1: Diagnosing and treating a hemothorax in the major fissure.

CASE: An 89-year-old male presented with hemoptysis and dyspnea. Two weeks prior, the patient received diagnosis of new-onset asymptomatic paroxysmal atrial fibrillation and was started on rivaroxaban. The day prior to admission, he took 1 aspirin for back pain then developed hemoptysis and dyspnea. Initially, the patient was tachypneic with an oxygen saturation of 97% on continuous positive airway pressure with fraction of inspired oxygen of 35%. Laboratory values were within normal limits. A chest X-ray revealed a newly developed 11 centimeter left upper lobe mass-like density. Computed tomography of the chest showed an 11 centimeter soft tissue density in the left upper lobe along the left major fissure. Interventional radiology performed thoracentesis and drained only minimal fluid containing red blood cells and no microorganisms. Cardiothoracic surgery evaluated the patient and performed video-assisted thoracoscopy and evacuation of the hematoma, confirming presence of the hematoma along the left pleural fissure.

IMPACT: In patients with atrial fibrillation, the prevention of thromboembolic events using novel oral anticoagulants, including rivaroxaban, has become increasingly popular. While intracranial and gastrointestinal bleeding have been reported, pulmonary bleeding and spontaneous hemothorax are infrequently reported complications of rivaroxaban use.

DISCUSSION: This case demonstrated that using aspirin only one time while on rivaroxaban may result in a spontaneous hemothorax. This presentation was unusual in that the hemothorax was contained in the left pleural major fissure. Since rivaroxaban has become popular as an oral anticoagulant, both patients and providers need to be aware that spontaneous hemothorax is a risk.

AORTIC DISSECTION PRESENTING AS AORTIC REGURGITATION LEADING TO CHF Anirudh Penumetcha; Aditya Sood; Raju Penumetcha; Luis Afonso. Wayne State University, Farmington Hills, MI. (Control ID #2707552)

LEARNING OBJECTIVE #1: Recognize thoracic aortic dissection as part of the differential diagnosis of new onset CHF and/or aortic regurgitation.

LEARNING OBJECTIVE #2: Diagnose ascending thoracic aortic dissection with negative CTA.

CASE: A 59-year-old gentleman with PMHx significant for HTN presented to our ED complaining of one month onset of progressively worsening dyspnea, orthopnea and worsening bilateral LE edema. He also complained of intermittent substernal non-radiating chest pressure that started one day prior. Admitted to being non compliant with medications and PCP follow up. On ROS he denied any dizziness, syncopal episodes, pleuritic chest pain, lateralized weakness or numbness. He did not have history connective tissue diseases, tobacco use, prior MI, HLD or DM. Vitals were significant for BP 180–210 s/100 s, HR 70s, RR 16, Tmax 36.6 C and 100% O2sat on RA. Cardiac exam was significant for S3 gallop, 2/6 diastolic murmur heard best at the left sternal border and negative for JVD. On labs creatinine 1.37 (unknown baseline), BNP 2,595, troponin (peaked at 0.131), albumin 3.2, Hb 15.2. CXR showed no acute abnormalities. Subsequent TTE showed systolic (EF 30–35%) and grade II diastolic heart failure. In addition severe aortic valve regurgitation and a non mobile echogenic mass was noted at the aortic root consistent with atherosclerotic plaque vs dissection. Subsequently a CTA of the thorax, abdomen and pelvis were done and negative for aortic aneurysm/dissection or intramural hematoma. To further evaluate the aortic regurgitation patient underwent a TEE that showed findings consistent with a focal dissection of the ascending and root aorta (Type 2 De Bakey) with avulsion of the AV cusps and severe aortic regurgitation. CT Surgery was immediately brought on board and patient underwent subsequent aortic root replacement and aortic valve repair.

IMPACT: Aortic dissection presenting with heart failure symptoms and aortic regurgitation is documented but uncommon. In addition, this case emphasizes the importance of TEE in the diagnosis of aortic dissection due to a negative CTA.

DISCUSSION: Aortic dissection is an emergency that if undiagnosed or untreated has high mortality rates (>80% in 2 weeks). It is crucial for clinicians to consider aortic dissection in a patient presenting with new onset HF with aortic regurgitation. Roughly only 6% of aortic dissections present with acute CHF [1]. Although CTA is the most commonly obtained diagnostic test to diagnose aortic dissection, in our case it did not aid in the diagnosis. TEE is another test that should be obtained if CTA is inconclusive and clinical suspicion is high. It has a sensitivity of 99 and specificity of 98% in diagnosing aortic dissection [2]. 1. Evangelista, Arturo, et al. “Role of Transoesophageal Echocardiography in the Diagnosis of Acute Aortic Syndrome.” 2. Ali, Usman, et al. “Painless aortic dissection presenting with congestive heart failure.” British Journal of Medical Practitioners 4.1 (2011).

APPROACH TO ANXIETY AS A BARRIER TO VENTILATOR WEANING IN THE ICU Dheepa R. Sekar; Kaylee J. Shepherd; Sonja Bartolome. UT Southwestern, Dallas, TX. (Control ID #2702989)

LEARNING OBJECTIVE #1: Recognize anxiety and post intensive care syndrome in the process of ventilator weaning

LEARNING OBJECTIVE #2: Manage anxiety during ventilator weaning with the paradoxical use of oral benzodiazepines

CASE: The patient is a 65 year old woman with metastatic breast cancer treated with chemotherapy and radiation and left hemidiaphragm paralysis who was admitted to the intensive care unit with pneumonia, hypercapnic respiratory failure requiring intubation and septic shock. The evening after the patient was extubated, she was re-intubated due to tachycardia and recurrent hypercapnea. Tracheostomy was performed to aid with ventilator weaning. She initially tolerated tracheostomy collar for 3–5 h at a time, but would request ventilator support due to fatigue and was noted to be hypertensive with systolic blood pressure >160 mmHg during these trials. Considering anxiety as a factor, Lorazepam was offered to the patient prior to her ventilator weaning trials. On the second day of Lorazepam use, the patient tolerated tracheostomy collar during all waking hours, and her systolic blood pressure during trials soon stabilized. Although she tolerated more frequent and longer sessions of physical therapy, she was discharged to a skilled nursing facility, as she required pressure support at night.

IMPACT: Management of patients in the ICU has a predominant focus on the details of physiology and cardiopulmonary status. However, treatment success requires appreciation of the patient as a whole, including psychosocial factors. In this case, the patient’s anxiety was the primary barrier to ventilator weaning and subsequent ICU discharge. Recognition of the patient’s anxiety allowed appropriate treatment and successful improvement in ventilator status.

DISCUSSION: Post-critical care syndrome has been described in critical care patients and involves physical and psychosocial impairment, including anxiety and acute stress response. In fact, anxiety is one of the most common psychiatric challenges for ventilated patients. It is also thought that memories of the experience contribute to a feeling of lack of control. In this patient, the major barrier to ventilator weaning was not physiologic but rather psychosocial, namely, related to her anxiety. The anxiety led to prematurely shortened tracheostomy collar trials, prolonging her stay in the ICU. Although it may

seem paradoxical to use benzodiazepines in ventilator weaning, they were used in this particular case to treat the patient's anxiety, allowing her to progress in her ventilator weaning. She was judiciously given Lorazepam in small oral doses and at longer time intervals, and her oxygen saturation was maintained during the daytime. Once her anxiety was addressed, the patient improved more quickly, allowing sooner discharge from ICU.

AT WIT'S END: UNRAVELING AN UNEXPECTED CAUSE OF DELIRIUM Carlos A. Lopez[2]; Erik Kockenmeister[1, 2]; Vinita Gupta[1, 2]. [1]Northwell Health, New Hyde Park, NY; [2]Northwell Health, Manhasset, NY. (Control ID #2706618)

LEARNING OBJECTIVE #1: Recognize the clinical features of cefepime-induced encephalopathy (CIE) while distinguishing it from other common causes of delirium

CASE: A 75-year old woman with osteoarthritis treated with a left knee replacement presented to her primary doctor with worsening left knee pain. She was sent to the emergency room when her CBC showed a platelet count of 33 k and an absolute neutrophil count of 320, which were subsequently found to be due to acute myeloid leukemia. Arthrocentesis of the knee showed hemoarthrosis without evidence of infection or crystallopathy. After developing neutropenic fevers without a clear source of infection, she was started on cefepime. She started induction chemotherapy with decitabine the next day. Two days after starting induction, she developed progressively worsening hypoactive delirium, lethargy, disorientation, slurred speech, dysphagia, and tachypnea; symptoms persisted even after completing induction. An MRI was negative for leptomeningeal disease, ischemic stroke, or hemorrhage. Serial ABGs showed normal pH, pCO2 and pO2 levels. Mild hypercalcemia (ionized calcium 1.47 mmol/L) was noted, which when treated failed to resolve her encephalopathy. Ammonia levels were normal; both hepatic function and renal function were normal. She was started on lactulose for constipation, though mental status failed to improve despite having regular soft bowel movements. Serial lumbar punctures were negative for malignant cells or infection. A video EEG showed moderate diffuse nonspecific slowing without epileptiform abnormalities. Opiates and patient's home oxybutynin and cyclobenzaprine were held without improvement. Despite normal renal function (baseline creatinine clearance of 93 mL/min), cefepime was switched to meropenem due to concern for CIE. The patient's encephalopathy, tachypnea, and dysphagia markedly improved, returning to baseline over the next 24 hours.

IMPACT: The work up for encephalopathy in a hospitalized patient should always include a review of less common adverse effects of a patient's medications. This can simplify the work up and avoid delays in diagnosis.

DISCUSSION: This case shows that CIE can go unrecognized when competing etiologies are present. It can present with delirium, myoclonus, hallucinations or seizures. It is particularly important to suspect CIE in patients with seizures prior to initiating anti-epileptics, as symptoms typically resolve within 48 hours of stopping cefepime. The proposed mechanism for CIE is through an increase in excitatory neurotransmission by inhibiting the release of GABA from nerve terminals. Retrospective cohort studies of patients with hematological malignancies show that patients with renal dysfunction are at greater risk of developing CIE, even when properly dosed; this is thought to be due to an increase in blood–brain permeability due to the effects of accumulated organic acids. However, as our case shows, having normal renal function is not completely protective against CIE.

ATRIAL FIBRILLATION IN A PATIENT WITH AN ACCESSORY PATHWAY Andrew Silverman; Sonia Taneja; Liliya Benchetrit; Lovemore Makusha; Robert L. McNamara; Alexander Pine. Yale School of Medicine, New Haven, CT. (Control ID #2702843)

LEARNING OBJECTIVE #1: Recognize confounding electrocardiographic (ECG) features and appropriate treatment of Wolff-Parkinson-White (WPW)/atrial fibrillation (AF) syndrome.

CASE: A 24-year-old man with a history of unspecified arrhythmia presented with palpitations and chest pain. Initial ECG revealed irregular tachycardia with varying QRS width: 150–200 bpm for narrow complexes and 300 bpm for wide complexes. Several wide QRS complexes in the lateral leads showed a slurred upstroke phase. Due to an interpretation of the rhythm as ventricular tachycardia (VT), the patient was given two rounds of amiodarone 150 mg IV without effect. He was then cardioverted with 100 J, synchronized. The post-cardioversion ECG revealed sinus tachycardia with a pre-excitation pattern of positive delta waves in the anterolateral leads (I, aVL, V2-6) and negative delta waves in inferior leads (III, aVF). The patient remained in sinus rhythm and underwent successful ablation of a right posteroseptal accessory pathway. Subsequent ECG showed upright T waves in leads I, aVL, and V2-6, large inverted T waves in leads III and aVF, and no delta waves. The troponin level peaked at 0.53, and was undetectable within 12 hours. The patient was discharged after 3 days in stable condition.

IMPACT: This case serves as an important reminder that rapid AF (rAF) in the presence of an accessory pathway may present with confounding ECG features, potentially leading to incorrect diagnoses and treatments that may be life-threatening. Despite 10–30% prevalence of rAF in the presence of an accessory pathway and the relative awareness of WPW syndrome among general internal medicine providers, the clinical recognition of WPW may be hindered in the presence of rAF.

DISCUSSION: The patient's first ECG reflected an irregular chaotic WCT, partly because of abnormal depolarization along the accessory pathway. It was also apparent that some impulses were conducted through the AV node, as evidenced by narrow QRS complexes without the delta wave (capture beats). Since impulses travel through both the AV node and accessory pathway, treatment with AV nodal blockers (e.g., adenosine, calcium channel blockers, beta blockers, and possibly amiodarone) is contraindicated, as atrial impulses would preferentially conduct through the accessory pathway. This can cause the rhythm to degenerate into ventricular fibrillation. Thus the key to recognition of WPW/AF syndrome is irregular WCT with QRS of varying morphology with sustained rates exceeding 200 bpm. While this rhythm can be difficult to differentiate from polymorphic VT, the immediate treatment for both is cardioversion. The definitive treatment for WPW/AF syndrome is radiofrequency ablation. Following ablation, peaked T waves may appear in leads where the delta wave was most noticeable, with concordant polarity. In the context of small and transient cardiac enzyme elevation, such an abnormality is a classic post-ablation memory T wave pattern and is considered evidence of a successful ablation.

ATTEMPTED SUICIDE WITH CRUSHED ROSARY PEAS: ABRUS PRECATORIUS Alena Perez-Majul[2]; Andrew Zabel[2]; Amelia Todd[1]; John Andrew O'Connor[1]. [1]St. Vincent Hospital, Indianapolis, IN; [2]Marion University, Indianapolis, IN. (Control ID #2707603)

LEARNING OBJECTIVE #1: Recognize the clinical features of abrin ingestion

CASE: A 32-year-old male with a past medical history of bipolar disorder presented to the emergency department with a two day history of nausea, vomiting, and diarrhea. He reported approximately 10 episodes of vomiting and 40–50 episodes of diarrhea in the past two days. His blood pressure and heart rate were elevated on admission. He reported loose, watery bowel movements with hematochezia and colicky abdominal pain. He denied any fevers, chills, dyspnea, cough, sick contacts, changes in medications or diet, or recent travel. He also denied a family history of inflammatory bowel or autoimmune disorders. A complete blood count revealed an elevated white count of 24.5. An abdominal CT scan showed pancolitis. Although the patient initially denied suicidal ideation or depression, he later admitted to intentionally ingesting 100 crushed rosary peas (abrus precatorius) in a suicide attempt two days prior to admission. With supportive care, his vomiting and diarrhea improved within three days.

IMPACT: Cases of abrin toxin ingestion are uncommon in North America but have high fatality rates. This case expands on the literature as another example of management of abrin toxin ingestion without fatality. No antidote exists for the toxin, so the ability to recognize clinical symptoms and understand successful symptom management is vital to patient outcomes.

DISCUSSION: Abrin, a toxin similar to ricin, comes from the seeds of the arbus precatorius tree (rosary pea) which is commonly found in tropical areas. Abrin contains a toxalbumin which is a AB subunit protein toxin and is obtained from the seeds of Abrus precatorius. Abrin is highly toxic, with an estimated human fatal dose of 0.1-1 microgram/kg, and commonly causes death after accidental ingestion in children. Toxalbumins inhibit protein synthesis and cause cell death by binding and penetrating cell membranes through endocytosis. Symptoms generally begin within a few hours and include persistent vomiting, diarrhea, and abdominal pain, with associated hypokalemia, which our patient developed during his hospital course. Systemic injury may appear as late as 1–5 days after ingestion as the cumulative effects of inhibition of protein synthesis mount. Elevated serum LFTs and creatinine levels may be seen, indicating hepatorenal failure. If death occurs, it is generally 3 to 5 days after ingestion. Our patient ordered 100 rosary peas from a major online retailer, ground them in coffee grinder, and mixed the powder into a protein shake, which he then ingested two days prior to admission. This dose is several magnitudes higher than the toxic dose suggested by the literature so it is fortunate that the patient did not suffer hepatorenal failure, as observed in some cases of smaller ingestion. His gastrointestinal distress began within 3–4 h, first with vomiting followed by persistent diarrhea.

ATTENTION TO DETAIL: EXAMINING A CASE OF CHRONIC DIARRHEA AND A BLEEDING DIATHESIS Anna L. Dill[1]; Andre N. Sofair[1]; Reginald Severe[2]. [1]Yale Internal Medicine-Primary Care, New Haven, CT; [2]Yale School of Medicine, New Haven, CT. (Control ID #2706309)

LEARNING OBJECTIVE #1: Recognize signs and symptoms of multiple myeloma and systemic amyloidosis.

LEARNING OBJECTIVE #2: Recognize cognitive bias and systems limitations in decision making.

CASE: A 55-year old man presented with 4 months of daily diarrhea, right upper quadrant pain, weight loss, and orthostatic hypotension. He was previously healthy, originally from Mexico and had been living in the area for 5 years. He was employed as a mechanic and had no toxic habits. He had been hospitalized 2 times already for the same complaints. During his first presentation, 2 months prior, he had labs notable for an anemia and isolated elevated alkaline phosphatase. A CT scan of the abdomen showed stranding around the terminal ileum but otherwise normal. He underwent an infectious workup for his diarrhea that was normal. He had a colonoscopy that showed normal mucosa and negative pathology. He was discharged to home. He returned 3 days later with bloody diarrhea. A CTA showed a hematoma in the colon. He underwent colonoscopy that showed ulcer at prior bx site. Hematology was consulted and workup showed platelet function abnormality, low fibrinogen levels, and low alpha-2-antiplasmin suggestive of abnormal fibrinolysis. He was discharged to home. For his 3rd presentation, the total duration of complaints was 4 months. His ROS was now notable for paresthesias in hands/feet and a 50 pound weight loss. His PE was significant for a firm slightly enlarged liver and no splenomegaly. He had had diminished sensation in bilateral hands and feet. His labs were unchanged from prior. He had an EKG, which was notable for low voltage. Given neuropathy, hypotension, weight loss, and bleeding diathesis he was evaluated for a monoclonal gammopathy and his initial serum SPEP and IFE did not show evidence of monoclonal protein. However, his UPEP and urine IFE were positive for free lambda light chain. A bone marrow bx showed 20% involvement of plasma cells, consistent with multiple myeloma. Given low voltage of EKG and firm liver on exam, there was concern for systemic amyloid and he underwent rectal and fat pad biopsies that were negative for amyloid. Bone marrow biopsy was also negative for amyloid. Eventually, a liver biopsy was obtained which confirmed the diagnosis of AL amyloid associated with multiple myeloma.

IMPACT: This case heightend my awareness to cognitive bias. Our patient encountered numerous providers and I relied on earlier assessments (anchoring). Furthermore, his presentation did not fully “fit” with a primary GI diagnosis, but the decision making process was terminated prior to me exploring these aspects (premature closure).

DISCUSSION: The case highlights the diagnosis of amyloidosis as well as systems/cognitive challenges. Regarding the diagnosis, our case displayed that a high degree of suspicion is necessary. Furthermore, our patient did not speak English. We believe this could have contributed to a less in-depth HPI that was carried forward. Early workup was anchored on GI symptoms, which may have led to a delay in diagnosis.

ATYPICAL PRESENTATION OF AL AMYLOIDOSIS Munit Singh; Daniyal Ansari; Anupama Paranandi. Saint Mary’s Hospital, Cartersville, GA. (Control ID #2706352)

LEARNING OBJECTIVE #1: To obtain clinical insight about the atypical signs and symptoms of AL amyloidosis

CASE: A51-year-old female with no significant past medical history initially presented with dyspnea and chest pain. On exam, she was noted to have mild respiratory distress, oxygen saturations of 89% on room air, trace lower extremity edema bilaterally and a normal cardiac exam. ACS was ruled out. Brain natriuretic peptide was 592 pg/ml suggestive of heart failure. A transthoracic echocardiogram showed an ejection fraction of 60-65% with moderate evidence of left ventricular hypertrophy. The discharge diagnosis was acute hypoxic respiratory failure secondary to new onset diastolic heart failure. She was readmitted a month later with complaints of bright red blood per rectum, worsened dyspnea and bilateral lower extremity edema refractory to prescribed diuretic treatments. Despite the bleed, the hemoglobin remained at her baseline. Troponin peaked at 1.23. Repeat transthoracic echocardiogram showed worsening of the ejection fraction and severe concentric hypertrophy suggestive of an infiltrative process. Cardiac catheterization was negative for significant coronary

artery disease and demonstrated a restrictive physiology. Cardiac MRI was indicative of cardiac amyloidosis. Tc-99 m pyrophosphate scan confirmed immunoglobulin light chain (AL) amyloidosis. The gastrointestinal bleed prompted a duodenal biopsy, which showed abundant amyloid deposition. Due to the association of AL amyloidosis with plasma cell dyscrasias, a bone marrow biopsy was pursued, which confirmed multiple myeloma with secondary amyloidosis. A 24-hour urine protein electrophoresis showed a discreet band present in the beta region, identified as free lambda light chain consistent with multiple myeloma. The patient is currently being treated with systemic chemotherapy with cyclophosphamide, bortezomib, and dexamethasone.

IMPACT: Amyloidosis is the deposition of abnormal protein that affects multiple organ systems with diverse clinical manifestations. The incidence in the United States is about 6–10 cases per million persons. Amyloidosis has many distinct subtypes with primary (AL) being the most common. It can have unusual presentations and can rarely be associated with multiple myeloma.

DISCUSSION: Amyloidosis is a clinical disorder due to the deposition of extracellular and/or intracellular amyloid fibrils resulting in alteration in the normal function of tissues. There are several forms of amyloidosis, however, AL (primary) is the most common, which is the deposition of abnormal protein composed of immunoglobulin light chain fragments. Typically, AL amyloidosis involves heavy proteinuria, edema, hepatosplenomegaly, and cardiomyopathy. However, our patient only presented with intermittent lower extremity edema, restrictive cardiomyopathy, and subtle gastrointestinal bleed. A subset of patients have atypical presentation and rarely (0.4%) develop multiple myeloma, which was found to be the case in our patient.

ATYPICAL PRESENTATION OF CARDIAC SYNCOPE Mo Shirur[2]; Hassan Alsabbak[1]; Kais Zakharia[1]; Cynthia R. Piko[1]. [1]Beaumont Hospital - Dearborn, Dearborn, MI; [2]Wayne State University - School of Medicine, Detroit, MI. (Control ID #2702526)

LEARNING OBJECTIVE #1: Diagnosing atypical presentation of cardiac syncope.

CASE: 72-year-old female with past medical history of hypertension, CKD stage 3, COPD, Diabetes Mellitus Type 2, Crohn's disease, hypothyroidism, CAD status post drug-eluting stent (DES) placement in distal and proximal LAD artery, and two DES in mid-circumflex artery presented for syncopal episode. She stated that while watching TV, felt dizzy and tried to stand, but fell. The episode lasted 10 min followed by slurring speech, nausea, and heaves. The patient denied shortness of breath, palpitations, chest pain, tingling, or numbness. She has a history of vasovagal syncope during defecation. Her physical exam was negative, is an active smoker, but denied alcohol or illicit drug use. The patient's EKG showed left axis deviation and incomplete RBBB. Echocardiogram had no abnormalities and 60% ejection fraction. CT revealed mild decreased density in right basal ganglia and left thalamus; most likely age indeterminate chronic ischemic changes. MRI was negative for acute infarction and confirmed CT findings. CTA of neck showed <50% stenosis of right carotid and 50–90% stenosis of left carotid. These findings were not ruled as etiology of syncope and patient was set to follow up with vascular surgery as outpatient. Days later, patient had another similar episode while sitting on her chair. A tilted table test showed presyncope with drop in BP, but no loss of consciousness. She was positive for Vasodepressor response and was implanted with a loop recorder. The patient returned for a third syncopal episode, and this time, the loop recorder showed complete heart block. She was put on a permanent pacemaker and eventually discharged.

IMPACT: The case shows importance of conscientiousness towards patients with cardiac histories. Our patient had extensive history of CAD and although she presented with symptoms of vasovagal syncope (prodromal signs of dizziness and lightheadedness, post syncopal signs of nausea), in reality, it was a cardiac cause.

DISCUSSION: Syncope is a spontaneously self-limited syndrome where there is transient loss of consciousness (LOC) due to brief period of inadequate cerebral flow. The LOC causes loss of postural tone and eventual collapse. Causes of syncope are grouped into four categories: Neurally-mediated reflex (vasovagal), orthostatic, cardiac, structural cardiopulmonary disease. According to literature, classic prodromal signs such as lightheadedness, sweating, palpitations, nausea, visual blurring, and pallor occur in vasovagal syncope. In patients without these symptoms, the likely etiology could be cardiac, especially when there is an extensive CAD history. Our case was atypical because our patient did in fact have prodromal symptoms and her EKG did not point towards a heart block. It was not until we placed a loop recorder that we found complete heart block as the cause of her syncope.

ATYPICAL PRESENTATION OF SJOGREN'S SYNDROME Kathryn J. Spavento. NY Presbyterian- Brooklyn Methodist Hospital, Brooklyn, NY. (Control ID #2705908)

LEARNING OBJECTIVE #1: To recognize and diagnose an atypical presentation of Sjogren's Syndrome

CASE: A 74-year-old female with a history of hypertension, hypothyroidism, GERD and diverticulosis presented with a chief complaint of right upper abdominal pain. She reported a 3-week history of abdominal pain that was intermittent, dull and had no association with food. Symptoms were exacerbated in the supine position and improved while upright. Additionally, she had nightly fevers and unintentional weight loss of 15 pounds in 1 month and paranesthesia's of the 4th and 5th digits bilaterally. Her medications included cholecalciferol 10,000 units, levothyroxine 88mcg, valsartan 320 mg, amlodipine 10 mg, pantoprazole 40 mg, for which she adhered too daily. She lived at home by herself and was able to perform all her activities of daily living. She denied any use of alcohol or recreational drugs and she did not smoke cigarettes. Family history was noncontributory. On physical exam, she was pleasant and appeared to be of her stated age. The remainder of her exam was unremarkable with the exception of right upper quadrant pain on deep palpation. A complete evaluation was undertaken with a complete blood count which revealed a mildly elevated white blood cell count at 10.4 K/uL, Hb of 10.6 g/dl and normal platelet count of 160 K/uL. CT chest with contrast showed bilateral subsegmental atelectasis and abdomen and pelvic images were only suggestive of diverticulosis coli. There were no signs of mesenteric ischemia, pancreatitis, cholelithiasis nor bowel perforation. X-ray hands showed age-related changes and no fractures. A search for collagen vascular etiology as the cause of her symptoms ensued. Results of the C-reactive protein was 126 mg/L and an erythroctye sedimentation rate of 98MM/HR. She also had a positive rheumatoid factor of 22.4 and Anti- SSA antibody. Sjogren's syndrome was diagnosed and she was managed supportively

IMPACT: Sjogren's commonly presents as SICCA syndrome and manifests as dry eyes and dry mouth. This case was atypical and forces the clinician to be open minded and consider other differentials when evaluation any case. For me, it further reinforced the concept that vasculitides may present as a myriad of complaints. The astute clinician should have a broad range of differentials and continually analyze every aspect of the patient's presentation to prevent delay in diagnosis and treatment.

DISCUSSION: Sjogren's syndrome can affect people of any age, but symptoms usually appear in older women. (American College of Rheumatology). In the typical presentation known as SICCA syndrome, patients will notice dryness of mucous membranes in addition to enlarged salivary glands. The ability to recognize the other atypical presentation as a vasculitis, which was our diagnosis, is imperative.

ATYPICAL PRESENTATIONS OF BRAF-MUTANT COLORECTAL CANCER: CASE REPORT AND LITERATURE REVIEW Yoshito Nishimura. Okayama University Hospital, Okayama, Japan. (Control ID #2672049)

LEARNING OBJECTIVE #1: Recognize unilateral arm swelling as a potential symptom of axillary lymph node metastasis.

LEARNING OBJECTIVE #2: Assess colorectal cancer patients with biomarker testing to provide the best treatment options.

CASE: A 68-year-old female presented with left arm swelling. Four months prior to the presentation, she noticed a mass in her left axilla. A month prior, she visited an nearby clinic and was referred to our hospital. Her past medical history was unremarkable. Physical examination revealed left supraclavicular and axillary lymphadenopathy. CT scan confirmed generalized lymphadenopathy and irregular wall thickening of the transverse colon. A lymph node biopsy revealed signet ring cell adenocarcinoma. Colonoscopy showed a lesion in the transverse colon. The biopsy of the lesion demonstrated well differentiated tubular adenocarcinoma. The results of genetic analysis with wild-type KRAS, high-level microsatellite instability (MSI-H) and BRAF V600E mutation in both tissues led us to the diagnosis of BRAF-mutant metastatic colorectal cancer. After referral to gastroenterological surgeon, she went through neoadjuvant chemotherapy and transverse colectomy. Four months after the diagnosis, she was referred to another hospital to be a candidate of anti-PD-L1 antibody clinical trial.

IMPACT: The case illustrates two points that can change our daily practice. The first is importance performing full HEENT examination to colorectal cancer patients. The axillary lymph node metastasis with colorectal cancer may be a hallmark of poor prognosis due to BRAF V600E mutation. The second is a need of biomarker testing to every colorectal cancer patient because patterns of biomarker expression change treatment strategies.

DISCUSSION: Patients with BRAF-mutant CRC have poor prognosis with median survival of only 10 months as compared to 35 months for those without the mutation. Axillary lymph node involvement is a unique pattern of metastasis of BRAF-mutant CRC with only nine cases reported to date. Unilateral arm swelling may be a hallmark of malignancy implicating lymphatic congestion. It is important to recognize axillary lymphadenopathy is a potential sign of BRAF-mutant CRC. Because of aggressive clinical course with BRAF-mutant CRC it is imperative to have approproate therapeutic strategies. Recent trials have indicated BRAF inhibitors are not as effective to BRAF-mutant CRC as they are to BRAF-mutant melanoma. Triple targeted inhibitor combinations with BRAF + EGFR + MEK inhibitors has shown promising data in a clinical trial. Anti-PD-L1 inhibitors such as nivolumab have been used in clinical trials for BRAF-mutant CRC. Because PD-1 and PD-L1 are known to be upregulated in MSI-H CRC that are correlated with BRAF mutation, patients with these mutations are considered to be good candidates. Our case illustrates the need to perform both full physical examinations and thorough biomarker testing to reach the diagnosis and provide the best treatment options that patients will be most likely to respond.

AUTOIMMUNE HYPOPHYSITIS PRESENTING AS ADRENAL INSUFFICIENCY AND CENTRAL DIABETES INSIPIDUS Aviva Cohn[1]; Gargi Patel[2]; Vijay Bhat[3]; Payal Dave[3]. [1]Rutgers RWJMS, Highland Park, NJ; [2]Rutgers Robert Wood Johnson, Piscataway, NJ; [3]Rutgers Robert Wood Johnson Medical School, North Brunswick, NJ. (Control ID #2706609)

LEARNING OBJECTIVE #1: Recognize autoimmune hypophysitis as a cause of secondary adrenal insufficiency and central diabetes insipidus.

CASE: A 30-year-old female with a past medical history of diet-controlled diabetes mellitus type II presented to the ED with three weeks of nausea, vomiting, and diarrhea. On admission, laboratory evaluation revealed a sodium concentration of 172. Review of systems was positive for generalized malaise, fevers, galactorrhea, as well as a 40-pound weight loss. Her severe hypernatremia was associated with impaired thirst, and urine studies revealed low urine osmolality, raising concern for central diabetes insipidus. Further workup for a central process revealed a low TSH, LH, FSH, ACTH, and Somatomedin C as well as mildly elevated Prolactin. Given the low ACTH, a Cosyntropin stimulation test was performed which showed a pre-cosyntropin cortisol of 3 and post stimulation cortisol of 12, confirming a secondary cause for her adrenal insufficiency. She was started on stress dose steroids and DDAVP for treatment of adrenal insufficiency and diabetes insipidus respectively. A subsequent brain MRI revealed a pituitary mass, explaining her secondary endocrinopathies as well as her galactorrhea and headaches. Biopsy of the pituitary mass showed pathology consistent with lymphocytic hypophysitis. On post-hospital follow-up, her sodium concentration normalized with DDAVP, her nausea/vomiting improved with stress dose steroids, and her TSH normalized with replacement therapy.

IMPACT: In patients with hypernatremia due to central diabetes insipidus, look for secondary adrenal insufficiency. Furthermore, if workup of secondary adrenal insufficiency reveals a mass, this may not always be due to an adenoma, and lymphocytic infiltration of pituitary gland should be considered.

DISCUSSION: Lymphocytic or autoimmune hypophysitis typically presents in females, usually postpartum, who have other autoimmune disorders. In addition, patients with a pituitary mass from lymphocytic hypophysitis often present with headache or visual symptoms. In cases such as ours, the primary symptoms were not necessarily concerning for a large pituitary mass, however laboratory findings were consistent with a central cause for her symptoms. In a patient who presents with suspected central diabetes insipidus and adrenal insufficiency, it is imperative to consider lymphocytic hypophysitis as a rare but known cause for both of these disease processes. Recognizing that lymphocytic hypophysitis can present as a spectrum of different disease processes can aid in appropriate management, including biopsy for diagnosis, steroid administration, and hormone replacement.

AXIAL GOUT: A CRYSTAL CLEAR CAUSE FOR BACK PAIN Matthew F. Hartman[1]; Joan Addington-White[3]; David Feldstein[2]. [1]University of Wisconsin, Madison, WI; [2]University of Wisconsin School of Medicine and Public Health, Madison, WI; [3]University of Wisconsin-Madison, Madison, WI. (Control ID #2702197)

LEARNING OBJECTIVE #1: Recognize axial gout as an unusual presentation of a common condition

LEARNING OBJECTIVE #2: Recognize the potential neurologic complications of undiagnosed axial gout

CASE: A 74-year-old woman with uncontrolled hypertension and gout presented to the emergency room with low back pain of three-days duration. She denied preceding trauma or recent procedures. Physical exam revealed

tenderness to palpation of the right upper gluteal region without overlying skin changes. There were no focal neurological deficits of the lower extremities, and initial labs were unrevealing. Plain radiograph of the pelvis revealed only a subtle lucency near the right sacroiliac joint. The patient was diagnosed with lumbago and discharge from the ED was in process when she spiked a fever to 101.9 F. Standard infectious work up ensued and was remarkable only for elevated ESR to 110. Because back/gluteal pain continued to be her only localizing symptom, an MRI was obtained showing enhancement of the right sacroiliac and L4-5 facet joints. The patient was admitted on broad spectrum antibiotics due to concern for septic arthritis. On hospital day two, she developed left wrist, MCP, and ankle pain with tenderness and swelling on exam raising suspicion for polyarticular gout. Serum uric acid was 12.7 mg/dL and fluid studies from wrist and ankle arthrocenteses revealed monosodium urate crystals. Antibiotics were replaced with high dose methylprednisolone yielding a dramatic improvement in all symptoms within hours, further supporting a diagnosis of polyarticular gout with axial involvement.

IMPACT: In caring for this patient, I have come to appreciate the various manifestations of gout and the serious implications of spinal involvement.

DISCUSSION: Back pain secondary to axial gout is often overlooked for several reasons including lack of distinctive symptoms, similarities to infection in presentation, and a lack of awareness by general physicians and radiologists. Axial gout most often presents with isolated back pain, but can also masquerade as infection due to the presence of fever, leukocytosis, and elevated inflammatory markers. Despite a recent cross-sectional study identifying axial involvement in 17 of 48 subjects (35%) with uncontrolled gout, clinicians are often unaware of low back pain as a manifestation of gout. Furthermore, undiagnosed axial gout leads to dramatic complications due to the development of tophi in the axial skeleton which can lead to spinal stenosis, lumbar radiculopathy, spondylolisthesis, spinal cord compression, and cauda equina syndrome. This makes it imperative that the astute clinician maintain a high index of suspicion for axial gout in cases such as this. Even a short, uncontrolled period of time in the disease process can lead to devastating neurological deficits.

BACTEREMIA: A NOBLE SOURCE Zorawar Singh; Heidi Gunderson. Henry Ford Hospital, Detroit, MI. (Control ID #2706043)

LEARNING OBJECTIVE #1: Recognize unusual sources of bacteremia

LEARNING OBJECTIVE #2: Educate patients on the use of insulin needles

CASE: 57 year old African American male with a PMHx of well-controlled Type-2 DM, on Lantus, presented to the hospital with fevers, chills, and lethargy with abdominal pain and nausea for 2 days duration. He stated that he was in overall good health and denied any sick contacts, cough, sputum production, chest pain, palpitations or shortness of breath. Physical examination was essentially unremarkable except for a group of small painless and pruritic excoriations along the lower half of his abdomen. They were 1–2 mm in size, red in color, and slightly raised, patient stated that they had been there for a little more than 2 weeks. Patient was found to have a temperature of 39.4 deg C, and a heart rate of 115, with a leukocytosis of 17,000. He was admitted for further septic workup. Subsequent blood cultures were positive for MRSA on 2 bottles and he was started on IV antibiotics for bacteremia without any obvious source. Echo was negative for endocarditis. On further questioning, patient stated that he had a remote history of IV drug abuse but quit over 15 years ago and he denied any recent use. He denied any cuts or bruises on his body, and denied recent dental procedures. When asked about his excoriations on his abdomen, he stated that is the location of his insulin shots. Upon further questioning about his insulin needles it was found that the patient was reusing them to inject himself because he was unable to afford more. It was deemed that his insulin needles were the source of his bacteremia. Patient then completed treatment for MRSA bacteremia and his labs improved and he was discharged home.

IMPACT: Most cases of bacteremia we see in Detroit are from IV drug abusers or skin and soft tissue infections. In this case, this gentleman was unable to afford new needles and tried to save costs by reusing the old supplies he already had in order to continue to receive his medication. It really changed my thinking because there are many other sources of bacteremia which us physicians usually do not think about right away that may potentially lead to detrimental effects on the human body.

DISCUSSION: IV drug abuse is a major worldwide epidemic that affects hundreds of thousands of people and their families. Working in downtown Detroit, we encounter many patients on a daily basis who come in with bacteremia and develop endocarditis or other devastating diseases causing them to be bed bound for the rest of their lives. Physicians have to realize that there are many other ways of becoming bacteremic other than IV drug users. We also need to learn the cost effectiveness of our therapies. Diabetic supplies can be very expensive for some patients and we need to realize the consequences of this. We should also take time to educate out patients and explain the detrimental effects of reusing medical supplies that are only meant for a single use.

BAD POTT LUCK Lylla Ngo; Richard Jennings; Steve Urban; Roger D. Smalligan. Texas Tech Univ HSC-Amarillo, Amarillo, TX. (Control ID #2704324)

LEARNING OBJECTIVE #1: Detect reactivation TB infection of the bone or spine

LEARNING OBJECTIVE #2: Broaden the differential diagnosis if response to treatment of working diagnosis is failing

CASE: A 46yo Vietnamese man (in USA for 2 years) presented with intermittent low grade fever and progressively worsening left lower back pain with left leg radiculopathy. MRI of the spine revealed extensive osteomyelitis involving L1 and L2, epidural abscess and left psoas abscess. CRP was 7.7 and ESR was 123. Patient underwent incision and drainage and laminectomy. Standard broad spectrum IV antibiotics were started for osteomyelitis/diskitis. He continued to spike fevers daily. Pathology came back with granulomatous inflammation, and AFB stains of specimen were positive. He later grew pansensitive Mycobacterium tuberculosis. HIV and PPD were negative. CXR was clear. Within 24 hours of changing to antituberculous therapy the patient defervesced. His back pain and left leg radiculopathy improved remarkably with the help of physical therapy over the ensuing days and weeks. A thorough history disclosed that the patient may have had primary TB at age 7 and was treated with herbal medicine. The patient's wife passed away a few months prior to his illness due to unclear causes.

IMPACT: The diagnosis of Pott disease is frequently delayed in the United States due to the subacute course of the disease and the relatively low incidence of extrapulmonary TB. Early diagnosis is a major factor in determining the outcome of the disease. TB should be considered in the immigrant population when appropriate,

DISCUSSION: Tuberculosis (TB) is one of the world's deadliest diseases; there were 1.5 million TB-related deaths worldwide in 2014. Although pulmonary TB is most common, and initial infections are often self-limited,

reactivation disease leads to the most classic presentation with cough, fever, night sweats and weight loss. Reactivation usually occurs in the setting of malnutrition, advancing age, HIV infection, renal failure, TNF blocking agent use and other immune compromising conditions. Studies have shown that psychological stress can severely impair the immune system by blocking TNF which plays a major role in tuberculosis suppression; thus, we speculate our patient's stressful situation due to his spouse's death might have played a role in his disease. Extrapulmonary TB also represents reactivation disease, and tuberculous spondylitis or Pott disease is the most common form of skeletal TB. When two adjacent vertebrae are involved (usually in the thoracic or lumbar spine) there can be vertebral collapse and kyphosis. This can cause cord compression and paraplegia. Fortunately, our patient had a good outcome with fairly prompt diagnosis and treatment. Treatment is standard 4 drug regimen (INH, rifampin, ethambutol and pyrazinamide) for 2 months, followed by 4mo of INH/rifampin. Despite a negative PPD or interferon gamma release assay test, clinicians need to keep a high index of suspicion for TB in immigrants from endemic regions.

BAKING SODA TETANY — TOXICITY OF A HALF-BAKED REMEDY

Micah Eades; Christopher Lu; Arjmand Mufti. University of Texas Southwestern, Dallas, TX. (Control ID #2703805)

LEARNING OBJECTIVE #1: Recognize alkalemia, due to respiratory alkalosis (pulmonary edema) and sodium bicarbonate use in the setting of renal failure, as a cause of symptomatic hypocalcemia

LEARNING OBJECTIVE #2: Avoid seemingly harmless yet unnecessary treatments

CASE: A 57-year-old male with a history of alcoholic cirrhosis status post liver transplant and chronic kidney disease (CKD) due to perioperative kidney injury was admitted with involuntary spasms of his face and extremities and dyspnea on exertion. He was in excellent health until one month prior when he underwent Mohs procedure for basal cell carcinoma. He was given prophylactic antibiotics, but soon developed hypovolemic acute kidney injury and severe metabolic acidosis from *Clostridium difficile* diarrhea. He was prescribed oral vancomycin for *C. difficile* diarrhea, one teaspoon of baking soda twice daily for three days for metabolic acidosis, and instructed to stop furosemide. He presented nine days later with the above spasms, which were worse with activity, and improved but still present with rest. The dyspnea on exertion reduced his exercise tolerance to 300 yards, whereas he was previously able to walk miles. The diarrhea had resolved, but he was still using baking soda. His respiratory rate was 23 and he had gained 8 pounds. Physical exam demonstrated spontaneous, involuntary contractions of perioral facial muscles and extremities. Chvostek's and Trousseau's signs were positive. Lab tests revealed Na 137, Cl 111, CO2 25 (mmol/L), creatinine 1.6 (baseline 2.2), Ca 8.8, ionized Ca 4.2 (mg/dL), albumin 3.5 g/dL. A chest X-ray showed bilateral pleural effusions and pulmonary vascular congestion. He was treated with IV calcium, magnesium, and furosemide. Tetany and dyspnea resolved and he was discharged with strict orders to discontinue baking soda.

IMPACT: Sodium bicarbonate use and pulmonary edema are often underappreciated processes of hypocalcemia. Also, the temptation of seemingly harmless treatments must be weighed against potentially disastrous consequences.

DISCUSSION: This case highlights an unusual presentation of sodium bicarbonate toxicity. A teaspoon of baking soda contains 59 mEq of bicarbonate, whereas oral sodium bicarbonate tablets contain only 7.7 mEq each. In this case, bicarbonate clearance was reduced due to chronic renal impairment resulting in metabolic alkalosis. In addition, acute volume overload in the setting of high sodium intake, and the resultant pulmonary edema, led to a concomitant respiratory alkalosis. The ensuing alkalemia increased calcium binding to albumin, reduced ionized calcium, and led to tetany. While metabolic alkalosis lowers calcium more significantly than respiratory alkalosis, tetany is more commonly noted with the latter. Were prophylactic antibiotics for Mohs procedures really necessary? A 2008 American Academy of Dermatology Advisory Statement asserted "we do not recommend antibiotic prophylaxis for prevention of total joint prosthesis infection with Mohs micrographic surgery, even in high-risk patients".

BALANCING THE RISKS THAT ARE IN PLAIN SIGHT - VISION SPARING SURGERY DURING ACUTE CORONARY SYNDROME

Phillip S. Hamilton[1]; Thomas R. Radomski[2]. [1]UPMC, Pittsburgh, PA; [2]University of Pittsburgh School of Medicine, Pittsburgh, PA. (Control ID #2706604)

LEARNING OBJECTIVE #1: Review the differential diagnosis of an orbital mass.

LEARNING OBJECTIVE #2: Outline current guidelines and knowledge regarding emergent surgery during acute coronary syndrome.

CASE: A 60-year-old woman with type 1 diabetes presented with 1 week of progressive monocular vision loss. Her physical exam was notable for complete left-sided vision loss and ophthalmoplegia. A brain MRI showed a mass-like enhancement involving the bilateral intraconal spaces with edema of the left optic nerve. Ophthalmology planned to perform an emergent left orbitotomy with biopsy, however, shortly after admission the patient developed burning sub-sternal chest pain. An EKG showed nonspecific ST depressions in leads I, V5, and V6 and cardiac biomarkers were normal. On hospital day 2, the patient developed recurrent chest pain and a repeat troponin was elevated to 3.64 ng/ml. She was started on a heparin drip for non-ST elevation myocardial infarction (NSTEMI). A left heart catheterization was deferred due to rising creatinine. Orbitotomy with orbital mass biopsy was deferred until hospital day 4, ultimately leading to a diagnosis of follicular B cell lymphoma.

IMPACT: ACC/AHA pre-operative risk stratification guidelines do not expressly address blindness. This case required us to extrapolate from existing guidelines to decide whether to emergently operate in the context of her vision loss and ongoing NSTEMI, thus enhancing our thinking regarding pre-operative risk stratification.

DISCUSSION: General Internists commonly perform pre-operative cardiac risk stratification for non-cardiac surgery. An initial step of pre-operative risk stratification is to determine the urgency of the surgical procedure. According to ACC/AHA guidelines, emergent surgery is defined as surgery required within 6 hours to avoid loss of life or limb. Blindness, while highly debilitating, is not expressly addressed by current ACC/AHA guidelines. Our decision whether or not to proceed with emergent surgery in the context of her NSTEMI was driven largely by our differential diagnosis for her orbital mass. Our differential diagnosis focused on both benign and malignant tumors such as a cavernous hemangioma or lymphoma, but also included inflammatory processes such as sarcoidosis, and infectious processes such as mucormycosis. We did not suspect the patient was experiencing a rapidly progressive process that would affect her preserved right-sided vision, therefore, we opted to delay surgery. In patients with Acute Coronary Syndrome (ACS) including NSTEMI, current guidelines recommend delaying elective surgery to treat

the ACS prior to proceeding to the operating room. For patients who undergo bare metal stent placement, this necessitates at least 30 days of dual antiplatelet therapy prior to surgery. Patients with drug eluting stents should have at least 3 months of dual antiplatelet therapy. To our knowledge, the medical literature lacks outcomes based studies of patients with ACS who undergo emergent operations.

BAZEX SYNDROME Kiyoshi Shikino; Tsutomu Mito; Yusuke Hirota; Masatomi Ikusaka. Chiba University Hospital, Chiba, Japan. (Control ID #2700947)

LEARNING OBJECTIVE #1: Diagnose Bazex syndrome when skin findings are resistant to conventional treatments including steroids

LEARNING OBJECTIVE #2: Recognize clinical features of Bazex syndrome

CASE: An 84-year-old man presented with a 2-month history of skin lesions on the hands, feet, ears, and nose. The cutaneous lesions were well-limited but painful. Eight weeks of treatment with clobetasol cream was unsuccessful. He also reported dysphagia, odynophagia, and weight loss (8 kg/ 3 months). He had a smoking history of 3 packs/day for 60 years. Examination revealed symmetric hyperkeratotic plaques on the distal hands and feet. Fingernails were yellow and proximally detached. Violaceous desquamation of the ears and nose was noted. Electronic laryngoscopy revealed a paralyzed right true vocal cord and right arytenoid, with a large submucosal mass in the right false vocal cord and right arytenoids. Computed tomography revealed a mass in the right parapharyngeal space and enlarged right cervical lymph nodes. Microscopic examination of fine-needle aspirate from the mass showed poorly differentiated squamous cell carcinoma. Bazex syndrome was diagnosed based on typical cutaneous findings and associated poorly differentiated laryngeal squamous cell carcinoma (tumor stage 4a, lymph-node stage 2c, no distant metastasis). Radiation therapy for 3 weeks cleared the skin condition associated with tumor regression. There was no recurrence at 6 months.

IMPACT: How did this case change your thinking? I learned two important facts in this case. 1. Although Bazex syndrome can mimic a number of conditions, particularly psoriasis and chilblains, the cutaneous manifestations are resistant to conventional steroids, suggesting Bazex syndrome. 2. Cutaneous manifestations of Bazex syndrome may precede the diagnosis of malignancy. Cutaneous manifestations can indicate underlying upper aerodigestive tract malignancy.

DISCUSSION: Bazex syndrome (acrokeratosis paraneoplastica) is an obligatory paraneoplastic syndrome frequently associated with squamous cell carcinomas of the upper aerodigestive tract. An association with bladder, breast, and gynecological cancers has been reported. The pathophysiology is thought to represent a cross-reaction between specific types of tumor and cutaneous antigens. It is characterized by symmetrical desquamative erythema with bluish or violet discoloration, onychodystrophy, or keratoderma. Lesions are typically located on the fingers, toes, ears, and nose. The skin findings are resistant to conventional treatments including steroids and can serve as a good indicator for general physicians. Improvement occurs after primary tumor treatment (91%). Although cutaneous lesions usually precede the diagnosis of cancer, underlying malignancy is diagnosed at the same time or after the development of cutaneous features. The differential diagnosis includes psoriasis.

BENIGN INTRACTABLE HYPERCALCEMIA Babusai Rapaka; Stacy Higgins. Emory University, Atlanta, GA. (Control ID #2706775)

LEARNING OBJECTIVE #1: Review pathophysiology and management of humoral hypercalcemia

LEARNING OBJECTIVE #2: Learn presentation and epidemiology of ameloblastoma

CASE: 72yo woman presents with 2 weeks of fatigue, constipation, jaw and abdominal pain. PMH: biopsy proven benign ameloblastoma (AB) diagnosed 1 year ago managed with analgesics. EXAM: HR 110 BPM, BP 144/ 102 mmHg, T 36.9 C, and RR 16/min; 10x7cm hard, tender mass on her right mandible, with left shifted tongue and inability to close her mouth; oriented x3, with 2+ reflexes throughout. LABS: creatinine 0.8, calcium 14.3 (ULN 10.3), albumin 4.0, PTH of 5.0 (normal 12–88), and EKG with normal PR, QRS, and QT intervals. Jaw CT: 8x7x13cm mandibular mass. Hypercalcemia therapy was initiated with IV fluids and calcitonin with initial improvment, but the hypercalcemia persisted. Bisphosphonates were forgone due to risk of jaw osteonecrosis in setting of possible resection. With negative malignancy work-up and uncontrolled hypercalcemia, malignant hypercalcemia from AB was reconsidered. PTHrP was normal and repeat biopsy revealed benign AB. After resection, hypercalcemia and clinical symptoms resolved within 24 hours without further therapy.

IMPACT: The presence of intractable hypercalcemia often triggers concern for malignancy. Rarely, humoral hypercalcemia occurs with benign tumors, but there are only a handful of cases in the literature reported with AB. This case taught us that a systemic approach to the workup with a strong emphasis on pathophysiology eventually led to the diagnosis.

DISCUSSION: The most common etiologies of hypercalcemia are primary hyperparathyroidism and hypercalcemia of malignancy. In 30% of malignancy cases, hypercalcemia occurs due to skeletal metastases or indirectly via production of a humoral factor (most commonly PTHrP) from the tumor increasing osteoclastic bone resorption. But PTHrP assays are insensitive and normal values cannot rule out humoral hypercalcemia. More reliable is suppression of endogenous PTH with hypercalcemia and low calcitriol indicating exogenous production. Humoral hypercalcemia presents as severe hypercalcemia and is treated in a multifactorial approach. Volume expansion with normal saline increases renal calcium excretion and reduces symptoms secondary to dehydration. Calcitonin with zoledronic acid or pamidronate further reduces serum calcium by osteoclast inhibition. Calcitonin aids in immediate reduction of serum calcium while bisphosphonates take 48–72 h to take effect, stabilizing the patient for definitive therapy. AB is a rare tumor arising from remnants of dental lamina, the developmental organ of enamel, and most commonly affects the mandible causing reactive bone formation and jaw enlargement. It is most common in ages 30–40 with no gender or race predilection. It is extremely rare for AB to cause hypercalcemia and typically signals malignant transformation. Mechanisms of humoral hypercalcemia in AB are not well understood but the most effective therapy remains symptomatic treatment and tumor resection.

BETWEEN A STENT AND A HARD PLACE Eesha Khan; Asad H. Khan; Ahmad Turk; Jaime Hernandez Montfort. Baystate Medical Center, Springfield, MA. (Control ID #2707347)

LEARNING OBJECTIVE #1: Discuss the management of post-myocardial infarction cardiogenic shock with ventricular-assist devices

CASE: An 80 year old male who presented with symptomatic high degree atrioventricular block received a dual-chamber pacemaker. Prior to pacemaker placement, an exercise stress test to assess chronotropic incompetence showed ST segment depressions without angina. Baseline transthoracic echocardiogram (TTE) showed preserved ejection fraction (EF) with inferolateral wall motion abnormalities, suggestive of an old myocardial infarction. One day after pacemaker placement, the patient became confused, hypotensive and was found to have elevated cardiac biomarkers. This clinical picture indicated a silent non-ST elevation myocardial infarction complicated by cardiogenic shock. Repeat TTE showed severe biventricular systolic dysfunction (EF of 15%). Initial treatment with milrinone showed no improvement and he subsequently underwent coronary angiography which showed 99% stenosis of proximal left anterior descending artery (LAD) and 90% stenosis of proximal left circumflex artery (LCX). Given persistent shock, an IABP was also placed. Being a very high risk candidate for a coronary artery bypass, the choice was between pursuing palliative care after IABP removal versus a high-risk protected percutaneous coronary intervention (PCI). A multi-disciplinary decision was made to pursue the latter. He underwent a high-risk PCI of the LAD and LCX under Impella support. He was then successfully weaned off the Impella CP in the next 48 hours, with prompt resolution of cardiogenic shock and improvement in EF to 20-25%.

IMPACT: Our case highlights the value of a multidisciplinary team approach in the management of complex cases in which tMCS is not a 'one-size-fits-all' solution and an innovative approach may be potentially life-saving

DISCUSSION: Temporary mechanical support (tMCS) such as intra-aortic balloon pumps (IABPs) and Impella devices provide hemodynamic support to patients across the cardiogenic shock spectrum. Traditionally, IABPs have been the most commonly used form of percutaneous VADs used during high-risk PCIs. Innovations in the arena of VADs have revolutionized the management of post-MI cardiogenic shock, with a particular focus on revascularization and myocardial recovery. When used in the setting of a protected PCI, the Impella CP provides greater mechanical support than an IABP or the Impella 2.5. In the case above, the transition from intra-aortic balloon pump (IABP) to microaxial flow pump (Impella CP) was used successfully in sequence in a patient with post-myocardial infarction (MI) cardiogenic shock. The strategy to place an Impella as a bridge to recovery saved a patient who may not have survived without revascularization.

BIOTIN INTERFERENCE WITH LABORATORY TESTING RESUTING IN MISDIAGNOSIS Murali K. Duggirala. Mayo Clinic, Rochester, MN. (Control ID #2695478)

LEARNING OBJECTIVE #1: Recognize the biotin interaction with thyroid function testing

CASE: Patient is an 82 year old with hypertension and mild chronic renal insufficiency. Routine blood testing during an annual examination showed low TSH - 0.09 (0.3 - 4.2 mIU/L); normal Free T4 - 1.6 (0.9 - 1.7 ng/dL); elevated Total T3 - 272 (80–200 ng/dL); Thyrotropin receptor antibodies were elevated at 30 (0–1.75 IU/L). She denied any symptoms suggestive of hyperthyroidism and was recommended a recheck of her thyroid function in three months. However, she was lost to follow up but returned one year later for an annual physical examination. Again, she denied any symptoms suggestive of thyroid disease. Repeat blood tests again showed low TSH - 0.1 (0.3–4.2 mIU/L); normal Free T4 - 1.3 (0.9–1.7 ng/dL); elevated Free T3 - 15.2 (2.8–4.4 pg/mL). Thyroid scan with uptake showed a slight decrease of RAI of 7.4% (8–29%). She then saw an endocrinologist, who recommended rechecking the Thyroid function testing after discontinuation of oral biotin supplementation. Ten days after discontinuation, her thyroid function tests including Thyrotropin receptor antibodies were normal. TSH - 1.8 (0.3–4.2 mIU/L); Free T4 - 1.1 (0.9–1.7 ng/dL); Free T3 - 2.8 (2.8–4.4 pg/mL); Thyrotropin receptor antibodies < 1 (0–1.75 IU/L).

IMPACT: The initial laboratory testing was suggestive of hyperthyroidism, possibly grave's disease. However, her thyroid uptake with scan was normal and the patient did not have any symptoms suggestive of hyperthyroidism. It is important to consider a laboratory error when test results do not match with the clinical picture. Further investigation concluded that this is a case of interference of biotin with thyroid laboratory assays.

DISCUSSION: Biotin is a water-soluble B vitamin also called vitamin B-7. For adults, a 30 μg/day is considered adequate. This vitamin is present in a variety of foods and can also synthesized by gut bacteria. People use this as supplement to improve nails, hairs etc. Over the counter biotin formulations usually contain 1,000 IU - 5,000 IU. Ingestion of these supplements result in high biotin concentration in the patients' serum causing interferece with immunoassays. These immunoassays rely on biotin streptavidin interaction and depending the type of assay used, biotin can cause a false increase or decrease in the test result. It can also cause a false positive Thyrotropin receptor antibodies. These labratory abnormalities can lead to unnecessary downstream testing (our patient received Thyroid scan with uptake testing) and even treatments resulting in harm to patients. It important to check with patients about biotin use prior to test ordering, and especially when lab results don't match the clinical picture. Once the biotin supplementation is discontinued, it may take upto two days for the TSH and thyroid hormone levels to normalize and upto one week for the thyrotropin receptor antibodies.

BLEEDING AND CANCER - WHEN ITS NOT JUST LOCAL

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LEARNING OBJECTIVE #1: Recognize the importance of considering Disseminated intravascular coagulation (DIC) as potential cause of bleeding in cancer patients.

LEARNING OBJECTIVE #2: DIC in prostate cancer is a poor prognostic sign and may be a manifestation of advanced disease.

CASE: A 65-year-old African-American male presented with complaints of gross hematuria and fatigue for 1 week. He has history of hormone sensitive Prostate cancer with diffuse bony and liver metastases and receiving Eligard and Casodex without having achieved remission yet. He was not on any antiplatelet or anticoagulants. On admission, his hemoglobin was 6.9 with hematocrit of 20.7. His other labs suggested elevated INR of 2.1 and low platelet count of 110,000. No platelet clumping and schistiocytes were noted in peripheral smear. Liver and renal function were within normal range. Further work up was ordered, showing elevated D-dimer levels > 10, fibrinogen level of 117 (192–405 MG/DL), thrombin time of 30 sec (0–24 sec) consistent with onging Disseminated intravascular coagulation (DIC). PSA level was 134. He had no bleeding elsewhere. He was treated with continuous bladder irrigation and transfusion of fresh frozen plasma and packed red blood cells. By day 2, his coagulation parameters normalized as well as platelet count, thrombin time and fibrinogen levels. Hematuria resolved with stable hemoglobin levels and catheter was removed eventually.

IMPACT: Bleeding in prostate cancer patients may represent serious underlying conditions as DIC. Early diagnosis and confirmation with prompt focused laboratory testing may avoid life threatening complications. Physicians should not ignore subtle signs such as low platelet or abnormal coagulation profile in cancer patients and should pursue necessary work up, when appropriate.

DISCUSSION: Disseminated intravascular coagulation (DIC) is an acquired coagulation disorder which may represent a serious underlying systemic disorder. Solid and hematological malignancies are sometimes associated with DIC. In Prostate cancer patients, it usually develops in advanced metastatic prostate cancer or after biopsy of primary or metastatic site due to release of thromboplastic substances. DIC in prostate cancer is considered a poor prognostic sign. Treatment is primarily supportive and aggressive treatment of prostate cancer itself with anti-androgen therapy and chemotherapy in resistant cases. High doses of oral Ketoconozole (anti-androgen mechanism) have been tried in severe life-threatening bleeding situations with success.

BLEEDING IN A BROKEN HEART: A RARE CASE OF IMMUNE THROMBOCYTOPENIA AND TAKOTSUBO CARDIOMYOPATHY
Asad H. Khan[2]; Eesha Khan[1]. [1]Baystate Medical Center, Springfield, MA; [2]Baystate Medical Centre, Broad Brook, CT. (Control ID #2707585)

LEARNING OBJECTIVE #1: Identify various testing modalities for the diagnosis of acute thrombocytopenia

LEARNING OBJECTIVE #2: Recognize that adalimubab can cause severe thrombocytopenia

CASE: A 63 year old male with past medical history significant for Crohn's, history of deep venous thrombosis and severe chronic obstructive pulmonary disease presented with hypercarbic respiratory failure. An electrocardiogram showed diffuse T-wave inversions and subsequent cardiac catheterization showed clean coronaries. An echocardiogram revealed a large apical thrombus with severe left ventricular systolic dysfunction and hypokinesis. A diagnosis of Takotsubo (stress-induced) cardiomyopathy was made and the patient was started on a heparin drip for treatment of the thrombus. Two days after initiation of anticoagulation, the patient had an episode of bleeding, hemolysis on labs and a drop in platelets from 242,000 to 47,000. A '4-T's' score for heparin-induced thrombocytopenia (HIT) was found to be high. Heparin was discontinued and given the significant risk posed by the apical thrombus, anticoagulation was continued with argatroban. HIT workup was initiated. There was no evidence of disseminated intravascular coagulation; coagulation studies were normal. A peripheral smear showed schistocytes and evidence of microangiopathic hemolytic anemia. Platelet count continued to drop to a nadir of 12,000. The patient was started on plasmapheresis and intravenous methylprednisolone. Interestingly, the HIT antibody returned negative. It was thought that the patient may have thrombotic thrombocytopenic purpura (TTP) and the patient was switched back to heparin. With steroids and daily plasmapheresis, the patient's platelet count normalized to 152,000 within a week. The patient clinically improved with no further episodes of bleeding. Further intrigue ensued when the ADAMTS13 results were negative for TTP. At the time, we discovered a case report where adalimumab had caused a TTP-like phenomenon, which the patient had taken for several years for Crohn's disease and adalimumab was discontinued.

IMPACT: The importance of a through review of medications and their potential side effects should be emphasized, especially in complex patients with unusual presentations of common conditions. This case contributes to the existing literature by being one of only a handful of cases where adalimumab can cause life-threatening thrombocytopenia.

DISCUSSION: This case highlights the importance of continuing anticoagulation in a patient with a left ventricular thrombus and thrombocytopenia. It is also one of the rare instances reported in literature where adalimumab is associated with severe thrombocytopenia, with all other causes having been excluded. Anti-TNF-α drugs are used for induction and maintenance of remission in patients with Crohn's disease. Thrombocytopenia is an uncommon side effect of treatment, but one that should be periodically monitored, especially in instances of increased physiological stress.

BONES, GROANS, AND HEPATITIS PRONE: THE SUBTLE SIGNS AND SYMPTOMS OF AUTOIMMUNE HEPATITIS
Rishika Chugh[2]; Kimberly R. Cavaliere[3]; Sanjana Luther[2]; Sheira Schlair[1]. [1]Albert Einstein College of Medicine/Montefiore Medical Center, Bronx, NY; [2]Montefiore Medical Center, Bronx, NY; [3]Montefiore Medical Center, New York, NY. (Control ID #2705934)

LEARNING OBJECTIVE #1: Appropriately assess for autoimmune hepatitis when incidental liver test abnormalities are seen.

LEARNING OBJECTIVE #2: Distinguish between type 1 and type 2 autoimmune hepatitis.

CASE: A 30-year old previously healthy female developed fatigue, progressive alopecia, and arthralgias involving the right knee, wrist, fingers and elbow. Liver tests incidentally showed aspartate transaminase (AST) of 47 and alanine transaminase (ALT) of 69. Hepatitis serologies and joint imaging were negative. On further review, the patient was noted to have had a mildly elevated ALT of 48 two years prior. A right upper quadrant sonogram showed mild coarsening of the liver echotexture. Liver/kidney microsomal IgG antibody (anti-LKM-1) was elevated to 56.5. Anti-smooth muscle antibody (ASMA), anti-mitochondrial antibody, and antinuclear antibody (ANA) were all negative, and immunoglobulins were normal. Liver biopsy revealed moderately active chronic hepatitis consistent with autoimmune hepatitis. Treatment with azathioprine and prednisone was started, and her symptoms and liver tests improved.

IMPACT: This case demonstrates the nonspecific presentation and subtle lab abnormalities of autoimmune hepatitis. It prompts one to pursue the workup for autoimmune hepatitis even when non-gastrointestinal symptoms are seen in a patient with the appropriate demographic profile.

DISCUSSION: Fatigue, abdominal pain and nausea are well-known symptoms of autoimmune hepatitis; however, extra-hepatic manifestations can also be seen as the presenting sign. In fact, 10–60% of patients with autoimmune hepatitis may have joint pain. The presence of other autoimmune disorders should also heighten the concern for autoimmune hepatitis and may allow for differentiation between the two types. Only type 2 autoimmune hepatitis is associated with polyglandular autoimmune syndrome, which includes a constellation of endocrine glandular insufficiencies such as alopecia, vitiligo, type 1 diabetes mellitus, and hypothyroidism. Laboratory abnormalities are usually the first to suggest chronic liver disease. Classic, or type 1, autoimmune hepatitis may present with AST and ALT elevation in the thousands; however both type 1 and type 2 can present with any liver test abnormality including a cholestasis or infiltrative pattern. Auto-antibodies provide further assistance. ANA and ASMA are positive in type 1, whereas anti-LKM-1 and antibody to

liver cytosol are positive in type 2. Despite the above-mentioned findings, diagnosis is difficult and liver biopsy is necessary. One clinical prediction rule includes ANA titers, LKM titers, immunoglobulin levels, liver histology, and the exclusion of viral hepatitis. A score of six or above is noted to have a sensitivity of 88 and specificity of 97%. Inconsistent symptoms in young patients, especially healthy females, should prompt internists to pursue an autoimmune diagnosis. However, this case highlights a morbid and likely underdiagnosed autoimmune disease in the setting of very mild abnormalities in liver tests.

BOWEL BYPASS SYNDROME/BOWEL -ASSOCIATED DERMATOSIS ARTHRITIS SYNDROME -A RELAPSING AND RARE COMPLICATION OF GASTRIC BYPASS SURGERY Swathi Vallabhaneni. Brookwood Baptist Health System, Birmingham, AL. (Control ID #2707593)

LEARNING OBJECTIVE #1: Although this syndrome is rare inoccurrence the constellation of symptoms especially in patients with a remote history of Bowel surgeries should prompt the physician in early recognition and diagnosis and treatment, avoiding myriad of investigations and diagnostic tests

CASE: Bowel bypass syndrome, also known as bowel-associated dermatitis arthritis syndrome, has been described after a range of intestinal bypass procedures. This syndrome is an extremely rare complication of gastric bypass surgeries done in 1960- 1970s for Morbid obesity. Approximately 20 percent of those patients who underwent these surgeries developed serum sickness like syndrome. We report an interesting case of bowel-associated dermatitis arthritis syndrome that developed many years after this procedure in a 50-year-old woman presenting with polyarthralgias, fevers, ulcerating lesions and pustules on the upper and lower limbs, with protein malabsorption and severe Vit D and Vit A deficiency. Before the development of these symptoms she was morbidly obese and underwent verified banded gastroplasty with duodenal switch. A skin biopsy taken from the left shin showed superficial to mid-dermal neutrophilic dermatosis, consistent with bowel-associated dermatitis arthritis syndrome. The patient had multiple relapses even though she is on corticosteroids and antibiotics. This case may illustrate another possible complication following bariatric surgery. The significant time period between the initial surgery and the development of bowel-associated dermatitis arthritis syndrome may mean that more cases of this condition will continue to emerge.

IMPACT: Although this syndrome is rare inoccurrence the constellation of symptoms especially in patients with a remote history of Bowel surgeries should prompt the physician in early recognition and diagnosis and treatment, avoiding myriad of investigations and diagnostic tests

DISCUSSION: ●The Jejuno-Ileostomy procedure done to reduce obesity in the mid 1980s was succeeded by other sophisticated procedures and the picture of the bowel bypass or arthritis-dermatitis syndrome has become rare. ●However, Our case shows that this syndrome can appear many years after bypass surgery and as long as people live with their blind loops, it is important to think of the possibility of a bowel bypass syndrome when we see patients with arthritis, vasculitis and a history of surgical treatment for obesity. ●Also as depicted in our patients case, this is a relapsing condition with multiple failed Prednisone and Antibiotic therapies and ultimately needing surgical restoration of the normal bowel anatomy ●Although rare in occurrence the constellation of symptoms especially in patients with a remote history of Bowel surgeries should prompt the physician in early recognition and diagnosis and treatment, avoiding myriad of investigations and diagnostic tests.

BREAKDOWN ON THE MAT: A RARE CASE OF EARLY ADULT-ONSET DERMATOMYOSITIS Monica Lee[2, 1]; Mark Hall[1]; Ritik Tiwari[1]. [1]UT Health Sciences Center at San Antonio, San Antonio, TX; [2]South Texas Veterans Health Care System, San Antonio, TX. (Control ID #2692481)

LEARNING OBJECTIVE #1: Differentiate early dermatomyositis from rhabdomyolysis.

LEARNING OBJECTIVE #2: Identify extra-muscular manifestations of dermatomyositis.

CASE: An 18 year-old man presented with two months of progressive weakness and dysphagia. He was previously active in high school wrestling and weightlifting but is now unable to participate in either due to the weakness. He was recently treated for rhabdomyolysis at an outside facility and encouraged to continue aggressive oral hydration. Exam was notable for sinus tachycardia without chest pain, reduced strength in hip and elbow flexion without palpable tenderness, and tea-colored urine. He had an extensive non-pruritic rash involving the face, torso, and hands. Labs revealed a troponin of 0.30, myoglobin elevated to greater than 1,000, and creatine kinase at 21,825. Both electrocardiogram and echocardiogram were unremarkable for acute pathology. While video swallow fluoroscopy revealed severe pharyngeal dysphagia, no cause could be identified by esophagogastroduodenoscopy. Rheumatology was consulted and with their assistance a muscle biopsy was performed. Findings were consistent with dermatomyositis. The patient was first started on high dose steroids but due to only a modest response, intravenous immunoglobulin was initiated. This young man further improved and was discharged home to the care of his parents but required a percutaneous endoscopic gastronomy tube due to his continued dysphagia. It is unknown if he has since recovered enough to resume his previously active lifestyle.

IMPACT: When faced with suspected rhabdomyolysis and acute extra-muscular symptoms, the internist should broaden their differential to include dermatomyositis. Awareness of these extra-muscular manifestations can heighten clinical suspicion for DM, prevent misdiagnosis, and help expedite appropriate treatment.

DISCUSSION: Dermatomyositis (DM) is part of a group of rare idiopathic Inflammatory myopathies associated with proximal muscle weakness and is differentiated by a violaceous, photosensitive rash classically appearing on the face, chest, and hands. Though DM is often considered a disease of older age with peak incidence at ages 50–59, a juvenile form also exists but is notably less common (1–10 versus 1–3.2 cases per million annually). DM can present with a variety of extra-muscular symptoms such as dysphagia, pulmonary, and cardiac involvement. Swallowing may be disrupted by involvement of the striated muscles in the oropharynx causing dysphagia and possible aspiration. Cardiac involvement, though rare, includes myocarditis, conduction abnormalities, arrhythmias, and even increased risk for myocardial infarction. Before the development of extensive cutaneous involvement, early DM may be difficult to distinguish from rhabdomyolysis as both classically involve weakness and elevated creatine kinases. Because of this, it is prudent to include DM in the differential of those with suspected rhabdomyolysis and extra-muscular symptoms, leading to faster treatment and recovery.

BREAKING THE MOLD: METASTATIC CERVICAL CANCER INITIALLY DIAGNOSED AS PULMONARY HISTOPLASMOSIS

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LEARNING OBJECTIVE #1: Recognize framing bias, anchoring bias, and confirmation bias, and how they affected the clinical reasoning in this clinical case.

CASE: A 33 year-old previously healthy woman presents to the hospital with a worsening chronic cough accompanied by a 15-pound unintentional weight loss. In the past month, she developed dyspnea with minimal exertion and required a blood transfusion for "low hemoglobin." Initial outpatient workup revealed positive Histoplasma IgM antibodies and a CT scan with pulmonary nodules. The patient resides in central Pennsylvania and denies trips to the Ohio River valley. Physical examination revealed coarse crackles and an oxygen saturation of 93%. Admission labs showed WBC 9.6, Hb 7.3 g/dL (MCV 71.2, RDW 26.6), Platelets 753, Fe 5 ug/dL, ferritin 116, TIBC 245, Fe saturation 5%. Fourth generation HIV testing was negative. Chest x-ray on admission showed diffuse, patchy airspace disease. She also reports menorrhagia preceding her respiratory symptoms. Given the high suspicion for fungal disease, treatment with itraconazole was initiated. Repeat CT chest showed bilateral, innumerable pulmonary nodules and lymphangitic carcinomatosis. Transbronchial biopsy revealed nests of poorly differentiated non-small cell carcinoma. CT abdomen showed a large cervical mass with subsequent biopsy positive for invasive cervical adenocarcinoma. All bronchial specimens and cultures were negative for fungal organisms, itraconazole was discontinued, and the patient established follow up with Oncology.

IMPACT: This case changed my practice by serving as a reminder of the how errors in clinical reasoning can delay making an important diagnosis.

DISCUSSION: The diagnosis of pulmonary histoplasmosis was considered so seriously for this patient that treatment with itraconazole was initiated prior to confirmatory tests being ordered. The diagnosis of metastatic cervical cancer was delayed because of substantial cognitive biases. Framing bias occurs when the way facts are presented influences how they are interpreted. This case was initially framed as "chronic productive cough with positive Histoplasma serologies." If instead the summary were "unintentional weight loss, menorrhagia, and worsening pulmonary symptoms," cancer may have been considered earlier. Anchoring occurs when the first piece of information reviewed influences subsequent actions. Providers focused on the patient's chief complaint of worsening cough, when menorrhagia causing severe anemia was equally important. Finally, confirmation bias is the tendency to favor new information supporting an initial theory. A diagnosis of pulmonary histoplasmosis may seem validated by news of a positive Histoplasma IgM antibody, CT scan with nodules, and treatment with itraconazole, when none of these are truly confirmatory. In this patient, all three of these biases delayed the diagnosis of metastatic cancer.

BREATHLESS: A CASE OF CENTRAL NEUROGENIC HYPERVENTILATION Elisa Walsh[1]; Robert Montgomery[2]. [1]Harvard Medical School, Brookline, MA; [2]Beth Israel Deaconess Medical Center, Boston, MA. (Control ID #2672310)

LEARNING OBJECTIVE #1: Recognize the signs suggesting a neurologic cause of dyspnea.

LEARNING OBJECTIVE #2: Understand the pathophysiology of central neurogenic hyperventilation.

CASE: A 73 year-old man with a remote history of lung cancer and recent hip replacement presents with one month of dyspnea. Family members note that he gradually developed a regular, rapid deep breathing pattern that interferes with his ability to speak in full sentences and persists even during sleep. On exam, the patient is not in distress despite a respiratory rate of 30 breaths per minute. He is afebrile and his oxygen saturation is normal. Cardiopulmonary exam is unremarkable. There is no lower extremity edema and no lymphadenopathy. Strength is intact. There is hyperreflexia of the left lower extremity and tongue deviation to the right. An EKG is unremarkable. Cross-sectional imaging of the thorax reveals no abnormalities. His initial arterial blood gas on room air is: pH 7.53, pCO2 15, PO2 108, HCO3 14. MRI of the brain is obtained, which reveals areas of signal abnormality in the right subinsular white matter, right basal ganglia and thalamus tracking into the corticospinal tract. Biopsy of the brain reveals diffuse large B-cell lymphoma. He is started on methotrexate and intravenous bicarbonate which results in normalization of his breathing pattern.

IMPACT: We report a rare case of true central hyperventilation secondary to an infiltrating brain tumor. Dyspnea is one of the most common patient complaints encountered in internal medicine. Prompt recognition of the atypical findings in neurogenic hyperventilation can avoid delays in definitive treatment.

DISCUSSION: One of the most helpful diagnostic tools in evaluation of dyspnea is the *arterial blood gas* (*ABG*). In this case, the ABG reveals a chronic primary respiratory alkalosis with maximal metabolic compensation with normal oxygen content and normal A-a gradient on room air. This indicates inappropriately high minute ventilation beyond metabolic needs, suggesting a disorder of respiratory control. Hyperventilation that persists during sleep, low arterial PaCO2, high arterial PaO2, and high arterial pH in the absence of drugs or metabolic cause is diagnostic for *central neurogenic hyperventilation* (*CNH*). CNH is characterized by deep, rapid breaths at a rate of at least 25 breaths per minute. The majority of adult patients with CNH have infiltrative tumors affecting the pons and medulla. The mechanism remains poorly understood, but is thought to arise from physical interruption of negative feedback circuits controlling respiration, or direct chemoreceptor stimulation by local inflammation caused by tumor. Patients can remain conscious if the reticular activating system is spared. However, most patients will progress to coma within two to three months after onset of CNH. Increasing irregularity of the respiratory rate often indicates impending coma. There is no accepted treatment for CNH, but interventions include opioids, mechanical ventilation, and treatment of the underlying tumor.

BRONCHOSCOPY SHOULD BE CONSIDERED EARLY DURING THE EVALUATION OF CAVITARY PNEUMONIA EVEN IN YOUNG AND PREVIOUSLY HEALTHY PATIENTS. Fady Salama[2]; Rahul Nair[1]; Maheshkumar Desai[1]; Theodore Casper[1]. [1]Montefiore Medical Center, Wakefield Campus, New York, NY; [2]Montefiore Medical Center- Wakefield Campus, Bronx, NY. (Control ID #2704430)

LEARNING OBJECTIVE #1: Recognize that unresponsiveness to antimicrobial therapy in patients with risk factors for aspergillosis should raise the suspicion for chronic necrotizing or cavitary pulmonary aspergillosis and bronchoscopy should be considered early for diagnosis.

CASE: A 35 year old African American male taxi driver active smoker with a history of childhood asthma, presented with cough of two weeks duration not responding to outpatient antimicrobial therapy. He also reported fever, night sweats, and unintentional weight loss in the preceding weeks. In the hospital, he was initially treated with broad spectrum antibiotics for multi-lobar pneumonia and placed on airborne isolation for possible pulmonary tuberculosis. CT chest revealed bilateral upper lobes cavities with a thick-walled cavitary lesion and an air-fluid level in the right upper lobe, areas of interstitial infiltrates, and mediastinal lymphadenopathy. Three sputum acid fast bacilli were negative. Aspergillus galactomannan and D glucan were negative.

Despite treatment, he remained febrile, leading to bronchoscopy for further diagnostic evaluation. Bronchoscopy required intubation because of hypoxic respiratory failure, and post procedure ICU stay for stabilization and careful extubation. Bronchoscopic biopsies from the cavitary region revealed Aspergillus invasion and necrotization with non-caseating granulomatous changes in the involved lung parenchyma. AFB and other pathogens were negative and there were no vasculitic changes in the biopsy specimen. Infectious Disease and Pulmonary consults recommended that the patient be treated with antifungal therapy for one year with active clinical follow-up and monitoring. The patient was discharged to outpatient follow-up on continuous home oxygen and bronchodilators.

IMPACT: Chronic pulmonary aspergillosis can have substantial impact on quality of life and can affect even previously young healthy patients. Early diagnosis improves outcome. Suspected patients should be tested for the presence of IgG antibodies to Asperigillus. Bronchoscopy and chest CT should be considered early for diagnosis and better prognosis.

DISCUSSION: Chronic cavitary or necrotizing pulmonary aspergillosis are uncommon and potentially severe diseases. Patients usually have had evidence of prior pulmonary damage or disease, even including mild intermittent asthma. Typically, chronic cavitary or necrotizing pulmonary aspergillosis is not diagnosed until later in the clinical course, as most patients have similar initial presentations to pneumonia or tuberculosis and are only diagnosed when they fail to respond to therapy. Unresponsiveness to anti-microbial therapy in patients with risk factors for aspergillosis should raise the suspicion for chronic necrotizing or cavitary pulmonary aspergillosis and bronchoscopy should be considered for better evaluation. Early diagnosis and early treatment can prevent further lung parenchymal destruction and improve clinical outcomes, including survivorship.

BRUCELLOSIS A CHEESY INFECTION Riya Joseph[1]; leigh K. hunter[2]. [1]Methodist Hospitals of Dallas, Dallas, TX; [2]methodist dallas medical center, Dallas, TX. (Control ID #2680489)

LEARNING OBJECTIVE #1: Recognize an infectious disease that affects <1/100,000 Americans

CASE: An 80 y/o Hispanic man with past medical history of COPD, ascending aortic aneurysm s/p graft repair 10/06, and biventricular pacemaker implantation 4/16 due to third-degree heart block presented with dyspnea, productive cough, orthopnea and fever to 103 F in 5/16. Examination revealed III/VI diastolic murmur, pulmonary rales, peripheral edema and increased O2 requirement. CXR showed bibasilar infiltrates so blood cultures were submitted and therapy with vancomycin, piperacillin/tazobactam, and azithromycin was initiated for presumed HCAP. Despite diuresis and antibiotic therapy, the patient's symptoms did not improve. Cultures subsequently grew Brucella melitensis at 4 days. Patient recently traveled to Mexico from 11/15-4/16 where he consumed unpasteurized cheese. Brucella IgG was positive and IgM negative suggesting the infection had been present for some time. Treatment with doxycycline, rifampin, and gentamicin was begun and a TEE was ordered which demonstrated markedly worsened aortic insufficiency (AI) compared with TTE 4/16, bicuspid valve, mild aortic stenosis, pseudoaneurysm with leaflet perforation, graft dehiscence and paravalvular abscess. Suspected infective endocarditis (IE) was confirmed and his antibiotic regimen was expanded to doxycycline, rifampin, gentamicin, and trimethoprim/sulfamethoxazole. The patient was transferred for cardiothoracic surgery to replace the infected valve and graft. Post-operatively, the patient had multiple complications and expired approximately 1 month post-op.

IMPACT: Brucellosis is caused by Gram negative, non-spore forming, intracellular coccobacilli. The most common mode of transmission is eating unpasteurized milk products. Mortality rates for brucellosis are usually between 1-5 and endocarditis accounts for more than 80% of these deaths. Endocarditis is an uncommon presentation of Brucella infections, which can present immediately or many years after onset of symptoms. As internists, we see patients with CHF and COPD exacerbations almost every day. Since these patients present with the same pattern of symptoms, it is imperative that a complete history is obtained on every patient and the differential diagnosis is broad. Most likely the patient had infection of the graft and IE causing the third degree heart block 1 month prior to the presentation with fever, severe AI and positive blood cultures. No blood cultures were done on that admission. Had the diagnosis been made then, would the outcome have been different?

DISCUSSION: Brucellosis is a rare infection and Brucella endocarditis even more rare. As noted by our case, it is a disease that can have devastating results if not diagnosed and treated in a timely manner. It is important for hospitalists and other primary care providers, especially those practicing in highly diverse cities with travel to endemic areas, to take a complete history and consider uncommon causes of common disease processes.

BUPROPION AS A CAUSE OF SIADH Corey Tapper; Erica Grabscheid. Mount Sinai Beth Israel, BROOKLYN, NY. (Control ID #2706781)

LEARNING OBJECTIVE #1: Recognize CNS-acting agents as rare causes of SIADH

CASE: An 85-year old male presented with a five-day history of generalized weakness and fatigue. The patient reported insomnia and dry cough. He denied fever, dyspnea, nausea, headaches, muscle spasms, and seizures. The patient's medical history included atrial fibrillation, hyperlipidemia, and Alzheimer's Disease. His chronic medications included memantine, donepezil, simvastatin, and warfarin. Two months prior to presentation, bupropion was started for depression. There were no other recent medication changes. The patient had been taking all medications as prescribed. The patient's vital signs were within normal limits. On neurologic exam, the patient was oriented only to self. Otherwise, the exam was unremarkable. Notably, at his baseline, the patient was oriented to person and place. Laboratory results showed serum sodium of 125 mmol/L (normal 135–144), serum osmolality of 265 mOsm/kg (normal 280–296), white blood cell count of 6.5 K/μL, AM cortisol of 24.47 μg/dL (normal 4–22), TSH of 6.588 μIU/mL (normal 0.55–4.78), free thyroxine of 1.25 ng/dL, uric acid of 2.1 mg/dL, urine osmolality of 463 mOsm/kg, and urine sodium of 170 mmol/L (normal 30–90). Chest radiograph showed no consolidations. The urine legionella antigen was negative. Computed tomography of the head showed mild diffuse cortical atrophy. Two years prior, the patient's sodium was 133 mmol/L. This patient was found to have euvolemic hypo-osmolar hyponatremia, consistent with SIADH. A challenge with isotonic fluids was attempted. The sodium did not improve. Bupropion was discontinued, and a fluid restriction was instituted. Over the next three days, sodium levels returned to the previous baseline and symptoms improved. Other causes of hyponatremia were ruled out, including pneumonia, glucocorticoid deficiency and overt hypothyroidism. There were no signs of malignancy. Throughout this presentation, the patient's memantine and donepezil were continued. Both of these medications could have contributed to the patient's mild chronic hyponatremia.

However, they were not likely the cause of the current SIADH given the patient's clinical improvement following bupropion discontinuation.

IMPACT: This case is noteworthy as it potentially shows a widening array of CNS-acting agents that can cause SIADH, although further investigation is necessary.

DISCUSSION: Hyponatremia is a well-established adverse effect of antidepressants, namely SSRI's and TCA's. However, there are only four published case reports of SIADH secondary to bupropion. Due to elevated ADH levels, there is a lowered capacity to excrete dilute urine. Extracellular fluids are retained, leading to a hypo-osmolar state. Physiologically, bupropion acts by inhibiting neuronal re-uptake of dopamine and norepinephrine. It is thought that serotonin may play a role in regulating ADH secretion. However, as bupropion does not act significantly on serotonin, the causal mechanism for bupropion-induced SIADH is not known.

BURKITT LYMPHOMA PRESENTING AS UNILATERAL PLEURAL EFFUSION IN A PATIENT WITH HIV INFECTION: AN INTERESTING ENCOUNTER. Talal Asif; Badar Hasan. University of Missouri, Kansas City, Mission, KS. (Control ID #2703195)

LEARNING OBJECTIVE #1: To create a differential diagnosis for unilateral pleural effusions in patients with human immunodeficiency virus (HIV) infection and acquired immunodeficiency syndrome (AIDS).

LEARNING OBJECTIVE #2: To recognize that Burkitt lymphoma (BL) is an exceedingly aggressive B cell non-Hodgkin lymphoma (NHL) known to affect patients with high CD4 counts (>200/μL).

CASE: A 40 years old female with a past history of HIV and AIDS, currently on antiretroviral therapy (ART) with Genvoya, presented to primary care clinic with the complaint of dyspnea on less than normal exertion. Patient reported compliance with her ART and last CD4 count acquired two weeks earlier was 311 cells/μL with undetectable viral load. Physical examination was unremarkable. Chest x-ray was obtained which showed a small right pleural effusion and right lower lobe opacities. Patient's lactic acid dehydrogenase was elevated at 919 U/L. With infection high on the differential, patient was hospitalized with the working diagnosis of Pneumocystis pneumonia and started on trimethoprim-sulfamethoxazole. Bronchoalveolar lavage was performed and was negative for Gomori-methenamine silver staining, acid fast bacilli and Gram staining. On day 3, patient developed hypoxemia. Computed tomographic (CT) scan of chest was obtained which showed diffuse right lung heterogeneous opacities and moderate right pleural effusion. Left lung was clear. There was no evidence of lymphadenopathy. Thoracentesis was done and 1 liter of pleural fluid was drained. Pleural fluid analysis showed an exudative picture and a white cell count of 44123 with 100% mononuclear cells. On day 5, patient's hypoxemia worsened again. CT chest was repeated which showed massive right pleural effusion with complete right lung compressive atelectasis. There was new demonstration of hilar, mediastinal and bilateral axillary lymphadenopathy. Ultrasound guided core biopsy of right axillary lymph node was obtained which showed CD10 positive monoclonal lymphocytes with high mitotic rate, 100% Ki-67 index, starry sky macrophages negative for BCL-2 and BCL-6, consistent with BL. Flow cytometry of pleural fluid showed CD10 positive cells as well. Patient was started on chemotherapy with improvement in her pleural effusion.

IMPACT: Given its rising incidence and propensity to evolve in patients with normal CD4 counts, it is important to consider BL when encountered with patients who have no clear cause for rapidly accumulating pleural effusions. This case also aims to raise awareness of the diagnostic challenges that pleural effusions present in patients with HIV.

DISCUSSION: Patients with HIV/AIDS are at an increased risk of development of lymphoma. BL in this subset of patients often presents with disease involving the lymph nodes, bone marrow and central nervous system. Extranodal involvement is typically a late manifestation. Unilateral pleural effusion as in this instance is an unusual mode of presentation for BL. This occurrence is also an attestation to its aggressive nature.

BUTTERFLY-SHAPED PONTINE LESION WITH NON-MASS-FORMING B-CELL LYMPHOMA: A CASE SERIES Naoki Kanda; Ayako Kumabe; Yu Yamamoto; Shuji Hatakeyama; Masami Matsumura. Jichi Medical University Hospital, Tochigi, Japan. (Control ID #2690900)

LEARNING OBJECTIVE #1: Recognize the significance of symmetrical hyperintense lesions in the pons on T2-weighted imaging

LEARNING OBJECTIVE #2: Assess non-mass-forming lymphoma when a butterfly-shaped pontine lesion is observed

CASE: [Patient 1] An 86-year-old Japanese woman was admitted with a 2-week history of fever and pitting edema of the extremity. Laboratory data showed a platelet count of $8.0 \times 10^6/\mu L$, a lactate dehydrogenase level of 836 U/L, and a soluble interleukin-2 receptor level of 5,360 U/mL. Physical and radiographic evaluation revealed no lymphadenopathy. Despite the absence of neurological symptoms, brain magnetic resonance imaging (MRI) demonstrated a butterfly-shaped hyperintense lesion in the central parts of the pons on T2-weighted and diffusion-weighted imaging. Random skin biopsy specimens showed atypical lymphocytes strongly positive for CD20 within the lumina of capillaries. She was thus diagnosed with intravascular large B-cell lymphoma. [Patient 2] A 26-year-old woman presented with a 3-month history of night sweats and 1-month history of fever. Physical exam and imaging studies showed isolated massive splenomegaly without adenopathy. There was no neurological abnormality, but brain MRI presented a symmetrical pontine lesion similar to that observed in patient 1. Biopsy specimens of the bone marrow, skin, and liver yielded no pathologic findings. A diagnostic splenectomy was performed and the histological analysis revealed a splenic diffuse red pulp small B-cell lymphoma. [Patient 3] An 82-year-old man was referred to our division due to prolonged fever lasting more than 3 weeks with dyspnea, leukopenia, and thrombocytopenia. He had no lymphadenopathy and neurological symptoms. Brain MRI showed a symmetrical lesion in the pons similar to the other cases. A bone marrow biopsy showed CD20-positive atypical lymphocytes, which were strongly suggestive of B-cell lymphoma.

IMPACT: We may perform a more aggressive histological exam including invasive surgical procedures to diagnose lymphoma if asymptomatic symmetrical pontine lesions on MRI are found in patients with suspected lymphoma without lymphadenopathy.

DISCUSSION: Diagnosis of non-mass-forming lymphoma is challenging because of the difficulty in obtaining histological evidence. Spleen or liver biopsy can be used for diagnosis; however, a dilemma between the diagnostic yield and the risk of the procedure exists. There have been a few reports describing the symmetrical pontine lesion complicated with systemic lymphoma, mainly intravascular large B-cell lymphoma. The lesion may represent a tumor cell infiltration into the vessels of the pons producing venous congestion. In cases with suspected lymphoma without lymphadenopathy, the asymptomatic butterfly-shaped lesion in the pons might indicate the presence of an unusual type of lymphoma requiring aggressive procedures to diagnose.

CANAGLIFLOZIN MAY CAUSE EUGLYCEMIC DIABETIC KETOACIDOSIS IN PATIENTS WITH TYPE 2 DIABETES MELLITUS WITHOUT COEXISTING FACTORS Ryuta Suzuki. Kameda General Hospital, Kamogawa, Japan. (Control ID #2700813)

LEARNING OBJECTIVE #1: Diagnose euglycemic diabetic ketoacidosis in patients with type 2 diabetes mellitus (T2D) without coexisting factors

CASE: A 62-year-old woman with hypertension and non-insulin dependent T2D presented to our hospital with a six-day history of nausea, vomiting, and anorexia. She has been taking 100 mg of canagliflozin, a sodium-glucose cotransporter-2 (SGLT2) inhibitor, for six months, together with pioglitazone 7.5 mg and metformin 1500 mg. On presentation, she was afebrile and breathing normally, but was tachycardic to 112 beats per minute. She did not have signs of dehydration including dry mouth and decreased skin turgor. However, her arterial blood gas revealed a significant anion gap acidosis (pH 7.139, pCO_2 9.6 mmHg, HCO_3 3.1 mmol/L, anion gap 35). Her glucose was 192 mg/dL, suggesting euglycemic diabetic ketoacidosis (DKA) caused by canagliflozin. She was admitted to our hospital and started on a continuous intravenous insulin infusion at a rate of 0.1 unit/kg/hour, which led to a resolution of the anion gap acidosis and improvement in her symptoms on the following day. On the fifth hospital day, her symptoms resolved completely, and the insulin infusion was replaced with subcutaneous basal-bolus insulin. After her glucose levels became stable, she was discharged to home on the tenth hospital day.

IMPACT: This case suggests that patients with T2D treated with SGLT2 inhibitors have a potential risk of euglycemic DKA, even if they do not have coexisting factors.

DISCUSSION: DKA in patients with T2D treated with canagliflozin has been reported in previous studies. Canagliflozin-induced DKA is relatively less common in patients with T2D than in patients with type 1 diabetes (T1D): incidence of less than 0.1% in T2D, but 4.3–6.0% in T1D [1,2]. Erondu et al. reported that most of the patients with T2D who developed DKA while taking an SGLT2 inhibitor had coexisting factors for ketoacidosis: post-gastric cancer surgery, pancreatic cancer, pancreatitis, and/or insulin-dependent diabetes [1]. This case, however, had none of these coexisting factors. SGLT2 inhibitors are a new class of oral hypoglycemic agents approved by the Food and Drug Administration in 2013. Since its approval, they have been widely used for patients with T2D across the globe. SGLT2 inhibitors are likely to be even more widely used in the coming years, and hence further caution for ketoacidosis - euglycemic or hyperglycemic - is necessary in patients treated with SGLT2 inhibitors. [1] Erondu N, Desai M, Ways K, and Meininger G. Diabetic ketoacidosis and related events in the canagliflozin Type 2 diabetes clinical program. Diabetes Care 2015; 38:1680–6. [2] Peters AL, Henry RR, ThakkarP, TongC, and Alba M. Diabetic ketoacidosis with canagliflozin, a sodium-glucose cotransporter 2 inhibitor, in patients with Type 1 diabetes. Diabetes Care 2016; 39:532–8.

CARBON MONOXIDE POISONING - A SILENT MENACE Jordon Holt; Carmen Vesbianu. Oklahoma University, Tulsa, Jenks, OK. (Control ID #2706119)

LEARNING OBJECTIVE #1: Diagnose carbon monoxide poisoning in the chronic setting

LEARNING OBJECTIVE #2: Point out that carbon monoxide exposure is an under-recognized occupational hazard.

CASE: A 55-year-old man with a history of sleep apnea and benign prostatic hyperplasia presented with complaints of dizziness. He described sudden onset repeated episodes of a "sinking feeling," lasting for few seconds while flying alone in his personal aircraft. He consulted his primary care physician the next day and reported similar symptoms that continued outside the plane as well as headache, dull neck pain, fatigue, and tinnitus. He denied loss of consciousness, nausea, ataxia, chest pain, or palpitations. On physical exam, blood pressure was 133/86 supine and 137/86 standing, heart rate 78, oxygen saturation 96% on room air. He had a regular heart rhythm, no murmurs, no carotid bruit.. Neurovestibular examination was normal. Patient denied ever smoking or alcohol abuse. He was compliant with the routine airplane inspections required by the Federal Aviation Administration. Over the next four months, he continued to experience similar symptoms while flying that persisted during days when he was not operating the aircraft. To address the etiology of the dizziness, he underwent a cardiac and neurovestibular work-up. A 48-hour Holter monitor was consistent with occasional premature ventricular complexes and an echocardiogram showed normal left and right ventricular function and no valvulopathy. Audiogram and brain MRI results were normal. The diagnosis was revealed four months later when a carbon monoxide leak was detected in the patient's aircraft. In retrospect, he remembered having more persistent and severe symptoms the first two days after a flight. He fully recovered after the leak was repaired.

IMPACT: The full extent of carbon monoxide poisoning in aviation is not known; we believe this could be an under-recognized occupational health risk factor. Our case illustrates how the failure to identify the link between the patient's symptoms and his work environment led to an expensive work-up and delay in explaining the etiology of his complaints. Perhaps the most severe consequence of this missed diagnosis is that the patient was discharged to the same environment of the original exposure.

DISCUSSION: The symptoms of chronic carbon monoxide poisoning are vague and nonspecific making it difficult for physicians to recognize cases of low-level exposure. Patients with mild intoxication present with headache, dizziness, and nausea and often are misdiagnosed with an acute viral disease. Nevertheless, it is vital for medical professionals to identify the signs of carbon monoxide poisoning in a timely manner and minimize further harm. Prolonged, short-term exposure can lead to delayed neurological and cardiac sequelae including memory loss, personality changes, movement disorders and myocardial injury.

CARDIAC ARREST AFTER ADMINISTRATION OF INTRAVENOUS AMIODARONE IN WOLFF - PARKINSON - WHITE SYNDROME: A CHANGE IN PERSPECTIVE Mahesh A. Chandrasekhar[2]; Zuyue Wang[1]; guastavo guadalini[2]. [1]Medstar Heart and Vascular Institute, Washington, DC; [2]Medstar Washington Hospital Center, Washington, DC. (Control ID #2702900)

LEARNING OBJECTIVE #1: To address a serious harm associated with administration of intravenous amiodarone in atrial fibrillation and WPW syndrome.

LEARNING OBJECTIVE #2: To review appropriate diagnosis and treatment of atrial fibrillation WPW syndrome.

CASE: A 63-year-old African American Woman presented to emergency room with chest pressure and palpitations. A baseline electrocardiogram showed atrial fibrillation with WPW syndrome. Patient was given intravenous amiodarone as a means to convert the patient to a sinus rhythm. Following this administration, the patient went to ventricular fibrillation requiring intubation and defibrillation. The patient was transferred to a tertiary care hospital,

stabilized in the cardiac critical care unit, and underwent catheter ablation of the accessory pathway.

IMPACT: This cases addresses the controversies of appropriate, acute medical management of these patients. The 2011 AHA guidelines for the treatment of patients with atrial fibrillation and WPW suggest that hemodynamically stable patients should be cardioverted either via direct current cardioversion. In addition to procainamide and ibutilide, was amiodarone was an AHA Class II B recommendation for the treatment. Amiodarone is a class III antiarrhythmic and a commonly used drug for rhythm control in this atrial fibrillation. No properly conducted trials of amiodarone, with or without comparison to procainamide, exist to justify the use of this medication in this patient population. Several authors published these concerns and have helped reimagine current guidelines such that, as the 2015 guidelines for the management of adult patients with supraventricular tachycardia amiodarone is now a class III recommendation against use in this patient population.

DISCUSSION: There is a paucity of evidence showing safety or efficacy in regard to AF WPW patients receiving amiodarone, and several case reports and case series note a pathophysiologically plausible significant harm. Though medical literature has removed amiodarone as first-line medication to convert atrial fibrillation in WPW patients, recommendations may not go far enough in regard to dissuading its use. Procainamide and ibutilide would be appropriate in the above clinical scenario. Working to change these guidelines may help guide providers avoid amiodarone administration in this population and decrease the rate of conversion to ventricular arrhythmia.

CARDIAC ARREST DURING RAPID PACING IN A PATIENT WITH AORTIC STENOSIS (AS) AND CARDIAC AMYLOIDOSIS UNDERGOING TRANSCATHETER AORTIC VALVE REPLACEMENT (TAVR). Shubha Deep Roy; Siva Sagar Taduru; Shariq Shamim; Paramdeep S. Baweja. University of Missouri Kansas City, Kansas City, MO. (Control ID #2706990)

LEARNING OBJECTIVE #1: Recognize a potentially fatal outcome in patients with AS and cardiac amyloidosis undergoing TAVR.

CASE: A 77 year old male with a history of coronary artery disease (CAD), combined heart failure and severe AS presented with progressive “slowing down” for 6 months. Physical exam revealed a late peaking grade 3/6 systolic ejection murmur in aortic area with slow and delayed carotid upstroke. JVP and pulmonary exam was normal. Transthoracic echocardiography showed paradoxical low flow, low gradient AS. Transesophageal echo (TEE) showed aortic valve area of 0.7 cm2 and severe biventricular hypertrophy. Endomyocardial biopsy was consistent with cardiac amyloidosis and was sent for subtyping. Cardiac MRI showed diffuse late gadolinium enhancement (LGE) transmurally in basal segments suggestive of ATTR amyloidosis. He was considered to be at a high risk for surgical aortic valve replacement (SAVR) due to his comorbidities and severe ventricular hypertrophy but at an acceptable risk for TAVR. A pre-procedural coronary angiogram showed stable CAD. He underwent placement of a 26 mm Sapien valve via a transfemoral approach. Left ventricular end diastolic pressure (LVEDP) was elevated. During rapid pacing for initial balloon aortic valvuloplasty he had a precipitous drop in blood pressure requiring inotropic support. Then immediately after repeat rapid pacing during valve deployment, he developed cardiac arrest with pulseless electrical activity requiring ACLS. Intraoperative TEE, coronary angiography, and ascending aortography did not show any mechanical complication.

IMPACT: This case shows that rapid pacing during TAVR in patients with AS and cardiac amyloidosis with restrictive physiology can have potentially fatal outcomes. It is important to be aware of these complications as they can help in deciding the management of similar patients with AS and amyloidosis.

DISCUSSION: Coexistence of degenerative aortic stenosis (AS) and wild type-transthyretin related cardiac amyloidosis (wt-ATTR) has been suggested to be a potentially dangerous condition in patients undergoing SAVR or TAVR based on autopsy data. Currently, there is limited data on safety of rapid pacing during TAVR in patients with cardiac amyloidosis. Rapid ventricular pacing at a rate of 140 to 220 beats per minute is required for balloon valvuloplasty and implantation of balloon-expandable aortic valve prosthesis during TAVR. Rapid pacing in the setting of restrictive filling pattern, as evidenced by an elevated LVEDP, can potentially lead to hemodynamic collapse and cardiac arrest. This can happen due to a sudden reduction in coronary perfusion pressure (CPP) which is the difference between the end-diastolic aortic pressure and LVEDP. As LVEDP rises, CPP falls which can cause sudden cardiac dysfunction. Another possible explanation of cardiac arrest could be due to unmasking of arrhythmia in patients with amyloidosis with conduction system involvement.

CARDIAC SARCOIDOSIS: A DIAGNOSTIC CHALLENGE

Monil Shah; B. Corbett Walsh; Nathan Teich; Benjamin Milgrom. New York University Langone Medical Center, New York, NY. (Control ID #2706817)

LEARNING OBJECTIVE #1: Diagnose cardiac sarcoidosis (CS) in a patient with complete heart block

LEARNING OBJECTIVE #2: Management of cardiac sarcoidosis

CASE: A 53-year-old female with no prior medical history presented to the ED with a few days of weakness. Initial ECG revealed sinus rhythm with complete heart block and junctional escape rhythm at a rate of 35 bpm. Patient was not on atrioventricular nodal blocking medications. Transthoracic echocardiogram showed normal bi-ventricular size/function without valvular disease. Laboratory workup including Lyme antibodies was unrevealing. Diagnosis of CS was considered and a cardiac MRI (CMR) was performed however, failed to definitively demonstrate late gadolinium enhancement suggestive of fibrosis. Positron emission tomography (PET) imaging was unavailable at the time. CT of the chest demonstrated bilateral hilar lymphadenopathy highly suggestive of sarcoidosis. A transvenous pacemaker was placed and an endobronchial ultrasound guided lymph node biopsy was performed which demonstrated non-caseating granulomas consistent with sarcoidosis. Given biopsy proven extra-cardiac sarcoidosis in combination with complete heart block without alternative explanation, a diagnosis of CS was established. Prednisone therapy was initiated and a dual chamber implantable cardioverter-defibrillator (ICD) was placed. Patient was discharged on oral steroids and planned for PET scan as an outpatient.

IMPACT: Diagnosing CS in patient who presents with complete heart block whose cardiac imaging fails to demonstrate cardiac involvement is challenging. Internists should be aware that a negative CMR, despite high sensitivity, does not exclude cardiac involvement of sarcoidosis. A high index of suspicion should be maintained to pursue evidence of extra-cardiac involvement. If confirmed, the management changes significantly since an ICD should be considered instead of pacemaker along with need for immunosuppression.

DISCUSSION: Cardiac involvement is seen in 5% of patients with sarcoidosis and presents with high-grade AV block, ventricular tachyarrhythmia, left ventricular dysfunction or heart failure. Chest imaging (X-ray or CT) is abnormal in 85-95% of patients. PET and/or CMR are imaging modalities of choice with

PET having higher sensitivity compared to CMR based on multiple studies (87% vs 75%). Endomyocardial biopsy (EMB) can be considered if extra cardiac targets are not available for biopsy; however, the sensitivity is low (25%) due to focal cardiac involvement. The American College of Cardiology recommends ICD implantation for primary prevention of sudden cardiac death in all patients with cardiac sarcoidosis due to high incidence of ventricular arrhythmias. Recovery of AV block following immunosuppression has been demonstrated in small studies however; predicting which patient population would recover their native conduction still remains an active area of investigation.

CARDIAC TAMPONADE SECONDARY TO PURULENT PERICARDITIS IN A PATIENT WITH LUDWIG'S ANGINA AND LEMIERRE'S SYNDROME Karishma Samtani; Katelyn Booher. Wright State University, Dayton, OH. (Control ID #2707252)

LEARNING OBJECTIVE #1: Recognize the clinical features of purulent pericarditis and it's complications.
LEARNING OBJECTIVE #2: Assess for cardiac tamponade in patients with shortness of breath and signs of pericarditis.
CASE: A 51-year-male with non-contributory past medical history presented to the emergency department with five days of right-sided cheek and neck swelling with pain. Magnetic resonance imaging (MRI) head and neck were negative for drainable fluid collection, and the patient was discharged home with antibiotics. He improved however returned in four days with new shortness of breath and dizziness. His heart rate was regular but tachycardic at 108 beats per minute, and he was normotensive. Electrocardiogram (ECG) demonstrated sinus tachycardia with diffuse ST elevation and PR depression. A portable chest radiograph showed widened cardiomediastinal silhouette. Computed tomography (CT) and MRI now revealed extensive Ludwig's angina. Incision and drainage was performed followed by intravenous steroids and antibiotics. Emergent echocardiography revealed a large pericardial effusion with right ventricular diastolic collapse consistent with cardiac tamponade. Emergent pericardiocentesis was performed yielding 590 mL of fluid and a pericardial drain was placed. Due to his worsening clinical status, further imaging was obtained and showed progressing infection including infectious thrombus in his right internal jugular vein. He remained in the hospital for further treatment including antibiotics. His pericardial drain was removed without complication or need for further cardiac intervention.
IMPACT: This case is a valuable addition to literature as it demonstrates purulent pericarditis from Ludwig's angina as a rare cause of pericardial effusion and cardiac tamponade requiring emergent intervention and intravenous antibiotics. This case prompts further learning to recognize cardiac tamponade seconary to purulent pericarditis, a rare and fatal condition.
DISCUSSION: Purulent pericarditis accounts for less than one percent of cases of pericarditis. The incidence of cardiac tamponade secondary to purulent pericarditis is unclear and reportedly ranges from 42 to 77%. This rare entity will generally present as a febrile illness, and possibly with signs of sepsis and hemodynamic instability. Our patient presented with severe odontogenic infection, and subsequently shortness of breath and dizziness. If left untreated it is fatal and therefore early recognition and aggressive treatment is essential. As many as 85% of patients with purulent pericarditis who have received comprehensive therapy will survive with good long-term outcomes. Physicians must recognize rare causes of cardiac tamponade, a life-threatening condition, such as purulent pericarditis due to Ludwig's angina.

CARDIO-RENAL SYNDROME: RAPID PROGRESSION OF CHRONIC KIDNEY DISEASE IN A CARDIOTHORACIC SURGEON Mia Williams; Hsu Chi. University of California San Francisco, San Francisco, CA. (Control ID #2706180)

LEARNING OBJECTIVE #1: Recognize patterns of CKD development in HTN & T2DM
LEARNING OBJECTIVE #2: Understand unique causes of secondary FSGS
CASE: 74 year old African American (AA) male with a history of HTN, T2DM, and BPH presented to Renal Clinic for evaluation of worsening CKD. Five years prior, CKD III was diagnosed and felt likely due to obesity. In 2016 he was found to have an elevated creatinine of 2.51 mg/dl. Given concern that his ARB was the cause it was stopped and he was referred to Nephrology. It was felt that his presentation was most consistent with hypertensive nephrosclerosis; however his Endocrinologst felt it was secondary to FSGS. Given lack of improvement he was referred to UCSF for a second opinion. Regarding possible etiologies of his worsened CKD, his T2DM was first diagnosed two years prior with a HbA1c <7% without evidence of neuropathy or retinopathy. His long term HTN medications were: amlodipine, valsartan and HCTZ. His BPs were well controlled. He endorsed a family history of CKD. At initial evaluation he denied a history of a UTI, dysuria, hematuria but noted some urinary frequency and light froth to urine. He denied edema, change in appetite or energy, pruritus or fatigue. He had intentional weight loss. He had no significant NSAID use. None of his medications were associated with renal disease. Pr:Cr Ratios had increased from 2.49 in 2012 to 3.3 in 2016. His SPEP/UPEP was negative 2012. Physical exam was only significant for obesity. His subsequent work-up was significant for a creatinine of 3.1 mg/dl (GFR 22), Pr: Cr Ratio of 5.27. His work-up was negative for other etiologies of CKD. Given the rapid progression of his disease, a renal biopsy was pursued and demonstrated FSGS. Given the family history of CKD he was sent for APO-L1 testing which was negative. His FSGS was felt to be secondary to obesity rather than hereditary. With continued weight loss and restarting his ARB his creatinine and Pr:CR improved to 2.55 mg/dl (GFR 28) and 2.59.
IMPACT: This case highlighted an approach to assessing patients for CKD and being aware that rapid progression as in this patient is atypical. Specifically I learned that while diabetic nephropathy may present with this degree of proteinuria, hypertensive nephrosclerosis does not. As research and this patient's case demonstrated, weight loss and ACE-I can improve renal function and protein excretion in obesity related FSGS.
DISCUSSION: Compared to patients with T2DM, hypertensive nephrosclerosis rarely presents with nephrotic range proteinuria. Furthermore the absence of diabetic retinopathy does not exclude the development of diabetic nephropathy. FSGS is typically considered inCKD with nephrotic range proteinuria and should be approached by ruling out secondary etiologies. Regarding primary etiologies, there is evidence for APO-L1 as an underlying genetic susceptibility for FSGS. Deleterious mutations in these genes are more prevalent in AAs and provide another etiology in this population. Thus biopsy should be critically advocated for when appropriate.

CARE MANAGEMENT: A SOLUTION FOR HIGH-RISK PATIENTS? (IMPROVING THE CARE OF HIGH-RISK PATIENTS WITH CARE MANAGEMENT) Elizabeth Park[1]; Lee S. Shearer[2]; Paul Lu[3]. [1]New York Presbyterian Hospital, New York, NY; [2]Weill Cornell Medical College, New York, NY; [3]Hospital for University of Pennsylvania, Philadelphia, PA. (Control ID #2702184)

LEARNING OBJECTIVE #1: Recognize high-risk patients as candidates for Care Management.

LEARNING OBJECTIVE #2: Apply Care Management as a tool to improve care coordination, health outcomes, and reduce cost.

CASE: A 75 year old man with Parkinson's Disease Dementia with chronic urinary retention and indwelling suprapubic catheter established care at our outpatient clinic after frequent Emergency Department (ED) visits. His past medical history included Hypertension. Social history was pertinent for living at home with his elderly wife. On initial visit, patient had no complaints. Vitals were notable for sinus bradycardia and physical exam was consistent with Parkinsonian features, with a suprapubic catheter in place. Review of his previous hospital visits showed 8 ED visits in the past year. At this point, a referral was made to Care Management (CM). His hospital visits are summarized below. 11/2014: Admission for Urinary Tract Infection (UTI) 01/2015: Admission for UTI 01/2015: ED visit for Foley complication 02/2015: Admission for UTI 02/2015: ED visit for Foley complication 04/2015: ED visit for Foley complication 05/2015: ED visit for Foley complication 06/2015: ED visit for medication non-compliance 06/2015: Established care and CM introduced 08/2015: Admission for UTI 09/2015: Admission for UTI 06/2016: Admission for UTI

IMPACT: Patients with frequent hospital visits are an example of high-risk patients who may benefit from CM. CM is a tool to help patients coordinate care outside of the office and may serve as a resource to reduce hospital visits, improve health outcomes, and reduce overall cost.

DISCUSSION: High-need, high cost (HNHC) patients are a heterogeneous group of patients that utilize a disproportionate amount of US health care cost. HNHC patients often deal with multiple medical conditions, complex social needs, and poorly coordinated care which contribute to the high cost of care. For example, the most expensive 5% of Medicaid enrollees accounted for nearly half of the total expenditures of all Medicaid enrollees in 2009–2011. Care Management typically comprises of an interdisciplinary team of primary care physicians, sub-specialists, nurses, and social workers, who collaborate to deliver patient-centered and cost-efficient care. Specific interventions include: patient education, medication reconciliation, coordination of care, adjunct social services, counseling, and hospital discharge planning. The literature has shown conflicting data on the effect of CM with inconsistent benefits on outcomes such as mortality, use of primary or secondary care, and cost. This may reflect individualized models of CM employed, with some more successful than others. However, as with our patient, we found CM to be helpful in reducing hospital visits from 8 visits in the year prior to CM down to 3 visits in the subsequent year. CM is one potential tool which may be applied to high-risk patients to improve care coordination, overall health, and cost-effectiveness.

CASE STUDY OF A LIFE THREATENING NEMATODE Sheba E. John. Presence St Francis Hospital, Evanston, IL. (Control ID #2704361)

LEARNING OBJECTIVE #1: Recognize clinical presentation of strongyloides hyperinfection

LEARNING OBJECTIVE #2: Assess the importance of parasitic screening before immunosupressant therapy

CASE: A 58-year-old male was brought to the ED after being found lying on the floor at his apartment. At presentation, patient was confused and failed to recollect the course of events leading to the fall however he reported feeling fatigued and having non-bloody diarrhea. He had significant weight loss over the past 6 months. His past medical history included Crohn's disease for 40 years which was treated initially with infliximab and eventually switched to vedolizumab in the last 8 months. He also underwent two bowel resections in the past for lysis of adhesions. Patient was born in Chicago and had no significant travel history. On examination, he appeared cachectic, blood pressure was 92/58 mmHg, pulse rate of 96 beats/min, temperature of 96 F and was saturating well on room air. Decreased breath sounds and crackles were noted on right chest. Initial blood tests showed leukocytosis, elevated lactate and chest X-ray revealed heterogeneous infiltrates throughout right lung field. Patient was started on broad spectrum antibiotics and fluid resuscitation for severe sepsis secondary to pneumonia. Blood cultures, influenza test, streptococcal and legionella urine antigen testing were all negative. Despite antibiotic treatment, chest X-ray showed worsening infiltrates and opacities on the right side and he started having episodes of non-bloody diarrhea. CT of chest showed dense consolidation throughout the right lung and ground glass opacities at left upper lung. While studying the bronchoscopy cytology, a very rare and interesting finding was revealed in the form of rhabdtitiform larvae of strongyloides. Patient also tested positive for strongyloides antibody which further confirmed the diagnosis and he was started on Ivermectin. He showed significant improvement with treatment and started feeding well without further episodes of diarrhea.

IMPACT: Strongyloides hyperinfection can be prevented by early detection and treatment of asymptomatic chronic infections. A comprehensive screening program should be considered routinely to detect any latent infections before the start of chemotherapy, immunosuppression and steroid therapy.

DISCUSSION: Strongyloides Stercoralis is a soil transmitted intestinal nematode. Its unique ability to replicate in the human host permits cycles of autoinfection, leading to chronic disease that can last for several decades. However, in patients receiving long-term corticosteroid therapy, hyper infection can occur resulting in high mortality rates (up to 87%). Bacteremia develops due to disruption of mucosal barrier by larva, and sepsis complicate the clinical course. Eosinophilia is uncommon in disseminated cases. So even in the absence of eosinophilia, clinical symptoms of diarrhea and pulmonary findings should raise suspicion of strongyloides hyper-infection in immunosuppressed individuals as seen in this case.

CASE STUDY: AGGRESSIVE SIGNET RING CELL GASTRIC ADENOCARCINOMA IN A YOUNG MAN Lauren Choi; Nardos Temesgen. George Washington University, Washington, DC. (Control ID #2689863)

LEARNING OBJECTIVE #1: The incidence of signet ring cell gastric adenocarcinoma is a rising, particularly among younger, otherwise healthy patients.

LEARNING OBJECTIVE #2: Signet cell gastric cancer can initially present as an infiltrative bone marrow process with severe cytopenias.

CASE: A 26 year old previously healthy man presented to the George Washington University Emergency room with 3 days of pre-syncope and significant weakness. He endorsed recurrent epistaxis, fevers and chills. His vital signs were remarkable for tachycardia and fever. He was remarkably pale, with dry mucous membranes. Serum studies showed a hemaglobin concentration of 4.0 g/dL and a platelet count of 96×10^3 cells/microliter. Twenty days prior, his hemaglobin concentration was 13.9 g/dL and platelet count was 163×10^3 cells/microliter. His prothrombin time was elevated, with an international normalized ratio of 1.48. His serum alkaline phosphatase was also elevated at 305 international units per liter. A peripheral smear showed myelophthisic disease with teardrop cells, schistocytes, polychromasia, and many nucleated red blood cells. A CT demonstrated mediastinal, bilateral hilar,

abdominal and retroperitoneal lymphadenopathy, suggestive of lymphoma. A lymph node biopsy atypical hyperchromatic cells with a signet-ring like appearance. It was CK20 positive, CK7 negative, TTF-1 negative, and CDX-2 showed focal weak reactivity, suggesting a GI primary cancer. Gastric biopsy confirmed gastric signet ring cell carcinoma. He was offered palliative chemotherapy with Oxaliplatin, Mitomycin, Doxorubicin, Capecitabine. Unfortunately, he passed away after 4 months of treatment.

IMPACT: Over the last 30 years, the incidence of gastric carcinoma has been declining worldwide, but the incidence of diffuse-type carcinoma, especially signet ring cell carcinoma, has been increasing. Because of these changing trends, internists must be more vigilant about diagnosing signet ring cell carcinoma, as this form is found in younger patients who do not have any risk factors.

DISCUSSION: Our patient is a previously healthy 26 year old man who presented with severe, symptomatic anemia. He was eventually diagnosed with signet ring cell gastric carcinoma with bone marrow infiltration. Signet ring cell gastric adenocarcinoma has a higher rate of bone marrow metastasis compared to other forms of gastric adenocarcinoma. Once bone marrow metastasis occurs, the mortality rate is very high. The average life expectancy is 44 days from the time of documented bone marrow involvement. This case is significant for two reasons. First of all, it highlights the importance of a broad differential diagnosis when evaluating a patient with severe, symptomatic anemia. Second of all, the incidence of signet ring cell gastric adenocarcinoma is rising, particularly among young, otherwise-healthy patients.

CAT FANCIER'S PNEUMONIA: A CASE OF PASTEURELLA MULTOCIDA PNEUMONIA Neelesh Rastogi[1]; Jacqueline Hirsch[1]; Craig Tenner[2]. [1]New York University School of Medicine, New York, NY; [2]VA New York Harbor Healthcare System, New York, NY. (Control ID #2692987)

LEARNING OBJECTIVE #1: Describe a rare presentation of *Pasteurella multocida* pneumonia without history of cat bite

CASE: An 84 year old male with a history of HTN, HLD, BPH, PVD, extensive smoking presented to the ER with small volume hemoptysis of 1 day duration. He reported having a cough productive of scant amounts of clear/yellow phlegm for a few weeks prior to developing hemoptysis. Review of systems was only notable for fatigue. He emigrated from Puerto Rico in the 1950s and lives in an apartment with one cat that often sleeps in his bed with him. Exam showed a well-appearing man, afebrile with a HR of 103, RR of 20, BP of 165/92, saturating 94% on ambient room air. Pulmonary exam was notable for dry crackles throughout both lung fields. Hemoglobin was stable without leukocytosis. In the ER, patient underwent CT chest angiography revealing diffuse mediastinal lymphadenopathy, diffuse interstitial lung disease, and a pleural-based infiltrate in the left upper lobe. The diffuse lung disease had been stable since 2006. The patient was admitted and placed on airborne isolation for further workup. Overnight on hospital day 1, the patient spiked a fever and was started on Unasyn to cover for community acquired pneumonia. Sputum acid-fast bacilli smear returned positive x2 and PCR later revealed Mycobacterium avium complex (MAC), thought to be a colonizer. Bacterial sputum cultures grew *Pasteurella multocida*. The patient improved on IV Unasyn for *Pasteurella* and hemoptysis resolved. The patient was discharged from the hospital on hospital day 9 with a plan to complete a 14-day course of antibiotics.

IMPACT: This case broadened our differential when an immunocompetent patient presents with fevers and hemoptysis and also shed light on a rare presentation of *Pasteurella multocida* infection.

DISCUSSION: *Pasteurella multocida*, is a gram negative bacilli most abundantly found in the oral cavity of cats. Pasteurella has been transmitted to humans most commonly through animal bites or scratches. Severe infection in previously healthy individuals without occupational exposure or bite/scratch history is thought to be extremely rare. *Pasteurella* pneumonia usually presents with non-specific symptoms, including fever, malaise, dyspnea, pleuritic chest pain, and sometimes hemoptysis. Though our patient's sputum was also positive for MAC, adding an extra layer of challenge in treating him, the acuity of the his illness, sputum findings, improvement on Unaysn all argued for *Pasteurella* Pneumonia as the main culprit of this patient's presentation. Our patient appeared to contract *Pasteurella* pneumonia without direct mucous secretion exposure, presumably only from sharing a bed with his cat. This is an exceedingly rare cause of *Pasteurella* pneumonia, but not completely unheard of. Given the presence of other case reports available of rare, but similar presentations of *Pasteurella* pneumonia in the elderly or those with underlying lung disease, we propose that this disease entity be called "Cat Fancier's Pneumonia".

CAT GOT YOUR TONGUE ? A CASE OF NON-CONVULSIVE STATUS EPILEPTICUS (NCSE) PRESENTING WITH MUTISM

rajan gurunathan[1, 2]; Pamela Lobo[1]; scott segan[1]. [1]SBH Health System, Bronx, NY; [2]CUNY School of Medicine, NY, NY. (Control ID #2707684)

LEARNING OBJECTIVE #1: Recognize the clinical features and diverse symptoms associated with NCSE

CASE: A 44 year old male with a history of drug abuse presented to the ER for evaluation of altered behavior. As per his friends, the patient abruptly began refusing to eat or answer questions several days ago. On arrival he appeared well, but would only open his eyes to acknowledge his interviewer and not answer questions. No further history was available. Physical exam was otherwise unremarkable, and no automatisms or rhythmic movements were noted. Serum chemistry, CBC, ammonia, alcohol level, and urine toxicology were unrevealing, and CT brain was normal. On hospital day 2, an EEG was ordered, and psychiatry and neurology were called. The EEG revealed diffuse rhythmic delta waves with some epileptiform activity intermixed over the left temporal region, suspicious for a diagnosis of NCSE, and the patient was loaded with IV Fosphenytoin. Within a few hours the patient was able to speak a few words, and the next morning he was talking and answering questions. He then reported a history of a similar episode years prior that resolved without treatment. Repeat EEG showed improvement, and the patient remained neurologically intact.

IMPACT: Status epilepticus occurs as a result of neural mechanisms which lead to abnormally prolonged seizures, or from the failure of mechanisms responsible for seizure termination. NCSE is defined as status epilepticus without prominent motor signs, and can be a serious diagnostic challenge that is often under-recognized and misdiagnosed, therefore a high index of suspicion is required to make the diagnosis.

DISCUSSION: NCSE can typically be categorized by an impaired level of consciousness; changes in behavior with automatisms (subconscious movements); and/or alteration in muscle tone resulting in posturing or fine motor twitching. While uncommon when compared with other epileptic syndromes, it has been estimated to affect 3–10% of patients presenting to emergency rooms with altered consciousness or coma, and the subtle nature of its symptoms may make it difficult to recognize. Patients with NCSE can be broken down into 2 main types: those with primary generalized seizures (absence status), and those with complex partial seizures. Symptoms associated with

NCSE are diverse, but can be grouped into “negative symptoms,” such as aphasia, mutism, amnesia, or catatonia; and “postitive symptoms,” such as rhythmic twitching of one or more muscle groups, ocular deviation, or nystagmoid eye-jerking. Over 50% of patients presenting with NCSE will have prior history of seizures, though other risks include recent neurosurgery, coma, sepsis, and benzodiazepine discontinuation. Precipitants include infection, sleep deprivation, excess alcohol intake, withdrawal from anti-epileptic drugs (AED), psychotropic meds, and emotional stress. Prompt recognition and initiation of treatment with benzodiazipines or AED therapy is key, as there is significant risk for neurologic sequelae and mortality.

CAT SCRATCH DISEASE (CSD) - AN ATYPICAL MANIFESTATION WITH VISCERAL ORGAN INVOLVEMENT IN ELDERLY IMMUNOCOMPETENT PATIENT Brian V. Dinh; Olusola Isikalu; Shruti Patel; Sara Keiler. Wright State University, Dayton, OH. (Control ID #2706222)

LEARNING OBJECTIVE #1: Recognize clinical and radiological findings of cat scratch disease involving visceral organs.

CASE: 71-year-old Caucasian male with significant history of hypertension, type 2 diabetes mellitus presented malaise, fatigue, anorexia, subjective fevers, and confusion for 1 week. Physical examination revealed alert and oriented male with unremarkable cardiopulmonary, abdominal, lymph node, and neurologic exam. Skin was notable for 0.5 cm round erythematous papule at the right wrist. Laboratory analysis showed normal complete blood count, urinalysis, and chemistries. C-reactive protein was 82.4 mg/L. Chest radiograph showed questionable infiltrate so moxifloxacin was empirically started for concern of pneumonia. Despite antibiotics, patient was febrile up to 102.9 °F for 3 days, while cultures remained negative. CT imaging showed no acute pulmonary process, but revealed hepatosplenomegaly with numerous nonspecific hypodense hepatosplenic lesions. PET/CT showed increased avidity in right axillary lymph node, supraclavicular area, and diffuse focal splenic uptake. Moxifloxacin was held with subsequent defervescence. Legionella antigen, viral hepatitis, HIV, CMV, monospot and fungal serologies were negative. Further history revealed that the patient had a stray kitten for the previous 6 months and recalls a healing linear cat scratch of the right forearm. Bartonella henslae (*B. henslae*) immunoglobulin G titer were obtained, and azithromycin and rifampin were empirically started for suspected CSD. Titers returned >1:1024, confirming the diagnosis of disseminated CSD.

IMPACT: With the case presented, our practice has been greatly changed to consider a large differential with findings of visceral organ hypodensities on imaging. History taking combined with physical, radiological, and laboratory findings are key in making the correct diagnosis.

DISCUSSION: Rarely, CSD presents with disseminated hepatosplenic lesions identified on imaging. CSD manifests as self-limiting fevers and limited regional granulomatous LAD in 85% of patients, asymmetric axillary LAD in about 46% of patients, and hepatospenic lesions in 2.3% of cases. In young or immunocompromised patients, atypical presentations can include visceral organ, neurological, and ocular involvement with associated encephalopathy, transverse myelitis, Parinaud’s oculoglandular syndrome, or optic neuritis. Biopsy of visceral organ lesions would reveal necrotizing granulomas. Cutaneous involvement occurs 3 to 10 days after inoculation, and LAD arises proximally to inoculation site after 2 weeks. CSD with limited LAD is treated supportively or with azithromycin and rifampin is added for disseminated disease. Interestingly, fluoroquinolones have in vitro activity against *B. henslae* which could explain defervescence with moxifloxacin. In challenging cases with fever of unknown origin and imaging suggesting infection, a detailed history and physical, clinical suspicion, and broad differential to include CSD are key in making the diagnosis.

CATCH ME IF YOU CAN: PULMONARY COCCIDIOIDOMYCOSIS AND NON-TUBERCULOUS MYCOBACTERIUM PRESENTING AS COMMUNITY-ACQUIRED PNEUMONIA Jonathan P. Salud; Robin Klein. Emory University School of Medicine, Atlanta, GA. (Control ID #2705218)

LEARNING OBJECTIVE #1: Recognize that persistent symptoms in the appropriate setting raise concern for an atypical pulmonary infection.

LEARNING OBJECTIVE #2: Review the presentation of atypical pulmonary infections such as coccidioidomycosis.

CASE: A 46 year-old male presents with cough, fever, and fatigue for 7 days. He reported weight loss but no night sweats or hemoptysis. Travel included a trip to California and Arizona 10 days prior to symptom onset, and remote travel to Mexico. He denied animal contact, occupational exposures, or use of hot tubs. After 2 days of symptoms, he was evaluated in clinic and treated with azithromycin without improvement. On admission, he was febrile and hypoxic with temperature of 38.9 °C and saturation of 93%. Exam revealed decreased breath sounds and crackles in the right upper anterior lung field. Laboratories showed WBC 14,300/mcL, total protein 7.6 g/dL and albumin 3.1 g/dL. Imaging showed right upper lobe consolidation and ground glass opacity. Blood cultures, HIV and hepatitis serologies, urine *Histoplasma* and serum *Cryptococcus* antigen were negative. Bronchoscopy showed no endobronchial lesions, cytology was negative, and respiratory viral cultures were negative for influenza, parainfluenza, RSV, HSV, and CMV. He remained febrile with leukocytosis and persistent cough. He was diagnosed with community-acquired pneumonia and treated with moxifloxacin, with gradual symptom resolution. After discharge, respiratory cultures grew 3+ *Coccidioides* species, and serum *Coccidioides* IgM antibody was detected. Sputum and respiratory culture later grew *Mycobacterium avium complex*.

IMPACT: Persistent symptoms in the appropriate setting raise the possibility of certain atypical pulmonary infections. History is the first step to ascertain this, and proved to be key in diagnosing pulmonary coccidioidomycosis and *Mycobacterium avium complex*.

DISCUSSION: Atypical pulmonary infections refer to infections not caused by one of the more traditional bacteria pathogens. *Coccidioides* are spore-forming fungi found in the southwestern US and Mexico that can cause symptoms of fever, cough, weight loss, and marked fatigue. Image findings can resemble that of classic community-acquired pneumonia. Uniquely, recent or active infection is conferred by detection of either IgG or IgM antibodies. Current guidelines advise close observation for these patients if symptoms are mild. *Mycobacterium avium complex* (MAC) is the most common non-tuberculous mycobacterium pathogen in the US. Pulmonary MAC often presents as cavitary disease in older white male smokers, or as nodular/ bronchiectatic disease in nonsmoking older females, but presentation can vary. In this case, recent travel to the southwestern US pointed to *Coccidioides* as a potential etiology, and culture confirmed the diagnosis of pulmonary coccidioidomycosis and MAC. Physicians should be cognizant that persistent pulmonary symptoms in an immunocompetent patient warrant thorough history in order to ascertain the likelihood of an atypical pathogen as the cause.

CAVITARY LESIONS IN THE LUNG WHAT CAN THEY BE

Tehseen Haider; Kezia Ann Sam; Charles Fishman. montefiore medical center, Bronx, NY. (Control ID #2702757)

LEARNING OBJECTIVE #1: Identify different causes of cavitary lung lesions.

LEARNING OBJECTIVE #2: Consider chronic invasive aspergillosis as a cause of cavitary lung lesions in immunocompetent host.

CASE: A 33 year old man (former smoker - 5 pack years) with history of asthma presented with complaints of dry cough and shortness of breath for 3 weeks. He was febrile to 101.7 °F with cachexia and bilateral rales on exam. He had white blood cell count (WBC) of 10.6 k/uL (granulocytes 76%, eosinophils 2%). Initially he was treated with broad spectrum antibiotics for bacterial infection, with no relief. Further workup showed CD4 count of 376 cells/uL, negative HIV, normal ACE level, indeterminate mycobacterium interferon assay, serum aspergillosis galactomannan antigen of 0.084 (reference range <0.5), negative cryptococcal antigen, negative ANCA and negative respiratory bacterial and acid fast bacilli sputum cultures. CT-scan showed chronic parenchymal changes with upper lobe volume loss, fibrosis, and multiloculated cavities. He underwent bronchoscopy, revealing non-necrotizing granulomas and necro-inflammatory tissue with clusters of fungal species suggesting chronic invasive pulmonary aspergillosis (CPA). He was treated with voriconazole with improvement in his symptoms.

IMPACT: Diagnosing CPA can be challenging. Outcome largely depends on early diagnosis and treatment.

DISCUSSION: The differential diagnosis for cavitary lung lesions includes infectious and noninfectious causes. Infectious causes include necrotizing pneumonias, lung abscesses, septic pulmonary emboli, HIV, and fungal, mycobacterial and parasitic infections. Noninfectious causes are Wegner's granulomatosis, sarcoidosis, Langerhans's cell histiocytosis, and others. Usually Aspergillus causes lung disease in immunocompromised host, or in patients with underlying lung disease. CPA is a spectrum of diseases ranging from simple aspergilloma to progressive cavitary aspergillosis. Prevalence varies from <1 case/100,000 in developed countries to 42.9/100,000 in underdeveloped. Inflammatory makers such as CRP and sedimentation rate are very commonly elevated but are not specific. Serum total IgG, IgE, and Aspergillus specific IgG (cardinal test) levels are elevated. Sputum cultures are often positive (10-40%), but negative cultures do not rule out disease. Aspergillus PCR from sputum has high false positive rates due to contamination or colonization. Galactomannan is positive sometimes (38% sensitivity for serum vs 92% for bronchoalveolar lavage), while serum 1–3 beta glucan is unreliable. Ultimately, diagnosis relies on a combination of clinical presentation, imaging, serology, cultures, and underlying risk factors. Treatment includes systemic antifungals, local instillation, and sometimes surgical resection if necessary.

CENTRAL VENOUS CATHETER PLACEMENT A ROUTINE PROCEDURE WITH UNEXPECTED COMPLICATIONS

Rahul Nair; Sangeetha Venugopal; Manoj Karwa. Montefiore Medical Center, Wakefield Campus, New York, NY. (Control ID #2700955)

LEARNING OBJECTIVE #1: Recognize the rare but lethal side effect of heart blocks in central line insertion.

CASE: A 67 year-old woman with history of upper gastrointestinal bleeding and end stage renal disease on hemodialysis was admitted with symptomatic anemia secondary to acute onset of melena. Electrocardiogram (EKG) showed normal sinus rhythm with left axis deviation and pre-existing left bundle branch block (LBBB). She was transferred to the intensive care unit for hemodynamic monitoring. A decision was made to insert a trialysis catheter, as her AV fistula for dialysis access was clotted. The CVC was introduced using the Seldinger technique into the right internal jugular vein. While inserting the guide wire, at about 20–25 cm she started to develop bradycardia to 40s on cardiac monitor. Guide wire was immediately withdrawn and patient went into asystole and became unresponsive. She was revived as per Advanced Cardiac Life Support protocol with return of spontaneous circulation in 40 sec. Post-cardiac arrest EKG revealed normal axis with right bundle branch morphology with slow ventricular escape rhythm at approximately 26/minute and atrio-ventricular dissociation, which did not respond to Atropine requiring emergent trans-venous pacemaker insertion. Repeat panel of cardiac enzymes were normal. Her complete heart block resolved and she returned to baseline cardiac rhythm within twenty four hours.

IMPACT: It is essential to recognize those patients at higher risk of complications such as heart blocks during central line placement. Patients with prior LBBBs are at greatest risk, and carefully reviewing an EKG prior to CVC insertion is crucial. CVC insertions are commonly done without cardiac monitoring. We emphasisize that it is essential to have such procedures done in a monitored environment with careful assessment of telemetry while such procedures take place.

DISCUSSION: In our patient, the transient complete heart block was caused by trauma to the right bundle branch by the guide wire, causing bilateral bundle branch block in the setting of pre-existing LBBB. Eissa et al. described a case akin to our patient, suggesting complete heart block as a potential complication of CVC placement when a contralateral bundle branch is present (1).Additionally, having a patient on cardiac monitoring while the procedure is taking place is vital to quickly identify and reverse such complete heart blocks. Andrews et al. assessed the safest distance for guide wire access in a non-randomized prospective trial. The right IJV distance was the shortest, averaging about 16 cm and it was deemed that 18 cm to be considered as the upper limit for guide wire insertion (2). It pays to be vigilant during guidewire insertion so as not to exceed 18 cm in length. And to always have the patient in a monitored setting with dedicated personnel looking at the cardiac monitor during such procedures to recognize the possibility of complete heart block as a potential complication in patients with pre-existing LBBB.

CHASING THE K

Shakera Syed; Doris Yang; Dipen Khanapara; Colette Knight. Montefiore Medical Center Wakefield Campus, Bronx, NY. (Control ID #2706742)

LEARNING OBJECTIVE #1: Recognize secondary causes of hypertension in the setting of hypokalemia.

LEARNING OBJECTIVE #2: Describe the work-up for diagnosis of primary aldosteronism as a cause of secondary hypertension

CASE: 33-year-old woman with no significant past medical history presented to urgent care complaining of headaches. Blood pressure was 209/122 mm Hg. Physical exam was unrevealing. Therapy was initiated with hydrochlorothiazide 12.5 mg daily and symptoms improved. Three days later blood tests revealed a low serum potassium of 2.5 mEq/l which prompted an urgent referral to the hospital. Upon presentation to the hospital the patient's blood pressure was 173/106 mmHg. Physical examination was unremarkable. Hypokalemia was refractory to medical management. A workup for secondary causes of hypertension showed Plasma cortisol and urine metanephrines were within normal range,

plasma renin activity was suppressed to 0.13 ng/mL/h and plasma aldosterone was elevated to 62 ng/dL. An abdominal CT Scan revealed a right adrenal nodule measuring 2.4 cm × 1.5 cm with characteristics typical for adrenal adenoma. The presentation was suggestive of primary aldosteronism and the patient was treated with spironolactone. On her follow up visit, blood pressure improved significantly and the potassium level was 3.5 mEq/l.

IMPACT: Consider secondary causes of hypertension especially in young patients with associated hypokalemia.

DISCUSSION: Primary hyperaldosteronism(PA) constitutes about 10% of the diagnosis of secondary hypertension. Idiopathic hyperaldosteronism and aldosterone-producing adenomas account for more than 95% of the cases with PA. Patients with hypertension and hypokalemia, regardless of suspected cause (diuretics, incidentaloma), and patients with medically-resistant hypertension, should be considered for screening for primary hyperaldosteronism. Initial screening tests show suppressed Plasma Renin Activity (PRA) and increased Plasma Aldosterone Concentration(PAC) with the PAC/PRA ratio >20 ng/dL per ng/mL/hour. The combination of a PAC above 20 ng/dL and a PAC/PRA ratio above 30 had a sensitivity and specificity of 90 percent for the diagnosis of aldosterone-producing adenoma. These screening tests are not employed in older normokalemic patients with hypertension. Adrenal venous sampling has a high sensitivity and specificity for detecting unilateral aldosterone excess and ideally should be performed prior to surgical resection. In patients with bilateral adrenal hyperplasia or adenomas and in patient who are not surgical candidates, medical management is considered. Spironolactone has been preferred over Eplerenone because of reduced cost, greater efficacy and easy availability. However, Eplerenone causes fewer anti- androgenic side effects.

CHRONIC DIARRHEA AND ZOLLINGER-ELLISON SYNDROME (ZES) : WELL-DOCUMENTED YET RARELY SOLICITED

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LEARNING OBJECTIVE #1: This case signifies considering Zollinger-Ellison syndrome (ZES) as a differential diagnosis of chronic diarrhea

CASE: 75 year-old male with history of Barrett's esophagus on chronic proton-pump inhibitor (PPI) therapy presented to the hospital with nausea, vomiting, diarrhea and dehydration. On further questioning he had chronic diarrhea since the last 45 years and was on PPI therapy for atleast >30 years. On admission to the hospital he was found to have acute kidney injury with elevated creatinine of 3.0 mg/dL (baseline 0.9–1.1 mg/dL) and BUN of 63 mg/dL (baseline 14–18 mg/dL). Stool clostridium difficile toxin was positive and metronidazole 500 mg every 8 hours was initiated. A CT scan of the abdomen demonstrated distension of the stomach with gastric wall thickening. A follow up EGD displayed esophagitis, gastritis and prominent gastric rugae. Subsequent to the EGD findings, a gastrin level was checked which was noted to be 303 after holding the PPI for a >48 hours (normal: <100 pg/mL). This was followed by a secretin stimulation test which confirmed increased gastrin levels to 1716 pg/mL 5 min after secretin injection with reproduction of symptoms of nausea, vomiting and diarrhea. An octreotide scan confirmed somatostatin receptor positive abnormality in the area of the duodenum. The patient subsequently had a repeat CT abdomen and pelvis which noted a 1.4 centimeter thickening in the second portion of the duodenum. A repeat EGD showed Barrett's esophagus and a mass in the second portion of the duodenum which was biopsied and was resulted as benign. A EUS was performed with fine needle aspiration of the mass which was again benign. Patient was resumed on omeprazole daily. With no resolution of symptoms he was then referred for surgical resection and a distal gastrectomy, proximal duodenectomy and resection of duodenal mass was performed. The pathology of resection specimen was consistent with a 1.9 cm well-differentiated, low grade (G1) neuroendocrine tumor. Immunohistochemistry testing was positive for chromogranin and synaptophysin and the mitotic rate was less than 1 per 100 hpf. The TNM staging was T2N0MX. The patient continues to be treated with omeprazole with plans to possibly discontinue it in near future. He has remained symptom free without any diarrhea since the surgery and his gastrin levels have decreased to a normal level of 67 pg/mL.

IMPACT: With delayed diagnosis, complications arise as seen in this case with Barrett's esophagus because of gastric acid hypersecretion.

DISCUSSION: Chronic diarrhea occurs because of multiple mechanisms in ZES. Complete removal of the lesion is the main curative treatment when gastrinomas are sporadic and not a part of MEN1 syndrome. Medical management includes high dose PPIs or somatostatin analogues such as octreotide. Patients without metastatic disease should be offered surgery with curative intent as it has been demonstrated to protect against the possible morbidity and death from metastatic spread.

CHRONIC EOSINOPHILIC PNEUMONIA: A DIAGNOSIS TO CONSIDER IN PATIENTS WHO FAIL TREATMENT OF INFECTIOUS PNEUMONIA Shivani Thanawala; Aron Mednick. New York University School of Medicine, New York, NY. (Control ID #2706987)

LEARNING OBJECTIVE #1: Recognize clinical features of chronic eosinophilic pneumonia

LEARNING OBJECTIVE #2: Diagnose eosinophilic pneumonia when imaging is atypical

CASE: A 42-year-old male with history of hypertension and asthma presented with intermittent cough and progressive dyspnea over eight months. His symptoms were more pronounced in the two months leading to admission, during which time he had outpatient treatment with 5 courses of simultaneous oral antibiotics and steroids. Outpatient CT scan of the chest during this time showed diffuse bilateral ground glass opacities, interpreted as atypical infection and inflammatory changes. His symptoms temporarily improved with therapy; however, he was ultimately admitted due to progression of symptoms. On admission, he reported dyspnea at rest, cough productive of yellow sputum, and 20 lb unintentional weight loss over six months. He denied fevers, recent travel, or smoking. Initial vital signs and exam were normal. Labs were notable for WBC 14,000 with 5% eosinophils (750/μL) and elevated ESR and CRP. A repeat CT of the chest showed airspace consolidations primarily in a central and peribronchovascular distribution, with differential diagnosis including infection, organizing pneumonia, vasculitis, chronic eosinophilic pneumonia (CEP), and neoplasm. Blood cultures, HIV, 1,3 beta-d-glucan, galactomannan, ANA, p-ANCA, and c-ANCA were unremarkable. For tissue diagnosis, patient underwent video-assisted thoracoscopy with wedge resection, complicated by an apical pneumothorax requiring chest tube placement. Pathology showed numerous eosinophils in alveolar airspaces, consistent with CEP. Patient was started on high dose steroids with clinical improvement. He was discharged home with a chest tube and continued steroid treatment.

IMPACT: In future practice, diagnoses other than infection should be considered earlier in patients with a history of atopy who fail multiple courses of outpatient

antibiotics for presumed pneumonia. Furthermore, CEP can be diagnosed with elevated eosinophil count in broncho-alveolar lavage (BAL) fluid. For a patient with peripheral eosinophilia and symptoms consistent with CEP, BAL is the less invasive and more appropriate first diagnostic test over open lung biopsy.

DISCUSSION: This patient's chronic dyspnea and cough, weight loss, lack of improvement with antibiotics, and unrevealing infectious and rheumatologic workup made CEP and cryptogenic organizing penumonia (COP) leading differential diagnoses. The classic radiographic appearance of eosinophilic pneumonia is peripheral upper-lobe ground glass infiltrates, which is seen in approximately two thirds of patients with this disease. About three quarters of patients have peripheral eosinophilia. While imaging of COP may appear similar to CEP, peripheral eosinophilia is not typically present, and open lung biopsy is required to make the diagnosis. This patient's classic symptoms along with peripheral eosinophilia pointed toward a diagnosis of CEP even in the absence of typical radiographic findings.

CHRONIC LYMPHOCYTIC LEUKEMIA: A RARE CAUSE OF THE PATHOLOGICAL FRACTURE OF THE FEMUR Parita Soni; Anand Rai; Vivek Kumar; Nidhi Aggarwal; Taek Yoon; Yizhak Kupfer. Maimonides Medical Center, Brooklyn, NY. (Control ID #2706750)

LEARNING OBJECTIVE #1: Although bony involvement or pathological fracture is very rare to happen in cases of Chronic Lymphocytic Leukemia (CLL), it can sometimes be the initial presentation of the CLL.

LEARNING OBJECTIVE #2: With this case, we emphasize that all the physicians should evaluate for pathological fracture of long bones in patients with CLL complaining of bone/joint pain.

CASE: An 85-year-old Caucasian female with a history of CLL, atrial fibrillation, congestive heart failure and hypertension, presented to the emergency room with shortness of breath. She was diagnosed with CLL 6-years ago and refused therapy. On presentation her temperature was 101.3 F, HR 130/min, RR 32/min, BP 156/67 mmHg and Spa02 80% on room air which improved minimally on BiPAP. She was intubated, admitted to the MICU and was successfully extubated after 2-days. Laboratory work showed WBCs 107 K/UL, hemoglobin 10.4 gm/dl, platelets 149 K/UL, 2+ smudge cells on peripheral smear. On day 3 of hospitalization, she started complaining of severe left knee pain and denied any trauma or fall. On examination it was warm and extremely tender to touch. Arthorcentesis was performed and septic arthritis was ruled out. X-ray and CT scan showed acute pathological fracture of the left distal femur. She was not an operative candidate and thus was treated conservatively with brace and pain control. Her fracture was stabilized with Extension Lock Splint (ELS).

IMPACT: Review of literature suggests that the pathological fracture in patients with CLL are mostly associated with vertebral compression fractures. To our knowledge, this is the first case of pathological fracture of the femur secondary to CLL.

DISCUSSION: Chronic Lymphocytic Leukemia (CLL) is a lymphoproliferative disorder predominantly diagnosed around the age of 50 years. The presentation varies from totally asymptomatic to the eventual development of anemia, thrombocytopenia and infections due to involvement of lymph nodes, spleen and liver. Bony involvement in leukemia is most commonly associated with acute lymphoblastic or acute myeloblastic leukemia. CLL involving bone leading to the pathological fracture is rare (1). Review of literature suggests that the exact pathophysiology of the pathological fracture in CLL is not known but may be secondary to locally released osteoclast stimulating factors. Many times it is associated with Richter's transformation or multiple myeloma which were absent in our case. Prior reports of pathological fracture associated with CLL involved vertebral compression fractures. To our knowledge, this is the first case of pathological fracture of the femur secondary to CLL. We therefore suggest to evaluate for pathological fracture of long bones in patients with CLL complaining of bone/joint pain. References: Langenberg JC, et al. Pathological fractures in a patient with chronic lymphatic leucaemia without disease progression. BMJ Case Rep. 2015 Feb 25;2015;doi: 10.1136/bcr-2014-208118.

CHRONIC MOTHBALL TOXICITY IN SETTING OF CIRRHOSIS Krupa Parikh[1]; Genevieve Bergeron[2]. [1]Cambridge Health Alliance, Somerville, MA; [2]Cambridge Health Alliance, Cambridge, MA. (Control ID #2707480)

LEARNING OBJECTIVE #1: Recognize constellation of clinical findings to suspect Para-dichlorobenzene (PDCB- Mothball) toxicity.

LEARNING OBJECTIVE #2: To address underlying diseases that may precipitate mothball toxicity.

CASE: A 51 year old female with a history of alcoholic cirrhosis, fatty liver disease, autoimmune hepatitis, active alcohol and tobacco use disorder, and depression initially presented with a one month history of ataxia, weakness, blurry vision, and an extensive hyperpigmented, hyperkeratotic rash. During that hospitalization she was treated for hepatic encephalopathy and discharged home. However, the patient returned 1 month later after a fall and with continued progression of prior symptoms. At that time, patient's family provided collateral about her chronic mothball use. Patient had been sucking on mothballs since she was 8 years old for 30 min every evening; there was no increase in the amount of ingestion. She had no prior history of rash or ataxia. On exam, she was found to have extensive hyperkeratotic, hyperpigmented plaques along bilateral hands, forearms, and distal lower extremities. Neurologic evaluation showed mild wide-based gait and difficulty with memory and cognition. MRI Brain showed was normal with no evidence of leukoencephalopathy. Fundoscopic exam was normal. MELD score was 15. Patient discontinued mothball ingestion. There was resolution of rash within one month and normal gait after three months after cessation of mothball ingestion. After 5 months MELD score decreased to 12.

IMPACT: Chronic PDCB toxicity causes reversible neurotoxicity and rash, with studies reporting onset of symptoms 2 months to 6 years after exposure. This patient's 43-year ingestion history is longer than what has previously been reported. The progression of her cirrhosis may have caused her symptoms. PDCB is metabolized by the liver, and cirrhosis decreases the metabolism of PDCB. The relationship between progressive liver disease and mothball toxicity is a novel addition to the literature.

DISCUSSION: Mothballs are a commonly used fumigant and these days are composed of PDCB. Toxicity is usually due to occupational exposure, and toxicity from ingestion is rare. Chronic toxicity affects liver, skin, central and peripheral nervous system. The reversible neurotoxicity from mothball intoxication has been well documented; gait instability is present in almost every case. A hyperkeratotic rash is also a characteristic of chronic toxicity. There are no studies that show how pre-existing liver disease affects PDCB metabolism. Conversely, there are no human studies of how PDCB affects progression of liver disease. Murine models show PDCB causes increased liver weights and centrilobular necrosis. Progressive hepatic disease may precipitate PDCB toxicity. We advocate for further studies to understand the relationship between underlying liver disease and PDCB accumulation.

CLASSICAL HODGKIN'S LYMPHOMA PRESENTING AS ACUTE CHOLANGITIS Janice Jang. New York University School of Medicine, New York, NY. (Control ID #2691417)

LEARNING OBJECTIVE #1: Recognize an atypical presentation of Hodgkin's lymphoma.

CASE: A 54-year-old Hispanic woman presented with 5 days of subjective fevers, jaundice, nausea, vomiting, and right-sided abdominal pain. On presentation, she was febrile with borderline hypotension and tachycardia, abdominal tenderness, and laboratory values notable for leukopenia and transaminitis with direct hyperbilirubinemia. The patient received vancomycin, cefepime, metronizadole, and intravenous fluids per sepsis protocol. She was intubated for an emergent ERCP, which revealed a possible common bile duct stricture for which a stent and cholecystectomy drain were placed. Bile cultures grew *Staphylococcus epidermidis*, *Enterococcus faecalis* and candida, while blood cultures remained negative. Despite antibiotics, the patient remained persistently febrile with worsening hyperbilirubinemia and altered mental status. MRI of the abdomen revealed numerous hyperintense lesions of the liver and MRCP confirmed multiple hepatic lesions. A liver biopsy was performed with pathology revealing Epstein-Barr virus positive mixed inflammatory cells with immunophenotype studies consistent with a diagnosis of classical Hodgkin's lymphoma (HL). She received one dose of doxorubicin and gemcitabine, however, she was unable to tolerate further chemotherapy and died within days after treatment.

IMPACT: This case highlights the importance of maintaining a broad differential diagnosis in a patient with presumed cholangitis and no response to antibiotics. It is important to consider cholangitis as an atypical presentation of HL in order to prevent delays in treatment and diagnosis, as HL has an excellent prognosis when treated early.

DISCUSSION: With an incidence of 2.6 per 100,000 people per year in the United States, Hodgkin's lymphoma is a rare disease. It typically presents with constitutional "B symptoms" such as fevers, night sweats, weight loss, and fatigue, in addition to painless lymphadenopathy. Though liver infiltration is frequently seen in patients with advanced HL, initial presentation with acute cholangitis leading to a diagnosis of HL is rarely seen. As such, the patient's hepatic lesions on the MRI were thought to be most likely foci of abscesses, given her clinical context of septic cholangitis and it was only after the pathology report was released that a hematological malignancy was considered as the underlying illness. Our patient's clinical presentation is attributable to lymphomatous cells infiltrating the liver, causing bile duct necrosis, obstruction and ultimately cholangitis.

CLINICAL DILEMMA IN SLE: MANAGING DIFFUSE ALVEOLAR HEMORRHAGE IN THE SETTING OF DEEP VENOUS THROMBOSIS. Anuhya Kommalapati[1]; Allan-Louie Cruz[2]; Joseph Catlett[2]. [1]Washington Hospital Center, Silver Spring, MD; [2]Washington Hospital Center, Washington, DC. (Control ID #2706551)

LEARNING OBJECTIVE #1: Managing a patient with systemic lupus erythematosus (SLE) and acute deep venous thrombosis (DVT) presenting with hemoptysis while on rivaroxaban.

CASE: We describe a case of a 28-year-old African American male with past medical history of SLE complicated by acute non-provocative lower extremity DVT. He was started on Rivaroxaban 15 mg twice daily. Four days after initiation of Rivaroxaban, the patient presented to our emergency department with the complaints of shortness of breath, cough with bloody sputum. His vital signs on presentation: Temperature: 37 C, Blood Pressure: 118/78 mm Hg, heart rate: 68/min, saturating 92% on ambient air. Physical examination is remarkable for bloody sputum on coughing and tender right lower extremity. Laboratory values on presentation were: hemoglobin 11.4 g/dL, hematocrit 35.5%, WBC 5.9x10^3/mcl, platelet count 350x10^3/mcl, PT 18.7 sec, INR 1.6, PTT 24 sec, antinuclear antibody speckled pattern 1:640, Anti-smith >8 Anti-dsDNA >1:1280 (positive), C4 7 mg/dL, C3 66 mg/dL. Urinalysis showed moderate proteinuria with 1.9gm/24 h. Liver function and basic metabolic panel were within normal limits. Lupus anticoagulant, anticardiolipin antibody and beta-2 glycoprotein 1 IgG and IgM antibodies were negative. Diffuse alveolar hemorrhage (DAH) was diagnosed on bronchoscopy. We had a dilemma about managing the patient's DAH in the setting of DVT. We discontinued rivaroxaban and started the patient on steroids. A retrievable inferior vena cava (IVC) filter was placed. Within five days, the patient recovered from hemoptysis. Eventually steroids were tapered and the patient was discharged home on Mycophenolate mofetil and Enoxaparin. On discharge, emoval of IVC filter was scheduled. Long-term anticoagulation using enoxaparin was recommended.

IMPACT: DAH in SLE is rare but potentially lethal complication. In a patient whose disease is complicated by concomitant DAH and DVT, IVC filter placement is an option and anticoagulation should be initiated as soon as bleeding risk is subsided.

DISCUSSION: Diffuse alveolar hemorrhage is a life threatening clinical manifestation of SLE. It is rare and has been reported in 2–5% of patients with SLE. It is more associated with anti-phospholipid syndrome, and lupus nephritis. Capillary inflammation and subsequent necrosis, and small vessel vasculitis are the main causes of bleeding. Control of SLE using immunosuppressive therapy is the mainstay of treatment. Beside respiratory complications, mortality was predominantly due to thrombotic disease. Thus, it is crucial to initiate anticoagulation as soon as possible especially in our patient who recently had DVT. Because of its rarity, data are lacking on optimal duration of anticoagulation. However, intuitively, long-term anticoagulation will be considered for our patient.

CLINICAL PRESENTATION IS EVERYTHING:CHURG- STRAUSS VASCULITIS (CSV) WITH LIFE THREATENING LIVER HEMORRHAGE. Steven Smith[2]; James Sabetta[2]; Irem Nasir[1]. [1]Greenwich Hospital, Greenwich, NY; [2]Greenwich Hospital, Greenwich, CT. (Control ID #2701750)

LEARNING OBJECTIVE #1: To recognize that liver hemorrhage can develop in CSV.

LEARNING OBJECTIVE #2: To diagnose CSV without a tissue biopsy in emergent cases.

CASE: 60y old female with chronic sinusitis and asthma for 5 years presented with acute L foot drop x1day.Despite multiple courses of steroids and antibiotics,she had multiple sinusitis flares.A sinus biopsy few years prior had severe eosinophilia and inflammatory polyps.She denied fevers,chills,chest pain,shortness of breath,headaches,blurry vision,slurred speech.She felt her abdomen distended,but had no nausea,vomiting,diarrhea,abdominal pain,melena,or hematemesis.She denied coughing,weight loss,and night sweats.There were no sick contacts,recent travel history,or family history of autoimmunity.Vital signs-97.2 F,BP126/

76,HR120,RR14,100% RA.Lungs were clear.Abdomen was soft.No rashes noted.She had 0/5 dorsiflexion of L foot.No other focal deficits.On labs,WBC 27(42% eosinophils),TB0.4, ALT212, AST282, INR1, Cr0.8, and hemoglobin(hgb)9.4,which had decreased from 12.9, 3 days prior.CRP was high at 11.Over the years,her Anti-myeloperoxidase (MPO)Ab had been negative,but now had a high titer of >1:8.CT head was negative.CT chest abdomen pelvis revealed sub-capsular hepatic hematoma with peritoneal hemorrhagic fluid.She was admitted to the ICU for aggressive IVF and stat blood transfusion.A diagnosis of CSV was made and high dose IV solumedrol started.Hgb stabilized at 9–10 within 24 hours.Echo revealed a normal EF75%.MRI/MRA brain had no acute ischemia and no vasculitis.EMG had reduced activations of L peroneal nerve consistent with motor neuropathy.A 6 month course of prednisone with cyclophosphamide was initiated.L foot drop improved.On follow up,WBC normalized to 7,14% eosinophils.Both MPO titer and CRP declined to 0.7 and 0.3,respectively

IMPACT: CSV usually has a good prognosis.It can rarely have a life threatening complication of liver hemorrhage that needs to be managed emergently.IV steroids can be instituted without a tissue biopsy with good effect.

DISCUSSION: CSV,also known as eosinophilic granulomatosis with polyangiitis,is a diffuse vasculitis affecting small and medium sized blood vessels.CSV can affect any organ including lung,kidney,GI tract,brain,nerves,and rarely liver.There is only one other case report of CSV related hepatic hemorrhage.It was fatal.Anti-MPO Ab is associated with 40%CSV cases and its pathogenic role is not well understood.Clinicians should know that CSV can have severe complications including liver hemorrhage and must maintain a low threshold to evaluate acute anemia.There are several CSV diagnostic criteria and is suspected based on clinical findings.There are no lab tests that are specific.Eosinophilia is characteristic.Our patient met 4/6 ACR diagnostic criteria (asthma,eosinophilia >10%,mononeuropathy,and paranasal sinus abnormality).Though a tissue biopsy is encouraged,emergent immunosuppressive treatment can be instituted without a biopsy in life threatening cases.As in our case, steroids can be life saving.

CLONIDINE OVERDOSE IN ADULT. zannat kawsari; Alejandro Lemor; Punya Dahal. Mount sinai St. Luke's/West, NY, NY. (Control ID #2707476)

LEARNING OBJECTIVE #1: Suspect clonidine overdose when a patient displays altered mental status along with other signs similar to opioid intoxication.

LEARNING OBJECTIVE #2: Clonidine intoxication is a serious complication and resembles other causes of overdoses.

CASE: A 38 year-old male with a past medical history of hypertension, ADHD, bipolar disorder and major depression brought himself to the ER stating he overdosed on numerous clonidine pills. Physical examination was remarkable for a lethargic male with Glasgow Coma Scale (GCS) of 5, hypotension (60/40 mmHg), bradycardia (70 bpm), bradypnea (11 breaths/min), and pinpoint pupils. He was intubated for airway protection and given three doses of Naloxone 2 mg and activated charcoal for respiratory depression. Laboratory analysis included finger stick glucose of 90 mg/dL, arterial blood gas showing metabolic acidosis (pH 7.28, PCO2 19, HCO3 14), lactic acid of 9.5 mmol/L and urine toxicology positive for cocaine. EKG confirmed sinus bradycardia (48 bpm) and early repolarization with no ST wave changes. He was admitted to the Intensive Care Unit (ICU) for further monitoring and management. Intubation was maintained for 12 h; blood pressure and heart rate were closely monitored. He was started on IV fluids, but required 4 h of dopamine infusion, as his heart rate was between 46–52 bpm and systolic blood pressure was <100 mmHg. He initially had a low urine output (600 cc in first 12 h), which improved with fluids. After 24 h in the ICU, his mental status improved, GCS recovered to 15, and his lactate and vital signs normalized.

IMPACT: This case made us think that clonidine overdose can be difficult to distinguish from other opioid intoxication and should always be suspected in a suicidal attempt of a patient with history of hypertension.

DISCUSSION: Clonidine is an alpha-2 adrenergic agonist that is used in the treatment of hypertension. Clonidine overdose presents as a classic "toxidrome" with symptoms of decreased mentation, bradycardia, hypotension, respiratory depression and miosis. In addition, altered mental status is seen in these patients. Other cases include miosis, hyporeflexia and hypotonia without mental status changes. These symptoms are difficult to differentiate from opioid intoxication. Our patient presented with depressed mental status alongside the classic toxidrome symptoms. The treatment of clonidine overdose is supportive with particular care of airway, breathing, and circulation. Naloxone can be used in cases of uncertainty, which has been shown to reverse the symptoms. Clonidine can exacerbate the lethargy or coma following alcohol, barbiturates, and other sedative hypnotics ingestion thus it is important to check urine toxicology level.

CLOZAPINE INDUCED MYOCARDITIS: A CASE REPORT

Tanuka Datta; Allen J. Solomon. George Washington University Hospital, Washington, DC. (Control ID #2701369)

LEARNING OBJECTIVE #1: Patients experiencing chest pain while taking Clozapine should be evaluated for potentially fatal cardiovascular side effects of this drug. Mortality rates can approach 25%.

LEARNING OBJECTIVE #2: Myocarditis should be considered for patients presenting as STEMIs in the setting of antipsychotic medication use. ECHO and cardiac angiography are necessary to confirm diagnosis. Beta blockers and ACE inhibitors are associated with improved outcomes.

CASE: A 40 year old Caucasian female with history of schizophrenia, being cared for on the psychiatric unit, was undergoing treatment with Clozapine. 10 days into treatment, she started to experience chest pain, nausea and vomitting. EKG demonstrated new marked ST segment elevations. Labs revealed elevated troponin and CKMB. She was transferred to our cardiac service. Vital signs were stable and physical examination unremarkable. Additional labs showed elevated BNP, ESR and CRP. No upper respiratory viral infection was detected on PCR and chest-xray was unremarkable. Left heart catheterization showed no occlusive coronary artery disease, but revealed reduced left ventricular ejection fraction. Echocardiogram (ECHO) confirmed reduced ejection fraction as well as moderate global hypokinesis. Diagnosis of myocarditis was made and Clozapine stopped. Metoprolol and Lisinopril therapy was initiated. Subsequent ECHO in 4 days revealed fully recovered left ventricular function and no wall motion abnormalities. Cardiac medications were stopped and the patient was transferred back to the psychiatry unit in stable condition.

IMPACT: Association of Clozapine with myocarditis is not well documented in cardiology literature. This case changed our thinking to include a broader differential of drug induced myocarditis when evaluating chest pain. A high rate of mortality is associated with failure to discontinue the medication thus it is important for physicians caring for psychiatric patients to be aware of the presentation of symptoms, diagnostic findings and management of Clozapine induced myocarditis.

DISCUSSION: Our case report highlights a rare yet potentially fatal cardiovascular complication of Clozapine. All chest discomfort while on this medication should be taken seriously. Given our patient's findings of new EKG changes at the time of chest pain, elevation of cardiac markers, and an echocardiogram to support decreased cardiac function in the absence of coronary artery disease confirmed on cardiac catheterization, an etiology of myocarditis was correctly suspected. Other etiologies of myocarditis including viral and autoimmune were less likely. Immediate discontinuation of Clozapine and intiation of cardiac medical therapy during the acute phase of reduced systolic function allowed this patient the best chance for cardiac recovery. The mechanism of Clozapine induced myocarditis has not been well established. Theories encompass everything from geographical preference based on ozone concentrations to genetic predisposition, Ig-E pathways, and elemental deficiencies.

CO-INCIDENCE OF WHEEZE AND MONONEURITIS MULTIPLEX SHOULD NOT PERPLEX Stefanie D. Wade[3]; Erin Little[1]; Jameel Uddeen[2]. [1]Univeristy of Connecticut, Hartford, CT; [2]University of Connecticut, Farmington, CT; [3]University of Connecticut Health Center, West Hartford, CT. (Control ID #2704102)

LEARNING OBJECTIVE #1: Recognize the clinical presentation of eosinophilic granulomatosis with polyangiitis (EGPA)

LEARNING OBJECTIVE #2: Distinguish EGPA from other forms of adult asthma by identifying mononeuritis multiplex (MNM) as a hallmark feature

CASE: A 55-year-old former smoking male with chronic allergic rhinitis and recently diagnosed asthma presented with weakness and paresthesias of his feet and left hand with associated weight loss, fatigue, post-nasal drip, wheeze and cough. He denied rash, hemoptysis, illicit drug abuse, NSAID/ASA use, pets, recent travel, or occupational risks. On presentation pulse was 120 beats/min, respirations 20/min with oxygen sat 93% on room air. Exam showed middle ear effusions, posterior oropharyngeal erythema, sinus tenderness, and expiratory wheeze. Neurologic exam revealed left abductor pollicis brevis and first dorsal interosseous weakness, left foot dorsiflexion motor power 4/5, absent left ankle reflex, and diminished sensation of right hand median distribution, entire left hand, and feet. Laboratory data revealed leukocytosis with 31% eosinophils and absolute eosinophil count of 10.5×10^9/L. Perinuclear antineutrophil anticytoplasmic antibody (P-ANCA) and myeloperoxidase antibody (MPO) were positive. Chest CT scan showed left lower lobe consolidation or infiltrate. On hospital day 2, lower extremity palpable purpura developed and was biopsied revealing leukocytoclastic vasculitis with intra and perivascular inflammatory infiltrates with eosinophils. A diagnosis of EGPA was made. Treatment with methylprednisolone 500 mg daily for 3 days improved strength and paresthesias.

IMPACT: In patients with adult-onset asthma who develop a MNM a diagnosis of EGPA should be considered.

DISCUSSION: EGPA, (formerly Churg-Strauss,) is an eosinophil-rich, necrotizing vasculitis involving small and medium sized vessels affecting many organs. EGPA presents in three step-wise phases: a prodromal phase characterized by atopy, allergic rhinitis and asthma; a remitting eosinophilic phase with peripheral and tissue eosinophilia; and a third phase involving a life-threatening vasculitis that can involve skin, nervous, respiratory, cardiac, and gastrointestinal systems. Hallmark features such as lung involvement and MNM are present in 90 and 75 percent of cases respectively. MNM manifests as motor and sensory deficits in two or more nerve areas and results from inflammation of peripheral nerve vasculature. Diagnosis of EGPA requires asthma, peripheral eosinophilia, and proof of vasculitis. ANCA positivity is seen in 40–60% of cases. Radiographic or clinical surrogates for vasculitis are acceptable; however, histopathology should be obtained if possible which may not always show necrotizing vasculitis or granulomas. Multiple phases of disease and absence of classic features can lead to delayed diagnosis. Patients with poor prognostic features (high five factor score) benefit from immunosuppressive therapy with rituximab or mepolizumab to induce remission and decrease steroid dependence.

COINFECTION WITH TWO DIFFERENT MALARIA SPECIES Edmond Fomunung. UT Southwestern Medical School, Dallas, TX. (Control ID #2687877)

LEARNING OBJECTIVE #1: Recognize the importance of diagnosing mixed species malaria infections

LEARNING OBJECTIVE #2: Assess the implications of malaria infections for patients outside malaria-endemic areas

CASE: A 21-year-old man presented with cyclical fevers, weakness and headache 10 days after returning from Liberia. He was born in Liberia and moved to the Unites States at the age of 12. He travelled to Liberia where he spent 1 week and soon after his return developed objective fevers up to 103 F at home. He presented to an outside hospital where signet ring cells where noted on peripheral smear and he was diagnosed with *plasmodium falciparum*, then transferred to our hospital. On exam, he was awake and alert. Sclerae were anicteric and abdomen was non-tender. His complete blood count was significant for a Hg of 15.3 and platelet count of 51. Serial peripheral smear testing was significant for the presence of two malaria species, *plasmodium falciparum* and *plasmodium ovale*.

IMPACT: The presence of fever in a patient returning from a malaria endemic area should always raise suspicion for malaria and prompt diagnostic testing. It is important, as clinicians, to recognize that coinfection with 2 species, while uncommon, remains possible and will change management. In our patient, serial testing revealed the presence of an additional malaria species beyond what had been initially diagnosed at an outside hospital.

DISCUSSION: Malaria is an acute febrile illness and remains the most common parasitic disease in the world. The populations at highest risk for severe malaria include children under the age of 5, pregnant women and travelers to endemic areas, as with our patient. Severe malaria is defined as the presence of end organ dysfunction and/or high levels of parasitemia. According to the WHO, approximately 3.2 billion people - about half of the world's population - is at risk of malaria. It is transmitted by the bite of the female Anopheles mosquito and caused by the parasite plasmodium of which there are several species, with *plasmodium falciparum* responsible for the most severe disease. Sub Saharan Africa, where *plasmodium falciparum* is most prevalent, bears the brunt of cases and death. *Plasmodium ovale* is notable in that it includes a dormant stage in the liver that can reactivate several years later and cause relapse of infection. With ongoing globalization, a particular group of note is travelers to malaria endemic areas who have never been exposed before, or those returning to these areas after prolonged absence, as they are at higher risk of severe malaria. Coinfection with two different plasmodium species is reported in 5-7% of all cases of malaria. It is important to realize this early as treatment directed at only one species can allow proliferation of the second species. In the case of *plasmodium ovale*, it can remain dormant in the liver for several years; this can cause persistent parasitemia which can later lead to severe malaria. Diagnostic testing and adequate treatment is thus important.

COMMON ABDOMINAL PAIN DUE TO AN UNCOMMON TUMOR.

Takuji Ueno[1]; KAZUKI SHIMIZU[1]; Kaname Uno[1]; Syo Tano[1]; Mayu Ukai[1]; Yasuyuki Kishigami[1]; Hidenori Oguchi[1]; Mitsunori Iwase[2]. [1]TOYOTA Memorial Hospital, Toyota, Japan; [2]TOYOTA Memorial Hostital, Toyota, Japan. (Control ID #2707229)

LEARNING OBJECTIVE #1: Don't you overlook young woman with ascites? Check the cause of the ascites.

LEARNING OBJECTIVE #2: Ultrasonography can help you find the malignancy.

CASE: A 42-year-old woman was admitted to our hospital complaining of lower abdominal pain lasting 3 weeks. She was followed by her previous doctor and refered to our hospital because of continuous symptoms. Her menstrual cycle was regular and she had no irregular genital bleeding. She had neither history of blood transfusion nor any abuse of drug as well as alcohol. She took no medication at all. She had no family history of cancer. She had neither fever nor weight loss through this period. Her vital signs were completely normal. She felt discomfort and slight pain in her lower abdomen, but did not have tenderness point. Ultrasonography revealed a little ascites. In adition, there was no abnormal laboratory findings including urine human chorionic gonadotropin (hCG). Three weeks later, her symptoms had not get improved. She still had no fever and no tenderness in her abdomen. However, abdominal palpation indicated increased ascites. Ultrasonography showed greater ascites with diffused high echoic area, omentum enlargement and dullness at liver surface. Laboratory test was normal, but some tumor markers were elevated. Computed Tomography (CT) showed ascites and swelling omentum. Gastrointestinal and colorectal endoscopy revealed no findings. We collected the ascites by echo guided abdominocentesis and cytodiagnosis was negative. We suspected peritonitis carcinomatosa and performed a diagnostic laparoscopy. Mucous tumors were scattered on ovary, appendix, peritoneum, and omentum. We removed right ovary and its pathological diagnosis was pseudomyxoma peritonei. She is going to be treated with debulking surgery and hyperthermic intraoperative intraperitoneal chemotherapy (HIPEC).

IMPACT: It is important to suspect common disease, but we should keep the possibility of rare diseases on mind. Omentum enlargement described in ultrasonography help us suspect of peritonitis carcinomatosa.

DISCUSSION: Pseudomyxoma peritonei is mucus-producing tumor originating from appendix or ovary and distinctly rare occurring 1 in 1,000,000 people. That has a poor prognosis because its easy to metastasize broadly in abdominal cavity, so early diagnosis is really important. But it is not easy due to nonspecific symptoms. In this case, there were wide variety of differential diagnoses including gastrointestinal and gynecological diseases. The simple ultrasonography may lead us to suspect pseudomyxoma peritonei or other malignancies.

CONFUSING-CALCEMIA: REFRACTORY HYPOCALCEMIA AS ONE OF THE MANY GUISES OF PERNICIOUS ANEMIA

Mary S. Vamenta; Starr Steinhilber. University of Alabama at Birmingham, Birmingham, AL. (Control ID #2705628)

LEARNING OBJECTIVE #1: List causes of hypocalcemia

LEARNING OBJECTIVE #2: Formulate a work up for refractory hypocalcemia

CASE: A 44-year old Caucasian woman with Graves' disease presents with a one year history of refractory hypocalcemia despite oral supplementation following a total thyroidectomy with inadvertent parathyroidectomy. Symptoms include perioral and acral numbness and tingling, tetany of her upper extremities, and new seizures. High dose calcium supplementation yields some resolution of symptoms with prompt readmission. Vitals, physical examination, and general labs are normal except for a positive Trousseau and Chvostek sign and low serum and ionized calcium. Home medications of calcitriol 1 mcg TID and teriparatide daily are continued. Oral calcium carbonate 1800 mg TID is begun and leads to modest improvement in calcium levels. Due to medication compliance, a concern for malabsorption is raised. EGD with duodenal biopsies is negative for any abnormality and anti-tissue transglutaminase antibodies and H. pylori stool antigen are negative. She is iron and vitamin B12 deficient, anti-parietal cell antibody returns elevated at 73.4 (normal <20), intrinsic factor antibody is positive, and gastrin levels are elevated to 1264 pg/mL (normal 13–115 pg/mL). These findings are consistent with pernicious anemia (PA).

IMPACT: There are many case reports on refractory hypocalcemia secondary to a multitude of drugs or diseases; however, little information exists regarding appropriate work up. Based on our literature search, we formulated an approach to refractory hypocalcemia that others can utilize and expand.

DISCUSSION: Complications of total thyroidectomy are iatrogenic parathyroidectomy and transient post-operative hypocalcemia, but oral calcium supplementation often resolves symptoms. Work up of refractory hypocalcemia should be considered in symptomatic patients on appropriate therapy and should begin with medications that affect vitamin D and stomach pH. It is well documented that efavirenz and anti-epileptic drugs can metabolize vitamin D through induction of the P450 system predisposing patients to refractory hypocalcemia. Other uncommon drugs such as foscarnet are powerful chelators of divalent cations (Ca and Mg). More commonly, H^2 blockers and proton pump inhibitors decrease calcium absorption by decreasing acidity in the stomach. When investigation into iatrogenic causes is insufficient, malabsorption must be considered. Bypassing the duodenum and proximal jejunum in Roux-en-Y surgery can cause a 10% rate of calcium deficiency and 51% rate of vitamin D deficiency since 80% of vitamin D absorption occurs at these sites. Mucosal damage in Celiac sprue and Crohn's disease, achlorhydria due to PA, and fat malabsorption are known culprits of calcium and vitamin D malabsorption and must be recognized also. From our patient experience, we propose 1) reviewing all medications affecting vitamin D, calcium, or stomach acidity and 2) considering malabsorption through further history, laboratory studies, and imaging.

CONGENITAL UNILATERAL PULMONARY VEIN ATRESIA IN A YOUNG ADULT

Abhimanyu Chandel; Amanda Duttlinger. Walter Reed National Military Medical Center, Bethesda, MD. (Control ID #2704183)

LEARNING OBJECTIVE #1: Recognize the expected radiographic findings of pulmonary vein atresia.

LEARNING OBJECTIVE #2: Identify the complications and natural history of unilateral pulmonary vein atresia.

CASE: An 18-year-old highly active student at an elite U.S. military academy with a history of prior pneumonia as a child presented to his primary physician with complaints of persistent fevers and productive cough despite multiple courses of outpatient antibiotics. Chest radiographs demonstrated multifocal pneumonia, a shift of the mediastinum to the right with associated right lung volume loss, hyperinflation of the left lung, and prominence of the left pulmonary artery. Subsequent CT scan with IV contrast revealed a smooth left atrium where the right pulmonary veins should enter, right lung hypoplasia,

unilateral right pulmonary edema, and gradual tapering of the right pulmonary arterial system. Dilation of bronchial arteries on the right with a conglomeration of varices in the posterior mediastinum was also present. Based on these findings, unilateral pulmonary vein atresia was suspected and the patient was referred for echocardiogram, pulmonary angiography, and right heart catheterization to further delineate the anatomy and to evaluate for associated congenital cardiac defects. Echocardiogram revealed normal biventricular function without evidence of shunt or other congenital defect. Invasive angiography demonstrated normal position of the right superior and right inferior pulmonary veins adjacent to the left atrium, but without luminal communication with the left atrium. The right lung drained via collateral vessels to the right pulmonary artery; with associated retrograde flow into the main pulmonary artery. Right heart catheterization was remarkable for lack of pulmonary hypertension or shunt. These findings were consistent with the diagnosis of congenital unilateral right pulmonary vein atresia. Upon follow up, the patient resumed physical activity and experienced excellent clinical recovery from the pneumonia which had prompted the initial diagnostic workup. His underdeveloped right pulmonary venous system was deemed to be unsuitable for surgical intervention. Based on current normal pulmonary artery pressures, the patient is felt to be low risk for progression to pulmonary hypertension, but will be followed annually with echocardiography.

IMPACT: This case illustrates a very uncommon cause of recurrent and persistent pneumonia in a young adult caused by congenital disease.

DISCUSSION: In a recent review of the literature, less than 50 cases of isolated pulmonary vein atresia had been reported, with only a few adult cases having been described. Associated congenital heart defects occur in about 1/3 of patients. Most commonly, the condition is identified following recurrent infections in the affected lung. Hemoptysis or hematemesis often occurs due to systemic collateral supply to the affected lung. Pneumonectomy should be considered if pulmonary hypertension or severe recurrent pulmonary infections develop.

CORONARY ARTERY ANEURYSM PRESENTING AS NON-ST ELEVATION MYOCARDIAL INFARCTION Murtaza A. Sundhu[1]; Mehmet Yildiz[1]; Gaurav Kistangari[2, 1]; Emad Nukta[3]. [1]Fairview Hospital/Cleveland Clinic Hospital, Fairview park, OH; [2]Medicine, Cleveland, OH; [3]Fairview Hospital/Cleveland Clinic, Cleveland, OH. (Control ID #2702174)

LEARNING OBJECTIVE #1: Identifying coronary artery aneurysm as a cause of non-ST elevation myocardial infarction.

LEARNING OBJECTIVE #2: Learning the differential diagnoses, management and complications of coronary artery aneurysms.

CASE: 52 year old man with past medical history of migraine, is an active smoker with 40 pack years smoking history and a recovering drug addict (used cocaine, heroin and prescription opioids) who has been sober for 5 years, presented to the hospital with typical chest pain which was sub-sternal in location that radiated to the jaw and left arm and was associated with nausea. Complete blood count and comprehensive metabolic profile were within normal limits. The electrocardiogram showed ST depressions in leads III and AVF. Initial troponin was negative. He was admitted to rule out acute coronary syndrome. Subsequent troponins were elevated and he was diagnosed as non-ST elevation myocardial infarction. He was started on subcutaneous enoxaparin and transferred to coronary care unit. The following day he underwent cardiac catheterization that showed dilated ectatic coronary arteries with aneurysmal dilatation, sluggish flow and several clots especially in left circumflex artery. No intervention was done and he was anticoagulated with intravenous heparin infusion until he was therapeutic with coumadin. His C-reactive protein, sedimentation rate and autoimmune panel were negative as well. Transthoracic echocardiogram was done showing ejection fraction of 35% with anterior and inferoseptal wall dyskinesia. There was no valvular abnormality. He was discharged on aspirin, beta-blocker, angiotensin converting enzyme inhibitor and statin for the medical management of reduced ejection fraction. Coumadin was given for the coronary artery aneurysms.

IMPACT: We do not see coronary artery aneurysm in internal medicine and this case stimulated me to read more about differential diagnosis, management and complication of the coronary artery aneurysms (CAA). There is not enough evidence on the management of CAA and hence cases with CAA should be reported so that medical community can understand more about the disease.

DISCUSSION: Coronary Artery aneurysms (CAA) are rare in general population. The most common causes of CAA include inflammatory disorders such as Kawasaki disease in children, atherosclerosis and cocaine abuse in adults. Our patient had CAA most likely secondary to a combination of cocaine abuse and smoking history and presented with acute myocardial infarction to the hospital. Treatment of CAA is not established; due to the rarity of the condition there is a lack of randomized controlled clinical trials to guide treatment. Surgery or covered stent is used when there is stenosis associated with the aneurysms. For non-obstructing aneurysms, however, medical management alone is appropriate. Untreated CAA even without stenosis can be complicated by arrhythmias, myocardial infarction or sudden death which is most likely from the thrombus formation and embolization due to sluggish blood flow.

CORTISOL SUPPRESSION OF CALCIUM ABSORPTION IS IMPORTANT Brian C. Adams. Virginia Commonwealth University Health System, Richmond, VA. (Control ID #2694195)

LEARNING OBJECTIVE #1: Recognize the clinical presentation of adrenal insufficiency in a person taking oral calcium.

CASE: A 68-year-old with a history of prostate cancer with extensive bony metastases, chronic kidney disease and heart failure presented to clinic with a chief complaint of fatigue and dizziness. He noted vague abdominal pain as well. He was discharged 19 days prior, after presentation with vague abdominal complaints. He was found to have fluid responsive hypotension, and discharged home with a diagnosis of gastroenteritis. While he previously performed all activities of daily living, patient stated he had not yet regained strength after discharge. Multiple falls after discharge were noted in an interval clinic note - found to be orthostatic so anti-hypertensives were de-escalated. His medications included Calcium-Vitamin D 500 mg-200 IU PO BID started the year before, and his last trial of chemotherapy was Abiraterone 1 g daily and Prednisone 5 mg BID which was started the year before and discontinued 4 days before initial hospitalization. In clinic he was found to be hypotensive with a blood pressure of 85/58 mmHg and heart rate of 43 bpm, with orthostasis on standing. Pertinent labs included sodium 136 mmol/L, potassium 5.2 mmol/L and calcium 11.1 mg/dL (most recent albumin 3.4 g/dL, and previous calcium level of 9.4 mg/dL at discharge) and a fall in estimated GFR from 29 to 18 mL/min over 19 days from discharge. The patient was admitted to the Palliative Care service for supportive care. His exam was consistent with consumptive disease and otherwise non-specific. He was given an IV fluid bolus of 1 L normal saline, followed by a rate of 50 cc/hr normal saline. His workup consisted only of a cortisol stimulation test, with a cortisol level of

1.4ug/dL at 0 min and 8.4ug/dL at 60 min post-administration of 0.25 mg cosyntropin IV - which confirmed adrenal insufficiency. Daily steroids were started. Blood pressure was 137/55 mmHg Day 1 of steroids, with further elevation (160/77 mmHg) on Day 2. Concurrently, his calcium level dropped to 9.5 mg/dL Day 2 of steroids. He was discharged with PO steroids and oral calcium was discontinued. At follow-up three days later his blood pressure was 142/66 mmHg, heart rate was 78 bpm, and calcium level was 8.5 mg/dL.

IMPACT: This case changed my thinking regarding the physiology of cortisol. A lesser known physiologic effect of cortisol is its role to suppress calcium absorption from the gut. The simultaneous abrupt withdrawal of steroid tone and ongoing delivery of calcium to the gut led directly to a reversible hypercalcemia.

DISCUSSION: The takeaway from the above case is to consider adrenal insufficiency as a potential cause of hypercalcemia (especially in the setting of oral calcium supplementation.) The current clinical algorithms for hypercalcemia do not include cortisol stimulation testing, however this test should be considered given the high incidence and easy reversibility of adrenal insufficiency.

CORYNEBACTERIA KROPPENSTEDTII: A NOVEL CULPRIT IN RECURRENT BREAST ABSCESSES Tolulope Ogriki; Jignesh Patel; Nidhi Saraiya. Montefiore Medical Center, Bronx, NY. (Control ID #2706064)

LEARNING OBJECTIVE #1: Recognize the clinical significance of *Corynebacterium kroppenstedtii* in breast infections

CASE: A 34 year old obese woman with prolactinoma presented with four days of chills and severe throbbing pain in her right breast. Her temperature was 100.2 °F and pulse was 98 beats per minute. Examination was unremarkable except for right breast peau d'orange appearance, erythema, tenderness and induration. She had leukocytosis of 14,300 cells/μL and sedimentation rate of 57 mm/h. She had been admitted twice for right breast abscess in the prior four weeks and had undergone needle aspiration; cultures grew *Corynebacterium spp*. She received doxycycline for 17 days in total. In this hospitalization, ultrasound showed a multi-loculated abscess and a peri-areolar collection. The abscess was drained and she was started on vancomycin and ampicillin-sulbactam. Fluid cultures grew *Corynebacterium spp*, further speciated to *C. kroppenstedtii*. Six days later, she developed a fever, after being afebrile for days, plus worsening leukocytosis and recurrent breast discharge. Ultrasound revealed a new abscess. Linezolid was initiated after a repeat drainage procedure. She then remained afebrile with decreasing leukocytosis and sedimentation rate.

IMPACT: When breast infections are recurrent, it is critical to have a high index of suspicion for *C. kroppenstedtii*. The lipid-rich breast tissue favors its growth and makes eradication difficult since many commonly used antibiotics are not lipophilic. Selecting a lipophilic antibiotic, such as linezolid, for *C. kroppenstedtii* breast infection can spare the frustration that may be associated with multiple antibiotics, drainage procedures and hospitalizations.

DISCUSSION: *Corynebacterium* species are gram positive, catalase positive bacilli which are usually *considered* contaminants. *C. kroppenstedtii* has emerged a pathogen in cases of granulomatous mastitis and breast abscess likely because of its lipophilic properties with tissue tropism for lipid-rich mammary glands. In the past, identification of this organism was laborious, but newer technologies such as gene sequencing and MALDI-TOF MS has made the diagnosis of *C.kroppenstedtii* easier. Breast infections caused by this organism require prolonged courses of antibiotics, with or without surgery, before cure can be achieved. Of note, a few cases of recurrent breast abscess in patients with prolactinoma have been reported. The most commonly used antimicrobials have been amoxicillin, amoxicillin-clavulanate, cefuroxime, ciprofloxacin, and doxycycline. Of the two main *C. kroppenstedtii* strains found in breast tissue, the ITA 205 strain can be multi-drug resistant to clindamycin, macrolides, and sulfa agents. Additionally, antibiotic sensitivity in vitro may not correlate in vivo due to poor penetration. Hence, lipophilic antibiotics such as ciprofloxacin, doxycycline, and linezolid may be more effective.

COSMETIC INJECTIONS ASSOCIATED WITH HYPERCALCEMIA AND ACUTE KIDNEY INJURY Sania Sultana; Colette Knight. Montefiore Medical Center, Bronx, NY. (Control ID #2707397)

LEARNING OBJECTIVE #1: Physicians have to become aware of potential complications of cosmetic injections which cause life-threatening conditions such as hypercalcemia.

LEARNING OBJECTIVE #2: Clinicians should inform and educate their patients about these practices.

CASE: 55 years old woman with history of Hypertension, CAD s/p MI, CKD and bipolar disorder presented to hospital with dizziness. On presentation, she had hypertensive urgency, BP: 228/127 mmHg which was treated with Labetalol. Routine labs revealed hypercalcemia: Ca:13.7- > 15 mg/dL (8.5–10.5 mg/dl), acute kidney injury: creatinine:1.89- > 3.49(0.5–1.5 mg/dl) and increased ionized Ca:1.63 mmol/L(1.10–1.35 mmol/L). She denied previous history of hypercalcemia, bone pain, abdominal pain, constipation, malignancy or family history of calcium disorder. She had been taking calcium and vitamin D supplements. Further studies revealed low PTH:9.9 pg/mL (10–65 pg/mL), elevated 24-h urine calcium:622 mg/24-h (50–250 mg/24 hr), elevated Vitamin D 1,25 $(OH)_2$:149 (18–72 pg/mL) and elevated ACE level:88 U/L (8–52 U/L). Renal Ultrasound showed bilateral nephrolithiasis. The constellation of findings raised the suspicion for hypercalcemia due to granulomatous disease. A noncontrast CT of thorax, abdomen and pelvis revealed diffuse inhomogeneous density enlarging buttocks and infiltrating subcutaneous fat consistent with prior injection augmentation procedure. On further inquiry, she admitted ~ 10 years ago, she had injections of "saline" to gluteal region for aesthetic enhancement and those were neither performed in a medical setting nor administered by a medically trained professional. Treatment with prednisone 30 mg daily was initiated and resulted in improvement of renal function and calcium level. However, she was not adherent to treatment and has had multiple admissions for relapsing hypercalcemia.

IMPACT: Cosmetic injections for body contouring have been widely increasing. However, granuloma formation associated with life-threatening hypercalcemia can be a major complication of this practice.

DISCUSSION: Hypercalcemia after cosmetic injections should be considered in any patient who has had a history of these procedures. Granulomatous reactions secondary to filling materials are rare complications and usually result from T-cell activation which results in release of cytokines that accelerate granuloma formation. Macrophages residing in granulomas convert 25-OH vitamin D to 1,25-(OH)2 D3 with help of 1α-hydroxylase, leading to hypercalcemia by increase of gut calcium absorption and calcium mobilization from bone. Systemic glucocorticoids inhibit production of calcitriol and suppress pro-inflammatory cytokines. Therapeutic management is usually long term as normocalcemia can be difficult to attain.

CROHN'S IS NOT ALWAYS ABOUT DIARRHEA: A CASE OF CROHN'S DISEASE PRESENTING AS ACUTE PANCREATITIS

waqas nawaz. Geisinger Medical Center, Danville, PA. (Control ID #2674713)

LEARNING OBJECTIVE #1: Recognize high risk of acute pancreatitis in Crohn's disease.

LEARNING OBJECTIVE #2: Recognize acute pancreatitis as an extra-intestinal manifestation of Crohn's disease.

CASE: 25 year old male with no medical history admitted for diffuse abdominal pain for 2 days, and was found to have epigastric tenderness on exam. Labs showed mildly elevated amylase and lipase. CT scan of abdomen showed acute pancreatitis (AP). Abdominal sonogram showed no biliary pathology. Serum triglyceride, calcium, ANA and IgG4 levels were normal. He denied any preceding flu like symptoms, drinking alcohol or taking any medication. He reported constipation with intermittent streaks of blood mixed with stools and 10 pound weight loss over last 7 months. Rectal exam showed anal fissure and ulceration. Sedimentation rate and C-reactive protein were markedly elevated. Pelvic MRI showed grade I perianal fistula. Colonoscopy showed ulcerations in terminal ileum. Histopathology showed active colitis and granulomas in terminal ileum consistent with initial Crohn's disease (CD). He was started on fluid therapy. Treatment for Crohn's disease was not initiated until pancreatitis resolved. He was started on mesalamine as outpatient, one month later.

IMPACT: This case taught me to look for rare etiologies of apparently looking idiopathic pancreatitis.

DISCUSSION: Patient with CD are at 4-fold higher risk of developing AP than general population mostly due to gallstones and medications with incidence of 1.4%. Most patients with CD present with AP within 2 years of diagnosis. However, CD may present for the first time as AP as its extraintestinal manifestation in 0.06% of cases. It tends to be less painful and severe than other causes of pancreatitis. Amylase is mildly elevated in most of cases. Prognosis is the same as in general pancreatitis.Some animal studies have shown evidence of migration of mucin-1 (MUC 1)-specific T cells, which are implicated in pathogenesis of human CD, to pancreas which suggests that pancreatitis might be an extraintestinal manifestation of CD. Pathogenesis involves duodenopancreatic reflux, papillary obstruction due to duodenal inflammation, pancreatic autoantibodies and development of pancreatic granulomas leading to inflammatory pancreatic changes.Management of CD related AP is same as in other cases of AP. However, drugs with harmful effects on the pancreas, like mesalamine, azathioprine, may have to be held as they have been associated with relapse of pancreatitis. Similarly, steroids used for CD may increase risk of necrosis and infection in AP. Although AP is a severe disease with 5% mortality, Crohn's related AP has a benign course with median hospital stay of 3.5 days.

CRYOGLOBULINEMIA: A RARE PRESENTATION OF RENAL FAILURE DUE TO CRYOGLOBULINEMIC VASCULITIS.

Gargi Patel; Abhishek Sarkar; Anand Patel; Manish Patel; Vivien Hsu. Rutgers-RWJ Medical School, New Brunswick, NJ. (Control ID #2702254)

LEARNING OBJECTIVE #1: Recognize mixed cryoglobulinemia as a cause of glomerulonephritis in patients with vague symptoms and no other physical findings for vasculitis.

CASE: Patient is a 63-year-old female with prior history of well-controlled hypertension, who initially presented to the emergency room (ED) with hypertensive urgency and normal laboratory data including renal function. Shortly after, she developed recurrent abdominal pain, and returned to the ED. On presentation, her blood pressure was187/105 and laboratory studies revealed an elevated creatinine of 3.3. She had no other complaints, denying arthralgias, rash, myalgias, fevers, or chills. Prior history was positive for a remote history of malar rash. While hospitalized, her creatinine deteriorated, requiring urgent dialysis. Further workup revealed a negative Hepatitis B and C serologies. Rheumatologic workup revealed a high RF, SS-A, and ANA with very low complement levels, including C3 and C4. The DsDNA was negative. A renal biopsy was consistent with cryoglobulinemic glomerulonephritis. The cryoglobulins returned elevated and immunofixation confirmed type 2 cryoglobulinemia. The patient was treated with pulse dose steroids and plasmapheresis. Subsequently, she received Rituximab with oral steroids. She improved and no longer required dialysis after 3 months from initial presentation, and her steroid was tapered off.

IMPACT: This case illustrates a unique presentation of cryoglobulinemic glomerulonephritis (CGN) in the absence of typical findings associated with CGN, such as palpable purpura, arthalgias, peripheral neuropathy, or hepatitis C infection. Despite her positive serologic profile and remote history of malar rash, she had no rheumatologic findings such as SLE or polyarthritis, and a renal biopsy was required to confirm her diagnosis.

DISCUSSION: The differential diagnosis of renal failure in the setting of low complement levels should include vasculitis due to viral infections (more than half the cases are due to Hepatitis C infection[1]), autoimmune diseases such as SLE and Sjogren's syndrome, as well as lympho-proliferative malignancies. A complete evaluation of any unexplained renal failure generally requires renal biopsy to confirm the diagnosis and guide in the management. Early detection of glomerulonephritis due to cryoglobulinemia was crucial in our case, since the early initiation of steroid and immunosuppressive therapy contributed to her complete recovery of kidney function. Despite the negative viral titers in our patient, we chose Rituximab because of the favorable results with Hepatitis C infection[2][3].References: 1. Schmid H, Braun GS. Chapter 169. Cryoglobulinemia and Cryofibrinogenemia. Fitzpatrick's Dermatology in General Medicine, 8e. New York, NY: McGraw-Hill; 2012. 2. De Vita et al.: A randomized controlled trial of rituximab for the treatment of severe cryoglobulinemic vasculitis. Arthritis & Rheumatism 2012; 64: 843–853.

CULTURAL BARRIERS TO CARE: PRIMARY HYPERPARATHYROIDISM IN A BANGLADESHI IMMIGRANT WITH DEPRESSION

Rebecca Boas[2]; Parimal A. Patel[1]. [1]NewYork-Presbyterian, New York, NY; [2]Weill Cornell Medicine - New York Presbyterian Hospital, NY, NY. (Control ID #2701880)

LEARNING OBJECTIVE #1: Recognize barriers for immigrants in New York City accessing mental health services

LEARNING OBJECTIVE #2: Assess improvement in depression after parathyroidectomy in primary hyperparathyroidism (PHPT)

CASE: 64 years old Bangladeshi woman, diagnosed and treated for depression without improvement presents to establish care. She reports trouble with memory, sad mood, and passive suicidal ideation over the last 3 years. She started escitalopram 5 mg daily, discontinued due to drowsiness. She also complained of chronic abdominal pain and fatigue. No history of kidney stones, polydipsia/polyuria, constipation. No lab work performed previously. Physical exam notable for BMI 20.1, otherwise stable vital signs, thin

appearing. Her thryoid cardio-pulmonary, abdominal and neurological exams were unremarkable. PHQ-9 score of 12. Laboratory data was collected, notable for elevated calcium level (11.7, corrected) and parathyroid hormone (142), leading to the diagnosis of primary hyperparathyroidism (PHPT). Patient's other electrolytes and creatinine were normal. Patient was found to have osteoporosis of the lumbar spine and left femoral neck on bone mineral density testing. The patient met surgical criteria for parathyroid resection. Patient underwent parathyroidectomy. 6 months post-op patient reported improved mood with suicidal ideations resolved.

IMPACT: Bangladeshi immigrants are one of the fastest growing immigrant groups in the US, with NYC having the largest population. Depression is much more widespread than previously thought. South Asians frequently go to primary care physicians (PCP) with vague somatic symptoms. It is important to recognize poor health behaviors in this population and need for early intervention and health promotion. It is essential to screen for depression and treat reversible causes, such as hyperparathyroidism.

DISCUSSION: Healthcare resources for Bangladeshi immigrants, particularly women, has lagged significantly behind the enormous growth in population. Advocates report mental health services are the largest shortfall with limited providers that speak Bengali or understand the Bangladeshi culture. A multitude of other barriers exist including cultural gender norms, financial dependence on their spouses, geographic isolation and poverty. Rates of domestic violence and abuse are high. In the community, 36.5% of this population screen positive for depression, with high rates of self harm, attempted and completed suicide attempts. Mental disorders, depression, and CNS dysfunction are all associated with hypercalcemia and PHPT. Patients meet surgical criteria for parathyroid resection with calcium elevation and bone mineral density scan with osteoporosis. Surgery has been shown to be effective for treatment of depression in PHPT after parathyroidectomy. At 12 months post-op there is a significant decrease in anxiety and depression, with incidence of suicidal ideation reduced to half the level compared to baseline (10.7% vs 22%). Physical and mental health scores also improve.

CURING CANCER WITH COMPASSION? Kristen Kelley[1]; Dominic Nguyen[2]; Sara-Megumi L. Naylor[3]. [1]Internal Medicine Residency Program, David Geffen School of Medicine, Los Angeles, CA; [2]David Geffen School of Medicine, Los Angeles, CA; [3]Division of Primary Care at the VA Greater Los Angeles Healthcare System, Department of Medicine David Geffen School of Medicine at UCLA, Los Angeles, CA. (Control ID #2702451)

LEARNING OBJECTIVE #1: Recognize that people with mental illness die earlier than otherwise similar people without mental illness, largely due to common medical conditions including cancer.

LEARNING OBJECTIVE #2: Acknowledge that physician pessimism, bias, and lack of training contribute to this mortality disparity.

CASE: A 68 year-old male veteran with schizoaffective disorder and tobacco use disorder was brought to the emergency room with worsening paranoid delusions. Recently, he had undergone a chest x-ray as part of a workup for altered mental status and a 3.5 cm opacity was found. A CT scan confirmed a mass compatible with a primary lung neoplasm. He declined any further workup, and in the setting of his grave disability from his mental illness, conservatorship was pursued. His cousin was appointed his conservator. On this current admission, he underwent a biopsy and staging. He was diagnosed with stage 1B non-small cell lung carcinoma. Management options of this potentially curable malignancy, which included surgical resection and radiation, were discussed with his conservator. Ethics was consulted, and the Tumor Board reviewed his case. There was abundant physician pessimism and bias that the patient would not be able to participate in treatment options. Our Ethics team helped clarify and enhance all providers' alignment with ethical principles, including understanding that patient autonomy could not exist at this time. All parties agreed the patient enjoyed an acceptable quality of life, even in the setting of severe mental illness. Management of his schizoaffective disorder and building a trusting doctor-patient relationship were prioritized. He eventually completed radiation therapy.

IMPACT: This vignette illustrates that physician compassion, teamwork, and training can overcome challenges that arise in taking care of patients with severe mental illness and lead to more favorable and just outcomes.

DISCUSSION: A well-documented, persistent mortality gap exists between patients with severe mental illness and otherwise similar people without mental illness. The causes of deaths are largely due to medical conditions like cardiovascular disease and cancer, which internists diagnose and manage daily. It is a common misunderstanding that mental illness itself leads to more deaths. Although there are many reasons for this disparity, physician pessimism, bias, and lack of training contribute. After humbly reflecting on our collective pessimism, we channeled compassion and resilience daily to engage our patient and ourselves in his care. Guidance from consultants and teamwork were crucial. Our lack of training forced us to review and deliberately practice capacity assessment and the ethical principles of beneficence and non-maleficence. We encourage providers to reflect on their own biases and channel compassion to help reduce the mortality gap that exists for patients with severe mental illness.

CURIOUS CASE OF CALCIPHYLAXIS CAUSING CARDIOMYOPATHY Asma Khatoon; Deepthi Chiluvuri; Renuka Chowdhury. Methodist Dallas Medical Center, Dallas, TX. (Control ID #2690740)

LEARNING OBJECTIVE #1: Calciphylaxis is characterized by skin ischemia and necrosis due to calcification of dermal arterioles. It is believed to be part of a continuum of systemic vascular and soft tissue calcification that is common in end-stage renal disease (ESRD). We share a unique case of dystrophic calcification causing restrictive cardiomyopathy.

CASE: A 42 year old Hispanic female presented to our service with complaints of severe chest pain after a mechanical fall. She had known history of diabetic nephropathy, ESRD and cirrhosis. On further evaluation, patient had a loud pericardial friction rub, scattered ulcerated as well as non-ulcerated skin plaques, predominantly on the legs and new onset jaundice. Laboratory data analysis was suggestive of myocardial injury and cholestasis. She had decreased responsiveness on day 3 of hospitalization and found to be in shock which responded well to vasopressors. Patient briefly required ICU monitoring and continuous renal replacement therapy as well. 2D Echocardiogram showed cardiomegaly, trivial pericardial effusion, elevated right ventricular systolic pressure and dilated inferior vena cava concerning for constrictive pericarditis. Left and right heart catheterization was performed which surprisingly revealed restrictive hemodynamics with mean pulmonary artery pressure of 50 mmHg and pulmonary capillary wedge pressure of 35 mmHg along with normal pulmonary vascular resistance and severely elevated mean right atrial pressure of 30 mmHg. Constriction was ruled out. She had normal coronary arteries and normal cardiac output. A wide array of tests ensued to rule out sarcoidosis, hemochromatosis, amyloidosis and direct cancer invasion. She had no prior radiotherapy. Patient had improvement in chest

pain but developed worsening dyspnea. A CT angiogram revealed worsening cardiomegaly and heavy calcium deposition in aorta and all major vessels, as well as the right atrium. Thus dystrophic calcium deposition was deemed to be the cause of her restrictive cardiomyopathy. Hemodialysis was continued as allowed by blood pressure during the hospital stay. She was initiated on intravenous sodium thiosulfate with improvement of the non-ulcerated plaques.

IMPACT: Calciphylaxis in the calves is easily confused with cellulitis in 80% of the patients. However, the mortality rate with non-ulcerated plaques at 6 months is 33 and once ulceration develops mortality increases to 80%!

DISCUSSION: This case illustrates the potentially severe effects of calciphylaxis which is usually an asymptomatic finding in patients with ESRD and renal transplant. Review of literature revealed varying degrees of soft tissue calcification in up to 60% of the patients with ESRD, including blood vessels, lungs, pericardium, myocardium, abdominal wall, even conjunctiva. Although many ESRD patients have vascular calcification, few develop severe clinical manifestations, such as the case described above. Therapy is multifaceted and efforts should be geared more towards prevention.

CUTANEOUS LEUKOCYTOCLASTIC VASCULITIS: MORE THAN JUST SKIN DEEP? Allison Guttmann; Jason F. Wang; Karin M. Warltier. New York University School of Medicine, New York, NY. (Control ID #2679850)

LEARNING OBJECTIVE #1: Review Cutaneous Leukocytoclastic Vasculitis and its association with malignancy

CASE: A 70 year-old man with diabetes presented with a lower extremity rash for two days. Five weeks prior to presentation, he experienced pharyngitis and rhinorrhea, resolving spontaneously. Two weeks later, he began to feel generalized weakness and fatigue. Two days prior to presentation, he had intense pruritus of his feet, and shortly thereafter developed purple lesions on the plantar surfaces, at which point he presented to the hospital. On presentation, physical exam showed multiple tender erythematous and violaceous non-blanchable macules coalescing on his lower extremities and back. Laboratory evaluation was notable for creatinine 1.0mg/dL, c-reactive protein 40mg/L and erythrocyte sedimentation rate 130mm/hr. Anti-nuclear antibody, rheumatoid factor, P-ANCA, C-ANCA, SS-A/SS-B, IgA and cryoglobulin were negative. C3 was normal and C4 was slightly elevated. Infectious evaluation was negative for hepatitis B and C, with an elevated antistreptolysin O. Skin biopsy showed leukocytoclastic vasculitis, though direct immunofluorescence was unavailable. Our patient was diagnosed with Cutaneous Leukocytoclastic Vasculitis (CLV) once other connective tissue disorders were excluded and with reassurance that visceral organs were not affected. This case was likely related to a recent respiratory infection, however underlying malignancy was not excluded. The patient received oral steroids, and was discharged to complete a malignancy work-up.

IMPACT: This case reminds us to consider associations between pathologies. For this patient, it was not sufficient to make the diagnosis of CLV, but we had to appreciate its association with malignancy in order to thoroughly manage this patient.

DISCUSSION: Cutaneous Luekocytoclastic Vasculitis (CLV) is a small vessel vasculitis limited to the skin. The pathophysiology is poorly understood, however it may be due to immune complex deposition and neutrophil migration resulting in the release of free radicals. CLV may be precipitated by infection, malignancy, medication or deemed idiopathic. Patients present with non-pruritic purpura predominantly in dependent areas, and may report constitutional symptoms. Pathologically, lesions appear as neutrophilic infiltration of the small vessels, and direct immunofluorescence reveals immune complex deposition containing C3, IgM, IgA and IgG. The diagnosis is made after excluding other vasculitides with visceral involvement. CLV may be considered a paraneoplastic process due to its association with malignancy. One study showed that 16 of 421 patients with CLV (3.8%) had an underlying malignancy, and the vasculitis appeared an average of 17 days before malignancy was diagnosed. Both solid organ and hematologic malignancies have been implicated, including chronic lymphocytic leukemia, urinary and gastrointestinal malignancies. CLV may also be associated with infections, including HIV, beta-hemolytic streptococcus, and endocarditis.

DECEPTIVE ANTINUCLEAR ANTIBODIES IN A PATIENT WITH HYPOTHYROIDISM, MALAR RASH AND MICROSCOPIC HEMATURIA Matthew Spindler[2]; Mackenzie Naert[2]; Brittany Glassberg[2]; Joseph Truglio[1]. [1]Icahn School of Medicine at Mount Sinai, Maplewood, NJ; [2]Icahn School of Medicine at Mount Sinai, New York, NY. (Control ID #2706408)

LEARNING OBJECTIVE #1: Assess the clinical significance of a positive antinuclear antibody (ANA) test.

CASE: A 60-year-old woman presents to her primary care provider to establish care. She has a medical history significant for hypothyroidism and hypertension. She takes levothyroxine (100mcg daily) and amlodipine (5mg daily). She reports a history of recurrent urinary tract infections and complains of ongoing dysuria. A urinalysis revealed microscopic hematuria (4–10 RBC's/hpf). A urine culture was negative, urine calcium/creatinine ratio was within normal limits, and a renal ultrasound was normal. The patient denies history of fever, weight loss, fatigue, joint pain/stiffness, weakness, sicca symptoms, oral mucosa ulcers, or Raynaud's phenomenon. She reports a positive family history of systemic lupus erythematosus (SLE) in her twin sister and aunt. On examination, the patient exhibits a malar erythematous rash. An ANA test was positive (1:360). The patient was diagnosed with SLE, started on plaquenil (200 mg daily), and referred to a rheumatologist. Subsequent laboratory tests were negative for anti-dsDNA, anti-Smith, anti-IgA/IgG/IgM, anti-ribonucleoprotein (RNO), anti-SSA, C reactive protein, and positive for anti-thyroidperoxidase (TPO). A subsequent ANA test was <1:40. The initial ANA result was considered a false positive associated with anti-TPO. Urine cytology showed atypical cells and the patient was referred to urology for potential cystoscopy.

IMPACT: The presence of a malar rash, microscopic hematuria, and ANA initially suggested SLE. Subsequent autoimmune workup was unrevealing however, and the repeat ANA was negative. The initial ANA likely resulted from thyroid antibodies.[1] Although an ANA test is often included in the initial workup of patients with signs of SLE (such as microscopic hematuria), other potential causes of ANAs should be considered prior to diagnosing SLE.

DISCUSSION: ANA detection plays an important role in the diagnosis of connective tissue diseases such as SLE. The clinical sensitivity of diagnosing SLE by ANA detection is 91%.[2] However due to the low prevalence of SLE in the general population, most people with ANAs do not have SLE. 13.8% of individuals age 12 years and older have ANAs, but the prevalence of SLE is only 0.24% in patients 17 years and older. ANAs are also present in a large percentage of patients with autoimmune thyroiditis (45%).[1] A recent guideline suggests using ANA testing when there is a strong clinical suspicion of SLE.[3] A separate study analyzed factors associated with SLE development and found

that oral ulcers, anti-dsDNA and renal disease (proteinuria or cellular casts) were independent predictors of developing definite SLE.[4] As our case demonstrates, a positive ANA test may not be clinically significant in a patient with few symptoms of SLE and a known ANA-associated comorbidity. In patients with hypothyroidism, ANA results should be carefully considered given the large ANA positivity in patients with autoimmune thyroiditis.

DEFECATE WITH A LIMPING GAIT! Payal Sen[2]; Uddalak Majumdar[3]; Patrick Rendon[1]. [1]UNM Health Science Center, Albuquerque, NM; [2]University of New Mexico, Albuquerque, IL; [3]Blessing Hospital, Quincy, IL. (Control ID #2692618)

LEARNING OBJECTIVE #1: Recognize Clostridium Difficile as a predisposing infection to Reactive arthritis

LEARNING OBJECTIVE #2: Use corticosteroids judiciously in the treatment of refractory Clostridium difficile related reactive arthritis

CASE: An 84-year-old Caucasian female presented with 3 days of profuse, watery diarrhea and right knee pain. She had been hospitalized for bronchitis a few weeks ago, treated with amoxicillin-clavulanic acid and discharged. There was no history of trauma or travel. Her past medical history included CKD stage IIIa and diverticulosis. She was afebrile and her clinical exam was normal except for dry oral mucosa and minimal swelling of the right knee. She had a normal WBC count, UA and LFTs, but had a GFR of 27 (baseline 45) and creatinine of 1.9 (baseline 1). Stool was positive only for Clostridium difficile (C.Diff) toxin. She was diagnosed with acute kidney injury from C. Diff associated diarrhea and started on IV fluids with oral vancomycin. Her diarrhea and renal function improved but the pain and swelling of her right knee increased and flexion became restricted. Work up showed CRP of 118 mg/dL, and ESR of 18 mm/hr, while X-rays, Rheumatoid Factor, anti-CCP, Anti-Nuclear Antibodies and uric acid were normal. The knee joint was aspirated and showed 12090 leukocytes with 85% PMNs. Gram staining, crystals and eventually cultures were also negative. Methylprednisolone was added and knee symptoms rapidly improved. Patient was discharged on oral prednisone and oral vancomycin for 2 weeks. On follow-up her renal insufficiency, diarrhea and knee pain had resolved. ESR and CRP had decreased to 12.2 mg/dL and 9 mm/hr. respectively.

IMPACT: I have started thinking of extra-gastrointestinal complications of C.Diff infection (CDI) and I also weigh the pros and cons of using corticosteroids in refractory cases.

DISCUSSION: Reactive Arthritis (ReA) is a syndrome of sterile asymmetrical autoimmune oligo-arthritis following infection. Preceding infections are usually Chlamydia, Campylobacter, Shigella, Salmonella, and Yersinia but CDI is distinctly uncommon. Only 50 CDI related ReA cases have been reported since the first case report in 1976. With increasing incidence of CDI, clinicians should expect to see more extra-gastrointestinal morbidity from CDI. CDI associated ReA has been mostly reported in younger people, with positive HLA-B27, with excellent prognosis. Although traditionally NSAIDs have been the first line of treatment, we used corticosteroids to avoid the well-known nephrotoxic effects of NSAIDs, since our patient had acute kidney injury. Even though conventional knowledge is that usage of corticosteroids in patients with CDI have worse outcomes, there is anecdotal evidence of refractory CDI being treated with corticosteroids. A recent study of elderly adults with pneumonia or COPD showed decreased incidence of CDI when treated with steroids. As demonstrated in this case, judicious use of corticosteroids in clinically appropriate situations may decrease morbidity in patients with CDI.

DELAYED POST-HYPOXIC LEUKOENCEPHALOPATHY AFTER APPARENT RECOVERY FROM CO INTOXICATION Jiping Zeng; Christopher J. Smith. University of Nebraska Medical Center, Omaha, NE. (Control ID #2710533)

LEARNING OBJECTIVE #1: Recognize the clinical presentation of delayed post-hypoxic leukoencephalopathy (DPHL) following CO poisoning.

LEARNING OBJECTIVE #2: Manage DPHL using a team-based approach.

CASE: A 43 year-old man presented with behavioral changes and paranoia. He had a history of depression and methamphetamine abuse and was hospitalized 3 weeks earlier for carbon monoxide (CO) poisoning following a suicidal attempt. He recovered after hyperbaric oxygen therapy and was discharged home on daily fluoxetine and buproprion. According to his family, his symptoms started to worsen 10 days prior to admission. He developed confusion, memory loss, paranoia, and aggressive behaviors. He had no recent head trauma, medication changes, or illicit drug use. Physical exams showed normal vital signs, muscle strength and DTRs. He was alert and oriented. No frontal release signs, tremor, cogwheel rigidity or focal neurologic deficits were noted. He had childish demeanor, labile mood, tangential thought process and poor insight. Lab tests, including CBC, CMP, UA, acetaminophen and salicylate levels, and UDS, were normal. Head CT revealed subtle hypodensity of the bilateral globus pallidus that was similar to the previous MRI. He continued to exhibit impulsivity, distractibility, hyperphagia, and hypersexuality. Brain MRI showed confluent frontal and parietal lobe white matter changes consistent with DPHL. His aggressive and impulsive behaviors required increasing doses of quetiapine, olanzapine, and trazodone. The patient was transferred to a cognition rehabilitation facility for ongoing care.

IMPACT: Internists and hospitalists should be aware of the variable presenting features of DPHL. This syndrome has been recognized for a century and more cases will be diagnosed with the expanding availability of MRI. The prompt recognition of DPHL allows early utilization of supportive care and rehabilitative services.

DISCUSSION: CO poisoning is responsible for up to 40,000 emergency department visits, and DPHL is a common complication that may be encountered by general internists and hospitalists. The incidence of DPHL varies widely in studies from a few percent to two thirds of patients. The findings are diverse, including focal neurologic deficits, motor dysfunction, personality change and psychosis. Various MRI findings, including globus pallidus lesions, white matter changes, and diffuse low-density lesions throughout the brain have been reported. There are no widely accepted criteria for diagnosis of DPHL, however it can be made with appropriate history and by ruling out common causes of acute toxic-metabolic encephalopathy. The management requires coordination of inter-professional teams, including internal medicine, neurology, psychiatry, neuropsychology, speech therapy, nursing, social work and rehabilitation. Although no specific treatment has proven effective, recovery from DPHL after CO poisoning occurs in 50% - 75% of patients within one year follow-up.

DELAYS IN DIAGNOSIS OF NECROTIZING FASCIITIS IN PATIENTS WITH NORMAL CT RESULTS Arthur Ablayev. Capital Health Regional Medical Center, Trenton, NJ. (Control ID #2706372)

LEARNING OBJECTIVE #1: Recognize necrotizing fasciitis when CT is normal.Avoid delays in surgical intervention

CASE: A 55-year-old male presented to the ER complaining of pain and persistent swelling in both legs. Patient denies fever, chills. Past medical history: lower extremity venous stasis, cellulitis, hypertension, alcohol abuse and seizures. Current medications: none. Denies smoking, drug use. Drinks alcohol 3–4 days a week. On physical exam: VS: T 99; POX 94%; RR 24; BP 100/58; HR 111 Patient looks not in acute distress. Examination of head, neck, chest and heart did not show any obvious changes. Lungs: mild basal rales left lung. Lower extremities: +1 edema, chronic venous stasis changes bilaterally. Right leg - no evidence of infection. Left leg - moderate cellulitis, some superficial bullae of the skin. No crepitus. Labs: WBC 11.7; bands 61%; BUN 17; creatinine 0.8mg/dl Doppler: no DVT. Patient was hospitalized, started on vancomycin + cefepime and supportive treatment. Eight hours later: BP 80/54, HR 130, RR 40, Temp 100.2. The pain in left leg worsened. Patient was intubated, got more fluid boluses, started on pressors, transferred to ICU. Repeat labs: WBC 14.4; bands 44%; BUN 56mg/dl; creatinine 2.66mg/dl; LA 4.9mmol/L There was no significant change on physical exam in lower extremities. CT leg showed no evidence of subcutaneous air, abscess. Surgical team was consulted and after reviewing CT, recommended observation. Later, due to worsening of systemic symptoms, repeat consult was requested. The subcutaneous tissue was aspirated at the bed side with a needle and showed murky fluid. At this point, decision was made to take the patient urgently to the operating room. Final diagnosis of necrotizing fasciitis was made in OR. Incision and drainage, debridement of the necrotizing soft tissue infection was done.

IMPACT: This case demonstrated again that necrotizing fasciitis is aggressive and rapidly progressing infection which is difficult to diagnose. CT can delay the diagnosis and treatment. Clinical judgment must be the most important element in diagnosis.

DISCUSSION: Necrotizing fasciitis is characterized with rapid progression, significant tissue destruction, systemic symptoms and high mortality. Early recognition of necrotizing fasciitis is an important and difficult task for any physician. There are some clinical features that can help with diagnosis of Necrotizing Fasciitis: Severe pain that is out of proportion to skin findings; Induration of soft tissue extending beyond the area of visible skin changes; Crepitus on palpation, bullous lesions, and skin necrosis. Negative results on imaging studies should not delay surgical consult and aggressive management when clinical suspicion is high.

DELTA-DELTA GRADIENT TO THE RESCUE: ELEVATED ANION GAP ACIDOSIS WITH A BASIC PH Rachna Rawal; Oluwasayo Adeyemo; Stewart G. Albert. St. Louis University, St. Louis, MO. (Control ID #2705228)

LEARNING OBJECTIVE #1: Utilize delta-delta gradient to explain elevated anion gap acidosis

LEARNING OBJECTIVE #2: Analyze alkalosis in the setting of alcoholic ketoacidosis

CASE: Elevated anion gap acidosis is a common finding after acute alcohol ingestion due to accumulation of keto and lactic acids associated with alcoholic ketogenesis. We report a case of recurrent metabolic acidosis with superimposed metabolic alkalosis that was analyzed using the delta-delta gradient. A 56 year-old man with a medical history of alcoholic pancreatitis was admitted for alcohol withdrawal and non-bilous emesis for three days. Exam was notable for blood pressure of 151/96, conjugate gaze palsy without nystagmus and diffuse abdominal tenderness. Labs were significant for: HCO3 16.6, lactic acid 4.7, beta-hydroxybutyrate 6.95, alcohol level 214, lipase 95, glucose 80, VBG pH 7.51, pCO2 21, pO2 51, base excess mixed venous 17.2. The patient's anion gap was 29 with a delta-delta gradient of 10. During the course of five hospitalizations his anion gap ranged from 24mmol/L to 30mmol/L. He was treated for acute pancreatitis, presumed thiamine deficiency and alcohol withdrawal syndrome. His large anion gap prompted further analysis. The delta-delta gradient of 10 (adjusted for loss of the chloride secondary to vomiting) confirmed a concomitant metabolic alkalosis. A gradient greater than 0 suggests a primary metabolic alkalosis with an anion gap metabolic acidosis.

IMPACT: This patient presented with an elevated anion gap, low bicarbonate and alkalotic pH. Typically, such large anion gaps trigger a search for additional etiologies, which may be misleading especially with an alkalotic pH. In such a setting, the delta-delta gradient can be helpful in determining the various components/etiologies of the patient's acid–base disorder.

DISCUSSION: This patient's alcohol binge drinking combined with chronic malnutrition prevented hepatic gluconeogenesis: the accumulation of NADPH from alcohol consumption prevented the oxidation of lactic to pyruvate. His persistently high alcohol levels caused alcoholic ketoacidosis leading to lactic acidosis with hypoglycemia. His intractable vomiting caused gastric chloride loss and a metabolic alkalosis. An elevated anion gap acidosis with a concomitant alkalosis is explained by the delta-delta gradient due to the combined organic acidosis and intractable vomiting. The patient presented with recurrent episodes of alcoholic keto/lactic alkalosis. It is uncommon to have alcoholic ketoacidosis with a large anion gap in the setting of alkalosis. The delta-delta gradient unmasked the true etiology of his elevated anion gap alcoholic acidosis with hypoglycemia by accounting for the loss of chloride due to vomiting. This case emphasizes the significance of using a less familiar, yet a valuable medical principle, the delta-delta gradient in clinical diagnosis, before ordering additional unnecessary testing.

DEMONSTRATING RESILIENCE AFTER FLEEING PERSECUTION: A MAN TORTURED FOR HIS POLITICAL OPINION IS GRANTED ASYLUM Katherine C. McKenzie[1]; Sarah Kimball[2]; Ryan Handoko[1]; Emmanuella Asabor[1]. [1]Yale School of Medicine, New Haven, CT; [2]Boston University School of Medicine, Boston, MA. (Control ID #2697888)

LEARNING OBJECTIVE #1: Understand fundamentals of the process of seeking asylum in a man tortured because of his political opinion, and the role physicians can play in providing medical forensic evaluations of asylum seekers.

LEARNING OBJECTIVE #2: Assess the characteristics of the man who was granted asylum and the provisions in the asylum program that increased the likelihood that once granted asylum, allowed him to transition to a successful and healthy professional and personal life.

CASE: AN was born in the Democratic Republic of Congo where he was persecuted because of his political beliefs. He was imprisoned in inhumane conditions and interrogated for two weeks, and as a result of his torture developed scars from a burn and cuts with a bayonet. Shortly after being released from detention, he fled to the US. Through a torture survivors program, he found an immigration attorney to represent him, who in turn referred him for a medical forensic evaluation. Shortly after arriving, he also

sought counseling and was treated for depression and post-traumatic stress disorder. He was granted asylum based on persecution due to his political opinion. His medical forensic report contributed to his successful case. His family joined him and he started a job in a surgical supply factory. He learned English and displays no chronic signs of psychological scars. His children are thriving in high school and college.

IMPACT: It has been shown that medical evaluations significantly increase the likelihood that asylum will be granted. (1) This case supports literature that demonstrates that many individuals who emigrate to other countries show remarkable resilience despite their pre-immigration trauma. (2) Physician support of asylum seekers is important is many cases, but additional institutional infrastructure which promotes occupational engagement and family reunification are key to success after asylum is granted.

DISCUSSION: AD experienced severe trauma when he was tortured in his country due to his political opinion. He fled the US and was able to access systems that increased the likelihood of a successful asylum appeal, including an experienced immigration attorney and physicians skilled in gathering evidence to be used effectively in immigration court. In addition, he demonstrated insight by entering counseling for depression and PTSD. After asylum was granted, US asylum policy provided the mechanism to unite him with his family and a torture survivors group provided occupational counseling. His personal resourcefulness, together with these institutional supports, have contributed to his ability to thrive personally and professionally. 1.Lustig SL, et. al. Asylum grant rates following medical evaluations of maltreatment among political asylum applicants in the United States. J Immigr Minor Health. 2008;10(1):7–15) 2.Overland G. Generating theory, biographical accounts and translation: a study of trauma and resilience. International Journal of Social Research Methodology. 2011;14(1):61–75

DENOSUMAB-INDUCED HYPOCALCEMIA Zaid Abdel-Rahman; Sameer K. Avasarala. Henry Ford Health System, Detroit, MI. (Control ID #2701608)

LEARNING OBJECTIVE #1: Recognize the increased use of denosumab and the likelihood of developing hypocalcemia

LEARNING OBJECTIVE #2: Educate patients on the dire necessity of calcium supplements to prevent the morbidity associated with denosumab-induced hypocalcemia

CASE: An 83-year-old male with chronic kidney disease (CKD), early Alzheimer's dementia presents with worsening back pain. Magnetic resonance imaging showed vertebral lesions, labs showed a high prostate-specific antigen (PSA) and he was eventually diagnosed with metastatic prostate cancer based on bone biopsy results. Treatment was initiated with bicalutamide followed by leuprorelin and radiation therapy to the vertebral lesions. Five months after starting therapy, he developed castration resistance and his PSA started to rise so he was started on docetaxel followed by cabazitaxel. He received additional radiotherapy sessions for cauda equine syndrome in addition to a denosumab injection for his bony metastases. Before administering denosumab, his baseline ionized calcium (iCa) was 1.1 mmol/l (1.00 - 1.35 mmol/L) and vitamin D and calcium supplements were prescribed. Six days after the injection he presented to the emergency department with generalized weakness and muscle twitches, his iCa was found to be 0.61 mmol/L requiring an intensive care unit (ICU) admission where he was started on an intravenous calcium drip while his QT intervals were closely monitored. After normalization of his calcium levels, he was switched to oral supplements and discharged on 500 mg of calcium citrate three times daily and 2000 units of vitamin D daily. Twenty eight days after the injection, he presented with similar complaints and his iCa was found to be 0.62 mmol/L. This necessitated another ICU admission for IV calcium replacement and monitoring. He was then discharged on the same supplements as last time with the addition of calcitriol 1 mcg twice daily. His serum calcium levels were followed on outpatient basis by his oncologist. Fifty days after the denosumab injection, he had a third ICU admission for severe hypocalcemia

IMPACT: Many factors played a role in this patient's course, most importantly; he was not taking his calcium and vitamin D supplements thinking that these are just non-essential vitamins rather than a key component of his treatment, in addition to CKD and social factors like not getting prescriptions filled because of transportation issues. Keeping these issues in mind can decrease the burden and morbidity of a preventable complication.

DISCUSSION: Hypocalcemia can be a serious electrolyte abnormality that can result in cardiac arrhythmias, coronary vasospasm and even sudden cardiac death. Denosumab-induced hypocalcemia has an incidence of 2-5 and as the use of denosumab is increasing among cancer and non-cancer patients (e.g., osteoporosis), all physicians should be aware of this adverse effect and should monitor patients by frequently checking their calcium levels before and after treatment and making sure they are taking their supplements as prescribed.

DEPLETE Eileen Hennrikus; Amanda Bryson; Melissa Yacur. Penn State College of Medicine, Hershey, PA. (Control ID #2705435)

LEARNING OBJECTIVE #1: Not only alcoholics suffer from thiamine deficiency. Consider thiamine deficiency in elderly, ill patients who acutely develop altered mental status while hospitalized.

CASE: RG, an 89-year-old male with Parkinsonism, presented to the emergency department with community acquired pneumonia and sepsis. He improved significantly within 24 hours of antibiotic treatment. While NPO for a swallow evaluation, he became hypoglycemic (45 mg/dl) and was started on a D5W infusion. The next morning, he became confused and agitated, developed opthalmoplegia, and subsequently became unresponsive. There was no evidence of recurrent sepsis or acute brain abnormality. He was empirically started on thiamine. Over the next 24 hours, he became responsive and continued to improve back to his baseline mental status. Thiamine level later returned < 7 (normal 8–30 nmol/L).

IMPACT: Wernicke's encephalopathy (WE) is a neuropsychiatric emergency caused by thiamine deficiency and is characterized by ocular disturbances, gait ataxia, and confusion. Physicians commonly prophylactically treat thiamine deficiency in alcoholic patients, but the clinical suspicion in non-alcoholic patients remains low. We suspect that many elderly patients undergo unnecessary procedures such as lumbar punctures, MRI of the head and a multitude of lab tests, when they suffer from a missed, treatable diagnosis of Wernike's encephalopathy.

DISCUSSION: We propose that acutely ill, elderly patients are at risk for thiamine deficiency and its sequela. When well, these patients may have borderline thiamine stores due to poor nutrition, which deplete rapidly when acutely ill due to a hypermetabolic state. Additionally, hospitalization can exacerbate thiamine deficiency, due to decreased oral intake. The administration of dextrose-containing fluids can precipitate Wernike's encephalopathy which can be mistaken for dementia in the elderly. Thiamine deficiency and progression to WE is preventable and treatable. Prompt initiation of

intravenous thiamine is low-risk and is paramount for achieving favorable outcomes in these patients. Physicians should consider thiamine supplementation in elderly, non-alcoholic patients with marginal nutrition who present with or develop “dementia”.

DEVELOPING AN ALGORITHM TO APPROACH PATIENTS WHO REFUSE CARE BUT LACK CAPACITY Maura George[1]; Kevin Wack[2]; Sindhuja Surapaneni[3]; Stephanie Larson[1]. [1]Emory University, Atlanta, GA; [2]Grady Memorial Hospital, Atlanta, GA; [3]Emory University School of Medicine, Atlanta, GA. (Control ID #2708015)

LEARNING OBJECTIVE #1: Articulate the ethical challenges and vulnerability of a patient who refuses treatment but lacks capacity

LEARNING OBJECTIVE #2: Use an innovative algorithm to approach this common but difficult ethics case

CASE: A 57 y/o male with PMH of schizophrenia and HTN is brought to the hospital by the police who found him lying on a sidewalk. There was no reported trauma, and the patient was awake but moaning. In the ED, he describes diffuse body pains but remains too confused to provide more info. His baseline mental status is unknown but 24 hours after admission he has spoken very little and seems unable to understand what is being said to him. Upon evaluation, he repeats “I’m all right” and “I’m ok;” however, when providers attempt to examine him, says “Leave me alone!” There is no surrogate, but the medical record mentions a sister who the SW attempts to find. Meanwhile, there is significant concern about the patient’s medical conditions. His imaging identified multiple lytic lesions in the axial skeleton with compression deformities of the thoracolumbar spine concerning for multiple myeloma or lytic bone metastases. The team is seeking a bone biopsy, but the patient lacks capacity to consent. The conversations make him agitated and he consistently states that he does not want to be touched. The ethics committee is consulted to determine if a bone biopsy is appropriate despite his apparent refusal.

IMPACT: While all hospitals see patients who lack capacity, a large, urban, safety net hospital like Grady Memorial Hospital in Atlanta sees these cases with an amazing frequency, and the patients are some of the most vulnerable because of factors like race, poverty, nationality, and social network. Patients may vocally or physically refuse care. We on the Grady ethics committee field so many such cases that we’ve internalized an algorithmic approach to the questions. This case motivated us to put on paper our approach in the hopes that other clinicians could make the best decisions in such scenarios.

DISCUSSION: Patients who lack capacity pose ethical challenges, especially when they are declining care their surrogates and/or clinicians feel are indicated. These patients are a vulnerable population and should receive standard of care that is in line with their authentic self’s values, just as any other patient would. But forcing treatment on patients who refuse but lack capacity carries medical and psychological risks to the patient and the staff involved in their care. It is also often simply impractical to force some treatments, especially long-term. For example, independent of the ethical “should” question, how *would* one force hemodialysis three times per week for the rest of someone’s life? How would one force a surgery that requires weeks of post-operative physical therapy? Using our algorithm, we can help clinicians think through these questions and arrive at the most ethical and practical decision, achieving best outcomes for patients and reduced moral distress for their caretakers and clinicians.

DIABETES, DIARRHEA AND DEFICIENCY Mohammad F. Mathbout; Monika G. Spacil; Joseph R. Sweigart. University of Kentucky, Lexington, KY. (Control ID #2672626)

LEARNING OBJECTIVE #1: Understand when it is appropriate to consider diabetic diarrhea as a diagnosis

LEARNING OBJECTIVE #2: Recognize vitamin C deficiency as a potential sequalae of long standing diarrhea

CASE: A 43-year-old man with a history of uncontrolled type-1 diabetes presented with acute onset nausea and vomiting. He also reported several months of persistent, watery, non-bloody diarrhea and weight loss. He appeared frail and cachectic. The patient was edentulous with gum ulcers. Skin examination was remarkable for generalized roughness, bruises, and petechia. Initial work up showed diabetic ketoacidosis (DKA) and he was treated immediately with intravenous fluids and insulin. His DKA resolved, but his chronic diarrhea did not. Stool electrolytes were consistent with a secretory process. Infectious etiologies, including giardia, HIV, Whipple’s disease, cryptosporidium, and microsporidium were all negative. Ensophagogastroduodenoscopy and colonoscopy with biopsies were also unrevealing. Laboratory investigation for gastrinoma, VIPoma, somatostatinoma, and carcinoid also returned negative. He was initiated on octreotide for a presumed diagnosis of diabetic diarrhea, with significant improvement in his symptoms. Because of his generalized skin and oral findings in the setting of persistent diarrhea, Vitamin-C level was checked and found to be severely diminished. He was diagnosed with scurvy and started on Vitamin C replacement.

IMPACT: The general medicine physician must be mindful of malabsorption from severe secretory diarrhea secondary to uncontrolled diabetes. If no inflammatory, autoimmune, infectious, or malignant sources are found, diabetic diarrhea is a likely explanation for persistent secretory diarrhea and can precipitate nutritional deficiencies. Management is mostly supportive with hydration, glucose control, and replacing nutrient and electrolyte deficiencies. Octreotide use has only been recorded in case reports to treat diabetic diarrhea. It was highly effective for our patient.

DISCUSSION: Scurvy is classically regarded as a disease of pirates, replete with an image of a grizzled peg leg with missing teeth, wiry hair, bruises, and cuts covering his body. This image exists for good reason: Vitamin C deficiency causes such manifestations and has all but left the forefront of physicians’ minds while treating patients in developed nations. However, in the case of this patient, scurvy was a very real issue in the setting of his malnutrition and chronic diabetic diarrhea. Severely uncontrolled diabetes can cause multiple common symptoms, but one often overlooked is diabetic diarrhea. Generally painless, non-bloody, and watery, occasionally causing incontinence, diabetic diarrhea is a diagnosis of exclusion for secretory diarrhea. Functional impairment of small and large intestine motility, enteral bacterial overgrowth, and increased intestinal secretion from autonomic neuropathy have all been linked as possible mechanisms in its pathogenesis.

DIAGNOSING HYPOXIC RESPIRATORY FAILURE IN A PATIENT WITH IDIOPATHIC HYPERTROPHIC PACHYMENINGITIS. Sarah Koumtouzoua. Emory University, Atlanta, GA. (Control ID #2701982)

LEARNING OBJECTIVE #1: Discuss presentation of PCP in HIV non-infected patients, including those with autoimmune or rheumatologic dysfunction treated with immune suppressive therapies.

LEARNING OBJECTIVE #2: Review recommendations for PCP prophylaxis in HIV non-infected patients with immune compromise.

CASE: A 69 year-old female presents with shortness of breath for two weeks. She also reports lethargy, dry cough, chills, lower extremity edema, proximal muscle weakness and difficulty walking. Past medical history is notable for idiopathic hypertrophic pachymeningitis with chronic dysphagia and dysarthria, treated with three months of high dose prednisone and rituximab. On admission, she was hypotensive, tachycardic and hypoxic. Exam revealed diffuse crackles and edema to her knees bilaterally. ABG showed respiratory alkalosis with a pH of 7.50, PCO2 of 34 and PO2 of 57 on 5L O2. BNP was 57. CT of the chest revealed diffuse ground glass opacities and septal thickening. Broad spectrum antibiotics and stress-dose steroids were initiated for sepsis. Despite treatment, hypoxia continued. LDH was elevated at 520, raising suspicion for Pneumocystis pneumonia (PCP). Empiric PCP treatment with pentamidine was started and bronchoscopy on day 5 revealed cytology positive for PCP. She improved with clindamycin and primaquine with steroids and was weaned off oxygen. Following treatment, she continued atovoquone for PCP prophylaxis.

IMPACT: Our case illustrates that PCP and other opportunistic infections should be considered in HIV non-infected patients who present with respiratory failure on immunosuppressive medications, especially those on multiple therapies. Additionally, consideration should be given to PCP prophylaxis for patients with rheumatologic disease on combined steroids and immunosuppressive therapies for greater than one month.

DISCUSSION: Pneumocystis pneumonia is an opportunistic fungal infection caused by *Pneumocystis jirovecii*. Clinical presentation of PCP in non-HIV infected patients includes subacute shortness of breath (as opposed to indolent progression in HIV patients), dry cough, fever, and hypoxia with diffuse interstitial infiltrates on imaging. Elevated LDH above 250 is suggestive of PCP, with cytology allowing for a definitive diagnosis. PCP typically causes an atypical pneumonia in immune-comprised hosts. It is traditionally associated with HIV infected patients, but can also occur in HIV non-infected hosts, specifically those with hematologic malignancies, transplant patients, and primary immunodeficiencies. Less commonly, PCP can occur in patients immunocompromised from the use of combined steroids and immunosuppressive medications to treat rheumatologic disease. In a retrospective study of patients on rituximab from 1998 to 2011, 73% of the patients that developed PCP were also receiving concomitant prednisone. As our case illustrates, PCP can occur in patients on immunosuppressive therapies and especially those on multiple therapies that include steroids.

DIAGNOSING MYOCARDIAL INFARCTION IN A VENTRICULAR-PACED RHYTHM Anish Vani[1]; Lauren Yokomizo[1]; Matthew Vorsanger[2]. [1]New York University School of Medicine, New York, NY; [2]New York University Langone Medical Center, New York City, NY. (Control ID #2671971)

LEARNING OBJECTIVE #1: Diagnose myocardial infarction (MI) in patients with ventricular-paced rhythms by using the Sgarbossa criteria

LEARNING OBJECTIVE #2: Recognize the limitations of the Sgarbossa criteria

CASE: A 93 year-old Polish man with complete heart block, treated with a dual-chamber pacemaker, presented with acute onset chest pain to the emergency room of our institution. His electrocardiogram (ECG) showed sinus rhythm with atrial sensing and right ventricular pacing. There were >1mm ST segment depressions in leads V3-V5, leads in which the QRS complex was predominantly negative. His initial troponin I level was 1.9 ng/mL. Due to suspicion of an acute coronary plaque rupture, the patient was referred for urgent coronary angiography, which revealed severe stenosis of the distal right coronary artery, mid posterior descending artery, left main coronary artery, mid left anterior descending artery, and the ostial left circumflex artery. An intra-aortic balloon pump was placed to maintain coronary perfusion. The patient subsequently underwent successful coronary artery bypass grafting, with saphenous vein grafts placed on the left anterior descending artery, first obtuse marginal, and posterior descending artery, and was discharged home in stable condition.

IMPACT: This case validates the application of the Sgarbossa criteria to the ECG of ventricular-paced patients to diagnose acute MI. It also highlights significant limitations of the Sgarbossa criteria and suggests a need to develop a more comprehensive system to allow for greater sensitivity in diagnosing acute MI in ventricular-paced patients.

DISCUSSION: Interpreting the ECG in the setting of a left bundle branch block (LBBB) or ventricular-paced rhythm can be challenging. Depolarization and repolarization through the ventricular myocardial tissue, instead of the specialized conduction system, produces ST segment changes discordant to the major vector of the QRS complex, which may obscure underlying ischemic ST changes. Sgarbossa et al. found that ST elevations ≥5mm in leads with predominantly negative QRS complexes, ST elevations ≥1mm in leads with predominantly positive QRS complexes, or ST depressions ≥1mm in leads V1-V3 were all highly specific for an acute MI, based on a 17 patient cohort from the GUSTO-1 trial. There are significant limitations of the Sgarbossa criteria, however. It has not been validated for use in patients with biventricular pacing and the criteria are specific, but not sensitive. Other scoring systems exist, although they have been validated in patients with a LBBB, not in ventricular-paced patients. Subsequent research with a larger patient cohort is needed, due to the increasing number of ventricular-paced patients in our aging population and the importance of the emergency room ECG to triage patients with acute MI for immediate fibrinolytic therapy or percutaneous coronary intervention.

DIAGNOSIS OF ISOLATED UNILATERAL ABSENCE OF THE LEFT PULMONARY ARTERY (IUAPA) IN AN ADULT Dorothy Charles; Steven Mckee; Michael goodwin; Lindsey Merrihew; Deepa R. Nandiwada. University of Pennsylvania, Philadelphia, PA. (Control ID #2706735)

LEARNING OBJECTIVE #1: Recognize the differential and diagnose previously unrecognized isolated unilateral absence of pulmonary artery (IUAPA)

LEARNING OBJECTIVE #2: Manage complications for patients who have IUAPA

CASE: A 55-year-old non-smoking man with a history of recently recurrent pneumonia and worsening dyspnea on exertion presented with right-sided chest pain. For the past 6 months he presented to clinic with progressive lower extremity edema and dyspnea on exertion with an echo ordered by his primary care physician revealing a normal ejection fraction and mild diastolic dysfunction. On the day prior to admission he described sudden onset of 7/10 pain after bending over and feeling a "pop in his chest". Vital signs revealed a blood pressure of 196/116 mmg/hg and an oxygen saturation of 94% on room air. On pulmonary exam, breath sounds were decreased on the left. The lungs were otherwise clear. Troponin T and brain natriuretic peptide levels were normal. An EKG was remarkable for T wave inversions. Chest x-ray demonstrated opacities in the left upper, middle, and lower lobes and the right lower lobe associated with volume loss suggestive of chronic post-inflammatory fibrosis

but could not rule out pneumonia. Computed Tomography of the chest showed a hypoplastic left lung with multifocal pulmonary infiltrates, left-ward deviation of the mediastinum and trachea, with right lung hyperinflation and mild right lower lobe peribronchial cuffing. Hospital Course: Initial concern for pneumonia was discussed, however clinically the patient had no other signs of infection so antibiotics were not started. Continuous oxygenation saturation monitoring overnight revealing sustained desaturations at 70% to 80% on room air, which improved with oxygen alone.

IMPACT: This is a rare diagnosis in an asymptomatic adult with only case reports available to guide diagnosis and management. It also shows how premature closure can delay the diagnosis of a long standing progressive pathology. In the clinic this patient's work up for dyspnea on exertion was stopped after congestive heart failure had been ruled out via echocardiogram. Additional anchoring and premature closure biases may have come into play with his recurrent pneumonias over the past few years.

DISCUSSION: This case brings up a rare diagnosis of asymptomatic IUAPA in an adult with a sub-acute progression later in life. Unlike most cases, he did not have a significant childhood history of pulmonary disease or congenital heart disease. Patients with absence of the left artery can be asymptomatic as the right lung is more able to compensate with hypertrophy as compared to the left. Complications of IUAPA include severe pulmonary hypertension, pulmonary hemorrhage, and recurrent infections. Monitoring with serial echocardiograms to assess for the progression of pulmonary hypertension is the mainstay of therapy. Supportive care including emobolization for hemoptysis and lobectomy or pneumonectomy for recurrent infections have also been reported.

DIFFUSE LIVER METASTASES UNDETECTED BY MULTIPLE IMAGING MODALITIES IN EXTENSIVE-STAGE SMALL CELL LUNG CANCER Benjamin D. Gallagher. Columbia University Medical Center, New York, NY. (Control ID #2673513)

LEARNING OBJECTIVE #1: Recognize the limited sensitivity of diagnostic imaging in detecting small liver lesions.

CASE: A 66-year-old former heavy smoker with a history of non-alcoholic steatohepatitis presented to the emergency department with several days of exertional dyspnea and 30 lbs. of weight loss over several months. He was found to have a large left hilar mass, as well as hypokalemia, metabolic alkalosis, abnormal liver function tests, and thrombocytopenia. The plasma cortisol and ACTH levels were markedly elevated, and Cushing's syndrome secondary to ectopic ACTH production by small cell lung cancer was suspected. This diagnosis was confirmed by transbronchial biopsy of the mass. Staging imaging revealed a right cerebellar lesion, but multiple modalities (ultrasound, CT, and MR) failed to demonstrate any liver metastases. Because the patient's hepatic dysfunction continued to worsen without an apparent cause, he underwent percutaneous liver biopsy, which showed extensive infiltration by tumor. Unfortunately the procedure was complicated by intraperitoneal hemorrhage, and the patient suffered a cardiac arrest soon afterwards. On autopsy more than 50% of the hepatic parenchyma was infiltrated by more than 100 discrete metastatic lesions, most of them <1 cm in diameter.

IMPACT: When treating patients with cancer and abnormal liver function tests, clinicians must maintain a high index of suspicion for metastatic disease even when imaging studies are unrevealing.

DISCUSSION: Small cell lung cancer is an aggressive, smoking-associated malignancy with a poor prognosis. The objective of staging is to identify the minority of patients with limited-stage disease, in whom lesions are confined to a single hemithorax, because they benefit from combination radiation and chemotherapy. Most patients (60-70%) have extensive-stage disease on presentation and are offered chemotherapy alone. This patient had extensive-stage disease based on his brain lesion, so ascertaining the presence of liver metastases would not have affected management. However, the degree of hepatic dysfunction was so severe (total bilirubin reached 22 mg/dL) as to preclude systemic therapy, so finding a reversible cause of liver failure would have been necessary for him to receive treatment. Ultrasound is 40-70% sensitive for detecting liver metastases, and contrast-enhanced CT (the modality most often used) is 80-85% sensitive. MR provides the best lesion-to-liver contrast but is still insensitive to lesions smaller than 1 cm. Thus this patient's innumerable tiny metastases on a background of steatohepatitis went unnoticed by imaging.

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DISCORDANCE IN BICARBONATE MEASUREMENT IN A PATIENT WITH HYPERTRIGLYCERIDEMIA Susan Tran[1]; Angela W. Fung[1]; Ivan M. Blasutig[1, 2]; Savannah Cardew[3]. [1]University of Toronto, Toronto, ON, Canada; [2]University Health Network, Toronto, ON, Canada; [3]Women's College Hospital, Toronto, ON, Canada. (Control ID #2684680)

LEARNING OBJECTIVE #1: Assess spurious laboratory values by ordering appropriate follow-up investigations

LEARNING OBJECTIVE #2: Recognize the effect of hypertriglyceridemia on biochemical assays

CASE: A 44-year old man presented to the emergency department with decreased level of consciousness after alcohol consumption. Medical history is significant for alcohol use of 30 bottles of beer per week, hypertension, and depression. On examination, he was hemodynamically stable, fatigued but rousable and oriented. His ethanol level was 53 mmol/L (normal <1). He received thiamine and intravenous fluids. He returned to baseline after further monitoring for several hours and was appropriate for discharge. However, bloodwork revealed a plasma bicarbonate level of 6 mmol/L (normal 23–29). This value was confirmed on repeated measurements. Anion gap was 27. As this result was unexpected and unexplained we tested bicarbonate level on arterial and venous blood gas samples and results were normal, as were pH and pCO_2. Electrolytes, creatinine, hemoglobin, and bilirubin were normal, serum ketones were negative, drug screen was negative, and lactate was only slightly elevated at 2.6 mmol/L (normal 0.5-2.0). After consultation with a clinical biochemist, a lipid profile was collected which detected a triglyceride level of 40 mmol/L (normal <1.7). In this case, plasma bicarbonate level was erroneous due to interference from high triglyceride levels. Bicarbonate from blood gas measurement was considered the true bicarbonate value. The patient was discharged home following this finding.

IMPACT: Understanding how laboratory results are measured, especially when discordance exists between two measurements of the same blood marker, is important to identify the true value. Biochemical interference leads to spurious results and occurs when the presence of a substance causes deviation from the true value of the analyte. Common endogenous substances causing interference include triglycerides, hemoglobin and bilirubin.

DISCUSSION: Bicarbonate is a routinely ordered laboratory test to detect acid–base disturbances. Bicarbonate can be measured directly in plasma/serum

or calculated from a blood gas whole blood sample using pH, pCO_2 and the Henderson-Hasselbalch equation. In general, bicarbonate values obtained from plasma/serum and blood gas are concordant. If discordant, ordering a lipid profile should be considered. High triglyceride levels may affect spectrophotometric analysis of plasma/serum bicarbonate, as used in our laboratory. This may be attributed to light scattering from the turbidity of the specimen causing interference with the assay. Hypertriglyceridemia also displaces the aqueous portion of the centrifuged plasma/serum sample with lipid, leading to erroneously lower values. In contrast, the blood gas measurement of bicarbonate is calculated from the Henderson-Hasselbalch equation and is not subject to spectral interferences. If high triglycerides are detected, blood gas measurement of bicarbonate should be considered more precise.

DISSEMINATED VARICELLA AFTER VACCINATION: VACCINE OR WILD-TYPE? Anthony Nicolas[2]; Deirdre Lewis[1]; Riffat Sabir[2]; Mini Hariharan[2]. [1]Baystate Medical Center, Northampton, MA; [2]Baystate Medical Center, Springfield, MA. (Control ID #2706625)

LEARNING OBJECTIVE #1: Recognize varicella as an uncommon cause of acute pancreatitis

LEARNING OBJECTIVE #2: Recognize the need for varicella vaccination after hematopoietic stem cell transplantation

CASE: A 57 year old man with a history of non-Hodgkin's lymphoma and autologous hematopoietic stem-cell transplant (HSCT) in remission was admitted to a community hospital with 3 days of epigastric pain. One week prior, patient had been vaccinated for varicella (VZV), MMR and pneumococcus. There was no history of trauma or alcohol abuse. Laboratory studies revealed elevated lipase, transaminitis, and indirect hyperbilirubinemia. A right upper quadrant ultrasound showed no gallstones or duct dilation. MRCP revealed mild pancreatic edema consistent with acute pancreatitis. On hospital day 2, patient's LFTs rose raising concern for an underlying hepatic process and was transferred to Baystate Medical Center for possible transjugular hepatic biopsy. On the day of transfer, the patient was noted to have a new vesicular rash. On admission, patient was afebrile and mildly tachycardic. Physical exam revealed a diffuse, pruritic, vesicular rash involving the limbs, torso and face. A PCR swab from an unroofed vesicle was positive for VZV, and IV acyclovir was initiated. The patient's hospital course was complicated by VZV hepatitis with prolonged hyperbilirubinemia and VZV pneumonitis requiring intubation and mechanical ventilation. The patient completed a 15 day course of acyclovir and was successfully extubated on Day 17. He was discharged on Day 30 to a rehabilitation facility.

IMPACT: This case adds to the literature by describing disseminated VZV infection and its complications in a patient post autologous HSCT, ultimately found to be wild-type strain but confounded by recent VZV vaccination.

DISCUSSION: Acute pancreatitis is a common cause of hospital admission with a broad differential. The patient's initial presentation was typical of acute pancreatitis; however diagnostic workup was unrevealing for a clear etiology. In such cases, consideration of less common causes such as viral infection is warranted. In this case, the patient's VZV pancreatitis heralded the onset of disseminated VZV infection. The temporal relationship between VZV vaccination and onset of illness initially suggested infection with vaccine strain, but serologic testing revealed a wild-type strain. Persons who have undergone HSCT are at increased risk for VZV reactivation, and so undergo vaccination. While data is limited, vaccination is thought to be safe and efficacious 2 years after HSCT in patients without ongoing immunosuppression or chronic graft versus host disease. Furthermore, disseminated VZV with vaccine strain following immunization is exceedingly rare in the immunocompetent, and generally occurs only when administered to a patient with an unrecognized immunodeficiency. This case describes an uncommon cause of VZV pancreatitis followed by disseminated VZV in a patient with a history of autologous HSCT who was recently vaccinated against VZV.

DON'T MAKE LIGHT OF PAINFUL INTERCOURSE -A 44-YEAR-OLD WOMAN WITH DYSPAREUNIA- KAZUKI SHIMIZU; Takuji Ueno; Hidenori Oguchi; Mitsunori Iwase. TOYOTA Memorial Hospital, Toyota, Japan. (Control ID #2702724)

LEARNING OBJECTIVE #1: When you encounter unexplained pleural effusion or ascites, consider tuberculosis as the potential cause.

LEARNING OBJECTIVE #2: Surgical approach is useful for definitive diagnosis of infectious diseases.

CASE: A 44-year-old G2P1 woman was referred for dyspareunia. She had history of cervical dysplasia and myoma uteri. She had no respiratory symptoms or abdominal distention, took no medications and had a benign family history. Her vital signs were normal. She had no rales in her lungs. Her abdomen was soft and flat, with normal bowel sounds and without tenderness. A pelvic exam showed normal uterine adnexa without tenderness. Blood tests identified elevated levels of CRP and CA125 but other serum chemistry and tumor markers were within normal limits. MRI detected fluid around the uterus; there were no peritoneal nodules or enlarged lymph nodes. She was clinically diagnosed as endometriosis and dysmenorrhea. Oral progestin replacement and oral contraceptive therapies were prescribed. However, her menstrual cramps worsened. Chest radiography detected no signs of malignancy or tuberculosis but enhanced abdominal CT detected signs of disseminated peritoneal lesions. We collected fluid from the pouch of Douglas. Microbiologic testing and cytologic examination of the fluid were negative but ADA was elevated. Ziehl-Neelsen stain was negative but interferon-gamma release assays were positive. We conducted diagnostic laparoscopy which revealed numerous tiny nodular lesions on the peritoneal surfaces. Pathological examination showed epithelioid granuloma and Langhans giant cells with caseous necrosis. Tuberculous peritonitis (TBP) was diagnosed and a combination-drug regimen of rifampin, isoniazid, pyrazinamide and ethambutol was initiated. At follow-up, her clinical symptoms were improving.

IMPACT: Microbiologic testing and cytologic examination were negative but ADA level was elevated. Ziehl-Neelsen stain was negative but interferon-gamma release assays were positive. Diagnostic laparoscopy was useful for definitive diagnosis.

DISCUSSION: TBP becomes a continuing problem in populations with a high prevalence of tuberculosis. Tuberculosis is known as the top 10 causes of death worldwide and one-third of the world population is still at risk. Tuberculosis is often misunderstood as the disease in developing countries but some cases are imported to developed countries. TBP is a form of abdominal and pelvic tuberculosis. It affects about 0.04% of all cases of tuberculosis. The risk increased in patients with cirrhosis, AIDS, diabetes, steroid use, underlying malignancy and undergoing continuous ambulatory peritoneal dialysis. TBP is diagnosed late due to lack of specific symptoms and laboratory findings and therefore associated with high mortality rate. We should consider TBP in the differential diagnosis of ascites and fluid around the uterus of unknown cause. Since preoperative diagnosis of TBP is difficult, pelvic laparoscopy is helpful to distinguish TBP from malignancy, including widespread ovarian cancer.

DON'T YOU KNOW THAT YOU ARE TOXIC Douglas Lim; Michael P. Smith. University of Nebraska Medical Center, Omaha, NE. (Control ID #2707502)

LEARNING OBJECTIVE #1: Recognize the risk of baclofen use in patients with kidney disease.

LEARNING OBJECTIVE #2: Develop a systematic approach to the patient with altered mental status.

CASE: A 34 year-old woman presented with several hours of confusion. She appeared obtunded with incomprehensible speech. She was unable to open her eyes. Her medical history included diabetes related end-stage renal disease and has been compliant with her maintenance hemodialysis; she has chronic muscle spasms as well. Her blood urea nitrogen was 69 mg/dL. A head CT was normal. Records revealed she was given dilaudid and baclofen for leg pain a few hours before her symptom onset. She showed no improvement after receiving naloxone. Baclofen toxicity was thought to be the culprit and she was treated with hemodialysis. She showed significant improvement after 3 days.

IMPACT: This case emphasized the importance of keeping a systematic approach to altered mental status given the limited history that is often able to be obtained. Medications that can cause toxicity may not be listed as a medication that requires decreased dosing. Thus, competing diagnoses must be excluded, requiring a systematic approach

DISCUSSION: Altered mental status is a problem often encountered by the general internist. The differential is very broad and identifying the cause can be challenging. History is by definition unreliable, and a systematic approach must used to effectively diagnose and treat the patient. This can look at all of the factors that transport oxygen to the brain, including the lungs, heart, blood vessels, the brain, and the contents of the blood carrying everything. Baclofen toxicity is a rare cause of encephalopathy and individuals with kidney disease are at greater risk. Baclofen is renally eliminated with an average reported half-life around 6.6 h. Dosing recommendations only recommend decreased dosing and caution advised. However, doses as low as 5mg dose can result in life threatening toxicity in those with impaired renal function. The patient from this case required urgent dialysis and intubation after she was given a total of 40mg of baclofen. Baclofen is used for muscle spasticity as well alcohol withdrawal syndrome. It acts as a gamma-aminobutyric acid (GABA) agonist but the complete mechanism is not fully understood. Due to its lipophilic nature, it can cross the blood brain barrier and have significant nervous system side effects; the more severe side effects are coma and respiratory distress as seen in the patient in the case. Individuals without renal impairment can develop baclofen toxicity as well if exposed to high doses. There are no standard treatment guidelines. But, others have also reported effective treatment of baclofen toxicity with dialysis and pulmonary support. Regardless of the dose, general internists should be aware of the serious risk of baclofen toxicity especially, in patients with kidney disease

DON'T ALWAYS FOLLOW YOUR HEART: A CAVEAT TO TROPONIN-T Kaylan Christianer; Heidi Lumish. New York Presbyterian- Columbia, New York, NY. (Control ID #2702933)

LEARNING OBJECTIVE #1: Recognize conditions that can lead to false-positive elevations in cardiac enzymes, particularly troponin-T and CK-MB

CASE: A 64yo Dominican man with HTN, depression, and pleural and peritoneal mesothelioma presented to the ED with 3 weeks of progressive dyspnea. Medications were escitalopram and gabapentin. He had received 1 year of pembrolizumab and carboplatin, followed by 7 cycles of gemcitabine and oxaliplatin, most recently 6 months ago. He had no family history of cardiovascular or autoimmune disease. Vitals were T 36.7 C, BP 120/82 mmHg, P 100/min, RR 20/min, and O2 sat 99% on room air. Cardiac and pulmonary exam were normal. He had several circular erythematous patches on the forehead and erythema of the nasolabial folds. Strength was 2/5 in the shoulders and hip flexors, and 3-4/5 in the distal upper and lower extremities. Sensation was decreased to pinprick in the fingers and toes bilaterally. Labs revealed elevated troponin-T (8.1 ng/mL, normal <0.01) and CK-MB (262 ng/mL, normal <7.7). ECG showed normal sinus rhythm. He was treated empirically for acute coronary syndrome with heparin and dual antiplatelet therapy. On day 2, echocardiogram was normal, and CPK was elevated (4715 u/L, normal <499), but troponin-I was normal (0.01 ng/mL). On day 4, heparin and antiplatelet therapy were discontinued, and methylprednisolone was started for empiric treatment of inflammatory myositis. Subsequent workup revealed + ANA (1:1280, speckled), +anti-PM/Scl Ab and + anti-ssA/Ro Ab. Electromyography was consistent with an inflammatory myopathy. Biopsy of the left quadriceps muscle confirmed an active, early chronic myopathy. The patient's proximal muscle weakness and respiratory status gradually improved with steroids, and troponin-T and CPK levels normalized. On day 12, the patient was discharged home on methotrexate.

IMPACT: While troponin-T and CK-MB are regarded as specific markers of myocardial injury, our case illustrates a caveat in patients with myopathies, and is unique in that the myopathy causing elevated enzymes was previously undiagnosed. Our case highlights the importance of keeping a broad differential and being wary of confirmation bias when treating patients with elevated cardiac enzymes in the absence of other signs of myocardial ischemia.

DISCUSSION: In patients with inflammatory myopathies, elevations in troponin-T and CK-MB have been reported in the absence of myocardial injury (Aggarwal, Dhir, Hamilton). This was initially thought to reflect cross-reactivity between skeletal muscle troponin and the troponin-T assay, or active inflammation of the cardiac muscle itself. Recent studies, however, suggest that in patients with continuous skeletal muscle breakdown and regeneration, skeletal muscle reverts to embryonic form which expresses cardiac troponin-T and CK-MB, unlike healthy adult skeletal muscle (Jaffe). The same phenomenon is not observed with troponin-I, suggesting it may be a more specific marker for cardiac ischemia in patients with underlying myopathies.

DONATING BLOOD GONE A-MRSA Kate Hust. Hennepin County Medical Center, Minneapolis, MN. (Control ID #2702695)

LEARNING OBJECTIVE #1: Recognize complications of thrombophlebitis.

LEARNING OBJECTIVE #2: Manage persistent methicillin-resistant *Staphylococcus aureus* bacteremia.

CASE: A 50-year-old man presented to the emergency room with dyspnea, cough, and pleuritic chest pain for 3 days. He also noted left arm pain and redness since donating blood 5 days prior. He was ill-appearing, febrile, tachypneic, tachycardic, and hypoxic with coarse breath sounds on pulmonary exam. His left forearm was erythematous and mildly tender in the antecubital fossa. Chest imaging showed multifocal consolidations. Upper extremity ultrasound showed superficial and deep venous thrombosis. Within 12 hours of collection, blood cultures were positive for methicillin-resistant *Staphylococcus aureus* (MRSA) in all 4 bottles. Despite treatment with vancomycin, the patient remained critically ill, requiring high-flow oxygen supplementation.

Daily blood cultures persistently grew MRSA. On hospital day 4, ceftaroline was added for synergy with vancomycin, and he had his first negative blood cultures 2 days later. He continued on dual therapy throughout his hospitalization and was ultimately discharged on hospital day 31 with supplemental oxygen and home services to complete a course of ceftaroline.

IMPACT: While blood donation, line placement and other venipuncture are commonplace in medical practice, it is important to both recognize their potential complications and also to educate patients about how to recognize them so timely management can be initiated and more severe complications avoided.

DISCUSSION: Blood donation and other venipuncture are common in medicine, and while they rarely lead to major complication, it is important to promptly recognize and intervene when they do arise. Bruising, bleeding, hematoma formation or extravasation may occur somewhat commonly while phlebitis is less frequent. Thrombophlebitis affects superficial veins and is diagnosed when there is thrombus associated with inflammation, usually after a vascular trauma. Management with elevation, warm compress, and analgesia is often sufficient for resolution. While considered a low risk location, superficial thrombophlebitis in the upper extremity may also lead to deep vein thrombosis or sepsis when bacteria seed the thrombi. MRSA bacteremia is often treated in hospitalized patients, beginning with source removal and intravenous antibiotics, usually vancomycin or daptomycin. With a good minimum inhibitory concentration (<1 mcg/mL), MRSA bacteremia should begin to resolve after 1–2 days of vancomycin therapy. When bacteremia is persistent despite appropriate antibiotics and occult infectious foci have been addressed, the regimen should broaden to dual-therapy with ceftaroline for synergism. Ceftaroline, a 5th-generation cephalosporin, has bactericidal activity against MRSA as well as gram-negative organisms. Once the bacteremia has resolved, ceftaroline may be continued as monotherapy with close monitoring of hematologic parameters due to possibility of bone marrow suppression.

DOUBLE TROUBLE: A CASE OF CONCOMITANT OPPORTUNISTIC INFECTIONS

Shradha A. Kulkarni. Baylor College of Medicine, Houston, TX. (Control ID #2707598)

LEARNING OBJECTIVE #1: To create a broad differential in immunocompromised patients with respiratory symptoms.

LEARNING OBJECTIVE #2: To emphasize the importance of prescribing PJP prophylaxis for patients on long-term high-dose steroids.

CASE: A 60-year-old male with hepatitis C infection status-post treatment with a negative viral load and chronic kidney disease (CKD) due to biopsy-confirmed focal segmental glomerulosclerosis (FSGS) presented with pleuritic chest pain, dyspnea, fever, and cough for a few days. He denied hemoptysis, sweats, weight loss, travel, or sick contacts. Of note, he had been prescribed high-dose steroids one month prior to presentation for FSGS and had not been prescribed any prophylactic antibiotics. Examination was notable for tachypnea to 24 breaths per minute, hypoxia to 92% on room air, and crackles auscultated in the left lung base. Laboratories were notable for leukocytosis to 27,000 cells/uL, acute kidney injury on his baseline CKD, and a negative human immunodeficiency virus (HIV) screen. Chest x-ray showed a left lower lobe infiltrate. He was treated empirically for community-acquired pneumonia with levofloxacin. PJP prophylaxis was also started given his steroid use; atovaquone was selected as trimethoprim-sulfamethoxazole could not be used given his CKD. He became febrile on this regimen, so coverage was broadened to vancomycin and cefepime until sputum cultures grew Gram-positive branching rods suggestive of *Nocardia*. Antibiotics were narrowed to linezolid and atovaquone prophylaxis. Brain magnetic resonance imaging was performed and did not show an abscess. Interestingly, PJP sputum stains also returned positive a few days later, so atovaquone dosing was increased to complete treatment. On a subsequent clinic visit, the patient had completed PJP treatment and was continuing pulmonary nocardiosis treatment for a total of six months. His cough, dyspnea, and hypoxia had resolved.

IMPACT: This case demonstrates the diagnostic challenges encountered when treating acutely-ill immunocompromised patients and the need to maintain a broad differential. It also demonstrates the utmost importance to consider PJP prophylaxis for any patient on high-dose steroids.

DISCUSSION: Nocardiosis is an uncommonly diagnosed infection, with less than 1,000 new cases in the United States every year per the Centers for Disease Control. Significant risk factors are corticosteroid use, HIV infection, and malignancy. Pulmonary involvement can be seen in approximately two-thirds of cases. Even more uncommonly seen is concomitant pulmonary nocardiosis and PJP. There are case reports detailing such instances, however all described patients were either receiving chemotherapy, post-transplant on multiple systemic immunosuppressive agents, or HIV positive. Our patient presented unusually, as he had only been taking high-dose steroids for one month.

DRAMATIC LEUKOCYTOSIS IN POLYCYTHEMIA VERA: NOT ALWAYS VERA RUBRA

Jonathan Wolfe[1]; William Levin[2]. [1]University of Pittsburgh Medical Center, Pittsburgh, PA; [2]University of Pittsburgh Medical Center, Gibsonia, PA. (Control ID #2705736)

LEARNING OBJECTIVE #1: Recognize dramatic leukocytosis as a complication of polycythemia vera (PV).

LEARNING OBJECTIVE #2: Diagnose and treat hyperviscosity symptoms related to PV.

CASE: A 74-year-old female with a history of PV on hydroxyurea and prior splenectomy presented with shortness of breath. Acute cardiac and pulmonary pathology were ruled out. She was found to have a WBC of 108,700, hemoglobin of 8.1, and platelets of 2.1 million. Her baseline WBC was 20,000. Labs were also notable for mild tumor lysis syndrome. She was treated with intravenous fluids and her hydroxyurea was increased. Her shortness of breath resolved with treatment. A peripheral smear demonstrated polychromasia, anisopoikilocytosis, changes consistent with a prior splenectomy, and no evidence of blasts. JAK2 testing was positive. She then underwent bone marrow biopsy, which revealed hypercellular marrow, mild fibrosis, and no evidence of dysplasia or leukemia. Cytogenetic studies showed a normal karyotype, and FISH was negative for multiple cytogenetic abnormalities. The findings were most consistent with PV. With the increased dose of hydroxyurea, her counts normalized. Her hospital course was complicated by a spontaneous hematoma in the rectus sheath. She was treated supportively and recovered.

IMPACT: Although PV is classically associated with an increase in hemoglobin, leukocytosis and thrombocytosis are common and can be dramatic. Hyperviscosity symptoms due to extreme erythrocytosis or leukocytosis are not unusual in the proliferative phase of the disease.

DISCUSSION: PV is a chronic myeloproliferative neoplasm associated with a mutation in the JAK2 signaling protein. In PV, all cell types often derive from a single neoplastic stem cell, and the erythroid progenitor cells are capable of growing and dividing in the absence of erythropoietin. The disease has three phases termed the latent, proliferative, and spent phases. Most patients are

diagnosed in the latent phase when they are relatively asymptomatic. Typically, patients present with hemoglobin of greater than 18.5 in men or 16.5 in women. In the case of our patient, her hemoglobin count was likely suppressed by her home hydroxyurea regimen. In the proliferative phase, hyperviscosity and thrombosis may develop. Concomitant leukocytosis and thrombocytosis are common in PV, with elevations of additional cell lines occurring in over 50% of patients. This case illustrates an extreme example of both leukocytosis and thrombocytosis associated with the proliferative phase of disease. Her presenting symptom of shortness of breath was likely a result of hyperviscosity given her dramatically increased WBC from baseline. Treatment may involve phlebotomy in the case of increased hemoglobin, hydroxyurea, or other immunosuppressive agents. Approximately 20% of patients enter the spent phase, where progressive fibrosis drives hematopoietic activity into the liver and spleen.

DRAMATIC RESPONSE TO HIGH-DOSE INTRAVENOUS METHYLPREDNISOLONE IN A PATIENT REFRACTORY TO ORAL PREDNISONE IN HASHIMOTO'S ENCEPHALOPATHY Mukund Das; Gregory Cunn; Nina Hein; Miran Salgado. New York-Presbyterian Brooklyn Methodist Hospital, Brooklyn, NY. (Control ID #2706157)

LEARNING OBJECTIVE #1: Treat Hashimoto's Encephalopathy with a trial of high dose intravenous Methylprednisolone in patients who fail oral Prednisone treatment in Hashimoto's Encephalopathy.

CASE: A 29 year-old female with newly diagnosed hyperthyroidism presented with worsening paranoia, palpitations, and chest pain. For the past four months she has had worsening agitation with frequent mood swings, constant pacing, insomnia, paranoia, and pressured speech. Exam findings included tachycardia and thyromegaly. Laboratory findings included TSH < 0.005 u/mL and free T4 level of 5.92 ng/dL. She was started on Propranolol and Methimazole. She then became paranoid and suicidal. Further workup revealed elevated TPO level of 789 IU/mL, elevated TSI level of 167 IU/mL, and low thyroglobulin antibodies. Despite treatment with Methimazole, there was no change in free T4 and treatment was changed to Propylthiouracil. Thyroid sonogram showed nodular right lobe thyroid, and fine needle aspiration showed a benign follicular nodule. She was started on Hydrocortisone and Phenobarbital, and underwent Radioactive iodine-131 ablation therapy. Her free T4 decreased by half; however, her psychosis persisted. Several autoimmune panels including NMDA receptor, anti-HU, CASPR2, GAD65, anti-MA, GABA-Br were negative, ruling out other causes of autoimmune encephalitis. She was started on pulse dose IV methylprednisolone for three days, and on day two her psychosis and suicidal ideation resolved. Considering the dramatic response to steroids in a patient with thyrotoxicosis with elevated TPO antibodies, and in the absence of other autoimmune disorders, a diagnosis of Hashimoto's encephalopathy was made. She was started on Mycophenolate mofetil, oral Prednisone taper for four weeks, and discharged home. At four weeks following discharge, she remained at baseline.

IMPACT: Hashimoto's encephalitis is a difficult diagnosis to make since no accepted diagnostic criteria exist. When dealing with diseases in which the clinical picture is complicated by other manifestations, in this case psychosis, it is crucial to have a wide range of differential diagnosis.

DISCUSSION: Hashimoto's encephalopathy, also known as steroid-responsive encephalopathy associated with autoimmune thyroiditis, is a rare syndrome associated with Hashimoto thyroiditis. The exact mechanism remains unknown; however, it is thought to be an immune-mediated disorder without direct effects of high thyroid level on the central nervous system. Most patients show good clinical response to steroids. Although optimal steroid dose has yet to be defined, current literature supports treatment with oral prednisone dose ranging from 50 mg to 150 mg daily. Benefits of high dose steroid compared to low dose steroids is unknown. Our patient did not respond to low dose oral corticosteroid treatment; however, responded dramatically to high-dose IV corticosteroid therapy. Therefore, if there is a poor response to oral steroids, high dose IV methylprednisolone should be tried.

DYSPNEA IN AIDS Akshar Chauhan[1]; Brandon J. Mauldin[2]; Deepa Bhatnagar[1]. [1]Tulane University, New Orleans, LA; [2]tulane university, New Orleans, LA. (Control ID #2705861)

LEARNING OBJECTIVE #1: Review the differential diagnosis of dyspnea in a patient with AIDS

LEARNING OBJECTIVE #2: Recognize the subtle clinical presentation of pericardial effusion

CASE: A 42-year-old African American man presented with complaint of progressive dyspnea on exertion for 2 weeks. He had a history of AIDS with unknown CD4 count. Prior history included atypical mycobacterial pulmonary infections and M. tuberculosis. He denied any chest pain, hemoptysis, edema, orthopnea, or weight loss. His physical examination showed no arrhythmia, murmur, friction rub, or peripheral edema apparent. Clear lung fields were noted. At rest, he had normal oxygen saturation. Upon physical exertion, he desaturated to 70-80 and became visibly short of breath. Complete blood count, basic metabolic profile, liver function tests, troponin I, BNP, TSH, and lactate were normal. Chest x-ray, EKG, and arterial blood gas taken at rest were normal. LDH was mildly elevated, and CD4 count was 11. Sputum DFA and acid fast staining was negative for P. jiroveci pneumonia and M. tuberculosis. Cultures from bronchoalveolar lavage were negative for bacterial or fungal organisms. CT chest angiogram showed no evidence of pulmonary embolism, AV malformations, or infiltrative disease. Echocardiogram revealed an ejection fraction 40-45% with a large pericardial effusion but no evidence of right ventricular dysfunction. A pericardial window was placed to drain the effusion, and the patient's dyspnea was noted to have markedly improved upon recovery. Analysis of the fluid was negative for malignancy or pathogens.

IMPACT: When caring for a patient with uncontrolled AIDS, a large number of infections can be the culprit for dyspnea. However, alternative causes may include cardiovascular diseases such as pericarditis.

DISCUSSION: In HIV-infected patients, cardiovascular disease may be due to HIV, opportunistic infections, malignancy, or non-HIV risk factors such as tobacco abuse and age. HIV or opportunistic infections may cause pericardial or myocardial disease. Pericardial disease is often due to pericarditis that leads to a pericardial effusion. Patients often present primarily with dyspnea (75%). Echocardiogram is the initial evaluation to determine the presence of a pericardial effusion. Pericardiocentesis allows for diagnosis of the cause of the effusion and therapeutic relief of symptoms. Where HIV and tuberculosis are endemic, HIV-associated pericardial effusions are often caused by M. tuberculosis. Other infectious organisms such as bacteria, viruses, and fungi can also result in pericardial effusions. With an incidence of up to 11% per year, pericarditis with cardiac effusion can be an easily overlooked cause of shortness of breath in these individuals. While usually asymptomatic, in rare cases these effusions can lead to respiratory distress and even cardiac tamponade. Unfortunately, pericardial fluid analysis is often negative, making the true etiology difficult to identify.

EAGLE IN A TAILSPIN (STYLOHYOID SYNDROME LEADS TO VERTIGO) Harshal G. Tejale; Bharat Khandheria; Roger D. Smalligan. Texas Tech Univ HSC-Amarillo, Amarillo, TX. (Control ID #2704259)

LEARNING OBJECTIVE #1: Identify the differential diagnosis of dizziness and distinguish between the rare causes by careful consideration of patient presentation

LEARNING OBJECTIVE #2: Diagnose Eagle's syndrome in the general population

CASE: A 68yo woman with hypertension, diabetes, migraines with aura and previous cervical spine surgery presented with 2 episodes of vertigo with diaphoresis, nausea, dyspnea, left leg weakness and neck pressure. Symptoms resolved each time she laid flat on her back. She denied loss of consciousness, visual changes, fever and chills with the episodes. PMH: cervical fusion 9 yrs ago. Meds: losartan, clonidine, acetaminophen, morphine and insulin. Social: denied smoking, alcohol and illicit drug use. Physical exam: HEENT normal, TMs nl, no carotid bruits, pulses 2+, lungs, heart, abdominal and detailed neuro exam were normal. Labs: Na: 137, K: 4.1, Glu: 103, Trop I: <0.02 ng/mL, TSH 2.0. Images: Head CT: normal, CTA Head and neck: normal flow and calcification of the stylohyoid ligaments was noted. Cardiac stress test: Negative. Similar episodes were elicited upon her turning the head to the right and on palpation of ipsilateral stylohyoid ligament. Due to suspicion of stylohyoid syndrome she was started on NSAIDS and referred to an otolaryngologist for further evaluation and treatment.

IMPACT: This case shows the importance of careful consideration of all available historical and physical findings to arrive at the diagnosis of a rare condition. Our patient presented with symptoms due to compression of the carotid artery when turning her head or with palpation of the stylohyoid ligament. Treatment options were discussed and she was given NSAIDs along with referral to an otolaryngologist for further treatment based on her preference.

DISCUSSION: The stylohyoid complex consists of the styloid process, stylohyoid ligament and the lesser cornu of hyoid bone. Irritation of cranial nerves V, VII, IX and/or X can cause facial pain on turning the head, tinnitus, otalgia, dysphagia or trismus. Carotid artery compression leads to visual symptoms, syncope, eye pain, or parietal pain. Typically, symptoms are exacerbated on palpation of the styloid process as in our case. Studies have shown that approximately 4% of the general population has an elongated styloid process but less than 5% of these people develop any symptoms. The normal range of length of a styloid process is 2 to 3 cm and the probability of Eagle's syndrome is greater with a styloid length more than 3 cm. Treatment options include a trial of antiinflammatories, analgesics, anticonvulsants or surgical shortening of the styloid through a transoral or lateral approach in refractory cases. Local infiltration with steroids or longacting local anesthetic has also been used with some success.

EMERGING HYPERVIRULENT KLEBSIELLA PNEUMONIAE LIVER ABSCESSES IN THE UNITED STATES: A NEED FOR A SCREENING PROTOCOL IN PREDISPOSED PATIENTS Steven Song; Joselle Cook. SUNY Downstate Medical Center, Brooklyn, NY. (Control ID #2694506)

LEARNING OBJECTIVE #1: Recognize potential for liver abscess and metastatic infection in a patient with Klebsiella pneumoniae bacteremia from an endemic region.

LEARNING OBJECTIVE #2: Implement a screening protocol with liver imaging and detailed ophthalmologic exam in such patients.

CASE: A 67-year-old Taiwanese man with no medical history presented with complaints of malaise, subjective fevers, and back pain for the past week. The patient was febrile to 102°F. Labs revealed leukocytosis (WBC 13x10^9 cell/L) and transaminitis (AST 134mg/dl, ALT 136mg/dl). MRI revealed discitis of the lumbar spine. Blood cultures grew ESBL Klebsiella pneumoniae (K. pneumoniae) and meropenem was started. Several days later, the patient complained of decreased vision in his left eye. Visual acuity decreased to "counting fingers" compared to 20/100 on admission. Orbit CT revealed periorbital soft tissue swelling, hyperenhancement of the uveal-scleral layer and vitreous body, choroidal detachment, and subchorionic abscess consistent with endophthalmitis. Intravitreal culture was also positive for ESBL K. pneumoniae. Intravitreal amikacin and vancomycin were administered. CT abdomen performed for abdominal pain showed multiple abscesses in both hepatic lobes and intrahepatic biliary ductal dilatation suspicious for cholangitis. The treatment course was interrupted as the patient left against medical advice.

IMPACT: The constellation of K. pneumoniae bacteremia, liver abscess, and further metastatic complications is a growing public health concern in the US due to increase in international travel. It is imperative to recognize potential devastating complications such as endophthalmitis and meningitis. Maintaining a high index of suspicion in patients with K. pneumoniae bacteremia traveling from endemic areas and instituting a screening protocol may improve clinical outcome with earlier treatment.

DISCUSSION: While K. pneumoniae is often associated with pneumonia and UTI, emergence of a K1 serotype has been implicated in K. Pneumoniae liver abscess (KLA). KLA was predominant in Southeast Asia, but increased prevalence in the US over the last decade has been recognized. Translocation of specific capsular subtypes of K. pneumoniae from the gastrointestinal tract predisposes to sepsis, with special tropism for the liver. Host susceptibilities such as diabetes and an immunocompromised state also influence the natural history of infection. Ultrasonography and CT will detect the presence of liver abscess. First line treatment combines systemic antibiotics with percutaneous drainage. Seeding of metastatic infection from KLA can result in endophthalmitis and discitis, as described in this index case; also osteomyelitis and meningitis. Endophthalmitis can cause permanent vision loss and is associated with significantly higher mortality rates. Early institution of systemic and intravitreal antibiotics may salvage vision. An established screening protocol may detect metastatic complications early in patients with KLA.

EMPHYSEMATOUS CYSTITIS: A SURPRISE! Supriya P. Singh[1]; Dipen B. Khanapara[2]; Marilou Corpuz[2]. [1]Montefiore, Bronx, NY; [2]Montefiore Medical Center, Bronx, NY. (Control ID #2707533)

LEARNING OBJECTIVE #1: 1: Recognize emphysematous cystitis (EC) as a complication of urolithiasis or recurrent urinary tract infection in elderly women with uncontrolled diabetes mellitus.

LEARNING OBJECTIVE #2: 2: Initiate early treatment of EC to avoid the potential morbidity and mortality associated with this infection.

CASE: A 54-year-old woman with poorly controlled diabetes and many clinic visits for Urinary Tract Infections presented with three days of suprapubic abdominal pain. She also complained of nausea, vomiting, dysuria, and foul-smelling urine. On examination, she was afebrile, and was tender in the lower abdomen. She was not adherent to insulin. Laboratory finding were significant for white blood cell count 12,500, hemoglobin 12.7 mg/dl and platelets 389,000/dl. Urinalysis revealed many leucocytes and was negative for nitrite. Imaging

was considered to rule out kidney stones or anatomical anomaly. CT scan of the abdomen showed a large amount of intraluminal air within the bladder, with large amount of air in the bladder wall, compatible with emphysematous cystitis without pyelonephritis. Urine culture grew Escherichia coli. She was treated with intravenous antibiotics with significant clinical improvement.

IMPACT: Any diabetic woman with recurrent UTIs should have imaging to rule out EC, as well as to evaluate the severity, extent of disease, and to assess for ascending infection.

DISCUSSION: EC is a rare disease characterized by primary infection of the urinary bladder with gas-producing pathogens. EC is typically defined and diagnosed radiographically. The incidence of reported cases is increasing with increased use of abdomino-pelvic imaging. However, as imaging is not routinely indicated in patients with urinary tract infections, EC might be under-reported and under-diagnosed. A review study of 102 relevant articles, including 135 reported cases, revealed the median age at presentation was 66 years; most were women and two thirds of were cases associated with diabetes. Most cases were diagnosed using plain films of the abdomen (84%); abdominal CT (40%), cystourethroscopy (39%), and bladder ultrasonography (7%). Causative pathogens are Escherichia coli (58%), Klebsiella pneumoniae (21%), Clostridium species (7%), and Enterobacter species (7%). EC has a mortality of 7% which can rise to 50% when perivascular gas migrates up the urinary tract leading to emphysematous pyelitis and pyelonephritis. Delayed diagnosis can lead to critical and even fatal complications. The treatment generally consists of antibiotics for longer duration (up to 2 weeks), bladder drainage, and glycemic control. Patients resistant to medical management or those with severe necrotizing infections might require partial cystectomy, cystectomy, or surgical debridement.

EOSINOPHILIC ESOPHAGITIS PRESENTING WITH EOSINOPHILIC GASTROENTERITIS Nirmal Guragain[1]; Dipen B. Khanapara[1]; Pranav D. Patel[2]. [1]Montefiore Medical Center, Bronx, NY; [2]Montefiore Medical Center Wakefield Campus, Bronx, NY. (Control ID #2706316)

LEARNING OBJECTIVE #1: To recognize eosinophilic gastroenteritis as etiology of diarrhea

LEARNING OBJECTIVE #2: To understand management of eosinophilic gastroenteritis.

CASE: A 43 year-old man with 5 year history of stable eosinophilic esophagitis on budesonide respules presented with one week of nausea, vomiting, diarrhea, and abdominal pain. He had no sick contacts or change in diet. This presentation was different from his typical flare, which consisted of dysphagia and chest pain. Physical exam was remarkable for diffuse abdominal tenderness. Laboratory investigation revealed absolute eosinophil count 2052/microL and elevated IgE level. Infective workup, including strongyloides, trichinella, toxocara screen, and stool for ova and parasite, was negative. Celiac panel was negative and IgA level was normal. CT abdomen and pelvis revealed thickening of the wall of the esophagus, stomach, small bowel and colon, likely enterocolitis. Endoscopy and colonoscopy with biopsies revealed eosinophils in lamina propria in esophagus, stomach, duodenum, and jejunum, consistent with diffuse eosinophilic gastroenteritis. He was treated initially with PO prednisone with slow taper over 2 weeks and then transitioned to inhaled steroid. He improved and was discharged with outpatient GI and allergy immunology follow up.

IMPACT: Clinician should be vigilant to recognize eosinophilic gastroenteritis as etiology of diarrhea, especially in patients with history of food allergy, eosinophilic esophagitis, or other atopic conditions, as treatment is steroid rather than antibiotics or conservative management

DISCUSSION: Eosinophilic gastroenteritis is rare and should be suspected in a patient with abdominal pain, nausea, vomiting, diarrhea, weight loss, or ascites associated with peripheral eosinophilia (absolute eosinophil count >500/microL in blood), and/or a history of food allergy or other atopic conditions. The diagnosis is based on the presence of eosinophilic infiltration of the gastrointestinal tract on biopsy and/or eosinophilic ascitic fluid, lack of involvement of other organs, and absence of other causes of intestinal eosinophilia. Hypereosinophilic syndrome, parasitic infestation, inflammatory bowel diseases, celiac disease, neoplasia, connective tissue, systemic mastocytosis, collagen vascular disorders, and medications are common differentials which can have similar clinical presentation and gastrointestinal eosinophilia. Thus, initial evaluation of diarrhea should always include stool studies to rule out infectious etiologies, followed by work-up for eosinophilia. An acute flare of eosinophilic gastrointestinal disorder may require systemic steroid for 1–2 weeks with subsequent taper over several weeks. Resistant cases may require high-dose intravenous steroids or even immunosuppressive therapy, such as azathioprine or 6- mercaptopurine. Dietary modification in cases of food allergy and discontinuation of offending medication are important to prevent further episodes.

EPISODIC WEAKNESS IN A YOUNG MALE Alexandra R. Lane; Nicolette A. Oleng'. Boston Medical Center, Boston, MA. (Control ID #2671541)

LEARNING OBJECTIVE #1: Learn about the careful repletion of potassium

LEARNING OBJECTIVE #2: Understand the difference between TTP and Familial Hypokalemic Periodic Paralysis

CASE: A 25-year-old Cambodian male with no medical or family history presented with two days of weakness. He was heathy until he woke up with inability to stand due to weakness in his lower extremities. He twice presented to an outside emergency room wtih transient weakness. He was given potassium for hypokalemia and after the second presentation he was refered to an a tertiary care center for workup. On arrival the patient was noted to be obese Asian male. Vital signs notable for tachycardia. Exam notable for 5/5 strength throughout with the exception of 4/5 in R hip flexors with a bilateral pronator drift. His bilateral patellar, brachioradialis and biceps reflexes diminished to 1+. Thyroid was non-tender and slightly enlarged. Lab values were significant for K of 3.1meq/L, TSH <0.01, Free T4 1.79 and T3 190.Thyroid stimulating immunoglobulin (TSI) was elevated at 416 and thyroid peroxidase antibody was normal. Patient was admitted for electrolyte management and diagnosed with Thyrotoxic Perioidc Paralysis.. The next morning, his potassium corrected. He was treated with propranolol 20mg three times a day and methimazole 5mg daily.

IMPACT: This case reflects the need to think carefully about the etiology of electrolyte disorders prior to aggressive correction

DISCUSSION: Thyrotoxic Periodic Paralysis (TTP) is characterized by recurrent episodes of transient paralysis and hypokalemia in the setting of hyperthyroidism. Thyroid hormones directly stimulate the sodium-potassium ATPase (Na+/K + −ATPase) leading to increased activity on skeletal muscles. This causes hypokalemia through intracellular shift of potassium leading to hyperpolarization of the myocytes, cellular dysfunction and clinical paralysis. A hyperinsulinemic state activates the Na/K ATPase pump, consistent with the observation that heavy

carbohydrates and alcohol precipitate TTP. Urine and fecal potassium are normal and a urinary transtubular potassium gradient is used to exclude urinary losses. In one study, recovery time was shorted when IV KCL was given compared to saline alone. However, 70% of patients given IV KCL at a rate of 10mmol/hr developed rebound hyperkalemia to greater than 5.0mmol/L. Supplementation is reasonable in severe hypokalemia to prevent cardiopulmonary complications but because total body potassium is normal, there is a risk for rebound hyperkalemia with aggressive repletion when the cells release K during the recovery period. TTP is similar to familial hypokalemic periodic paralysis (FHPP). Typically a male patient in the first or second decade of life presents with episodic weakness and hypokalemia. Presence of hyperthyroidism in TTP distinguishes the two. Additionally, FHPP is an autosomal dominant disease, although incomplete penetrance is common. Thus when a young male presents with transient paralysis is it imperative to measure TSH and thyroid hormone levels.

ESOPHAGEAL SQUAMOUS CELL CARCINOMA WITH METASTASES TO THE PHALANX AND GINGIVA Mariya Rozenblit; Kristen DeCarlo; Daniel Lin; MaryLynn Nierodzik. NYU, New York, NY. (Control ID #2688874)

LEARNING OBJECTIVE #1: Recognize oral cavity and hand lesions as possible sites for metastases

CASE: A 53 year old man with a history of stage III squamous cell carcinoma (SCC) of the esophagus (pT3N3) was admitted for dysphagia and found to have a mandibular mass and a painful finger nodule. The patient initially presented to an outside hospital four months prior with dysphagia and found to have an esophageal mass on endoscopy with SCC on biopsy. Chest CT showed precarinal, subcarinal, and gastroesophageal lymphadenopathy. The patient underwent esophagectomy without preoperative chemoradiation and pathology confirmed moderately differentiated invasive SCC with 6/12 lymph nodes positive for metastatic SCC. Adjuvant radiation had been delayed due to insurance issues and loss to follow up. A PET scan one month prior showed a right paratracheal mass and locoregional lymph nodes concerning for recurrent disease, but no distant metastatic disease. Seven days prior to admission, the patient noticed an erythematous nodule on his index finger. He completed seven days of antibiotics for presumed skin infection with no improvement in symptoms. At the same time, he also noted a small mass below his left premolar. On admission, physical exam was notable for a tender, necrotic-appearing 1cm nodule above the nail bed of the left 2nd digit distal phalanx, and a 2cm painful, immobile mass in the buccal mucosa below the left mandible. A bone scan demonstrated focal increased uptake only in the phalanx. Neck CT confirmed a superficial soft tissue mass along the buccal surface of the left mandibular body. Punch biopsy of both lesions revealed invasive high grade SCC. CT of the chest/abdomen/pelvis showed a paratracheal mass and regional lymphadenopathy, consistent with prior PET scan, with no evidence of distant metastases. The patient underwent palliative amputation of the distal phalanx, excision of the left mandibular gingiva, and was subsequently started on chemotherapy for recurrent metastatic esophageal cancer.

IMPACT: This is only the second reported case in the literature of esophageal SCC with metastases to the phalanx and gingiva. These lesions are often misdiagnosed as infections or unrelated processes but they may represent distant metastatic cancer and require further workup.

DISCUSSION: Esophageal carcinoma typically metastasizes to the liver, lungs, or bone. SCC metastases are usually intra-thoracic. Metastases to the buccal mucosa and gingiva are very rare, representing only 1% of oral cavity malignancies and often arise from lung, kidney, skin, or breast cancers. Chronic inflammation from gingivitis or periodontitis is hypothesized to play a role in attracting metastatic cells. Metastases to the hand are exceedingly rare since there is less red marrow, and comprise only 0.1% of bony metastases, often arising from lung, kidney, or breast cancers. Repetitive trauma is hypothesized to increase blood flow to the area and metastases to the phalanges are often observed in the dominant hand.

EUGLYCEMIC DIABETIC KETOACIDOSIS INDUCED BY NEW GENERATION ORAL HYPOGLYCEMICS Chandana Shekar; Niralee Patel; Alexander Miller; Kushani Gajjar. University of Connecticut School of Medicine, Farmington, CT. (Control ID #2706954)

LEARNING OBJECTIVE #1: Recognise a fatal complication of diabetes mellitus despite a normal blood glucose level

LEARNING OBJECTIVE #2: Recognise a rare yet fatal side effect of a newer generation medication

CASE: A 71 year old female with non insulin dependent diabetes mellitus and gastroparesis presented to our hospital with generalized abdominal pain, nausea and vomiting for 2 days. Pertinent positives included myalgia, loss of appetite and recent change in medications. She had been on SGLT2 (Sodium-glucose cotransporter 2) inhibitor Canaglifozin for a year now and the dose was increased two weeks ago. She did not have a history of alcohol use. On arrival to our hospital, she was hemodynamically stable. Physical examination was normal except for dry mucus membranes and diffuse abdominal tenderness. Lab investigations revealed a normal complete blood count. Blood glucose was normal at 91 mg/dL and hemoglobin A1c was 4.5%. Serial blood glucose levels also remained within normal limits. GAD-65 (Glutamic Acid Decarboxylase-65) antibody to rule out type I diabetes mellitus/latent autoimmune diabetes mellitus was also normal at <5. Chemistries showed anion gap metabolic acidosis with an anion gap of 32 and bicarbonate of 10 mmol/L. Blood urea nitrogen was 13 mg/dL and creatinine was 0.6 mg/dL. Serum acetone level was 80 mg/dL. Urine ketones were >160. Venous blood pH was 7.02. Lactic acid was 0.4 mmol/L and liver function panel was within normal limits. She was diagnosed with euglycemic diabetic ketoacidosis secondary to SGLT2 inhibitor therapy. Canaglifozin was stopped. She was treated per protocol with intravenous insulin infusion until ketoacidosis resolved. She was also maintained on dextrose infusion to avoid hypoglycemia. She was later transitioned to subcutaneous insulin. She did well and was discharged on metformin therapy for type II diabetes mellitus. She follows up as an outpatient and has not had such episodes ever since.

IMPACT: Our case emphasizes that patients on new generation medications should be monitored closely for side effects. It reiterates prompt recognition of rare presentations of fatal complications of diseases. We seek to describe the association of SGLT2 inhibitors with euglycemic diabetic ketoacidosis in hopes that it will enhance recognition of this potentially life-threatening complication.

DISCUSSION: Diabetic ketoacidosis is a fatal complication of diabetes mellitus, which can rarely occur despite normal glucose levels. This form is seen more commonly in type I diabetes mellitus than type II. SGLT2 inhibitors are a new class of oral hypoglycemics indicated for type 2 diabetes mellitus. They prevent the reabsorption of glucose from primary urine at the proximal renal tubules by targeting SGLT2, thus lowering plasma glucose levels. This in turn reduces insulin secretion, which lowers antipolytic activity of insulin and consequently stimulates free fatty acid production, which are converted to ketones, resulting in euglycemic diabetic ketoacidosis.

EUGLYCEMIC DKA: AN ATYPICAL AND MISLEADING PRESENTATION OF DKA Rohini Meka; Suresh K. Chirumamilla. Baystate Medical Center, Holyoke, MA. (Control ID #2708637)

LEARNING OBJECTIVE #1: Recognize DKA in patients presenting with normal blood sugars

CASE: A 41-year-old male with past medical history of insulin-dependent diabetes mellitus, hypertension, hyperlipidemia and fatty liver was brought to the emergency room by his wife for evaluation of agitation, "night terrors and restlessness". Because of the recurrent vivid bad thoughts, he has been binge drinking for the last 5 days. The patient usually takes insulin at home; however he was unable to recall the dose. Vitals on presentation were within normal limits. Initial blood work revealed Na 137mEq/L, K 4.1mEq/L, chloride 93 mEq/L, bicarbonate 13mEq/L, anion gap 30, BUN 8mg/dl, creatinine 0.9mg/dl, serum beta hydroxybutyrate 4.7 (normal 0.0-0.27), and serum glucose 163mg/dl. The diagnosis of diabetic ketoacidosis (DKA) was made based on elevated serum ketones and a low bicarbonate level, despite his normal blood sugar. He was then started on aggressive IV fluids and insulin drip; his electrolytes were monitored every 4 hours. D51/2 NS was started and continued to prevent hypoglycemia as blood sugars were never over 200mg/dl. The anion gap closed on hospital day 2 and on day 3 the patient was discharged home.

IMPACT: This case emphasizes that one cannot rely exclusively on elevated glucose levels to consider the diagnosis of DKA. It is important to recognize unexplained acidosis in diabetic patients as a sign of DKA and obtain ketone levels.

DISCUSSION: Diabetic ketoacidosis is one of the serious complications of diabetes mellitus. Diagnostic criteria of DKA by American Diabetes Association includes hyperglycemia (blood sugars >250mg/dl), metabolic acidosis (pH <7.3, serum bicarbonate < 18mEq/L) and ketosis. Even though hyperglycemia is an important criteria of DKA, sometimes it can present with normal blood glucose levels (<200mg/dl), which is defined as euglycemic DKA. Metabolic conditions that associate with euglycemic DKA include decreased calorie intake, heavy alcohol consumption, chronic liver disease, pregnancy, and use of sodium glucose contransporter 2 (SGLT2) inhibitors. Patients with euglycemic DKA pose a diagnostic challenge to physicians. Recognizing low bicarbonate levels and elevated anion gaps and obtaining serum/urine ketones is key to promptly making the correct diagnosis of DKA in these patients. Management of euglycemic DKA is similar to patients with DKA, in that volume resuscitation, insulin infusion and electrolyte replacement are key steps in treatment. However, given that blood glucose levels are <200mg/dl in these patients, insulin infusion can be given at lower rate 0.02-0.5 units/kg/hr and dextrose containing fluids should be used early to prevent hypoglycemia.

EVIDENCE OF INCREASING INCIDENCE: PRESENTATION OF A YOUNG HISPANIC MALE WITH ADVANCED GASTRIC CANCER BEENISH AHMED[1]; Dana M. Larsen[2]; Nedaa Husainat[2]; Jing H. Kees[1]. [1]BAYLOR COLLEGE OF MEDICINE, HOUSTON, TX; [2]Baylor College of Medicine, Houston, TX. (Control ID #2706936)

LEARNING OBJECTIVE #1: To recognize the increasing incidence of gastric adenocarcinoma in young Hispanic males

CASE: A 21-year-old Hispanic male with a history of Helicobacter pylori (H. pylori) gastritis and iron deficiency anemia presents with two years of decreased appetite, fatigue, ten pound weight loss, new onset coffee ground emesis, dizziness with standing, and syncope. One year prior to presentation, he was diagnosed with H. pylori and iron deficiency anemia. He completed a triple therapy regiment, but was not on iron therapy and did not follow up for eradication testing. On admission, he was orthostatic, hypotensive to 93/57, and tachycardia to 106. Exam showed a thin and pale young man, without palpable lymphadenopathy or rectal findings of hemorrhoids, masses, or blood. His labs were significant for microcytic iron deficiency anemia (hemoglobin 3.6, ferritin of 0.8). An EGD showed a 4-6cm tumor in the prepyloric, pyloric and duodenal bulb area with multiple bleeding ulcerations. Biopsy of the mass confirmed signet cell type invasive adenocarcinoma and H. pylori gastritis. His hemoglobin improved with blood transfusions, and he was started on quadruple therapy for chronic H. pylori gastritis before discharge. On follow up with oncology clinic, he underwent endoscopic ultrasound (EUS) with diagnostic peritoneal washings and biopsies, revealing invasion of the malignant cells to the muscularis propria and enlargement of perigastric lymph nodes. CDH1 testing was unable to be performed due to a scant number of malignant cells, and he was referred to genetics for germline evaluation. He has since received four cycles of FOLFOX chemotherapy and has undergone a subtotal gastrectomy. His most recent CT showed no evidence of disease.

IMPACT: This case led our team to recognize that the increased cases of gastric adenocarcinoma in young Hispanic males seen at our facility was indicative of an increase noted worldwide. This has heightened our diagnostic index of suspicion regarding possible malignancy in subsequent young patients who have presented with similar symptoms.

DISCUSSION: Gastric cancer is the fifth most common malignancy in the world and the third leading cause of cancer deaths, most commonly affecting males of Eastern Asia, Central and Eastern Europe and developing nations. The global incidence has rapidly decreased since 1975, a change presumed to be partially accounted for by the discovery of *H. pylori* and modification of risk factors (obesity rates, genetic susceptibility, and socioeconomic disparities). However, new concern has been raised over the growing number of young Hispanic males (age 20–49) diagnosed with gastric cancer. This subgroup had an annual percent change from 1992 to 2011 of 1.6 and is the only group that saw a rising incidence. Additionally, these patients are more likely to present with advanced disease. Continued studies are necessary to identify additional causal factors and identify appropriate screening methods for at risk individuals.

EXACERBATING THE PROBLEM: COMPLICATIONS OF MECHANICAL VENTILATION Michael A. Garcia; Maher Tabba. Tufts Medical Center, Boston, MA. (Control ID #2706221)

LEARNING OBJECTIVE #1: Recognize life-threatening complications of positive pressure ventilation

CASE: A 72 year old female with history of severe anxiety and end-stage COPD was brought to a tertiary care center by EMS for evaluation of respiratory distress and lethargy. In the field, her oxygen saturation was in the low 80's with subsequent clinical deterioration requiring intubation by EMS. On arrival to the emergency department, vital signs were notable for sinus tachycardia to the 120s, blood pressure of 160/70, respiratory rate of 12 with oxygen saturation of 87% on assist control ventilation with FiO2 of 100 and PEEP of 10. Exam revealed subcutaneous emphysema in the right chest and neck, absent right-sided breath sounds, and her abdomen was rigid and tympanic to percussion. Given her hemodynamic stability, a chest x-ray confirmed a right tension pneumothorax as well as pneumoperitoneum. A right-sided chest tube was placed with resolution of the pneumothorax and subsequent improvement in oxygenation to

95% on FiO2 of 60 and PEEP of 5. CT abdomen and pelvis was negative for perforated bowel as an etiology of pneumoperitoneum. Bladder pressures were monitored for development of abdominal compartment syndrome. The subcutaneous emphysema, tension pneumothorax and pneumoperitoneum were secondary to barotrauma from positive pressure ventilation. Labs were notable for a white blood cell count of 22.7. She was started on methylprednisolone and broad-spectrum antibiotics for presumed COPD exacerbation as a trigger of her respiratory decompensation. Her lung mechanics and abdominal distension improved with several days of supportive care and she was subsequently extubated to her home oxygen. The right chest tube was removed without complication and she was discharged on a prednisone taper.

IMPACT: Every intervention has its risks and complications should be quickly recognized in concordance with the ethical principle of do no harm.

DISCUSSION: The case highlights the recognition and management of several complications from positive pressure ventilation related to barotrauma. Barotrauma occurs when elevated transalveolar pressure causes alveolar rupture. Patients with acute COPD exacerbation are at highest risk of barotrauma due to dynamic hyperinflation. This patient exhibited the major complications of barotrauma including tension pneumothorax, subcutaneous emphysema, pneumomediastinum, and pneumoperitoneum. Tension pneumothorax should be identified on physical exam with tracheal deviation, absent breath sounds and hypoxia with immediate needle decompression. Subcutaneous emphysema, pneumomediastinum and pneumoperitoneum are self-limited and resolve with reduction in ventilator pressures. Barotrauma is a rare cause of pneumoperitoneum which prompted further evaluation for perforated bowel with a CT abdomen and pelvis. Early recognition and management of complications related to mechanical ventilation is imperative to prevent further harm to patients.

EXPANDING THE DIFFERENTIAL TO C MORE Justin S. Louie. Kaiser Permanente San Francisco, Berkeley, CA. (Control ID #2692535)

LEARNING OBJECTIVE #1: Recognizing that Vitamin C deficiency is an important reversible cause of unexplained bleeding and anemia

CASE: A 59 year old female with bipolar disorder and hypothyroidism presented to the emergency department with syncope in the setting of 3 months non-traumatic bruising, found to have a new anemia, Hgb 8.1. Vital signs were stable, and initial labs were negative for hemolysis, bleed, or reversible coagulopathy. Physical exam showed numerous ecchymosis and purpura on her lower extremities. After admission, rheumatology and dermatology were consulted given concern for a vasculitic process. A full hematologic and rheumatologic workup was negative, and a skin biopsy noted nonspecific results. Additional history revealed the patient normally ate a very bland diet and had been having worsening mood swings. Furthermore, while in the hospital she noted blood after brushing her teeth. A vitamin C level was sent and returned undetectable. She was started on vitamin C replacement for scurvy, with interval resolution of her symptoms.

IMPACT: This case is a classic presentation of scurvy, illustrating the insidious onset culminating in numerous cutaneous, systemic and hematologic manifestations. It highlights the need to keep nutritional deficiencies within our differential diagnoses to avoid missing these otherwise treatable conditions. Moreover, earlier consideration may limit the otherwise extensive and invasive workups that these patients receive.

DISCUSSION: Scurvy is a disease arising from vitamin C deficiency. The human body is unable to synthesize vitamin C, and therefore depends on exogenous dietary consumption. Thought to be a disease of the undeveloped world, and thus often not considered in initial differential diagnoses, there is still a notable prevalence of vitamin C deficiency in modernized countries. This can lead to a delay in diagnosis, allowing potentially life-threatening complications to develop in patients who have an otherwise treatable disease. Vitamin C is required in many biological processes, including the formation of collagen. Early manifestations are nonspecific, but as deficiency is prolonged, patients can develop potentially fatal cerebral hemorrhage, seizures, and hemopericardium. Population studies suggest that vitamin C deficiency is more prevalent than typically thought. The National Health and Nutrition Examination Survey (NHANES 2003–2004) found 7.1% overall prevalence, though subsequent data has noted some improvement. There are many at risk populations including the elderly, economically disadvantaged, and patients with gastrointestinal or psychiatric disease. Typically, scurvy carries an excellent prognosis if diagnosed and treated appropriately. Vitamin C deficiency should be suspected in high risk patients who present with signs of cutaneous bleeding and anemia with an otherwise negative workup. Treatment should include dietary counseling, vitamin C replacement therapy, as well as determination and correction of reversible risk factors.

EXPECT THE UNEXPECTED - A CASE OF NECROTIZING PANCREATITIS John Ning[3]; Bao Chau Nguyen[3]; Thamer A. Kassim[2]; Renuga Vivekanandan[1]. [1]Creighton Medical center, Omaha, NE; [2]Creighton University, Omaha, NE; [3]Creighton University School of Medicine, Omaha, NE. (Control ID #2705864)

LEARNING OBJECTIVE #1: Recognize the clinical features of necrotizing pancreatitis

LEARNING OBJECTIVE #2: Treat necrotizing pancreatitis conservatively in patient with multiple co-morbidities

CASE: A 61 year-old female presented with acute abdominal pain, shortness of breath and fever. The patient was in respiratory failure with an elevated White Blood Cell (WBC) count at 20.7 k/ul, elevated inflammatory markers and a serum Lipase of 3198 u/l. Patient was resuscitated aggressively with Intravenous (IV) fluids, started on IV Meropenem, and placed on oxygen. The patient's past medical history included hemothorax status post Video-Assisted Thoracoscopic Surgery, Heart Failure with preserved ejection fraction, Chronic Kidney Disease stage III, and Chronic Obstructive Lung Disease. The patient smoked 0.25 packs/day and had no history of alcohol use. Abdominal ultrasound (US) showed findings suggestive of acute cholecystitis with cholelithiasis. Abdominal computerized tomography (CT) scan showed findings consistent with cholelithiasis, acute pancreatitis with necrosis of the uncinate process and pancreatic body with no pancreatic duct or common bile duct dilatation. Due to concern from findings of necrotizing pancreatitis multiple teams were consulted. After stabilization, the patient underwent a cholecystectomy by our general surgery team without complications. On post-op day 2, patient developed a fever and went into respiratory distress, requiring 8 Liters on oxymizer. After a 10-day antibiotic treatment, her symptoms resolved. The patient was discharged home in stable condition.

IMPACT: This case has significant impact on our management of pancreatitis. Due to its unlikely occurrence, necrotizing pancreatitis may be overlooked by clinicians as a potential diagnosis. With the possibility of severe sequelae in

mind, it is imperative to formulate a systematic and thorough differential diagnosis that includes all possible causes in order to provide prompt evaluation with proper imaging and treatment.

DISCUSSION: Acute pancreatitis can be divided into two subtypes—interstitial edematous pancreatitis and necrotizing pancreatitis. Majority of patients with acute pancreatitis have diffuse inflammatory edema, while only 5-10% develop necrosis of the pancreatic parenchyma, peripancreatic tissue, or both. Bacterial infections developed in 40-70% of those with necrotizing pancreatitis with mortality rates up to 40%. Recent articles have discussed the use of prophylactic antibiotic treatment. One meta-analysis has suggested that the use of prophylactic antibiotics did not reduce the incidence of infected necrosis, while another meta-analysis on randomized control trials showed a statistically significant decrease in mortality rates in those who took antibiotics (7.4% vs. 14.4%). Due to its high morbidity and mortality rates, it is imperative to recognize the prospect of necrotizing pancreatitis when suspecting acute pancreatitis and initiate prompt evaluation and effective treatment.

EXTREMELY HIGH SERUM FERRITIN: A DEFINITIVE MARKER OF MASQUERADING ADULT ONSET STILL'S DISEASE WITH HEMOPHAGOCYTIC SYNDROME. Shun Yamashita; Yuka Naito; Akihiko Ogushi; Naoko E. Furukawa; Masaki Tago; Shu-ichi Yamashita. Saga University Hospital, Saga, Japan. (Control ID #2690766)

LEARNING OBJECTIVE #1: Recognize that extremely high serum ferritin can be a definitive indicator of adult onset Still's disease with hemophagocytic syndrome, even of a patient without typical rash or arthritis.

CASE: An 88-year-old woman had fever non-responsive to extended-spectrum antibiotics for 6 days. She only showed a non-specific erythema with infiltration on her trunk without any other abnormality including arthritis. Even in the absent of typical rash which is salmon pink ones appearing with fever and disappearing with defervescence, her fever over 39 degrees Celsius for more than a week, leukocytosis with neutrophilia of 80%, splenomegaly, hepatic dysfunction, normal level of rheumatoid factor and antinuclear antibody were compatible with adult-onset Still's disease (AOSD) according to Yamaguchi's criteria.Complicated disseminated intravascular coagulation (DIC) and hemophagocytic syndrome (HPS) were diagnosed by thrombopenia, elevated d-dimer, soluble IL-2 receptor antibody and extremely high serum ferritin (78,662 ng/mL). On the diagnosis of AOSD complicated with HPS and DIC, we started the treatment with recommended dose of prednisolone (30 mg/day). However, her condition deteriorated and pleuritis in the left side developed. In addition to 3 days of methylprednisolone 500mg/day followed by prednisolone 30mg/day, immunosuppressive agent (Cyclosporine 50mg/day) was started, which improved her general condition, elevated CRP and severe hyperferritinemia.

IMPACT: What does this case add to the literature? Extremely high serum ferritin can help make diagnosis of AOSD and HPS with atypical and rare presentations, including the absence of typical rash or arthritis and oldest age of ever reported.

DISCUSSION: AOSD with rare and atypical presentations is a diagnostic challenge, though 30% of AOSD were reported not to have arthritis and 23 cases only with atypical rash in the last 5 years. The median serum ferritin level of AOSD is 4,752 ng/mL. Extremely high serum ferritin over 10,000 ng/mL is reportedly caused by only three conditions, severe hepatic dysfunction, multiple blood transfusions or HPS. The presence of DIC, Leukopenia and thrombopenia can help make diagnosis of AOSD with HPS, the median serum ferritin level of which is 18,179 ng/mL. Corticosteroids are the mainstay treatment of AOSD with overall efficacy of more than 60%, and 78% in AOSD without arthritis.. We started recommended dose of prednisolone, 0.85mg/kg/day (30mg/day), which was not effective to our patient. About 55% of HPS was reported to be resistant to recommended dose prednisolone, which might require methylprednisolone pulse therapy and/or immunosuppressive agents.. We here report severe AOSD with HPS and DIC, whose extremely high serum ferritin was useful in the diagnosis, treated successfully with methylprednisolone pulse therapy and Cyclosporine.

EYING OTHER CAUSES John P. Haydek; Margaret Q. To; Meredith H. Lora. Emory University School of Medicine, Atlanta, GA. (Control ID #2700627)

LEARNING OBJECTIVE #1: Understand the differential diagnosis of optic neuropathy.

LEARNING OBJECTIVE #2: Recognize the epidemiology and clinical presentation of neuromyelitis optica.

CASE: A 26-year-old African-American woman presented with a four month history of bilateral blurry vision that developed over several days. An optometrist initially found anisocoria and referred her to neurology, but she did not follow-up until seen in primary care clinic. Her past medical history included bipolar affective disorder treated with lithium. Her exam was notable for dilated pupils measuring 7 mm bilaterally and poorly responsive to light without a relative afferent pupillary defect (RAPD). Visual exam revealed an inability to differentiate colors. Fundoscopic exam showed bilateral optic pallor without papilledema[LMH1][JH2]. The rest of her neurologic exam was intact. Magnetic resonance imaging (MRI) revealed bilateral atrophy and enhancement of the optic nerves without abnormalities in the brain or spinal cord. Labs showed normal folate, vitamin B12 of 131 pg/mL, serum ACE of 13 units/L, normal TSH and negative RPR[LMH3][JH4]. Lumbar puncture revealed a normal cell count, glucose of 94 mg/dL and protein of 32 mg/dL. Serum neuromyelitis optica IgG levels were >40 units/mL. The patient was started on high-dose intravenous steroids for neuromyelitis optica and discharged on a steroid taper and vitamin B12 supplementation. Her vision did not improve. She declined further interventions.

IMPACT: This case highlights the importance of considering neuromyelitis optica in patients whom present with bilateral optic neuropathy.

DISCUSSION: The classic clinical signs of optic neuropathy are central visual field defects, washed out color vision, and a RAPD, unless both eyes are affected symmetrically. Rapid onset of symptoms usually indicates an inflammatory or ischemic cause such as multiple sclerosis (MS), neuromyelitis optica (NMO) or ischemic optic neuropathy. A gradual course over months is typical of toxic/nutritional or compressive causes such as vitamin B12 deficiency or sarcoidosis. This patient presented with acute bilateral visual loss and clinical signs consistent with optic neuritis. The most common cause of optic neuritis is MS, but often is unilateral and affects white females. Given her demographics and bilateral symptoms, NMO was appropriately investigated and diagnosed. Clinical presentations of NMO include acute bilateral or sequential optic neuritis or extensive transverse myelitis. It is recognized as a distinct clinical entity than MS by its pathologic and highly specific biomarker, NMO-IgG, as well as its lack of brain involvement and more longitudinally extensive spinal cord involvement. Workup for NMO includes MRI of the brain and spinal cord, lumbar puncture, and NMO antibody. CSF abnormalities may include

pleocytosis and elevated protein; Oligoclonal bands are notably absent. NMO exacerbations are managed with high-dose steroids. Systemic immunosuppression is the mainstay of long-term prevention of future attacks.

FACIAL CELLULITIS AND SINUSITIS LEADING TO CAVERNOUS SINUS THROMBOSIS, MENINGITIS, AND SUBARACHNOID HEMORRHAGE Fahad Juboori[1]; Sandi Khin[1]; Jannatun Sikder[2]. [1]NY Presbyterian Brooklyn Methodist Hospital, Jersey City, NJ; [2]NY Medical College, Valhalla, NY. (Control ID #2707299)

LEARNING OBJECTIVE #1: Recognize the symptoms and physical exam findings of cavernous sinus thrombosis.
LEARNING OBJECTIVE #2: Treat facial cellulitis and sinusitis aggressively to prevent progression to cavernous sinus thrombosis.
CASE: A 69-year-old female with medical history of hypertension, type II diabetes mellitus, and non-ischemic cardiomyopathy presented to the emergency department with altered mental status, worsening sinus pain, and bilateral eye redness and swelling for two days. The history was provided by the husband. Physical exam was pertinent for orbital and nasal cellulitis with left proptosis, chemosis, and purulent discharge. Labs were notable for a neutrophilic leukocytosis of 15 with bandemia of 30%, lactate of 3, and procalcitonin of 5. Vancomycin IV, ceftriaxone, and acyclovir IV were started for suspected meningitis. She progressively became obtunded. She was emergently intubated for airway protection and transferred to the ICU. CT of the brain demonstrated a subarachnoid hemorrhage in the left supraclinoid carotid terminus region. CT of the maxillofacial region revealed sinusitis in the bilateral frontal and sphenoid and right maxillary sinuses. Lumbar puncture revealed four tubes of grossly bloody cerebrospinal fluid (CSF). CSF and blood cultures grew MSSA. The antibiotics were changed to clindamycin, nafcillin, and rifampin. CTA of the head and neck were negative for an aneurysm. CT venogram of the brain demonstrated thromboses of bilateral cavernous sinuses, left superior jugular vein, sigmoid sinus, lateral left transverse sinus, and partial thrombosis of the right internal jugular vein with marked interval worsening of the subarachnoid hemorrhage. Video EEG suggested severe encephalopathy. Due to the extent of the hemorrhage, meaningful recovery was unlikely.
IMPACT: The morbidity and mortality risk associated with cavernous sinus thrombosis cannot be understated. Its ability to rapidly progress to meningitis and subarachnoid hemorrhage is rare, but documented. Early recognition of infections in the face and sinuses with appropriate antibiotic coverage can most certainly minimize progression of disease.
DISCUSSION: The sequence of events leading to cavernous sinus thrombosis, meningitis, and subarachnoid hemorrhage is rapid and carries a high mortality risk. A patient presenting with facial cellulitis or sinusitis, fever, visual disturbances, headache, and altered mental status should raise suspicion for involvement of the cavernous sinuses. Lateral gaze palsy may be the primary extraocular muscle deficit. Empiric antibiotics include IV vancomycin to cover MRSA and cefepime or piperacillin-tazobactam to cover gram negatives and anaerobes. Diagnosis of cavernous sinus thrombosis is confirmed with CT/MRI with contrast. Anticoagulation with unfractionated heparin is a controversial method of treatment and is an option if no hemorrhage or bleeding diathesis is present. The goal is to prevent further thrombosis and to reduce the incidence of septic emboli.

FAHR FROM NORMAL AN INTERESTING CASE OF TRANSIENT DYSARTHRIA Ana I. Velazquez; Mariana Mercader; Nina Nguyen; Anjanet Perez-Colon; Geeta Varghese. Mount Sinai Beth Israel, New York, NY. (Control ID #2707153)

LEARNING OBJECTIVE #1: Recognize Fahr's syndrome.
LEARNING OBJECTIVE #2: Distinguish the most common differentials of cerebral calcifications.
CASE: 70y/o female with hypertension and osteoarthritis presented with slurred speech for 24 hours. Patient and family described development of slurred speech acutely upon patient waking on the morning prior to presentation. Symptoms affected both English and patient's primary language. Dysarthria gradually improved, however it persisted for 24 hours and the patient subsequently pursued medical evaluation. She denied fevers, headaches, vertigo, weakness, numbness, vision changes, and frequent falls. No prior episodes. Patient denied toxic habits or known family history. Home medications included daily aspirin 81mg. Physical exam was significant for mild dysarthria with fluent speech and intact naming, registration, repetition, and reading; otherwise unremarkable neurological exam with preserved strength, sensation, and otherwise normal cranial nerves. Initial labs were unremarkable including normal CBC and chemistry, including normal renal function with creatinine 0.96mg/dL and calcium 9.5mg/dL. Noncontrast head CT showed dystrophic calcifications in the basal ganglia, right frontal white matter, bilateral corona radiata, dentate nuclei, and cerebellar white matter bilaterally. MRI brain confirmed aforementioned findings. Further workup to exclude metabolic etiologies included negative thyroid panel, PTH, ferritin, iron, and RPR. CT-angiogram was negative for significant vascular head and neck disease. Findings were consistent with idiopathic basal ganglia calcification also known as Fahr's disease.
IMPACT: Fahr's disease is a rare disease with a wide variety of presenting symptoms that represents a diagnostic challenge to physicians. Given the myriad of symptoms associated with this disease, knowledge of the classical radiological findings is imperative for the evaluation and diagnosis of Fahr's disease.
DISCUSSION: Fahr's disease or idiopathic basal ganglia calcification is a rare, neurological disorder characterized by abnormal calcified deposits in basal ganglia and cerebral cortex. Calcified deposits are made up of calcium carbonate and calcium phosphate. Fahr's disease commonly affects young to middle aged adults and follows an autosomal inheritance pattern. Clinical manifestations include a wide variety of symptoms, ranging from extrapyramidal symptoms to neuropsychiatric, as schizophrenia or dementia, to movement disorders including Parkinsonism, chorea and tremors amongst others. Diagnosis is confirmed by brain imaging after excluding other metabolic, toxic, infectious, or traumatic etiologies. As there is no cure for Fahr's disease and treatment is symptom based, familiarity with this entity and early recognition are imperative to offer patients and family members screening neuroimaging and genetic counseling.

FAILURE TO COMMUNICATE: DELAYED NOTIFICATION OF A PATIENT DEATH Braden K. Mogler[2]; Margot Kushel[1]; Katie Raffel[2]. [1]UCSF, San Francisco, CA; [2]University of California San Francisco, San Francisco, CA. (Control ID #2706846)

LEARNING OBJECTIVE #1: Identify guidelines for communication between inpatient and outpatient providers, focusing on discussions around goals-of-care and end-of-life

LEARNING OBJECTIVE #2: Recognize the strengths and weaknesses of EMR-based communication

CASE: A 74 year-old woman with history of advanced dementia and end-stage renal disease on hemodialysis was found down, asystolic, at home. She was intubated and received ACLS with return of spontaneous circulation. Upon emergency department arrival, she was registered under a temporary medical record number (MRN). Her exam was notable for hypothermia, hypotension requiring dopamine infusion, fixed and dilated pupils, and an absence of voluntary extremity movement or brainstem reflexes. Laboratory studies were notable for an anion gap metabolic acidosis with pH 6.97 and lactic acid 9. The patient's permanent medical record was later identified, noting a recently completed POLST with DNR/DNI code status. After communication with the family, the patient's care was transitioned to a comfort focus, and the patient died unbeknownst to the primary care provider (PCP), who practiced within the same institution. Two months later, the outpatient clinic contacted the patient's family with an upcoming appointment reminder and discovered the patient's death.

IMPACT: While guidelines for inpatient-outpatient communication exist, this case highlights the fact that communication remains infrequent and unreliable and can negatively impact patients, family members and providers. Use of the electronic medical record (EMR) holds promise for standardizing this communication but is insufficient in isolation both due to duplicate MRNs and the absence of a platform for two-way communication.

DISCUSSION: The primary team in this case failed to adequately communicate with the primary clinic regarding the patient's management and death leading to exclusion of PCP from end-of-life discussion and family support. While consensus guidelines for inpatient-outpatient communication do not explicitly address end-of-life scenarios, they clearly state the expectation for timely, two-way communication. There were multiple contributing factors but, notably, the patient's temporary MRN at admission prevented automatic notifications of patient admission and discharge from reaching the PCP. This is significant, as at this institution an estimated 800 duplicate MRNs are created monthly. When such EMR based notifications are functioning appropriately, only 39% of PCPs describe them as adequate for patient care. These notifications do not allow for two-way communication (i.e. telephone or email) forms of communication that only 31% of PCPs receive. In summary, timely communication of patient presentation and death from inpatient to outpatient providers did not occur in this case, negatively affecting the patient, family and outpatient caregivers. EMR-based alerts may increase PCP notification when patients are appropriately registered under existing MRNs, but cannot replace guideline recommended two-way communication.

FALSE ASSURANCE: A CASE OF SEVERE RESPIRATORY FAILURE BY ATYPICAL PATHOGEN Upasana Bagaria; Heather Root; Jennifer O. Spicer. Emory University School of Medicine, Atlanta, GA. (Control ID #2706114)

LEARNING OBJECTIVE #1: Review the diagnosis of *Chlamydia pneumoniae*

LEARNING OBJECTIVE #2: Recognize the need for antibiotic coverage for atypical pathogens

CASE: A 78-year-old healthy male with hypertension presented with difficulty breathing. He reported cough, congestion, progressive dyspnea, and subjective fevers for two weeks prior to admission. His travel history was significant for trips to Alaska, North Carolina and Orlando with recent exposure to two parakeets. At presentation, he was febrile, tachycardic and hypoxic to 78% on room air. Exam revealed labored breathing with crackles in bilateral lung bases. Laboratory studies were notable for WBC 28,000/mcL, platelets 527,000/mcL, and D-dimer 2907 ng/mL. CT chest was negative for pulmonary embolism but showed patchy consolidation in bilateral lower lobes. He was intubated within 48 hours after failing non-invasive ventilation. His antibiotics were broadened from ceftriaxone to vancomycin, piperacillin-tazobactam and azithromycin. Additional tests included bronchoalveolar lavage which showed multiple neutrophils but no organisms on gram stain with negative bacterial and fungal cultures, negative influenza PCR, negative urine Legionella and Histoplasma antigens, and negative Legionella respiratory culture. Given his exposure to parakeets, *Chlamydia* serologies were sent. The diagnosis was established when *C. pneumoniae* IgG titer resulted at 1:1024. Antibiotics were switched to doxycycline and he defervesced within 24 hours with improvement in respiratory function.

IMPACT: This case highlights the importance of including atypical coverage in a patient with severe respiratory failure. Clinicians must have a high index of suspicion for atypical pathogens as diagnostics are limited and common empiric antibiotic coverage may be insufficient.

DISCUSSION: *C. pneumoniae* is an obligate, intracellular bacterium that commonly causes mild respiratory infections, but can result in severe multifocal pneumonia with ARDS. It accounts for up to 20% of pneumonia in older adults. Despite high incidence, diagnosis is challenging as antibody testing, polymerase chain reaction and direct antigen detection modalities are not routinely available and *C. pneumoniae* does not have any distinguishing clinical characteristics. Moreover, the historical distinction between atypical and typical bacterial pneumonia can lead to a false sense of security that atypical pathogens do not cause severe disease. Patients admitted with acute respiratory failure are commonly covered with broad-spectrum antibiotics such as vancomycin and beta-lactams, which do not treat atypical infections. However, when patients continue to decline despite empiric antibiotics, it is crucial to think about atypical organisms such as *C. pneumoniae* since they do not grow in routine cultures. Our patient's gram stain had many neutrophils but no organisms, suggesting an atypical pathogen. These gram stain characteristics should prompt a search for atypical pathogens, including viruses, atypical bacteria, and fungi.

FECAL INCONTINENCE SECONDARY TO PERFORATED COLON CANCER Ekta Kakkar; Rosa Schmidt. Baylor College of Medicine, Houston, TX. (Control ID #2706343)

LEARNING OBJECTIVE #1: Fecal incontinence is a underreported condition that can have many different causes including perforated malignancy.

CASE: A 49-year-old man with a history of well controlled non-insulin dependent type 2 diabetes and recently diagnosed internal hemorrhoids presents to clinic complaining of fecal incontinence for one week. The patient says he has daily bowel movements, but he is unable to feel them. He denies changes in the quality of his stools or abdominal pain. He has noticed streaks of bright red blood in his stools and on his soiled clothes. He denies back pain, numbness, weakness, or bladder incontinence. He says he has lost 50 pounds over the past several months. He denies family history of GI cancers, NSAID use, fevers, joint pain, and rash. On exam he appears pale with conjunctival pallor and tachycardia. The patient is sent to the emergency room for further

workup. He is found to be severely anemic and iron deficient with a hemoglobin of 6.6 g/dL, and he is transfused. CT scan of his abdomen reveals a rectosigmoid mass with perforation and a pelvic abscess. Flexible sigmoidoscopy confirms presence of this mass, and due to concern for perforation, the patient is taken to the Operating Room for exploratory laparotomy and hemicolectomy. Staging CT of his chest reveals no lesions and his CEA is within normal limits. Post-operatively, the patient is doing well with a recovering blood count and no further hematochezia.

IMPACT: This is a case of ruptured rectosigmoid cancer that led to formation of a pelvic abscess and caused fecal incontinence due to pudendal nerve involvement. Prognosis for patients with fecal incontinence secondary to malignancy is usually poor due to the advanced stage of cancer at diagnosis resulting from the delay in presentation. Paying attention to the history and physical in a clinic setting can raise suspicion for urgent conditions that should be addressed in a higher acuity inpatient ward such as in this case. Clinicians should have a high index of suspicion for perforated malignancy in patients who do not respond to medical management of fecal incontinence.

DISCUSSION: Intra-abdominal abscess formation from perforated colon cancer is rare (incidence <1%). This patient presented to clinic for his hemorrhoids, but further questioning revealed his fecal incontinence and weight loss. The differential diagnosis for causes of fecal incontinence is broad with pelvic floor dysfunction being a major cause in women. The prevalence of fecal incontinence is higher than reported data suggests largely due to the embarrassment the patient experiences. Perforated colon cancer is a rare initial presentation of this condition.

FECAL TRANSPLANT IN RECURRENT CLOSTRIDIUM DIFFICILE ENTERITIS

Ekta Kakkar; Mohamed Othman. Baylor College of Medicine, Houston, TX. (Control ID #2706327)

LEARNING OBJECTIVE #1: Fecal transplant is a relatively new therapy shown to be very effective in treating multiple recurrent Clostridium difficile infections (CDI).

CASE: A 30-year-old female with a history of ulcerative colitis (UC) diagnosed in 2012 status post a proctocolectomy with end ileostomy presents with severe generalized abdominal pain associated with nausea, decreased oral intake, and decreased ostomy output for 1 week. The patient says the pain is constant, nonradiating, and severe. She feels bloated if she tries to eat. She has been on a clear liquid diet for 5 days prior to presentation because she called her primary doctor when the pain worsened and was advised to do so. She has decreased stool output but no diarrhea or bloody stools. She denies fevers, sick contacts, rashes, joint pain, or recent travel. Her end ileostomy was recently revised from a diverting loop ileostomy 2 months ago due to a history of recurrent clostridium difficile infection (CDI) requiring a fecal transplant 2 years ago. Prior to that, she had an ileal pouch-anal anastomosis or J-pouch that was complicated by recurrent pouchitis. Her last hospitalization was at the time of her ostomy revision 6 weeks ago where she was treated with oral vancomycin for CDI. She has also previously received fidaxomicin for CDI. She is hemodynamically stable and exam is significant only for diffuse abdominal tenderness with voluntary guarding but no rebound tenderness and normoactive bowel sounds. Her ostomy site appears uninfected. Initial CT scan of her abdomen shows no bowel obstruction and her basic labs are within normal limits. She is found to have CDI and CT enterography shows enteritis. She is started on oral vancomycin and scheduled for a fecal transplant due to her multiple recurrent CDI of the small bowel.

IMPACT: This is a unique case of recurrent CDI of the small bowel likely due to her multiple hospitalizations and colonic surgeries. Risk factors for clostridium difficile enteritis are recent antibiotic use or hospitalization, history of inflammatory bowel disease, and history of colonic surgery. The morphology of the small bowel changes after colectomy which predisposes these patients to infection. Studies have shown more patients with ulcerative colitis develop C. difficile enteritis than patients with Crohn's disease.

DISCUSSION: To date, there are no official guidelines for when to treat CDI with fecal transplant, but it has been shown to be >90% curative in treating multiple recurrent CDI. Additionally, there are ongoing trials investigating the efficacy of fecal transplant in treating inflammatory bowel syndrome and inflammatory bowel disease. CDI of the small bowel is rare but has a high mortality rate (60-83%). For this reason, it is important to have a high suspicion for this disease in high risk patients and to perform fecal transplant in an attempt to prevent further recurrence.

FEVER COUGH AND HEMOPTYSIS - AORTIC GRAFT ABSCESS AS A RARE CAUSE OF BRONCHO-AORTIC FISTULA

Timothy J. Brown; Stan D. Atkin; Jason Clark. The University of Texas Southwestern Medical Center, Dallas, TX. (Control ID #2707081)

LEARNING OBJECTIVE #1: Form broad differential for hemoptysis and hematemesis

LEARNING OBJECTIVE #2: Manage long-term complications of aortic grafts

CASE: A 57 year-old Mexican male with a history of type 2 diabetes, hypertension, Barrett's esophagus, peptic ulcer disease, and aortic coarctation repair 30 years ago presented to the emergency department with hemoptysis and hematemesis. Initially, he was having occasional blood-speckled productive cough, but two days prior to presentation progressed to frank hemoptysis. On presentation he had two large volume episodes of coagulated hematemesis. Two weeks earlier, he was treated for pneumonia; blood cultures from then grew *Peptostreptococcus*. Vital signs were significant only for tachycardia. Exam revealed a 2/6 systolic murmur heard over the precordium and posterior left lung. Labs were significant for hemoglobin of 9.8 g/dL. T-spot was negative. A chest x-ray was negative. A CT angiogram of the chest demonstrated soft tissue swelling around prior aortic coarctation repair with foci of air. He was admitted to the ICU for stabilization. He continued to have hemoptysis in the ICU; bronchoscopy showed pooling of blood in the left lower lobe. Thoracic surgery was consulted and he was taken to the operating room. In the operating room, he was found to have an infected aortic graft with fistulization into the left lung. His graft was replaced. Cultures grew *Prevotella*, *Streptococcus viridans*, and *Candida glabrata*. He was discharged following his surgery and is doing well six months later.

IMPACT: Careful history and physical exam revealed several aspects of the patient's presentation that were not consistent with common causes of hemoptysis or an upper gastrointestinal bleed. Based on his past history of aortic coarctation repair, a differential diagnosis was formed that more broadly included aortic pathology. The patient underwent a CT angiogram of his chest that revealed the abscess with fistulization, allowing for rapid surgical intervention.

DISCUSSION: This patient had numerous reasons for both hemoptysis and hematemesis, including peptic ulcer disease, Barrett's esophagus, and immigrant status from a tuberculosis-endemic area. However, the recent pneumonia with blood cultures positive for *Peptostreptococcus* (an abscess-forming organism) and history of prosthetic aortic graft prompted the team to search for

more serious aortic pathologies as a cause for his symptoms. As a result, a prosthetic aortic graft infection with fistulization was discovered. Long-term complications of prosthetic aortic grafts include infections, which can occur 20 years or more following placement. Diagnosis can be made by presence of perigraft fluid with or without associated gas on CT, loss of normal mediastinal tissue planes, or pseudoaneurysm formation. Management of aortic graft infections consists of debridement with replacement and 4 to 6 weeks of antibiotics. Infections requiring graft reconstruction via thoracotomy have a 27% hospital mortality rate and 36% 1-year mortality rate.

FIBROMUSCULAR DYSPLASIA PRESENTING AS A RENAL INFARCT Sidra Khalid; Suryanarayan Mohapatra; Ashoka Nautiyal; Hamed Daw. Fariview Hospital - Cleveland Clinic, Cleveland, OH. (Control ID #2706691)

LEARNING OBJECTIVE #1: − to recognize renal infarct as an initial presentation of fibromuscular dysplasia (FMD) involving the renal artery

CASE: A 49 year old male presented with a sudden onset of severe, left sided abdominal pain radiating to the groin for one day. He is a nonsmoker, with a non-significant past medical and surgical history. His family history is contributory for factor V Leiden mutation in his brother and factor XII deficiency in his half-sister. On examination, vitals were afebrile, BP 154/90 mmHg, pulse 55/min, RR 22/min with an unremakeable physical excpet for generalized abdominal pain on palpation. A CT abdomen and pelvis showed poor opacification of the upper and interpolar segments of the left kidney, that were concerning for a renal infarct. Hypercoagulability work-up was sent and enoxaparin was started. The PT, aPTT, factor V Leiden mutation, antithrombin III, prothrombin gene mutation, lupus anticoagulant, factor XII, protein C & S were negative. To rule out an embolic source, TEE was performed which showed no evidence of a thrombus in the heart. To further delineate the underlying pathology and for revascularization, a renal artery angiography was planned. The angiography revealed FMD with a clot in the anterior division branch of the left renal artery. He was started on apixaban for the clot and amlodipine for hypertension. In the outpatient setting, renal artery duplex showed 0–59% stenosis of the left renal artery. Carotid and abdominal visceral arterial ultrasounds were unremarkable. The apixaban was discontinued after one month of therapy, as the patient was asymptomatic with a BP of 120/82 mmHg. In three months, he would undergo repeat imaging studies of the renal vasculature.

IMPACT: When our patient presented with renal infarction, our differential diagnoses included cardio-embolic phenomenon, localized renal pathology, and hypercoagulability. When we performed a renal angiography, it revealed FMD with thrombus in the left renal artery. FMD rarely presents with renal infarction. This impacted our clinical approach to include FMD in the differential diagnosis and our management included anticoagulation, blood pressure control, and imaging other vasculatures.

DISCUSSION: 29% of renal infarctions are iatrogenic, which includes FMD. The incidence of FMD involving the renal arteries is 5.7%. Patients can present with flank pain or hypertension. The diagnosis is made with digital subtraction angiography, CTA, MRA or duplex ultrasonography. Angiography of the vessels can either present with a beaded or focal stenosis appearance. Management depends on blood pressure control, or revascularization with PTA or surgery. FMD involves the carotid or vertebral arteries in about 65% of cases; hence additional vessel imaging is necessary in these patients.

FLANK PAIN IN A YOUNG FEMALE - IT WASN'T PYELONEPHRITIS Nandini Mehta; Daniel Mazori; Bushra Mina. Lenox Hill Hospital - Northwell Health, New York, NY. (Control ID #2704103)

LEARNING OBJECTIVE #1: Recognize flank pain as a clinical presentation of pulmonary embolism

CASE: A 21-year-old female with a past medical history significant for low-grade glioma suspicious for diffuse astrocytoma (WHO grade II) status-post partial resection and hemicraniectomy presented with left flank pain for two days. The day prior, she had been diagnosed with a urinary tract infection and prescribed cefuroxime at an outside hospital. Despite taking antibiotics, the patient had persistent left flank pain and subjective fever, prompting her to seek evaluation at our ED. Physical exam on presentation was notable for a temperature of 100.7 F, regular heart rate of 130, and left flank tenderness. Urinalysis was negative. CT abdomen/pelvis with IV contrast did not show pyelonephritis, but rather a filling defect in a subsegmental left lower lobe pulmonary artery. Follow-up CT angiogram showed bilateral pulmonary emboli. Additionally, there was a left posterior lower lobe consolidation and atelectasis, suspicious for infarction. On further questioning, the patient reported that she had been bed bound since undergoing neurosurgery 3 weeks prior. Ultrasound revealed no thrombus in her lower extremities. The patient had an inferior vena cava filter placed given the risk of intracranial hemorrhage after brain surgery with anticoagulation, with eventual resolution of her tachycardia and flank pain.

IMPACT: Pulmonary embolism is a potentially life-threatening event that should be considered in a physician's differential diagnosis for patients with otherwise unknown cause of flank pain. Clinical prediction scores exist for suspected PE. However, high clinical suspicion for PE relies heavily on an accurate and thorough history and physical exam to uncover the potentially fatal disease.

DISCUSSION: Pulmonary embolism has been called "the great masquerader," because it may present with nonspecific physical exam findings, such as abdominal pain, or as in this case, flank pain. Pulmonary infarction may cause irritation of the parietal pleura and subsequent pleuritic pain. Irritation of parietal branches of intercostal nerves may also cause hyperesthesia of the cutaneous branches innervating the flank region. Fortunately for this case, PE was incidentally discovered after imaging ruled out pyelonephritis. In retrospect, the patient's Well's score for PE was 3.0 - 4.0, indicating moderate risk for the following criteria: heart rate > 100, immobilization at least three days or surgery within the past four weeks, +/− malignancy with treatment (diffuse astrocytoma is not considered benign).

FOLLICULAR LYMPHOMA: A RARE CAUSE OF HYPERCALCEMIA Nina Nguyen[1]; Rifat Mamun[1]; Doyun Park[1]; Anish Parikh[1]; Ilan Shapira[2]. [1]Mount Sinai Beth Israel, New York, NY; [2]The Beth Israel Medical Center, New York, NY. (Control ID #2706167)

LEARNING OBJECTIVE #1: Identify hypercalcemia as a rare presenting sign of follicular lymphoma

LEARNING OBJECTIVE #2: Consider Richter's syndrome as an etiology of hypercalcemia in low grade lymphomas

CASE: A 59 year-old man with history of hypertension and gout presented with six weeks of fatigue, persistent left sided abdominal discomfort leading to poor oral intake, and unintentional 40-pound weight loss. Physical examination showed bilateral inguinal adenopathy, left lower quadrant abdominal tenderness and a palpable spleen. Initial labs were significant for

hypercalcemia 15.3 mg/dL and creatinine elevation 3.32 mg/dL. Complete blood count showed white blood cell count 11.0 K/UL with left shift and hemoglobin 10.4 G/dL. Further workup showed normal intact parathyroid hormone (PTH) 13 pg/mL and elevated 1,25-dihydroxy vitamin D 126 pg/mL. Serum and urine protein electrophoresis (SPEP and UPEP) were negative for a monoclonal protein. CT chest/abdomen/pelvis was significant for diffuse abdominal lymphadenopathy, as well as splenomegaly measuring 20 cm with multiple hypodense splenic masses. His calcium levels normalized and creatinine improved after treatment with intravenous fluids, calcitonin, and zoledronic acid. Right inguinal lymph node biopsy showed effacement of lymph node architecture by neoplastic follicles, with immunohistochemistry positive for CD10, CD20, BCL-2 and Ki67 of 10%, favoring a diagnosis of follicular lymphoma. The patient was discharged home for further outpatient workup and initiation of chemotherapy.

IMPACT: We describe a rare case of follicular lymphoma that presented with hypercalcemia. While hypercalcemia is often associated with malignancies such as multiple myeloma and solid tumors found in lung or breast cancer, it is seldom a presenting finding in lymphoma. There are few reports of follicular lymphoma presenting with hypercalcemia, and this case adds to the literature and raises awareness of a rare malignant cause of hypercalcemia that should be considered in a differential diagnosis.

DISCUSSION: Follicular lymphoma is the most common form of indolent non-Hodgkin lymphoma (NHL) comprising approximately 20-30% of cases. It generally presents with lymphadenopathy, commonly in the neck, axilla, or groin, and sometimes with symptoms such as fatigue, night sweats, and weight loss. Diagnosis is obtained via lymph node biopsy. Hypercalcemia is a rare finding in B cell lymphomas in general and complicates only 0.3-4% of cases, mostly seen in the aggressive subtypes of NHL. There have been reports of hypercalcemia occurring with Richter's syndrome which is the transformation of low grade lymphomas into high grade and can occur in 5-10% of patients with previously diagnosed entities such as follicular lymphoma, Waldenstrom's macroglobulinemia, and chronic lymphocytic leukemia. While no systematic study of hypercalcemia in B-NHL has been published, Richter's syndrome should be kept in mind in low grade lymphoma patients with hypercalcemia.

FOR ALTERED MENTAL STATUS, CHECK A STOOL SAMPLE?

Nicholas Hendren; Shahzad Chindhy; Kaylee J. Shepherd. University of Texas-Southwestern, Irving, TX. (Control ID #2702104)

LEARNING OBJECTIVE #1: Recognize the relationship between *Strongyloides stercoralis* and gram negative rod (GNR) bacteremia or meningitis.

LEARNING OBJECTIVE #2: Diagnose a *Strongyloides stercoralis* infection with evidence based testing.

CASE: A 57 year-old Hispanic male with a history of embryonal sarcoma of the liver presented with one day of altered mental status. The day prior to admission he had a witnessed mechanical fall without a loss of consciousness. He developed progressive confusion, chills, mild headache and fevers. He was diagnosed with stage IV embryonal sarcoma of the liver one year prior to admission. Despite local surgical resection and adjuvant chemotherapy, his cancer progressed with recurrent liver lesions and metastatic spinal disease requiring palliative radiation and dexamethasone therapy. He was a citizen of Mexico and last traveled to Mexico in 2008. Admission vital signs were unremarkable. He appeared comfortable, but was only oriented to his person. Other than baseline right upper quadrant and back pain, his exam was unremarkable. Blood cultures were positive for *Escherichia coli* and a lumbar puncture revealed glucose <2 mg/dL, protein of 495 mg/dL, 82,350 nucleated cells and a positive culture for *Escherichia coli*. Given his immunosuppression, travel history and GNR meningitis, a stool ova and parasite was obtained to screen for *Strongyloides stercoralis*. His stool was markedly positive for *Strongyloides stercoralis* larvae and he was diagnosed with *Strongyloides* hyperinfection syndrome. Given his poor prognosis, the patient declined medical therapy and elected home hospice.

IMPACT: Clinicians should have a high level of suspicion for *Strongyloides stercoralis* in patients with unexplained GNR infections and a history of travel to endemic areas of transmission. Suspicion should be heightened for patients on steroids or with an immunocompromised state.

DISCUSSION: *Strongyloides stercoralis* is a neglected tropical disease that infects people mainly in developing countries, but remains endemic in rural pockets of the United States. *Strongyloides* is capable of chronically re-infecting human hosts without an external host via autoinfection which allows for chronic infections to persist. In patients with chronic infection, hyperinfection can be triggered with immunosuppressed state and/or advanced malignancies. Hyperinfection syndrome is characterized by a heavy larval stool burden, disruption of the intestinal wall by a disseminated parasitic infection with concomitant bacterial translocation that can cause life threatening infections. Disseminated *Strongyloides* should be considered as the source for unexplained GNR bacteremia or meningitis especially in immunosuppressed patients. Our patient likely had a chronic asymptomatic *Strongyloides* infection acquired in Mexico that became a hyperinfection after starting high doses of dexamethasone for spinal metastatic disease. This led to bacterial translocation resulting in a classic case of GNR infection secondary to *Strongyloides* hyperinfection.

FRIENDS WITH LOW PLATELETS

Mary Moellering[1]; Chetan Prasad[1]; Roger D. Smalligan[2]. [1]Texas Tech Univ HSC-Amarillo, Amarillo, TX; [2]Texas Tech Univ Health Sc Center - Amarillo, Amarillo, TX. (Control ID #2699649)

LEARNING OBJECTIVE #1: Understand how to arrive at a diagnosis of idiopathic thrombocytopenic purpura

LEARNING OBJECTIVE #2: Understand new treatment options for ITP

CASE: A 74yo man with CAD s/p CABG, stroke, HTN, and HLD presented with prolonged bleeding from a laceration and petechiae and bruising all over his body. Meds: aspirin, clopidogrel, cephalexin, ferrous sulfate; NKDA; FHx negative for bleeding disorders; SHx: no alcohol, smoking or drugs. Physical exam: BP 150/69, HR 83, RR 17, T 37C, SpO2 99% on RA. Alert, oriented, oral mucosa bruised, lungs clear, heart RRR no murmurs, abdomen was soft, no HSM, bruises and petechiae seen on entire body. Labs: glucose 142, BUN 38, Cr 1.3; LFTs normal, albumin 1.9; WBC 5,400, Hgb 10.1, platelets 3,000; INR 1.1, PTT 25.4s (nl). Peripheral smear showed markedly decreased platelets and no schistocytes. Hospital course: Hematology consult felt the patient had ITP. Aspirin, clopidogrel and cephalexin were discontinued. Bone marrow biopsy was negative for malignancy. ADAMTS13 mutation, anti-nuclear antibodies, HCV, and leukemia markers were all negative. Patient received platelets and was started on prednisone and IVIG. Initial treatment failed, so romiprostim was given with platelets, and after several days, the platelet count was 35,000. The patient received meningococcal, pneumococcal, and HIB vaccines to prepare for possible splenectomy. After platelets fell to 6,000 he was given prednisone and eltrombopag and did well.

IMPACT: Severe thrombocytopenia is a serious condition that needs prompt treatment. Internists must know the potential causes of, and treatment for, the many etiologies of thrombocytopenia. This case demonstrates a logical and careful approach to diagnosis and treatment.

DISCUSSION: Prolonged bleeding is always a concern. Severe thrombocytopenia with petechiae and purpura immediately suggests DIC, ITP, TTP, HUS, leukemia, SLE, and other possible etiologies.The patient was on aspirin, clopidogrel and cephalexin, all of which can cause drug-induced thrombocytopenia, hence they were stopped. The patient had not received heparin to consider HIT. Mutations in the ADAMTS13 gene would have supported TTP (though the typical pentad was not present). SLE, HCV and leukemia can cause severe thrombocytopenia but testing was negative for these leading to the diagnosis of ITP. First-line treatment for ITP is corticosteroids and IVIG therapy, as was done with our patient, in addition to repletion of platelets if counts <10,000 or active bleeding is present. Next line is a thrombopoietin receptor agonist (TRA) like romiprostim. The TRAs act on thrombopoeitin receptors on megakaryocytes, activating JAK-STAT and MAP kinase pathways leading to increased platelet production. Some patients, like ours, respond better to another TRA, eltrombopag. If these measures fail, patients undergo splenectomy, which is often helpful. Internists need to keep the diagnosis of ITP in mind as they approach patients with severe thrombocytopenia.

FROM VASCULITIS TO SUBACUTE BACTERIAL ENDOCARDITIS

Natasha A. Kassim; Dayakar Kancherla. UPMC, Pittsburgh, PA. (Control ID #2701210)

LEARNING OBJECTIVE #1: Diagnose subacute bacterial endocarditis (SBE) in patients presenting with features of small vessel vasculitis.

LEARNING OBJECTIVE #2: Recognize that SBE may cause false positive ANCA and associated small vessel inflammation will respond to treatment with antibiotics, not immunosuppressants.

CASE: A 54-year-old man with recent diagnosis of ANCA vasculitis presented with pancytopenia, rash, and acute kidney injury. His course began six months prior to presentation when he presented with rash and hematuria, prompting a full rheumatologic evaluation and renal biopsy. Laboratory results were notable for positive ANA, ASO, PR-3 antibodies, and low C3 and C4. Renal biopsy showed focal membranocapillary and membranoproliferative glomerulonephritis (GN) with C3 and IgM deposits by immunofluroescence. Blood cultures were not obtained at time of initial diagnosis. He was treated with steroids and mycophenolate mofetil. During steroid taper, his rash returned, and he was found to have worsening renal function and pancytopenia, prompting current admission. On physical exam he had a diffuse purpuric and petechial rash, anasarca, and a new diastolic murmur on cardiac exam. Due to his atypical presentation and course, repeat rheumatologic evaluation was completed and was negative except for continued low complements. On hospital day 3, blood cultures returned positive for streptococcus sanguinis. Immunosuppressants were stopped, and he was started on antibiotics. A TEE demonstrated a bicuspid aortic valve with multiple vegetations and severe aortic insufficiency (AI), all consistent with the diagnosis of SBE. His course was complicated by progressive renal failure leading to initiation of hemodialysis. He was discharged on a prolonged course of IV antibiotics and ultimately underwent aortic valve replacement. His kidney function did not recover, but his rash resolved with antibiotics.

IMPACT: This case demonstrates an atypical presentation of SBE that led to initial misdiagnosis and incorrect management. Similar cases of patients presenting with presumed ANCA-associated vasculitis who were ultimately diagnosed with SBE are found only in case reports and case series. However, despite the rarity of this presentation, blood cultures should be obtained in patients presenting with features of vasculitis to rule out infection.

DISCUSSION: SBE and ANCA-associated vasculitis have overlapping clinical manifestations including fever, constitutional symptoms, GN, and cutaneous purpura. For patients with suspected vasculitis, ruling out active infection with blood cultures is necessary before establishing the diagnosis. Notably, SBE can cause false positive ANCA. However, the vasculitis in SBE is not pauci-immune and thus not mediated by ANCA. SBE associated vasculitis typically responds to appropriate antibiotic therapy and immunosuppressants are not indicated, and in fact could worsen disease.

FULMINANT HEPATITIS SECONDARY TO HERPES SIMPLEX VIRUS INFECTION

John D. Herlihy; Anthony Roohollahi. Carolinas Medical Center, Charlotte, NC. (Control ID #2687406)

LEARNING OBJECTIVE #1: Recognizing an atypical cause of acute fulminant hepatitis

LEARNING OBJECTIVE #2: Management of disseminated HSV

CASE: 39 year old male with no medical history presented with 2 weeks of fever, weakness, diffuse arthralgia, and anorexia. He had gone to urgent care 10 days prior this hospitalization and completed short course of Levaquin and Prednisone for presumed CAP. Over the past 2–3 days he had been taking Motrin 400mg every 4 hours and Acetaminophen 3 tablets every 6 hours for persistent fevers. The patient denied any rash, recent travel, abdominal pain, nausea, or vomiting. On arrival he had a low grade fever (Tmax 100.1), HR in the 70s, and BP of 90s-100s/60s. On exam he was in no significant distress with normal exam other than a small bleeding sore over lower lip and multiple smaller sores on his tongue. Initial labs showed platelet count < 10, Hgb 12.5, WBC 5900, creatinine 7.52, INR >8, ALT of 6200, AST 11780, Alkaline phosphatase 457, total bilirubin 4.0, LDH 12.2, ammonia level 62, fibrinogen <50, lactic acid 4.5, and hepatitis panel negative. Abdominal US showed small amounts of fluid around the gallbladder, Morison's pouch, and the pancreatic head. The patient was admitted to the ICU and started on IV NS, HCO3, and NAC. Shortly after admission patient went into cardiac arrest and despite prolonged resuscitative efforts unable to achieve ROSC. Autopsy showed severe disseminated herpes infection with severe herpes hepatitis and extensive hepatic necrosis, herpetic esophagitis, herpetic involvement of the lungs with early diffuse alveolar damage, small volume ascites, and hemorrhage involving the gallbladder and peripancreatic area.

IMPACT: This case changed my practice because I will now be much more inclined to include HSV on my differential for acute fulminant hepatitis. I will have a much lower threshold for starting Acyclovir empirically when there is unclear etiology for a patient with acute hepatitis, especially in patients with the classic triad of leukopenia, fever, and significantly elevated transaminases.

DISCUSSION: Severe disseminated HSV infection is rare and often rapidly fatal. Patients with a defect in cell mediated immunity are at greater risk. The prognosis is poor despite effective antiviral therapy likely due to delayed diagnosis as symptoms are nonspecific and mucosal lesions are frequently absent. Correct diagnosis prior to death is made in only 23% of cases and mortality rate is >80%. Classic symptoms are a triad of high fever, markedly elevated aminotransferase levels, and leukopenia. Patients typically feel moderately ill for 3 to 10 days then suddenly deteriorate with hepatic necrosis, DIC,

hypotension, and death within 1 week. Limited cases to guide management however Acyclovir has been shown to improve outcomes. Patients presenting with fulminant hepatitis with no other clear etiology should be started on Acyclovir empirically until definitive diagnosis can be made with liver biopsy.

FUN ON THE FARM. A CASE OF Q-FEVER ENDOCARDITIS

Christopher C. Richardson. University of South Florida, Saint Petersburg, FL. (Control ID #2707605)

LEARNING OBJECTIVE #1: Recognize the initial laboratory workup for a patient with suspected blood culture negative endocarditis

LEARNING OBJECTIVE #2: Learn how to interpret the laboratory testing for acute versus chronic Coxiella burnetii infections as prompt diagnosis and treatment is essential for chronic infections such as Q-fever endocarditis which carries such a high mortality rate

CASE: A 60-year-old female with a past medical history of cirrhosis secondary to Hepatitis C and alcoholism who presented with confusion, abdominal distention and discomfort. Spontaneous bacterial peritonitis was ruled out on admission and patient was placed on lactulose and rifaximin with improvement of her encephalopathy. Two days into admission the patient developed new onset dyspnea with hypoxia. A transthoracic echocardiogram was ordered that showed no evidence of shunting that would suggest hepatopulmonary syndrome and dyspnea resolved with fluid restriction and diuresis. However, an incidental finding on the echocardiogram revealed a 7.8 mm mobile echodensity on the aortic valve, which prompted further evaluation. A transesophageal echocardiogram confirmed the presence of three mobile echodensities with the largest measuring 12 mm × 5 mm, consistent with aortic valve vegatations. Infectious disease specialists were consulted and a gambit of tests were ordered to evaluate for patient's culture negative endocarditis. At the time she did not meet "Duke criteria" for infective endocarditis. Regardless, the patient was started on empiric ceftriaxone and doxycycline, and was felt to be suitable for discharge, planning six weeks of outpatient IV antibiotic therapy. Two weeks after discharge patient's send out labs for Coxiella burnetii had resulted revealing a positive phase II IgM titer of 1:32, with negative phase I IgM antibody and negative Phase I and II IgG antibodies. Given the specific marked election of phase II IgM titer, the diagnosis of Coxiella or Q-fever endocarditis was confirmed. Patient was then contacted who confirmed exposure to farm animals in the months prior to the admission.

IMPACT: This clinical vignette highlights the importance of considering uncommon etiologies for infective endocarditis in a patient with negative blood cultures and confirmed vegetations on echocardiogram. Broad screening for Legionella, HACEK organisms, Bartonella, Brucella, Mycobacterium and Coxiella should all be considered

DISCUSSION:.Q-fever is a zoonotic disease caused by the bacterium Coxiella burnetii that can cause acute and chronic illness with transmission occurring most often through inhalation of contaminated soil with animal waste. Only 20–40 percent of patients who develop chronic Q-fever have symptoms of acute infection. In contrast to acute Q-fever, chronic Q-fever can manifest as endocarditis months to years after exposure and carries a high mortality rate with most cases being fatal without treatment, stressing the importance of prompt recognition and treatment with doxycycline per "Center for Disease Control" recommendations

GANGRENOUS GASTRITIS: UNUSUAL CAUSE OF UPPER GI BLEEDING

Umair Iqbal[2]; Mohammad Arsalan Siddiqui[1]; Ahmad Chaudhary[2]; Hafsa Anwar[3]. [1]Henry Ford Hospital, Detroit, MI; [2]bassett medical center, Cooperstown, NY; [3]dow university of Health sciences, Karachi, Pakistan. (Control ID #2700892)

LEARNING OBJECTIVE #1: Mesenteric ischemia can present without abdominal pain especially if chronic due to formation of collateral vessels

LEARNING OBJECTIVE #2: Weight loss in elderly can be the only sign of chronic mesenteric ischemia

CASE: *A 6*7 year old male with history of COPD and coronary artery disease presented with hematemesis and black stools for a day. He denied any abdominal pain, loss of appetite, or weight loss. No prior history of GI bleeding or postparandial abdominal pain. He was a current smoker with 50-year smoking history. On presentation he had BP of 146/94, pulse 83 and afebrile. Abdominal exam was unremarkable for tenderness. Bowel sounds were present. Rectal exam revealed black stools. Labs showed hemoglobin of 16. g/dl1, hematocrit 45%, WBC of 34,000 with 83% neutrophils, bicarbonate 20 mmol/L and INR of 1.7. EGD revealed inflamed gangrenous-appearing gastritis throughout with multiple clean ulcers, raising suspicion for ischemia. Cardia revealed extensive gastric ulcer; 5–6 cm in greatest dimension, with a large visible vessel. CT angiographyof abdomen showed proximal occlusion of Superior mesenteric artery (SMA), near complete occlusion of celiac artery and hypertrophic Inferior mesenteric artery which is likely the supply of much of his GI tract. Patient underwent successful SMA bypass from left iliac to mid. He was discharged home on aspirin daily.

IMPACT: Clinicians should have a high index of suspicion in diagnosing intestinal ischemia in elderly patients with risk factors for atherosclerosis as clinical presentation can be misleading. Early diagnosis can prevent morbidity and mortality associated with this serious disease by decreasing the dreadful complication of bowel gangrene as developed in our patient.

DISCUSSION: Patients with chronic mesenteric ischemia (CMI) typically present with recurrent abdominal pain after meals, resulting in fear of eating and weight loss. In a survey of 270 patients, weight loss, postprandial pain, adapted eating pattern, and diarrhea are associated with CMI. Probability of diagnosis increases to 60% with all four symptoms, and reduces to 13% if none are present. Few patients present with non-specific symptoms of nausea, vomiting and/or GI bleeding. This patient was unique in that he had no abdominal pain even with a total occlusion SMA, possibly due to well-formed collaterals which were seen in his CT abdomen. His upper GI bleeding as a result of gangrenous gastritis resulted from ischemic bowel from total occlusion. Review of literature shows delay in diagnosis ranges from 10.7 months to 15 months in diagnosing CMI, resulting in more complications. CT angiography abdomen is more than 90 sensitive and specific in diagnosing it. Endovascular therapy with stenting is the preferred method of revascularization in these patients and has widely replaced open surgical management. The non-specific symptoms and unremarkable physical exam in our patient demonstrate how silently intestinal ischemia can present.

GASTROINTESTINAL MANIFESTATIONS OF ACUTE THYROTOXICOSIS

Sana Tariq; Tehseen Haider; Colette Knight. montefiore medical center, Bronx, NY. (Control ID #2703137)

LEARNING OBJECTIVE #1: Recognize the gastrointestinal manifestations of hyperthyroidism.

LEARNING OBJECTIVE #2: Identify thyrotoxicosis in the absence of overt physical examination findings.

CASE: A 67 year-old woman with past medical history of dermatomyositis was referred to endocrine clinic for abnormal thyroid function tests. She was initially seen in the GI clinic one month prior for evaluation of intermittent diarrhea and unintentional 23 lb weight loss. Her exam was notable for cachexia and tachycardia; there was no resting tremor, proptosis, or stare. Thyroid gland was normal in size. Abdominal exam was unremarkable. Given the patient's history of dermatomyositis, a work up for malabsorptive syndromes was done and was negative. However, thyroid profile revealed suppressed thyroid stimulating hormone (TSH): 1000 and thyroid stimulating immunoglobulin (TSI): 351%. Thyroid nuclear imaging showed homogeneous radioactive iodine uptake of 46.4%, consistent with Graves' disease. The patient was treated with methimazole and diarrhea resolved after several weeks of treatment. She regained her baseline weight. Thyroid function tests normalized with continued anti-thyroid treatment: TSH 1.26 uU/ml and FT4 1.64 ng/dl.

IMPACT: Early detection of hyperthyroidism in patients who present with chronic diarrhea and weight loss can result in appropriate treatment and prevention of unnecessary tests.

DISCUSSION: Graves' disease accounts for 60-80% of thyrotoxicosis and is often associated with adrenergic symptoms, weight loss, orbitopathy, and goiter. However, in select patients, especially the elderly, symptoms can be subtle and exam can be unremarkable. Weight loss is the most common presenting symptom of hyperthyroidism (present in 60.7%), and many patients gain considerable weight after treatment. Recent studies have shown that in hyperthyroid patients treated with radioiodine, thionamide or surgery the average weight gain was 5.4 ± 0.5 kg and increase in body mass index (BMI) was 8 ± 1 percent. Diarrhea is present in 22.3% of patients and is due to enhanced intestinal mobility with reduced transit time from the small to large bowel. There are multiple causes of chronic diarrhea and weight loss including infectious, non-infectious, autoimmune and parasitic, however it is important to keep endocrinopathies such as hyperthyroidism in your differential diagnosis. A careful history and judicious clinical acumen can help to associate presenting symptoms and signs such as weight loss and diarrhea with hyperfunctioning thyroid disease. Appropriate management of hyperthyroidism can lead to resolution of gastrointestinal symptoms such as weight loss and diarrhea.

GENITOURINARY PERIOPERATIVE INFECTION ASSOCIATED WITH SODIUM GLUCOSE CO-TRANSPORTER 2 INHIBITOR USE

Stephen Melnick[1]; Anthony A. Donato[2]. [1]Reading Health System, Lebanon, PA; [2]Reading Hospital and Medical Center, W Reading, PA. (Control ID #2706459)

LEARNING OBJECTIVE #1: Describe the association between genitourinary tract infections and SGLT-2 inhibitors

CASE: A 47 year old male with history of diabetes mellitus type 2 presented with acute onset progressive scrotal swelling and pain and fever 3 weeks after penile implant surgery. His current medications included canagliflozin-metformin, added just before surgery to improve his perioperative glucose control. On physical examination, the patient was febrile with scrotal swelling and tenderness to palpation. The patient laboratory evaluation was unremarkable including WBC count of 7.5/μl and serum lactate of 1.0 meq/L. Urinalysis was positive for glucose and trace ketones but negative for bacteria and white cells. A CT pelvis showed scrotal fluid consistent with abscess, and he was brought to the OR for penile prosthesis explant. Cultures grew MRSA and gram-negative rods. Blood cultures found MRSA bacteremia on second day of hospitalization. The patient was eventually discharged on IV vancomycin and amoxicillin-clavulanic acid for 14 days. In addition, the patients sodium glucose co-transporter 2 (SGLT-2) inhibitor, canagliflozin, was discontinued. The incident was reported to the FDA's post-marketing surveillance system.

IMPACT: This case emphasizes the importance of shared decision making prior to surgery. As the SGLT-2 inhibitors are gaining in popularity the provider must be aware of the potential adverse outcomes and may even considering holding or discontinuing this medication in the setting of impending GU surgery as the risks of this medication class include increased risks of genitourinary infections

DISCUSSION: SGLT-2 inhibitors are a novel treatment option for type 2 diabetes mellitus which have been shown to lower hyperglycemia, systolic blood pressure, and promote weight loss with reported adverse events including infections involving the genitourinary(GU) tract due to the medication mechanism of action. Canagliflozin is a selective SGLT-2 inhibitor which increases urinary excretion of glucose but is associated with an increased the rate of GU infections. The incidence of GU infections on an SGLT-2 inhibitor in the setting of GU surgery has not been described, but caution should be taken in perioperative use of this class in light of this risk.

GIANT CELL ARTERITIS COULD CAUSE DYSGEUSIA: A CASE REPORT AND FEATURES OF SEVEN CASES DIAGNOSED IN THE DEPARTMENT OF GENERAL MEDICINE

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LEARNING OBJECTIVE #1: Exploring dysgeusia as a diagnostic clue of giant cell arteritis

CASE: A 65-year-old man visited our clinic of general medicine because of headache and dysgeusia. Two months before admission, his symptoms started and got worse gradually, so he was referred to our clinic by his primary care phycisian, and hospitalized for diagnosis and treatment. His had a history of traumatic subdural hematoma, otherwise no particlar medical history. On admission, his body temperature was 36.9 ° C, blood pressure 108/60 mmHg, heart rate 90/min, respiration rate 13/min, and oxygen saturation was 98 percent while he was breathing ambient air. By reviewing of the systems, he stated he had headache, dysgeusia (feeling too salty for everything he ate), hyperacusis, hyperosmia, and physical examination revealed jaw claudication. Laboratory findings were as follows: WBC 12,000/μL, CRP 7.6 mg/dL, and erythrocytes sedimentation rate 110 mm/hour. After admission, induration of the left temporal artery appeared which was not seen in outpatient clinic. Whole trunk contrast CT showed thickened wall of the left subclavian artery and the brachiocephalic artery, and the 3D-CT showed stenosis of the left subclavian artery. Giant cell arteritis was highly suspected and biopsy of the left temporal artery was performed. Biopsy showed moderate to high inflammatory cell infiltration, and the appearance of multinucleated giant cells. In addition, the endothelium was thickened and a stenosis was found in a part of the blood vessel cavity. He started 60 mg of oral prednisolone daily, and headache, dysgeusia, hyperacusis and hyperosmia disappeared.

IMPACT: In this case, headache and dysgeusia appeared as the initial symptoms of giant cell arteritis and disappeared with steroid administration. It is

important to consider giant cell arteritis as urgent differential diagnosis when we see patients with dysgeusia.

DISCUSSION: We experienced a case of giant cell arteritis that caused dysgeusia. In addition, retrospective review of the 7 cases (including this case) of giant cell artritis diagnossed in our department, from 2008 to 2016, found another one case with dysgeusia as initial symptom. Giant cell arteritis is an urgent disease which can cause loss of vision, so for patients over 50 years old with dysgeusia, it is important to consider giant cell arteritis as an urgent disease. It is necessary to have additional investigation about other abnormal sensation such as hyperacusis and hyperosmia are related to giant cell arteritis as well as dysgeusia.

GOUTY PANNICULITS: A RARE MANIFESTAION OF GOUT

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LEARNING OBJECTIVE #1: Since gouty panniculitis is a rare entity, it can often be overlooked. Thus in the right clinical setting it is important to include it in the differential to guide further management.

LEARNING OBJECTIVE #2: Low dose corticosteroids with long term therapy with high dose allopurinol can be used as the first line of therapy for gouty panniculitis.

CASE: 42 year old male with history of alcoholism and chronic tophaceous gout on allopurinol 300 mg, presented with acute left elbow pain and swelling. Exam showed synovitis of left wrist and elbow, distal interphalangeal joint (DIJ) and right knee and tophi on left DIJ. Arthrocentesis of left elbow revealed purulent fluid with leukocytosis (5000,000/mm^3) and mono sodium urate (MSU) crystals with negative culture. Uric acid level was 10.1mg/dl with peripheral leukocytosis(16,000/mm3). His joint pain improved with antibiotics and steroids. On second day of admission tender nodular eruptions were noticed over extensor surfaces of distal lower extremities. Chalky while amorphous material was expressed from these lesions and biopsy showed evidence of acute suppurative panniculitis with presence of eosinophils. Allopurinol dose was increased to 600 mg while continuing prednisone 40 mg. There was improvement in skin lesions and joint pain in 2 months.

IMPACT: There is no specific treatment recommendations for gouty panniculitis due to lack of experience and rarity of this entity. Several case reports suggested long term therapy with high doses of allopurinol (600-1200mg/day) and short duration of low dose corticosteroids (prednisone 30-60mg). Our patient was treated with prednisone 40 mg for 2 weeks and allopurinol dose was increased from 300 to 600 mg daily There was improvement in skin lesions and joint pain thus supports the data from literature.

DISCUSSION: Gouty panniculitis is a non-vasculitic inflammation of the hypodermis, predominantly in the lobular hypodermis due to MSU deposition. It is a very rare manifestation of gout and can often be overlooked. Histologically, amorphous eosinophlic material and foreign body granulomas can also be seen. Skin lesions can occur before, concomitantly or even years after the onset of gout. Clinically it presents with erythema, induration and tender nodules with tendency to ulcerate and drain opaque or serous MSU rich fluid. Underlying mechanism is still unknown. One proposed mechanism is localized inflammation and tissue injury from disruption of arterial blood supply or micro trauma to terminal capillary walls in dermis and adipose tissue by MSU crystal deposition. Uric acid levels can be variable in these patients. Definitive diagnosis can be made only by biopsy of the lesions. There is no specific therapy for gouty panniculitis due to lack of experience and rarity of this entity. Several case reports suggested long term therapy with high doses of allopurinol (600-1200mg/day) and short duration of low dose corticosteroids (prednisone 30-60mg).

GRANULOMATOSIS WITH POLYANGIITIS (GPA); AN UNUSUAL PRESENTATION

Sina Houshmand; Aiman Zafar; Barry Fomberstein; Olena Slinchenkova. Albert Einstein College of Medicine/Montefiore Medical Center Wakefield Campus, Bronx, NY. (Control ID #2701554)

LEARNING OBJECTIVE #1: To recognize vasculitis as one of the differentials of headache in high risk patients.

LEARNING OBJECTIVE #2: To recognize the role and indication of serologic studies and imaging techniques in the diagnosis of granulomatosis with polyangiitis.

CASE: A 55 years old woman with 5 days of severe left-sided throbbing headache in occipital and neck region, associated with blurred vision, photophobia, occasional dizziness, and nausea, which did not respond to pain medication, presented to the hospital. Her past medical history was significant for nasal congestion, bronchitis, 5cm intracranial aneurysm, subarachnoid hemorrhage (SAH), diabetes, hypertension and chronic kidney disease. Physical exam was unremarkable. MRI/MRA of the head was suggestive of vasculitis. No intracranial aneurysm was seen. The vasculitis workup was negative except cANCA (proteinase PR3), which was positive twice. Lumbar puncture revealed only mildly elevated glucose (86mg/dl). Headache improved with therapeutic trial of prednisone within 1 week. In view of her elevated PR3 antibodies, MRI/MRA findings and response to steroids, granulomatosis with polyangiitis was considered as a diagnosis. Biopsy for definite diagnosis has been deferred at this time since her symptoms have resolved after 3 months of follow up.

IMPACT: There have been only a few cases of GPA presenting with headache and although extremely rare, GPA should be considered in differential diagnosis. Thorough workup can lead to proper diagnosis when clinical judgement and imaging studies points towards the possibility of vasculitis. This case adds to the pre-existing literature on a few number of cases of GPA that have presented with headache.

DISCUSSION: Granulomatosis with polyangiitis is a necrotizing granulomatous vasculitis involving medium and small vessels. Its prevalence in US is approximately 3 per 100,000 individuals. GPA has a strong association with c-ANCA with PR3 specificity. It can involve any organ but primarily affects respiratory tract (pulmonary capillaritis with hemorrhage) and kidneys (necrotizing glomerulonephritis); fewer than 10% of patients have neurological manifestations. A big challenge in the practice of modern medicine is the management of a disease in a cost effective and efficient manner and avoidance of misdiagnosis. In this case, the patient had a common presenting symptom (headache) which constitutes a large percentage of the primary admissions to ED. Therefore, it is not possible to perform a complete workup for every patient. Since the patient had history of SAH, her headache was considered high risk and was investigated by MRI which revealed the abnormal findings suggestive of vasculitis. Further serologic workup revealed the abnormal cANCA and led to the diagnosis of GPA. From this case, we can conclude that a fair combination of clinical judgement, application of the available guidelines and paraclinics should be present in our daily practice in order to have an optimal diagnostic performance.

HARK THE HERALD GI BLEED: A RARE CAUSE OF GASTROINTESTINAL BLEED REQUIRING EMERGENT SURGICAL INTERVENTION

Candace A. Worsham; Bryan Doherty; Charles Frost; Andrew Pearson; Baby Kodali; Vinod E. Nambudiri. Grand Strand Medical Center, Myrtle Beach, SC. (Control ID #2706331)

LEARNING OBJECTIVE #1: Describe the clinical features of an aortoenteric fistula (AEF)

LEARNING OBJECTIVE #2: Diagnose an AEF with imaging

CASE: A 66 year old female with past medical history of a cerebrovascular accident with residual right-sided weakness, hyperlipidemia, hypertension, and peripheral vascular disease treated with an aortobifemoral bypass presented to her primary care physician with complaints of fever, chills, and melena. Her home medications included aspirin and clopidogrel. She was found to have a white blood cell count of 16,000 and hemoglobin of 7.6 (from a baseline of 10.5) and was referred to the emergency room. Upon arrival, her blood pressure was 93/51, pulse was 86, respiratory rate was 20, temperature was 101.7, and O_2 saturation was 94% on room air. On physical exam, she had no abdominal tenderness but was found to have maroon-colored stool. The patient was started on pantoprazole and an upper endoscopy was performed, which showed evidence of bleeding and an eroded mesh in the D2 portion of the duodenum; surgery was consulted. A CTA of the abdomen was done, which revealed a fistula between the duodenum and the aorta as well as a partially occlusive mural thrombus at the origin of the right common iliac branch of the graft. Given these findings, the patient underwent emergent surgical intervention. GI surgery mobilized the duodenal fistula and repaired the duodenal enterotomy by two layers; they also placed open J and G tubes. The graft was removed, and the aorta was then transected and its proximal stump was oversewn by vascular surgery. The patient was stable after the procedure.

IMPACT: Aortoenteric fistula is a rare life-threatening diagnosis that may initially present as a minor gastrointestinal bleed but will inevitably become a surgical emergency. This case highlights the need for a high clinical index of suspicion of aortoenteric fistulas in patients with a history of prior aortic surgery to avoid diagnostic delay, which is often fatal.

DISCUSSION: Aortoenteric fistulas (AEFs) are uncommonly encountered but are important to consider in the differential diagnosis of gastrointestinal bleeding in patients who have had prior aortic surgery. Primary AEFs arise de novo between the aorta and bowel, while secondary AEFs (SAEFs) are usually caused by prosthetic vascular grafts eroding into the intestine as in our patient. Pulsation of vascular grafts against the intestine may cause erosion of the duodenal wall, leading to hemorrhage. The third part of the duodenum (D3) is the most frequent gastrointestinal tract location of AEFs. SAEFs may present as gastrointestinal bleeding and occasionally as sepsis. Patients initially have "herald bleeding" - intermittent episodes of bleeding due to thrombus formation - followed by massive hemorrhaging. A CT abdomen with contrast is the best diagnostic test if an AEF is suspected; AEFs may also be detected on endoscopy as in our patient. Emergency exploratory laparotomy is warranted immediately upon diagnosis, as mortality is 100% if not surgically treated.

HE WHO KNOWS SYPHILIS, KNOWS MEDICINE

Vytas P. Karalius; Jaime De La Fuente; Adam P. Sawatsky. Mayo Clinic, Rochester, MN. (Control ID #2699393)

LEARNING OBJECTIVE #1: Recognize and diagnose atypical presentations of neurosyphilis.

LEARNING OBJECTIVE #2: Recognize common findings of neurosyphilis on neuroimaging.

CASE: A 78-year-old Filipino male was admitted to the hospital for acute polyarticular arthritis. Six months prior to admission, he had an acute gout flare with acute worsening of his mental status that persisted after resolution. During the current hospitalization, he showed signs of disorientation, behavioral changes, mood liability and memory loss. He was restless and combative, with persecutory delusions and confusion. MRI of the head demonstrated chronic ischemic changes, moderate generalized cerebral and cerebellar atrophy, and ex-vacuo dilatation of the ventricles. There was no evidence for acute ischemia. During the hospitalization, VDRL and confirmatory testing was positive. Lumbar puncture was VDRL-negative, but he was treated for neurosyphilis with 14 days of IV penicillin. The patient's mentation improved during the hospitalization, corroborating the diagnosis of neurosyphilis. He reported decreased visual acuity and he had signs of possible ocular syphilis on eye exam.

IMPACT: Sir William Osler called syphilis "the great imitator" based on its diverse presentation and offered that, "he who knows syphilis, knows medicine." Our patient embodies this unique presentation of syphilis and highlights the importance of considering atypical presentations of typical problems when a patient presents with a complex array of symptoms.

DISCUSSION: Syphilis rates have been increasing in the US since 2000. The presentations of neurosyphilis are incredibly diverse and difficult to suspect, because neurosyphilis can arise at any time after initial infection, even in previously asymptomatic patients. Neurosyphilis can present with behavioral changes, dementia, disorientation, cognitive deficits, memory deficits, mood lability, delusions, psychosis, mania, seizures and changes in sleep. Some of these symptoms can mimic other common causes of dementia, however neurosyphilis is often more abrupt in onset. There are no pathognomonic findings on imaging to suggest neurosyphilis. However, studies have reported generalized cerebral atrophy, frontal lobe atrophy, temporal-parietal atrophy, non-specific changes consistent with infarction, and increased signal intensity on T2-weighted images. Ocular syphilis can occur in conjunction with neurosyphilis. There are no pathognomonic findings for ocular syphilis on eye exam. Several presentations exist, including keratitis, anterior uveitis, chorioretinitis, retinal vasculitis, exudative retinal detachment and optic neuropathy. CSF-VRDL tests may be falsely negative in late stages of neurosyphilis, and positive serum treponemal tests in the presence of a high clinical suspicion are considered sufficient for diagnosis. Improvement in our patient's condition after receiving appropriate treatment suggests that neurosyphilis was a large factor in his cognitive decline.

HEERFORDT'S SYNDROME

Mina A. Ferig[1]; Amani F. Sargios[2]; Preeyanka R. Sundar[1]; Pena Sisto Cecilia[1]. [1]Berkshire Medical Center, Pittsfield, MA; [2]Berkshire medical center, Wappingers falls, NY. (Control ID #2682921)

LEARNING OBJECTIVE #1: Heerfordt's syndrome is an extremely unusual manifestation of systemic sarcoidiosis. It is characterized by three major findings: enlargement of parotid gland, uveitis, facial nerve palsy and is usually associated with fever. If only two of three characteristic findings of Heerfordt's syndrome are present, it is known as incomplete Heerfordt's syndrome

CASE: A 33-year old man with significant family history for Rheumatologic diseases presented with persistent fever, nonproductive dry cough, fatigue for 2 weeks, unintentional weight loss of 10 pounds in one month, dry mouth, blurry vision, and bilateral knee and ankle joint pain. On exam, patient appeared fatigued

with mild dyspnea. Examination showed temperature was 99.5°F, blood pressure 122/87 mm Hg, pulse 96 beats/min, respiration 21 breaths/min, and oxygen saturation 95% on room, bilateral parotid enlargement, tachycardia without murmurs, bilateral rales, with decreased range of motion of both knees with tenderness, and later developed erythema nodsum on extensor surface of both tibias.Labs revealed leukocyte count of 8.500 cells/mm3 with 89.9% polymorphonuclear leukocytes, hemoglobin of 13.6 g/dL, platelet count of 341,000/mm3, elevated CRP 10.6, angiotensin converting enzyme 71, and low MCV 80.6 and Hematocrit 39.4. Urine analysis showed microscopic hematuria and hypercalciuria. PPD and Quantiferon Gold tests were negative. RF, Anti-CCP-IgG, ANA, SS-A/Ro, SS-B/La were negative. Chest radiograph showed bilateral hilar lymphadenopathy, further CT imaging showed multiple bilateral pulmonary nodules and enlarged hilar lymphadenopathy, and renal ultrasound revealed right kidney stones. Patient referred to pulmonologist for bronchoscopy and biopsy.

IMPACT: The patient later developed Bell's palsy, was started on 70mg prednisone, and his symptoms improved except the fatigue. Pathology confirmed non-caseating granuloma and diagnosis of Sarcoidosis made

DISCUSSION: The diagnosis of sarcoidosis, a systemic granulomatous disease, is based on a compatible clinical-radiological picture and the histological evidence of noncaseating granulomas. There is no single test for sarcoidosis, and the presence of granulomas alone does not establish the diagnosis. Symptoms of sarcoidosis are nonspecific and can be markedly different according to organ involvement and disease course. Respiratory symptoms and fatigue may be identified at any stage of disease. Histological confirmation is not needed for Heerfordt's syndrome. Sarcoidosis has a significant genetic susceptibility, which has been shown from family and case–control studies. Sarcoidosis is associated with a genetic risk profile made up of many variant genes, so there is no single Bsarcoidosis gene^. MHC-2 alleles can determine the course of disease, e.g., in Scandinavians HLADRB1*03 predisposes to disease with spontaneous resolution. A German study found a strong association for polymorphism in butyrophilin-like 2 gene with development of sarcoidosis

HEMORRHAGIC HEPATOCELLULAR CANCER: A SINISTER CAUSE FOR SYNCOPE

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LEARNING OBJECTIVE #1: Evaluate for occult hemorrhage in patients presenting with syncope and anemia

LEARNING OBJECTIVE #2: Evaluate for hepatocellular cancer in patients with spontaneous hemoperitoneum

CASE: We report an 80 year old Asian female who presented with recurrent episodes of syncope. Physical exam was significant for orthostatic hypotension and tender hepatomegaly. Cardiac examination was entirely normal. Preliminary blood work showed moderate anemia but was otherwise unremarkable. Telemetry monitoring showed paroxysmal atrial fibrillation but these episodes were temporally unrelated to her symptoms. Abdominal computed tomography showed hemorrhagic hepatic masses and intraperitoneal bleeding. Serial monitoring revealed rapidly dropping hemoglobin. The patient was managed conservatively with blood transfusions after which her hemoglobin stabilized and she had no further episodes of syncope. Percutaneous liver biopsy subsequently demonstrated well differentiated hepatocellular carcinoma. Screening for hepatitis B and C viruses was negative. The patient was evaluated by oncology and then discharged home with further management planned as outpatient.

IMPACT: How did this case change my thinking? Syncope is widely encountered in everyday practice, yet diagnosing the underlying disorder can be a daunting task. Although vasovagal syncope that is most frequently seen is relatively benign, syncope can be the presenting symptom for serious underlying disease. Occult hemorrhage is a well-recognized cause of syncope and can easily be overlooked. Careful abdominal examination and a high index of suspicion in the presence of unexplained coincident anemia are essential to making the right diagnosis in such cases. Any patient presenting with syncope, abdominal pain and anemia should be meticulously evaluated for occult hemorrhage.

DISCUSSION: Presentation with syncope is well described in ectopic pregnancy; an analogous mechanism operates in other causes of intraperitoneal hemorrhage such as was seen in our patient. A key finding in such patients is unexplained anemia or anemia that is disproportionate to any visible bleeding. Another important finding is that of orthostatic hypotension in a patient who has no reason to be volume depleted. While resuscitation with fluids and blood products is key, it is equally important to diagnose the underlying source of blood loss in a timely manner. Emergent abdominal imaging is invaluable in such cases as a clinical abdominal examination can be deceptively subtle. Hemoperitoneum as first manifestation of hepatocellular cancer is frequently encountered in countries with a high incidence of this cancer such as countries of the far East but is uncommon in the West. Interestingly, as an immigrant from the Philippines, our patient conformed to this pattern of presentation. Transcatheter arterial embolization can be effective in patients with uncontrolled bleeding; however this was not required in our patient as she stabilized after resuscitation with blood products.

HEMOSUCCUS PANCREATICUS: A RARE CAUSE OF UPPER GASTROINTESTINAL BLEEDING

Brian V. Dinh; Asghar Ali; Srivats Madhavan; Pallavi Rao. Wright State University, Dayton, OH. (Control ID #2706072)

LEARNING OBJECTIVE #1: Recognize clinical, radiologic, and endoscopic findings of hemosuccus pancreaticus.

CASE: A 36-year-old male presented with acute epigastric abdominal pain radiating to the back, nausea, vomiting, hematemesis, and melena. Chart review revealed two admissions in regional hospitals for upper gastrointestinal hemorrhage without an identifiable source.Past medical history included recurrent alcoholic pancreatitis and a hemorrhagic pancreatic cyst evaluated by prior EUS. Exam revealed a pale-appearing, orthostatic hypotensive male with epigastric tenderness with diminished bowel sounds. No stigmata of chronic liver failure, Grey Turner's sign, or Cullen's sign noted on exam. Labs were significant for Hb of 3.4 g/dl, and lipase of 262 U/L. The patient was resuscitated with intravenous fluids, transfused 4 units of blood, and started on a pantoprazole drip. Esophagogastroduodenoscopy (EGD) revealed a normal esophagus and stomach. The ampullary region appeared mildly prominent with a hemorrhagic spot at the papilla. CT abdomen with contrast showed evidence of a 4.2 × 4.1 cm pancreatic pseudocyst with a partially thrombosed left gastric artery pseudoaneurysm (PSA) traversing the cyst. Abdominal angiography revealed a PSA with hemorrhage into the pseudocyst. He underwent successful interventional radiology (IR)-guided embolization and gel foam injection to the right and left gastric arteries to control the hemorrhage. Repeat mesenteric angiography four days later showed no further source of bleeding.

IMPACT: Our practice has changed greatly to include a larger differential of upper GI bleeding following this case. The case emphasizes the need to consider all causes of bleeding, which will aid any clinician in making appropriate diagnostic and management decisions to avoid anchoring.

DISCUSSION: Intermittent bleeding from PSA into the pancreatic duct is called hemosuccus pancreaticus. PSA develops in 3.5-10% of cases of pancreatitis, leading to gastrointestinal bleeding with a reported rate of 4-10% of all cases of pancreatitis. PSA formation in pancreatitis is well established phenomenon resulting from erosion of nearby vessels by pancreatic enzymes, an established pseudocyst eroding into a visceral artery, or pseudocyst eroding the bowl wall with bleeding from mucosal surface frequently involving the splenic artery. PSA rupture can present as occult or massive bleeding and accounts for about 1% of all cases of GI bleed. Hemorrhage into the intestines, pancreatic duct, or peritoneal cavity, as well as intrasplenic and subcapsular hematoma formation, splenic rupture, and infarction have been reported. Even with early diagnosis, the mortality can be as high as 15-50%. EGD may be unremarkable or reveal hemorrhage from the ampulla of Vater. Dynamic contrast-enhanced CT scans can delineate the location of the bleeding PSA. Arterial embolization is often successfull. However, recurrent bleeding occurs in 10-50% of cases, and patients should undergo surgery to achieve hemostasis.

HEPARIN INDUCED THROMBOCYTOPENIA VERSUS THROMBOTIC THROMBOCYTOPENIC PURPURA: A CHALLENGING CLINICAL SCENARIO Hassan Zeb; Zainab Jalal; Zeeshan Khakwani. Conemaugh Memorial Medical Centre, Johnstown, PA. (Control ID #2706648)

LEARNING OBJECTIVE #1: Recognize hematological causes of thrombocytopenia and understand the significance of prompt and appropriate management.

CASE: A 68 years old female with one week history of left knee arthroplasty complicated with periprosthetic femur fracture requiring surgical correction presented with lethargy, abdominal pain and watery diarrhea. Post-surgically, she was on Low Molecular Weight Heparin (LMWH) for Deep Venous Thrombosis (DVT) prophylaxis. Initial workup showed platelet count of 20000/μL, leukocytosis and acute kidney injury. Further evaluation revealed findings for hemolytic anemia. Patient received broad spectrum antibiotics for a possible infection. CT scan abdomen and pelvis showed right adrenal hemorrhage with left adrenalitis and steroids were given. Peripheral smear, ADAMTS13 levels and a HIT panel were ordered due to intermediate 4T score. On repeat analysis, platelets of 8000/μL and 2% schistocytes led to ICU transfer for possible TTP. Plasmaphresis was initiated but despite five sessions, platelet count improved only partially (53000/μL). HIT panel returned positive and ADAMTS13 was intermediate ruling out TTP. The partial platelet response was considered secondary to antibody removal during plasmapharesis and adrenal hemorrhage was believed to be a result of adrenal vein thrombosis causing passive congestion. Argatroban infusion was started, platelets improved by day 8 of hospital stay and she was bridged with coumadin once platelets returned to 150000/μL.

IMPACT: Thrombocytopenia can be a result of numerous etiologies among which hematological ones are of prime significance. In clinical settings, HIT can be difficult to differentiate from TTP but a wider thought process, early risk factors identification and prompt management leads to better survival rates.

DISCUSSION: Severe thrombocytopenia is a life threatening condition with multiple etiologies and treatment options, making prompt management a challenging scenario. Risk factors identification, intermediate 4T score and a positive HIT panel helped us diagnose HIT. A platelet count below 20000/μL is rare in HIT and common in TTP but it should not be the only factor to dismiss HIT as a cause of thrombocytopenia.

HEPATOCELLULAR CARCINOMA FOUND AFTER STREPTOCOCCUS BOVIS INFECTION Dianne Thompson; Jillian S. Catalanotti. The George Washington University, Washington, DC. (Control ID #2703543)

LEARNING OBJECTIVE #1: Recognize the association between Streptococcus bovis infection and liver disease.

CASE: A 59 year old woman with chronic hepatitis C and a recent history of S. bovis endocarditis requiring aortic valve replacement was brought to the emergency department by her family for confusion, fatigue and constipation for one week. On arrival, the patient was not alert and was dehydrated. She was found to have hypercalcemia (calcium level of 18.9 mg/dL) and was treated with intravenous hydration, bisphosphonate and calcitonin. An abdominal CT scan with contrast was ordered to evaluate for possible colon cancer. The CT scan showed no colon masses, but did show multiple liver masses, concerning for hepatocellular carcinoma affecting both lobes of the liver. Her serum AFP level was 17,320 ng/ml (normal is less than 200 ng/ml) which further supported a hepatocellular carcinoma diagnosis. The patient's calcium level returned to normal with medical treatment. Her functional status remained poor. Consistent with the wishes of the patient and her family, she was discharged to home with hospice care.

IMPACT: The association between S. bovis infections and colon cancer is well known. In fact, guidelines recommend screening patients diagnosed with S. bovis for colon cancer. There is also a strong association between chronic liver disease such as chronic viral hepatitis or cirrhosis, and S. bovis infections, but this association is rarely described in the literature and is less well-known to clinicians. Current recommendations do not suggest a workup for liver disease if no colon cancer is found in patients with S. bovis infection, however this patient illustrates that doing so may be prudent.

DISCUSSION: This patient's S. bovis endocarditis was associated with chronic hepatitis C and hepatocellular carcinoma, and colon cancer workup was negative. Although the mechanism of the association between S. bovis and liver disease is unknown, it is theorized to be due to an impaired immune system that allows the infection to spread through the portal system. S. bovis bacteremia is known to be associated with colon cancer and with liver disease, however the latter is rarer, less often discussed in the literature, and less well-known to clinicians. A triad of concurrent colon cancer, liver disease and S. bovis infection has also been described in the literature. This case reminds us that patients with S. bovis infections should be evaluated for colon cancer, and if such workup is negative, they should also be evaluated for underlying liver disease.

HEPATOCELLULAR CARCINOMA RUPTURE: A RARE COMPLICATION OF HCC Fabiola Rios de Choudens. University of South Florida, Tampa, FL. (Control ID #2690379)

LEARNING OBJECTIVE #1: Recognize this rare and life threatening complication of hepatocellular carcinoma in a patient with acute symptomatic anemia.

LEARNING OBJECTIVE #2: Treat ruptured hepatocellular carcinoma tumors with emergent transarterial embolization.

CASE: A 62-year-old male with history of cirrhosis and hepatocellular carcinoma (HCC) secondary to hepatitis C and chronic alcohol abuse was admitted after experiencing syncopal episode. The day prior to admission, the patient had undergone large volume therapeutic paracentesis with aspiration of 4.4 liters of serosanguinous fluid. On admission, labs were notable for a

hemoglobin of 5.7, platelet count of 53, and INR of 2.04. He denied any other complaints. CT abdomen/pelvis revealed a perihepatic hemorrhage secondary to rupture of a large hepatic mass in the dome of the liver. While in the ED, the patient underwent emergent transfusion of 2 units of blood and 2 units of FFP. Emergent hepatic artery embolization was done. Hemostastasis was achieved with successful embolization of an anterior division of the right hepatic arterial branch. Post embolization, the patient required another 8 units of blood, 10 units of FFP, and 20 units of platelets. He was started on Zosyn due to high risk of infection/abscess after embolization. Serial ammonia levels were monitored following procedure to monitor for liver failure and possible hepatic encephalopathy.

IMPACT: Complications of cirrhosis are commonly encountered in the inpatient and ER setting and as an internal medicine resident, I feel that I am becoming more comfortable in managing them. This patient had received a paracentesis prior to admission and his symptoms could have been attributed to a complication from that procedure. However, the etiology of his complaint was completely different and associated directly with his hepatocellular carcinoma. Prior to this case, I was unaware of tumor rupture as a consequence of HCC. Now I know that at least 15% of HCC patients can present acutely with this complication and need urgent treatment.

DISCUSSION: Hepatocellular carcinoma (HCC) is the most common primary cancer of the liver and its incidence in developed Western countries is increasing. Annual incidence of HCC is 3-5% in patients diagnosed with cirrhosis. HCC can further compromise a patient's health by tumor progression, liver failure, and, rarely, spontaneous rupture of the tumor itself. Rupture occurs in 3-15% of HCC patients and has very high mortality acutely. Proposed risk factors for rupture include rapid tumor growth with necrosis, erosion of hepatic vessels, vein thrombosis, direct tumor invasion of vessels, or superficial location of tumor. Although spontaneous rupture of HCC has a high mortality, transarterial embolization (TAE) is effective in controlling bleeding in the acute setting. Definitive treatment involves staged liver resection which can result in long-term survival in compensated patients.

HEY DOC, I AM LOSING WEIGHT: A 30 POUND WEIGHT LOSS IN AN AFRICAN AMERICAN MALE Stephanie C. Holt; Natalia Morone. University of Pittsburgh Medical Center, Pittsburgh, PA. (Control ID #2700474)

LEARNING OBJECTIVE #1: Diagnose Graves' disease with a normal thyroid exam

LEARNING OBJECTIVE #2: Recognize the treatment of this condition

CASE: 60-year-old African American male who has not seen a doctor in "over 10 years" presenting for 30 pound weight loss in an unknown time period. He has decreased appetite, palpitations, increasing SOB, and fatigue. He denies bloody stools, chest pain, headache, diarrhea, blurred vision, orthopnea, and prior cancer screening. Social history was remarkable for 22 pack year history and unprotected sex. Family history was remarkable for father with unknown cancer. No medications. Physical exam revealed a pleasant, thin male in NAD. BP 206/112 with repeat 194/102. HR 98. BMI 18.9. HEENT: normal thyroid size without nodularity or goiter, no lid lag, and no exophthalmos. Cardiac, lung, and abdominal exams unremarkable. Neurological exam: patellar reflexes 3+ and fine tremor bilaterally in hands. He was started on amlodipine for BP. Lab work revealed negative HIV, TSH <0.01, and free T4 4.6(0.8–1.8 ng/dL). CT scan and colonoscopy unremarkable. Then he was started on atenolol. Subsequent workup revealed free T3 > 20(2.3–4.2 pg/mL), thyrotropin-binding inhibitory immunoglobulin 76.3(<16%), thyroglobulin antibodies <1(<1 IU/mL), and thyroid peroxidase antibodies >900(<9 IU/mL), thyroid stimulating immunoglobulin 443(<140% of baseline), and radioiodine uptake scan showed homogeneous uptake in a slightly enlarged thyroid gland. He continued to lose weight and remained hypertensive (158/89) with a tremor. He was then started on 10 mg methimazole. Currently, he is followed by Endocrinology who is increasing his methimazole. His palpitations have stopped. He is gaining weight. However, his TSH and free T4 are not fully responding after 2 months, and if they remain abnormal, the next step is radioiodine ablation.

IMPACT: I now appreciate that a profound weight loss can be the presenting complaint of a patient with Graves' even without a goiter. In addition, starting methimazole early has an immediate impact on a patient's signs and symptoms and should be considered by the primary care physician.

DISCUSSION: Graves' disease is a syndrome of hyperthyroidism, goiter, and eye pathology caused by the stimulation of the thyroid gland due to thyrotropin receptor antibodies. There are several predisposing factors including genetics, female gender, smoking, infections, stress, and iodine/iodine containing drugs. The clinical presentation of Graves' is classically characterized by diffuse goiter, ophthalmopathy, and pretibial myxedema. Treatment consists of symptomatic control with a beta-blocker that decreases the beta-adrenergic tone. Then for definitive treatment of Graves', there are three options: antithyroid medications, radioiodine, or surgery. The goal is to achieve a euthyroid state quickly (3–8 weeks). The risk of recurrence after discontinuing the medications is higher than the rates after radioiodine or surgical treatment. The choice of treatment depends on the patient's risks and benefits.

HIP PAIN IN A YOUNG ADULT Mahreen Arshad[1]; Richard Jones[2]. [1]Brookwood Baptist Health, Birmingham, AL; [2]Clinic For Rheumatic Diseases, Tuscaloosa, AL. (Control ID #2707459)

LEARNING OBJECTIVE #1: To recognize inflammatory etiology of hip pain.

LEARNING OBJECTIVE #2: To review the radiographical findings and analysis of axial spondyloarthritis.

CASE: This case is about a 26 year old Caucasian female with a past medical history of ADHD who was seen in the rheumatology clinic for a 2 to 3 month history of hip pain. The patient's symptoms were progressively worsening and at the time of presentation she required help with some activities of daily life due to stiffness and pain. On exam the patient had slightly decreased strength in her right thigh when compared to her left and was noted to have a rash at the insertion of her Achilles tendon bilaterally. She also had a slight limp when she walked; her physical exam was otherwise insignificant. The patient had a MRI of the right hip 2 months before presentation that showed unilateral sacroiliitis. A repeat MRI of the hips 5 weeks later showed worsening right hip sacroiliitis and developing left hip inflammatory changes.

IMPACT: Hip pain is one of the most common complaints seen in primary care clinics. There are many different etiologies, but one of the most debilitating can be spondyloarthritis. It is also one of the more difficult diagnosis, however, this case helps clarify the new guidelines to help identify patients with the disease.

DISCUSSION: Non-radiographic axial spondyloarthritis (Nr-axSpA) is a fairly new classification that incorporates axial spondyloarthritis with no x-ray evidence of sacroiliitis. Studies have shown that most of the patients with Nr-axSpA are young females (with an average age of less than 45 years) and the duration of their symptoms is usually less than 10 years. Certain lab work can be elevated

including ESR and hsCRP along with a positive HLA-B27 although not necessary. In many cases with Nr-axSpA, ESR and CRP are both within normal limits while HLA-B27 is positive in over 80% of the cases. Patients with Nr-axSpA have been shown to have a good response to treatment with TNF α inhibitors. Recent studies have shown that early diagnosis and treatment can help prevent progression of disease. In the case of this patient she was started on adalimumab and had good response with notable decrease of hip pain within two days. New guidelines have been developed to help diagnose Nr-axSpA in a timely manner. It thus becomes imperative to have a high suspicion for inflammatory causes of hip pain and necessitates earlier referral for treatment. In the case of this patient it saved her from additional invasive procedures, provided improvement in symptomology, and halted disease progression.

HISTORY KEY TO CLARIFYING SIGNIFICANCE OF INCIDENTAL FINDINGS Farah Ladak[3]; Faraz Fiazuddin[2]; Temple Ratcliffe[1]. [1]UTHSCSA, San Antonio, TX; [2]University of Texas Health Science Center - San Antonio, San Antonio, TX; [3]University of Texas Health Science Center San Antonio, San Antonio, TX. (Control ID #2687802)

LEARNING OBJECTIVE #1: To recognize the multiple manifestations of hereditary hemorrhagic telangiectasia and the importance of obtaining a thorough patient history to make a prompt diagnosis and prevent negative outcomes.
CASE: A 37-year-old woman with history of ulcerative colitis and focal nodular hyperplasia (FNH) of the liver presented with right upper quadrant (RUQ) abdominal pain. An extensive workup including endoscopic retrograde cholangiopancreatography (ERCP) eventually diagnosed primary sclerosing cholangitis (PSC). Interestingly, the anti neutrophil cytoplasmic antibody was negative. However, review of systems was also significant for epistaxis. Family history was significant for father with hereditary hemorrhagic telangiectasia (HHT). Physical exam did not reveal any lesions. MRI liver showed dilated bile ducts, prominent vascular channels at hilum, hepatic congestion, right lobe cystic lesions and left lobe FNH. These findings prompted a liver biopsy which revealed arteriovenous malformation. A diagnosis of HHT was made based on the consensus criteria. Of note, CT chest revealed cardiomegaly and findings suggestive of pulmonary arterial hypertension. She was discharged with transplant hepatology follow up for her PSC.
IMPACT: HHT has several manifestations associated with high morbidity and mortality. The diagnosis is easy to miss without high clinical suspicion. A thorough patient history along with a high clinical suspicion is key to diagnosing HHT. Lack of appreciation of HHT manifestations can delay diagnosis resulting in progression of the disease and ultimately, poor outcomes for patients and families.
DISCUSSION: HHT is a rare autosomal dominant disorder involving the vasculature in multiple organ systems. Clinical features include epistaxis, gastrointestinal bleeding, anemia, mucocutaneous telangiectasia and visceral arteriovenous malformations (AVM). Consensus criteria conclude a definite diagnosis if three or more of the following are present: epistaxis, mucocutaneous telangiectasia, visceral AVMs and 1st degree relative with HHT. HHT is likely under recognized and diagnosis requires a high index of clinical suspicion. Interestingly, our patient's FNH may be related to her HHT as well. FNH has a much higher prevalence in HHT patients with liver AVMs. The increased blood supply due to the AVMs is considered responsible for hepatic hyperplasia. In addition, patients with HHT can have multiple areas of intrahepatic biliary dilation similar in pattern to sclerosing cholangitis as this patient had. This is thought to occur due to ischemic changes secondary to AVMs. Diagnosis of HHT is important because screening for visceral AVMs may be important to avoid negative outcomes such as pulmonary hypertension, heart failure, cerebral bleeding, and stroke. Our patient's possible pulmonary hypertension was found incidentally on CT and should be followed up with a transthoracic echocardiogram or right heart catheterization.

HOLY MOLDY! A CASE OF A PHAEOHYPHOMYCOSIS IN AN IMMUNOCOMPETENT PATIENT Michele A. Sundar[1]; Mitchell A. Blass[2]. [1]Emory University, Atlanta, GA; [2]Georgia Infectious Diseases, PC, Atlanta, GA. (Control ID #2700699)

LEARNING OBJECTIVE #1: Recognize phaeohyphomycosis as a cause of clinical disease in humans
LEARNING OBJECTIVE #2: Examine the most common disease presentations of *Exophiala dermatitidis*
CASE: A 39 year old immunocompetent female with medical history significant only for well controlled intermittent asthma, came to the Emergency Department for acute onset of shortness of breath. Her lungs on presentation were clear to auscultation with decreased breath sounds on the right, but no wheezing or rhonchi. Initial chest radiograph showed a moderate to large right sided pneumothorax. In addition to the pneumothorax, multiple nodules were found, with both cavitary and solid features. She underwent chest tube placement and bronchoscopy with tissue biopsy of one nodule, and pathology confirmed *Exophiala dermatitidis*. The patient improved initially with chest tube placement and had appropriate lung re-expansion, but unfortunately, relapsed three weeks later, presenting again to the Emergency Department with a right sided pneumothorax. At this time, Video-Assisted Thoracoscopic Surgery was performed for definitive treatment. Posaconazole was started for treatment of *Exophiala dermatitidis*, and she responded well to therapy.
IMPACT: This case highlights a rare presentation of phaeohyphomycosis in an immunocompetent patient. Thus far, the literature fails to show any case reports describing *Exophiala dermatitidis* in an immunocompetent patient that presented as solitary pulmonary nodules with a spontaneous pneumothorax. This case will help alert physicians to a newly described clinical syndrome associated with phaeohyphomycosis, thus improving their ability to recognize this uncommon disease.
DISCUSSION: Phaeohyphomycosis is the term used to describe infections caused by black molds with melanin containing cell walls. The molds are ubiquitous in soil and had previously been considered contaminants when isolated in culture.[1] Today, over 100 species have been identified, 60 of which have been linked to diseases in humans. Documented clinical syndromes from *Exophiala dermatitidis* include pneumonia, disseminated infection (most common), and subcutaneous lesions. Not only does our patient have a new clinical syndrome associated with *Exophiala dermatitidis*, but she represents the immunocompetent minority in which these infections occur. In a review of phaeohyphomycosis cases from 1993–2011, 30 cases were identified to have been caused by *Exophiala. dermatitidis*; however 71% of these cases had an underlying immunodeficiency or risk factor, such as malignancy, peritoneal dialysis, diabetes mellitus, HIV, steroid use, or bronchiectasis1. In cases where asthma was the only risk factor in an immunocompetent patient, the clinical disease was similar to that of Allergic bronchopulmonary aspergillosis, and almost exclusively due to B*ipolaris* or C*urvularia* species3(and not *Exophiala dermatitidis*).

HOW A BLADDER HELD A GALLON OF URINE Vassiliki Pravodelov. Boston University Medical Center, Boston, MA. (Control ID #2707084)

LEARNING OBJECTIVE #1: Describe a case of severe bladder outlet obstruction due to acquired bladder diverticula (BD)

LEARNING OBJECTIVE #2: Outline the diagnosis and management of BD

CASE: A 59 year old man presented to the clinic with constipation, bilateral lower extremity edema, and urinary hesitancy for 2 weeks. The patient noted abdominal distension without pain, nausea, or vomiting. He had no hematuria, dyspnea, or leg pain. His exam was remarkable for abdominal distension without rigidity, tenderness, or a fluid wave. He had bilateral 1+ lower extremity edema. A urine culture ruled out infection. Furosemide was started. Three days later, the patient's abdominal distension was more pronounced with new tenderness. The edema was now 3+. He had new hyponatremia and acute kidney injury and he was sent to the ED. A CT scan showed a severely distended bladder and a bladder wall defect with a diverticulum extending into the lower pelvis, exerting a mass effect on the rectum and prostate. A urinary catheter was placed with rapid removal of 4 liters of urine. The abdominal distension and extremity edema resolved soon after the catheterization. Outpatient urologic workup included a CT urogram and cystoscopy. The prostate was not enlarged. He had high post-void residuals (PVR) and discomfort with daily catheterizations. After shared decision making regarding treatment options, the patient had an uncomplicated robot-assisted laparoscopic bladder diverticulectomy. His PVR improved and he was able to stop the catheterizations. However, given the size of the excised diverticula, he was still at risk for recurrence. Therefore, he underwent a transurethral incision of the prostate (TUIP). Since then, the patient has been asymptomatic.

IMPACT: This case illustrates an unusual case of bladder outlet obstruction due to BD leading to abdominal distension, constipation, and lower extremity edema. It reminds us that BD should be on the radar when patients present with signs of urinary retention.

DISCUSSION: BD are pouches in the bladder wall. Acquired BD develop due to bladder outlet obstruction (i.e. prostate enlargement), neurogenic bladder, or prior bladder surgery. It is still unclear what caused the BD in this patient as BD are more common in children (congenital) and the elderly (acquired due to prostate hyperplasia). Urinary retention, recurrent urinary tract infections, and renal failure have been described as complications of BD. Malignant neoplasms may also develop within BD. The diagnosis of BD is through imaging, with a CT urogram done first. If concerning findings are noted, a cystoscopy can follow. Treatment of BD may be conservative with intermittent urinary catheterization and PVR monitoring. Surgical intervention is curative. This patient had high PVR and significant discomfort with intermittent urinary catheterization. A robotic-assisted bladder diverticulectomy resolved his symptoms. The risk of recurrence is high in patients with acquired BD. This is why the patient underwent a TUIP despite a normal prostate.

HUNGRY AND ANGRY CELLS Hadi Zein; Yehuda Fuzailov; Binh Huynh. New York Presbyterian Queens, Flushing, NY. (Control ID #2706734)

LEARNING OBJECTIVE #1: Recognize and treat hemophagocytic lymphohistiocytosis in adult patients

CASE: A 39-year-old female with chronic anemia presented to her primary care physician with fever and fatigue of 10 days duration. Her symptoms started with fatigue and mild shortness of breath. After 3 days, she developed fevers and myalgias. She sought medical attention at an urgent care center. The patient was positive for influenza and was not initiated on antivirals because of her late presentation. Over the next few days, she developed diarrhea associated with nausea and vomiting and presented to the ED. Physical examination was notable for tachycardia and fever with multiple bruises over her lower extremities. Laboratory testing showed pancytopenia, hemoglobin of 4.5 g/dL, white cell count of 600 cells/μL and platelet count of 8,000/μL. She was started on broad spectrum antibiotics and oseltamivir. Viral serologies (CMV, EBV, HIV, parvovirus B19, influenza) and blood cultures were negative. She was given multiple red blood cell and platelet transfusions over her hospitalization course, with no appropriate response to her cell counts. A bone marrow biopsy showed a hypercellular marrow with numerous large hemophagocytic histiocytes and macrophages. She was diagnosed with hemophagocytic lymphohistiocytosis (HLH). She was started on dexamethasone and etoposide with improvement in her symptoms and cell counts

IMPACT: HLH is a syndrome mainly encountered in infants and children. Because of its diverse presentation and being the target to the pediatric population mainly, it can be a diagnostic challenge for internists. The greatest hurdle to the survival of the patients is a delay in diagnosis.

DISCUSSION: HLH is a syndrome of excessive immune activation. It is most commonly encountered in children. In adults, there is usually an underlying trigger; most likely influenza in our patient. Macrophages secrete an excessive amount of cytokines ("cytokine storm"), and the negative feedback exerted on the immune system is inhibited. The most common clinical features of HLH are hepatosplenomegaly, lymphadenopathy, fever, and rash. The diagnosis is based on meeting 5 out of 8 criteria. Our patient had the following five criteria: fever, splenomegaly, peripheral cytopenia, hemophagocytosis in the bone marrow and a high ferritin level. Treatment of HLH depends on the hemodynamic stability of the patient. If the patient is acutely ill, HLH specific treatment should be initiated immediately. Otherwise, the underlying trigger should be identified. The specific treatment consists of dexamethasone and etoposide. A minority of patients would require an allogeneic hematopoietic stem cell transplant if they do not respond to the treatment or have an underlying genetic predisposition. Supportive care consists of prevention and treatment of opportunistic infections, transfusions, and treatment of bleeding.

HYPERKALEMIA DUE TO PSEUDOHYPOALDOSTERONISM TYPE II Patrick J. Sayre; Anita Lee. University of Pennsylvania, Philadelphia, PA. (Control ID #2703440)

LEARNING OBJECTIVE #1: List common causes of outpatient hyperkalemia

LEARNING OBJECTIVE #2: Employ a stepwise algorithm to evaluate outpatient hyperkalemia

CASE: TH is a 70 year old man who presented with 2 months of fatigue. He also reported a history of hyperkalemia (potassium 6.1 mEq/L) for which he was started on hydrochlorothiazide (HCTZ) 50 mg daily. His medical history was notable for hypertension well controlled on HCTZ, BPH on finasteride, and arthritis with intermittent use of naproxen. His family history was notable for hypertension. Social history was non-contributory. His exam was normal. He had a normal CBC and BMP with a potassium of 3.8 mEq/L while on HCTZ 50 mg. Given concern for adrenal insufficiency in the setting of fatigue and hyperkalemia, serum cortisol was obtained and was low at 3.7 ug/ml. Subsequent cosyntropin stimulation test was normal. Plasma renin activity

(PRA) and aldosterone were both normal at 3.4 ng/ml/hr and 10.2 ng/dl, respectively. Prior records were obtained and showed similar low-normal aldosterone in the presence of hyperkalemia. These results were concerning for hypoaldosteronism. Renal consultation was obtained, with the most likely diagnosis felt to be pseudohypoaldosteronism type II.

IMPACT: Hyperkalemia is a common outpatient laboratory abnormality with potentially serious consequences.[1,2] We found that many available diagnostic algorithms for hyperkalemia were more relevant for inpatients than outpatients. In addition, many such algorithms continued to use the trans-tubular potassium gradient, which has fallen out of favor due to invalid underlying assumptions.[1] This unusual case prompted us to develop a rational, stepwise algorithm for the evaluation of outpatient hyperkalemia.

DISCUSSION: Hyperkalemia is defined as a serum potassium greater than 5.5 mEq/L and is estimated to occur in 2-15% of outpatients.[1–3] Mechanisms for hyperkalemia can be categorized as either excess potassium intake, cellular shifts, or decreased potassium excretion.[1] Evaluation of hyperkalemia requires a stepwise approach that includes focused history and exam, potassium level re-check, identification and cessation of medications that cause hyperkalemia, then initial laboratory evaluation with CBC, BMP, serum osmolality, and urine electrolytes. These results are then used to successively rule in or out pseudohyperkalemia, cellular shifts, and inadequate distal sodium delivery.[1,4] If the above workup is unrevealing, this suggests insufficient mineralocorticoid activity, and PRA and aldosterone level are used to characterize the problem as either aldosterone blockade, adrenal insufficiency, or hyporeninemic hypoaldosteronism. TH presented with hypertension, hyperkalemia, normal PRA and aldosterone level, and low urine sodium. This is consistent with pseudohypoaldosteronism type II, which is caused by a mutation in the Na-Cl cotransporter, and corrects completely with thiazide diuretic therapy.[5] [1–5] References available upon request

HYPERLEUKOCYTOSIS IN ACUTE PROMYELOCYTIC LEUKEMIA: AN UNCOMMON PRESENTATION

Martin C. Fried[1]; Benjamin Kwok[2]. [1]NYU, Astoria, NY; [2]New York University, New York, NY. (Control ID #2705042)

LEARNING OBJECTIVE #1: Initiate treatment for leukostasis in APL

LEARNING OBJECTIVE #2: Recognize lethal complications of induction therapy for APL

CASE: A previously-healthy 72-year-old woman presented with two weeks of progressive fatigue. Laboratory tests revealed a white blood cell (WBC) count of 140x10^9/L and peripheral blood smear showed greater than 90% blasts and promyelocytes. Chest radiograph and transthoracic echocardiogram (TTE) were unremarkable. She was started on all-*trans* retinoic acid (ATRA), idarubicin, and dexamethasone. Molecular cytogenetics confirmed the diagnosis of acute promyelocytic leukemia (APL). WBC count decreased to 70x10^9/L by day three of treatment, but she developed hypoxemic respiratory failure with extensive pulmonary consolidations on chest CT. She required invasive mechanical ventilation with increasing oxygenation needs and later developed acute ischemic stroke of the left middle cerebral artery territory and NSTEMI with new McConnell's sign on repeat TTE.

IMPACT: Hyperleukocytosis is an uncommon and understudied presentation of APL that puts the patient at high risk for severe complications. A critical look at literature behind expert opinions and practices highlights several issues that need further investigation.

DISCUSSION: Patients with APL typically present with pancytopenia; hyperleukocytosis on presentation portends greater risk of differentiation syndrome (DS) and leukostasis. DS, a clinical diagnosis characterized by respiratory distress, fever, edema, hypotension, and renal failure, is a cytokine-mediated vasodilatory complication of ATRA that occurs in up to 25% of patients with APL. DS may occur as early as two days after initiation of therapy and has a mortality of 30%, primarily from respiratory failure or cerebral edema. Prompt treatment with corticosteroids and possible temporary discontinuation of ATRA improves mortality to 5%. Steroid prophylaxis is typically started for patients with WBC count greater than 10x10^9/L, though this recommendation has not been rigorously studied. Leukostasis is end-organ damage by WBC plugging of microvasculature. Management involves cytoreduction to prevent further end-organ damage. Leukapheresis is a treatment often used in hematologic malignancies but is not recommended in APL because cell lysis may release leukemic granules, worsen coagulopathy, and create a cytokine storm. Evidence for leukapheresis in APL is conflicting and incomplete. One small study showed fatal or near-fatal hemorrhage in a majority of APL patients who underwent leukapheresis. Another study showed that median overall survival and 3-year overall survival were not significantly affected in APL patients with WBC count greater than 50x10^9/L who underwent leukapheresis when compared to those who did not undergo leukapheresis. The preferred treatment for leukostasis in APL is induction therapy with ATRA or arsenic trioxide, but a case-by-case consideration of leukapheresis is warranted for those with severe leukostasis and multiple organ damage.

HYPERSENSITIVITY PNEUMONITIS IN A BIRD OWNER: THE IMPORTANCE OF ASKING ABOUT PETS IN THE SOCIAL HISTORY

Melissa Chamblain[1]; Johanna Martinez[2]; Zara Muzaffar[2]. [1]Northwell Health, Manhasset, NY; [2]Northwell Health, Lake Success, NY. (Control ID #2707383)

LEARNING OBJECTIVE #1: Review the pathophysiology and management of hypersensitivity pneumonitis (HP)

LEARNING OBJECTIVE #2: Raise awareness of the importance of conducting a thorough history, as early diagnosis and intervention can reverse a disease process

CASE: A 57 year-old, previously healthy woman presented to the Emergency Department with chief complaints of a dry, progressive cough and subjective fevers for one month. All other organ systems were reviewed and were negative. She is an every day smoker. On physical exam, she was an overweight woman in mild distress, with a low grade fever and scattered expiatory wheeze. Routine blood tests (CBC, CMP, blood cultures, viral respiratory panel) were performed. Results showed a WBC of 12 and the rest of the work-up was negative. Additionally, a chest x-ray revealed multi-lobar opacities. Treatment for community-acquired pneumonia was initiated. A CT chest revealed bilateral ground-glass opacities. She progressively became hypoxic and tachypneic, requiring transfer to the Intensive Care Unit. In the team's attempt to seek alternative diagnoses, her social history was revisited. It was found that she had purchased a parakeet about a month ago. In light of this new information steroids were started for presumed hypersensitivity pneumonitis. Within two days, she recovered clinically and was extubated.

IMPACT: This case highlights the importance of history taking. Studies dating back from the mid-twentieth century to most recently in 2012 attempted to measure the relative contribution of history taking, compared to physical exam

and laboratory tests in obtaining a correct diagnosis. As suspected, the most important factor in both diagnosis and treatment lied in the history which decided more than half of diagnoses and therefore management (Markert, 2004). Diagnosing HP can be challenging; it requires known antigen exposure, clinical, radiologic, laboratory and pathologic findings validating a clinical suspicion. In mild HP, simple avoidance of the antigen in question may be sufficient. In severely symptomatic patients, a tapered steroid regimen is started and mechanical ventilation may be required. In the case mentioned above, perhaps such clinical course could have been avoided with thorough history taking.

DISCUSSION: Histologically, HP presents as granulomatous lymphocytic alveolitis which can evolve into fibrosis in chronic advanced disease. On CT scan, ground glass opacities or nodules can be seen in acute/subacute cases whereas reticular opacities and traction bronchiectasis point towards a chronic disease. What remains intriguing is that only a few of the exposed develop the disease. A two-hit model (i.e. genetic and environmental factors) has been hypothesized to provoke an immune-complex mediated response in both the acute and subacute/chronic cases. Reference: Markert, R. J., Haist, S. A., Hillson, S. D., Rich, E. C., Sakowski, H. A., & Maio, A. C. (2004). Comparative Value of Clinical Information in Making a Diagnosis. Medscape General Medicine, 6(2), 64.

HYPERTENSION AND HYPOKALEMIA: MAKING THE (CONN)ECTION Melissa Magrath; Brooks Brodrick. University of Texas Southwestern, Dallas, TX. (Control ID #2706260)

LEARNING OBJECTIVE #1: Recognize when to screen for primary aldosteronism

LEARNING OBJECTIVE #2: Assess the necessity of adrenal vein sampling to characterize PA

CASE: A 62 year old male with a history of coronary artery disease and hypertension presented to a primary care clinic to establish care. On review of his medical history, he reported an inguinal hernia, for which surgical repair was aborted two years ago due to hypokalemia. Vital signs were significant for blood pressure of 180/109. The remainder of the physical exam was normal with the exception of a large inguinal hernia. Labs were significant for a potassium of 2.0 mmol/L and a bicarbonate of 38 mmol/L. Plasma renin and aldosterone levels were obtained: renin <6 mg/ml/hr, aldosterone 38.7 ng/dl, with an aldosterone/renin ratio of 64. CT abdomen revealed a 1.4 cm mass on the left adrenal gland. Spironolactone was initiated with improved blood pressure control. He was scheduled for adrenal vein sampling (AVS) and referred for surgery.

IMPACT: This case highlights the diagnostic algorithm for suspected primary aldosteronism (PA). In addition, although this patient presented with profound hypokalemia, the majority of patients with PA are normokalemic. We should have a lower index of suspicion for PA in patients with resistant hypertension.

DISCUSSION: Primary aldosteronism, first described by Dr. Conn in 1955, is the leading cause of secondary hypertension and affects an estimated 5-18% of patients with hypertension. Patients should be screened for PA if they have hypertension on three conventional antihypertensive drugs (including a diuretic), normotension on four or more antihypertensives, or hypertension and spontaneous or diuretic induced hypokalemia. Guidelines recommend screening with plasma aldosterone/renin ratio because it is constant over many physiologic conditions. Confirmatory tests should be performed except in the setting of spontaneous hypokalemia, plasma renin below detection levels plus plasma aldosterone concentration >20 ng/dL (as illustrated in the case above). All patients with PA should undergo adrenal computed tomography (CT) as the initial study in subtype testing. PA is treated with adrenalectomy in patients with unilateral disease (most often adenoma) and mineralocorticoid antagonists (MRA) in the remaining patients. PA patients are at increased risk of cardiovascular complications due to excess aldosterone so it is not merely sufficient to control hypertension in patients with adenoma. Prior to adrenalectomy, AVS is performed to confirm unilateral versus bilateral disease. However, a recent RCT of 200 patients with PA challenged the necessity for AVS to characterize PA. Treatment of PA based on CT or AVS revealed no difference between groups in intensity of hypertensive medications, quality-of-life, or adverse events at one year of follow-up. These results suggest that AVS, an invasive test requiring technical expertise, may not be necessary in all patients with PA.

HYPERVISCOSITY SYNDROME AS A POTENTIAL CONTRIBUTOR TO MYOCARDIAL ISCHEMIA Guramrinder S. Thind; Yashwant Agrawal; Richard Roach. Western Michigan University School of Medicine, Kalamazoo, MI. (Control ID #2701327)

LEARNING OBJECTIVE #1: Recognize the importance of checking serum viscosity in multiple myeloma with high paraprotein load.

LEARNING OBJECTIVE #2: Identify hyperviscosity syndrome as a potential contributor of myocardial ischemia.

CASE: A 79-year old female with past medical history of coronary artery disease presented with a subacute onset of chest pain. Patient had been experiencing progressively worsening chest pain for two days. On presentation, the pain was present at rest and was associated with nausea and diaphoresis. Nitroglycerin patch was prescribed and the pain was relieved. EKG showed minimal ST depressions in the anterior leads. Troponin level was 1.01 ng/mL and trended up to 1.77 ng/mL. Patient was diagnosed with non ST-segment elevation myocardial infarction (NSTEMI) and started on heparin infusion. Initial workup showed: hemoglobin = 7.7 gm/dL, platelet count = 101,000/mm3, globulin = 8.5 g/dL, and albumin = 2.3 g/dL. Reticulocyte index was 0.5 suggesting marrow suppression as the cause of patient's anemia. Multiple myeloma was suspected, and serum protein electrophoresis with immunofixation revealed an IgG monoclonal spike of 6.3 g/dL. The diagnosis was confirmed by bone marrow biopsy that showed 90–95% plasma cells. Because of high load of the monoclonal protein, serum viscosity was checked, and it was 3.4 centipoise. Patient did not meet the hyperviscosity criteria for plasmapheresis (4.0 centipoise) and had no other obvious signs of hyperviscosity syndrome. However, high serum viscosity in the setting of pre-existing coronary artery disease was suspected to be responsible for patient's NSTEMI. Plasmapheresis was contemplated for this reason, but patient's symptoms improved and troponins trended down. Patient was discharged with outpatient Hematology follow up planned.

IMPACT: This case identifies hyperviscosity as a potential contributor to myocardial ischemia, especially in the presence of underlying coronary artery disease. Serum viscosity levels should be checked in all cases of multiple myeloma when the paraprotein load is significantly high. The subacute onset of symptoms in our patient was more consistent with hyperviscosity-induced myocardial ischemia, as opposed to an acute thrombotic event.

DISCUSSION: Hyperviscosity syndrome describes the various clinical manifestations of high serum viscosity. It is typically seen with leukemia, polycythemia, or paraproteinemias. In Waldenstrom macroglobinemia, IgM being a

much larger molecule than the other immunoglobulins is more likely to cause hyperviscosity. However, paraproteinemia in multiple myeloma can also cause hyperviscosity, especially if the load of IgA or IgG monoclonal spike is > 6 g/dL. Although normal serum viscosity is 1.4 to 1.8 centipoise, clinical features of hyperviscosity are usually seen with levels of >4 centipoise. Vision changes and neurological manifestations are the common symptoms. However, myocardial ischemia can occur, especially in pre-existing coronary artery disease. Plasmapheresis is the definitive treatment.

HYPOPHYSITIS AND ADRENAL INSUFFICIENCY SECONDARY TO IPILIMUMAB AND NIVOLUMAB: A NEARLY LIFE THREATENING SIDE EFFECT OF NOVEL IMMUNOTHERAPY AGENTS

Samir Bhalla[2]; Kevin Hauck[1]. [1]NYU Langone Medical Center, Brooklyn, NY; [2]NYU School of Medicine, New York, NY. (Control ID #2670508)

LEARNING OBJECTIVE #1: Discuss the clinical utility and mechanism of action of a widely used novel immunotherapeutic agents.

LEARNING OBJECTIVE #2: Highlight the incidence of endocrinopathies associated with Ipilimumab and Nivolumab.

CASE: A 70 year old female with metastatic melanoma presented to the emergency department with fatigue and lethargy for one month. She had recently completed 6 cycles of Nivolumab and Ipilimumab and was currently receiving Nivolumab monotherapy. Over the past month she had worsening fatigue associated with nausea and decreased appetite. Lab work one week prior to admission was significant for newly elevated TSH and low T4, and thyroid replacement therapy was initiated. On the day of admission, she had a syncopal episode at home prompting presentation. On arrival, she was hypotensive to 89/57. Lab work was significant for hyponatremia, hypokalemia, and hypochloremia. Due to concern for adrenal insufficiency, she was started on stress dose hydrocortisone. An AM serum cortisol was 1.5 and ACTH level was undetectable. FSH and LH levels were also low. An MRI of the brain was notable for enhancement of the pituitary gland suggestive of hypophysitis, which was likely a side effect of her immunotherapy.

IMPACT: Ipilimumab and Nivolumab are novel immunotherapeutic agents used in the treatment of melanoma, with research investigating their use into other malignancies as well. Endocrinopathies are relatively common side effects of these agents, especially when given as combination therapy. Nonspecific complaints, such as fatigue and nausea in our patient, should warrant a thorough investigation for endocrinopathies in patients with treatment exposure to ipilimumab and/or nivolumab.

DISCUSSION: Nivolumab and Ipilimumab are novel immunotherapeutic agents that are currently used for metastatic melanoma and squamous lung carcinoma. Nivolumab antagonizes the binding of Programmed Cell Death Ligand 1 to the programmed cell death 1 receptor (PD-1), activation of which would normally promote T-cell apoptosis. Ipilimumab antagonizes the cytotoxic T lymphocyte-associated antigen 4 (CTLA-4), preventing down regulation cytotoxic T lymphocytes. Endocrinopathies are relatively common side effects of checkpoint inhibitors and are thought to be result of auto-immune inflammation. They can manifest as primary hyper/hypothyroidism, primary adrenal insufficiency and/or hypophysitis thereby affecting the multiple hormonal systems. A retrospective review from Memorial Sloan Kettering showed an incidence of hypophysitis of 8 and thyroiditis of 6% following treatment with ipilimumab. The incidence of hypophysitis and thyroiditis increased to 9 and 22% respectively in patients who received combination therapy with ipilimumab and nivolumab. Our patient seemingly developed primary hypothyroidism and hypophysitis causing a secondary adrenal insufficiency secondary to her combination therapy. The initiation of levothyroxine therapy likely precipitated her adrenal insufficiency leading to her syncopal event.

HYPOTENSION AFTER CARDIAC CATHETERIZATION.

Idrees Azher[2]; Murtaza A. Sundhu[2]; Mubbasher Syed[2]; Ashoka Nautiyal[1]. [1]Fairview Hospital, Fairview Park, OH; [2]Fairview Hospital/Cleveland Clinic Hospital, Fairview park, OH. (Control ID #2705930)

LEARNING OBJECTIVE #1: Complication of temporary pacemaker lead causing tamponade.

LEARNING OBJECTIVE #2: Early recognition and emergent treatment of tamponade.

CASE: 68 year old women with past medical history of hypertension peripheral arterial disease and hypothyroidism presented to hospital with acute onset severe sub-sternal typical chest pain. Her initial physical examination was unremarkable except for ejection systolic murmur best heard over the right sternal border. Her initial troponin T was 0.267. There were no electrocardiogram (ECG) changes. Chest CT revealed bilateral lower lobe consolidation suggestive of bilateral lower lobe infiltrates. Patient was subsequently diagnosed with pneumonia and Non ST elevation MI and was started on broad spectrum antibiotics and intravenous heparin infusion. Transthoracic echocardiogram revealed dilated left ventricle with an ejection fraction of 42%. Cardiac catheterization revealed a significant rim of calcification and severe stenosis at the ostium of right coronary artery (RCA) that prevented its intubation with catheter. There was significant occlusive disease in left anterior descending and circumflex artery as well. Cardiothoracic surgery was consulted. Her severe vascular disease precluded coronary bypass surgery for near future and percutaneous coronary intervention of RCA lesion was planned. A successful rotational atherectomy using a rotabladder and angioplasty with drug eluting stenting was done. During the procedure, temporary pacemaker was inserted that was removed at the end of the procedure without any complications. Patient was transferred to the floor where she became bradycardic and hypotensive. Intravenous fluids were started as her blood pressure was 70/30. ECG showed a concave downwards ST elevation in V2 and V3. Emergent bedside echocardiogram showed diastolic collapse of the right atrium with a moderate pericardial effusion. Emergent pericardiocentesis was performed and after removal of 50 mL of blood, her condition improved. A catheter was left in the pericardial space and a total of 150 mL of blood was removed. Repeat echocardiogram showed minimal residual pericardial effusion. She made good recovery after this.

IMPACT: This case brought my attention to the early recognition and emergent treatment of cardiac tamponade.

DISCUSSION: Acute pericardial effusion resulting in tamponade is a life threatening condition and any cardiac intervention including pacemaker wire may cause this. In our patient, although the position of the wire appeared to be excellent during the procedure with normal pacing and sensing parameters, we believe that pericardial effusion resulted as a complication of pacing wire. In addition, patient being on dual antiplatelet agents and bivalirudin during the procedure, increased her risk of bleeding. Prompt recognition and management of tamponade are essential.

I'M JUST PSAYING SOMETHING ISN'T RIGHT Valentine O. Millien; Ryle Przybylowicz; Janis L. Sethness; Lee Lu. Baylor College of Medicine, Houston, TX. (Control ID #2707288)

LEARNING OBJECTIVE #1: Recognize diagnostic errors in clinical reasoning based on the interpretation of the standard screening test.

LEARNING OBJECTIVE #2: Recognize that neuroendocrine small cell carcinoma (SCC) of the prostate has a high mortality.

CASE: A 69-year-old Caucasian male with myelodysplastic syndrome and urinary retention from urethral stricture, with suprapubic tube, presented with 3 weeks of progressive left leg swelling. Physical exam was notable for pitting edema of the left lower extremity and scrotum. A Doppler ultrasound of left leg was negative for deep venous thrombosis. A CT abdomen/pelvis revealed retroperitoneal and bilateral pelvic lymphadenopathy with compression of the left external iliac vein and an enlarged nodular prostate with mass effect on the bladder outlet and serum PSA of 0.17 ng/mL. He has had regular follow up by urology for his urinary retention presumed due to urethral stricture, and his PSA had been very low since 2010. A PET/CT was significant for markedly avid uptake in an enlarged heterogeneous prostate gland, lymphadenopathy, hepatic hypodensities, and pelvic bony erosion, all of which were concerning for diffusely metastatic disease. He underwent prostate biopsy with pathology showing neuroendocrine SCC of the prostate. After an extensive discussion, he decided to pursue hospice care.

IMPACT: Premature diagnostic closure may have occurred in this case due to clinician cognitive errors with reasoning process assuming a low probability of prostate cancer given low PSA levels. It may be possible that the patient's urinary retention might have been due to his prostate cancer which was never investigated due to bias secondary to his low PSA value. Therefore, a negative PSA, in the proper clinical setting, should not decrease suspicion for a malignancy of the prostate.

DISCUSSION: Prostate cancer is a common type of cancer, occurring in older men. Approximately 1 out of 7 men will be diagnosed with prostate cancer in their life. The estimated 10-year survival rate is 98%. However, neuroendocrine SCC of the prostate is an aggressive rare variant of androgen resistant prostate cancer found in 0.35 cases per million per year. This type of cancer is a devastating disease due to the typical late stage at diagnosis and association with paraneoplastic conditions that are typical of small cell carcinomas of other organ systems. It is also an extremely aggressive malignancy, as compared to adenocarcinoma, with a median survival of <1 year despite chemotherapy. Screening with PSA lacks utility as levels are unlikely to be elevated in this malignancy. Hence, this case highlights the importance of recognizing physician cognitive errors with reasoning process in diagnostic delay and awareness of the aggressiveness of neuroendocrine small cell prostate cancer.

ICU DELIRIUM MISDIAGNOSED AS DELIRIUM TREMENS

James Rotenberg; Malcolm D. Kearns; Seneca Harberger; Christopher Magoon. University of Pennsylvania, Philadelphia, PA. (Control ID #2699691)

LEARNING OBJECTIVE #1: Re-evaluate a diagnosis of alcohol withdrawal delirium in light of conflicting evidence.

LEARNING OBJECTIVE #2: Treat hyperactive delirium in the setting of a prolonged QTc.

CASE: A 77 year-old man with no known medical history was transferred to our ICU for NSTEMI management; a cardiac catheterization on day 2 showed multivessel stenoses which were medically managed. Post-procedure, the patient was confused, agitated and pulling his lines. He told staff he drinks "6 scotches daily" though admission AUDIT-C score was zero. Regular CIWA assessments were started (initial scores 18 and 28) and 2 mg iv lorazepam given with mild improvement. Telemetry 1 hour later showed new rapid atrial fibrillation treated with IV metoprolol and amiodarone. He received 25 mg chlordiazepoxide then 50 mg diphenhydramine for ongoing agitation overnight. Repeated rapid atrial fibrillation and worsening agitation required further boluses of metoprolol, lorazepam and mechanical restraints. Empiric therapy for alcohol withdrawal was continued (700 mg diazepam-equivalents over 7 days) without improvement in delirium and leading to respiratory depression requiring BiPAP. The patient's relative denied any excessive alcohol use and found no alcohol after searching his home. Benzodiazepines were weaned and aripiprazole started for agitated delirium in the setting of a prolonged QTc (>500 msec). As delirium cleared, the patient repeatedly reported he had "never been drunk in my life".

IMPACT: This case reinforces the risks of diagnostic bias delaying recognition of iatrogenic harm. We describe the patient-level risks of inappropriate prescription of psychotropic medications to elderly patients. In future cases of delirium in patients with unclear medical histories, we will be more likely to check objective measures of alcohol consumption and gather collateral from family before medical decision making if at all possible.

DISCUSSION: Delirium is exceedingly common in the ICU (1). Alcohol withdrawal is a relatively uncommon cause, even in patients with known alcohol abuse (2), and requires alcohol reduction in addition to the characteristic withdrawal syndrome (3). While the CIWA scale is useful for rating alcohol withdrawal severity (4) it is not sufficient to diagnose alcohol withdrawal delirium. Diagnostic biases (e.g., overconfidence and anchoring (5), confirmation, diagnostic momentum, and base-rate neglect) are important barriers to accurate diagnosis (6). In managing acute agitation and psychosis in the setting of a persistently prolonged QTc, aripiprazole has a relatively low risk of torsades de pointes (7). 1. Lancet 2014; 383: 911–22 2. Am J Addict. 2008 Sep-Oct;17(5):452 3. *Diagnostic and statistical manual of mental disorders* (5th ed.) 2013. 4. N Engl J Med. 2014 Nov 27;371(22):2109–13 5. BMC Med Inform Decis Mak (2016) 16:138 6. Acad Med. 2003 Aug;78(8):775–80 7. J of Psychiatric Practice 2014;20:338–344

IFOSFAMIDE INDUCED ENCEPHALOPATHY AND ITS REVERSAL WITH METHYLENE BLUE Tejas Karawadia[1]; Arthur Topilow[1]; Michael P. Carson[2]. [1]Jersey Shore University Medical Center, Woodbridge, NJ; [2]Jersey Shore University Medical Center, Neptune, NJ. (Control ID #2672519)

LEARNING OBJECTIVE #1: Diagnose and treat encephalopathy, a rare complication of ifosfamide chemotherapy.

CASE: A male in his 40's was diagnosed with testicular germ cell cancer two months ago, and treated with unilateral orchiectomy. Chemotherapy with EP (etoposide and cisplatin) was completed 2 months before admission, followed by VIP (etoposide, ifosfamide and cisplatin) 1 month ago. He was admitted to receive his third session of chemotherapy with VIP daily for 5 days. The blood counts before chemotherapy were: Hb 10.5 gm/dl, WBC 11 K/ul, PLT 370 k/ul and he was treated with filgrastim 600mcg daily. Tumors markers LDH (2790 - > 241 iu/l), HCG (256323 - > 2118 miu/ml) and AFP (29825 - > 42 ng/ml) had dramatically improved with previous chemotherapy. BUN was 15 mg/dl and creatinine 0.95 mg/dl after completion of chemotherapy. Twenty-four hours after

completion of chemotherapy (day 6) he became confused, agitated and delirious. Given the timing, ifosfamide induced encephalopathy was the most likely diagnosis, so 50mg IV methylene blue was administered. Within 4 hours he became awake and coherent, with almost complete reversal of the neurologic symptoms. He later described the experience felt "like an LSD trip".

IMPACT: Although there are no established guidelines in management of ifosfamide induced encephalopathy, this case highlights the significance of methylene blue in treating this acute adverse event.

DISCUSSION: In addition to testicular cancer, ifosfamide is used to treat soft tissue sarcoma, cervical cancer, and lymphomas. Adverse effects include myelosuppression, nephrotoxicity, hemorrhagic cystitis and neurotoxicity. Frequently, IV fluids and mesna are given with ifosfamide to prevent nephrotoxicity and hemorrhagic cystitis, respectively. Ifosfamide induced encephalopathy is thought to result from accumulation of chloroacetaldehyde, a breakdown product of ifosfamide. Currently, there is no standard recommended treatment for this adverse effect. However, many reports suggest that methylene blue may be an effective treatment of this toxic and reversible complication. A PubMed search (ifosfamide; encephalopathy; methylene blue), did not identify any clinical trials, but there are 14 case reports in which methylene blue appeared to aid in resolution of ifosfamide induced encephalopathy. One author reported three patients with the history of ifosfamide induced encephalopathy who received prophylactic methylene blue prior subsequent treatments. In each case the treatment reduced severity as compared to previous chemotherapy sessions. In conclusion, when ifosfamide induced encephalopathy is suspected, treatment should include stopping the infusion, exclusion other causes of delirium, and administration of IV methylene blue 50mg every 4 hours till symptoms subside. For patients with a past history of ifosfamide induced encephalopathy, it seems reasonable to administer IV methylene blue as a prophylactic measure before any subsequent chemotherapy with ifosfamide.

IMATINIB INDUCED ACUTE HEPATIC INJURY Mohammad A. Selim[3]; Thamer A. Kassim[1]; Osman Bhatty[2]; Jaya S. Gupta[1]; Lakshmi M. Chintalacheruvu[3]. [1]Creighton University, Omaha, NE; [2]Creighton University GME, Omaha, NE; [3]Creighton university, Omaha, NE. (Control ID #2707030)

LEARNING OBJECTIVE #1: Recognize the clinical features and different presentations of Imatinib induced liver injury.

LEARNING OBJECTIVE #2: Assess the role of oral glucocorticoids as an early management strategy in severe cases of Imatinib induced liver injury.

CASE: 71-year-old woman presented with jaundice, pruritus, lethargy, pale stool, and dark urine without fever and abdominal pain. Past medical history was significant for Sjogren's disease, CML, breast cancer, choledocholithiasis, and history of self-limited liver enzymes elevation in 2007. No significant family history and she denies alcohol use. She was taking Imatinib, Tamoxifen, Plaquenil, and Duloxetine. No recent history of Acetaminophen ingestion. Physical exam revealed overt jaundice and pedal edema. MELD score was 28. Initial labs revealed markedly elevated transaminases, total bilirubin, INR, borderline Alkaline phosphate, and Acetaminophen level was not elevated. Imaging did not show biliary duct obstruction without any evidence of thrombosis, cirrhosis, or mass. Workup including autoimmune hepatitis; AMA, ANA, Anti-smooth muscle, and infectious hepatitis panel were negative. Liver biopsy performed and showed acute hepatitis and acute cholangitis consistent with drug induced liver injury. Liver enzymes trended down after cessation of Imatinib and dramatically improved after commencing the patient on Prednisone. Follow up labs showed continued decrease LFTs and marginal improvement of total Bilirubin. Patient presented back with RUQ abdominal pain approximately 2 weeks after steroid therapy started. Given the prior history of choledocholithiasis and persistent hyperbilirubinemia the patient had EUS, which did not reveal any obstruction or stricture but revealed a gastric ulcer. Prednisone discontinued and LFTs continued to trend down.

IMPACT: There are few case reports of Imatinib induced liver injury. Acute hepatitis is the most common reported form. Our case presented with acute hepatitis and acute cholangitis, adding to the diagnosis and recognition of such cases. Prednisone had been tried in a study and recent case reports. However, side effects led to its discontinuation in our case. LFTs and bilirubin continued to trend down despite steroid cessation. This case highlights that steroids maximum benefit is in the early few weeks.

DISCUSSION: Literature review revealed that high elevation of liver enzymes, occur in less than 4% of cases. Furthermore, it demonstrates that most of the severe cases were female patients who presented in the first 3 to 6 months after starting Imatinib. Prednisone had been tried before in some cases and it showed better outcomes. Based on that, we started the patient on prednisone. Our patient developed some side effects and Prednisone ceased. LFTs and bilirubin continued to trend down despite steroid cessation. The role of steroids still unclear and controversial. Given the lack of large studies and the side effect profile, risk and benefit of glucocorticoid therapy will need to be assessed on a case by case basis.

IMPENDING PARADOXICAL EMBOLUS IN A PATIENT WITH ENDOCARDITIS AND PFO Mubashir H. Bahrami[1]; Joshua Meskin[2]. [1]Medical College of Wisconsin, Wauwatosa, WI; [2]Medical College of Wisconsin, Milwaukee, WI. (Control ID #2701267)

LEARNING OBJECTIVE #1: Recognize the clinical features of Infective Endocarditis with Patent Foramen Ovale (PFO)

LEARNING OBJECTIVE #2: Manage Endocarditis and PFO both medically and surgically in the setting of impending paradoxical emboli

CASE: A 28-year-old Caucasian woman with history of intravenous drug abuse (IVDA) was found down by her family and brought to a nearby hospital. The patient did not have any pertinent past medical, surgical or family history. Upon examination the patient was altered, febrile, hypotensive, tachycardic and had a grade IV holosystolic murmur. Neurologic assessment revealed absence of movement in bilateral lower extremities, presence of clonus, and lack of sensation. A MRI of the cervical spine revealed cervical stenosis with a C2-T1 ventral epidural phlegmon. A MRI of the brain showed an acute right MCA and cerebellar infarct. Laboratory studies were significant for leukocytosis, and the patient was started on empiric broad-spectrum antibiotics for presumed infective endocarditis. A transthoracic echocardiogram (TTE) revealed a large tricuspid valve vegetation and a PFO with right-to-left shunting. Blood cultures revealed Staphylococcus Aureus and the antibiotics were narrowed appropriately. Orthopedic spinal surgery was consulted and urgently performed a C3-C7 posterior decompression and fusion with instrumentation. Neurology and Cardiothoracic surgery were consulted regarding the large tricuspid valve vegetation and associated PFO seen on TTE. There was consensus amongst the teams that pursuing surgery for secondary stroke prevention would be the appropriate course. An intraoperative transesophageal echocardiogram (TEE) showed no evidence of previously seen vegetation on

the tricuspid valve, however it showed impending paradoxical emboli. An approximately 25 mm vegetation was noted in the PFO, extending from the right to left atrium. The patient underwent successful removal of the vegetation and closure of the PFO. Postoperatively, the patient continued on antibiotics and was subsequently managed by therapy and pain services for her incomplete quadriplegia.

IMPACT: This particular case will supplement the limited data and radiographic evidence available on impending paradoxical embolism. Currently there are no standard guidelines available on management of a biatrial thromboembolus. This case demonstrates successful surgical removal of such vegetation with closure of a PFO.

DISCUSSION: Patients with infective endocarditis and PFO can present with various forms of paradoxical embolism. This case is unique in that there were multiple septic embolic phenomena including the multiple acute strokes and ventral epidural phlegmon that were visualized on MRI. There have been case reports that have described impending paradoxical emboli that are trapped across a PFO like the vegetation seen on the intraoperative TEE in this case. Medical management comprises 6 weeks of intravenous antibiotics, and these patients are evaluated for surgical thromboembolectomy, anticoagulation or thrombolysis.

INDEX OF SUSPICION: NEGATIVE LUMBAR PUNCTURE DOES NOT ALWAYS RULE OUT SERIOUS NEUROLOGIC ILLNESS Saundra Nguyen; Oanh K. Nguyen; Blake R. Barker. UT Southwestern Medical Center, Dallas, TX. (Control ID #2704982)

LEARNING OBJECTIVE #1: Recognize the role of lumbar puncture in diagnosing Guillain-Barre syndrome (GBS)

LEARNING OBJECTIVE #2: Recognize the characteristic clinical features of GBS

CASE: A 32 year-old man with history of cerebellar medulloblastoma resection was transferred from an outside hospital for management of severe hyponatremia. He reported a 2-week history of progressive weakness, gait instability with falls, nausea, vomiting, decreased PO intake, and a 17-lb weight loss. Physical exam was notable for pulse of 123, slowed verbal responses, and 4/5 lower extremity strength. Laboratory studies showed serum sodium 118 mg/dL, creatinine 1.51 mg/dL, and WBC count 13.8x109 cells/L. CT of the brain showed no acute abnormalities. He was admitted to the ICU and started on IV normal saline. Despite appropriate correction of hyponatremia, he developed worsening confusion, somnolence, profound weakness, urinary retention, and leukocytosis (WBC 23.1). Empiric antibiotics were started for presumed sepsis. Lumbar puncture (LP) revealed unremarkable CSF with protein 47 mg/dL, glucose 71 mg/dL, and no nucleated/red blood cells. MRI of the brain was unremarkable; EEG showed a mild nonspecific encephalopathy. On hospital day 12, the patient developed episodes of oxygen desaturation to 80 and was noted to be quadriplegic and areflexic. Given his symptoms, plasmapheresis and IV immunoglobulin were initiated for suspected GBS. The patient subsequently recalled a preceding diarrheal illness. Repeat LP showed CSF with protein 72 mg/dL; EMG showed severe axonal polyneuropathy without signs of demyelination, supporting the diagnosis. He was discharged to a skilled nursing facility after a 1.5-month hospitalization complicated by respiratory failure requiring mechanical ventilation.

IMPACT: Although lumbar puncture is an integral part in diagnosing GBS and excluding other causes of weakness, negative LP results are not sufficient to rule out GBS in patients with high pre-test probability and characteristic clinical symptoms.

DISCUSSION: Guillain-Barre syndrome is an acute immune-mediated peripheral neuropathy characterized by ascending symmetric motor weakness and areflexia, often triggered by a preceding infection (usually diarrheal). GBS can result in life-threatening respiratory failure and autonomic dysfunction, with mortality rates of 3-7%. Early diagnosis and treatment is critical to optimizing a patient's recovery. Initial diagnosis of GBS is based on clinical presentation, though this can be highly variable, and CSF demonstrating cytoalbuminologic dissociation (elevated CSF protein with normal cell count) is supportive. However, normal CSF does not make GBS less likely or exclude it, as elevation of CSF proteins depends on the timing of LP. In one study, the classic cytoalbuminlogic dissociation was noted in only 64% of patients; CSF protein was elevated in 49% of patients on the first day, 53% in the first 3 days, and 88% at 3 weeks. This is an important consideration when using CSF findings to aid in the diagnosis of GBS.

INHERITED NEUROMUSCULAR DISORDERS: NOT FOR THE FAINT OF HEART Kenneth M. Fifer; Jennifer P. Weintraub. Icahn School of Medicine at Mount Sinai, New York, NY. (Control ID #2706051)

LEARNING OBJECTIVE #1: Identify neuromuscular disorders as a rare cause of conduction abnormalities

LEARNING OBJECTIVE #2: Describe common physical exam findings and cardiac complications of inherited neuromuscular disorders

CASE: A 20 year-old Ecuadorian man with a history of end-stage renal disease secondary to focal segmental glomerulosclerosis (FSGS) presented to the emergency room after a five minute syncopal episode. Ten-point review of systems was otherwise negative. He denied tobacco, alcohol, or drug use. Family history was significant for consanguinity (patient's parents were first cousins) and ptosis in a maternal aunt and cousin. There was no known family history of cardiac disease. Physical exam demonstrated a short, thin male with small facial features. Cardiac exam was significant for a heart rate of 24. Extremity exam showed decreased muscle bulk, tone, and strength diffusely. Electrolytes, inflammatory markers, blood cultures, and Lyme testing were unremarkable. Electrocardiogram demonstrated marked bradycardia with complete heart block. Echocardiogram was significant for mild left ventricular dilatation and an ejection fraction of 60%. The patient was externally paced and admitted to the cardiac intensive care unit. A permanent cardiac pacemaker was placed. A presumptive diagnosis of inherited neuromuscular disorder was made following genetics consultation and the patient underwent further genetic testing.

IMPACT: As a practitioner of adult internal medicine, this case emphasizes the importance of identifying the physical exam findings of inherited neuromuscular conditions in adults who may have previously gone undiagnosed. Recognition of these genetic syndromes and their associated complications may help reduce patient morbidity.

DISCUSSION: The etiologies of complete heart block are many including infectious, infiltrative, ischemic, neuromuscular, and metabolic causes, as well as adverse medication effects. In this case a presumed diagnosis of inherited neuromuscular disease was made. Inherited neuromuscular disorders such as Duchenne and Becker muscular dystrophy affect multiple organ systems. Progressive weakness is often one of the first symptoms, affecting first proximal then distal muscle groups, usually first in the lower extremities. Associated physical exam findings include wide gait, lumbar lordosis, and calf enlargement. Multiple types of inherited neuromuscular disorders have been associated with conduction abnormalities. Duchenne muscular dystrophy has

been shown to cause progressive ventricular dilatation and dysfunction, predisposing those affected to cardiac arrhythmias. Myotonic dystrophy and muscular dystrophy associated with the LMNA gene have been associated with significant conduction abnormalities. Recognition of the complications of these inherited conditions should prompt providers to monitor closely for conduction abnormalities and consider prophylactic device implantation to prevent serious adverse cardiac events.

INSULIN INFUSION FOR SEVERE HYPERTRIGLYCERIDEMIA-INDUCED PANCREATITIS Takaaki Kobayashi[1]; Michael J. Lau[1]; Akihiro Kobayashi[1]; Heather Siedenburg[2]; Alfredo J. Astua[2]. [1]Mount Sinai Beth Israel, New York, NY; [2]Mount Sinai Beth Israel, New york, NY. (Control ID #2694030)

LEARNING OBJECTIVE #1: Recognize insulin infusion as a treatment option to effectively lower triglyceride (TG) levels in hypertriglyceridemia (HTG)-induced pancreatitis.

CASE: A 45-year-old woman with type 2 diabetes mellitus (DM) and dyslipidemia presented with a 2-day history of nausea, vomiting, and epigastric pain. Two years earlier, she had an episode of acute pancreatitis (AP) secondary to HTG (1,120 mg/dL), which was treated with gemfibrozil and atorvastatin. Her family history was significant for hyperlipidemia and type 2 DM. She denied alcohol use but admitted noncompliance with medication. Vital signs were as follows: blood pressure, 132/78 mmHg; heart rate, 90 beats/min; respiratory rate, 18 breaths/min; and body temperature, 97.9°F. Physical examination revealed moderate epigastric tenderness. Laboratory tests revealed TG, lipase, and glucose levels to be 3,793 mg/dL, 11,911 units/L, and 361 mg/dL, respectively. Ultrasound of the right-upper abdominal quadrant showed no cholelithiasis or obstruction. Subsequently, a diagnosis of AP secondary to HTG was confirmed. Treatment included pain management with opioids and HTG reduction with continuous insulin infusion at 0.05 units/kg/h, with intravenous (IV) 5% dextrose in normal saline titrated to a blood glucose level of 120–180 mg/dL. On day 2 of hospitalization, her TG level had dropped to 1,226 mg/dL. On day 5, she was switched to subcutaneous insulin (TG, 668 mg/dL); on day 6, she was discharged symptom free (TG, 586 mg/dL).

IMPACT: Previous studies have demonstrated the efficacy of apheresis for acutely lowering TG levels; however, its cost and feasibility are prohibitive. We can treat HTG-induced AP effectively with continuous insulin infusion, which is safe, simple, and cost-effective. With frequent blood glucose monitoring, this treatment can be safely achieved even beyond the intensive care unit.

DISCUSSION: HTG is the third most common cause of AP after alcohol and gallstone. The risk of developing AP is approximately 5% with TG > 1,000 mg/dL and 10-20% with TG > 2,000 mg/dL. The breakdown of TG into toxic free fatty acids is thought to be the cause of lipotoxicity during AP. HTG treatment includes conventional treatment of AP and management of serum TG levels (<500 mg/dL). Fibrates, nicotinic acid, and statins are commonly used to decrease serum TG concentration; however, insulin infusion acutely lowers TG levels. It decreases TG by enhancing lipoprotein lipase activity, thereby accelerating chylomicron and very low density lipoprotein metabolism to glycerol and fatty free acids. Moreover, it inhibits lipase in adipocytes, leading to an overall reduction in lipolysis. An initial rate of 0.1 to 0.3 units/kg/hour of insulin is recommended; IV administration may be more effective than subcutaneous. The main adverse effect of insulin infusion is hypoglycemia, which can be avoided with IV 5% dextrose.

INTERPROFESSIONAL MANAGEMENT OF A PSYCHIATRIC EMERGENCY IN THE PRIMARY CARE SETTING David Alajajian; Daniel J. Coletti; Leslie Rosenberg; Frank Cacace. Hofstra North Shore LIJ, Great Neck, NY. (Control ID #2701865)

LEARNING OBJECTIVE #1: Recognize and address social barriers to the treatment of acute psychiatric emergencies by collaborating with behavioral health professionals.

LEARNING OBJECTIVE #2: Engage patients and behavioral health professionals in constructing a safe and sustainable plan to manage depression with suicidal ideation.

CASE: “Carmen” is a 48-year-old Latina woman; history includes left breast LCIS (with lumpectomy) and a depressive disorder. She presents with severe anhedonia, insomnia, and worry about her medical and social situation, most notably her son’s welfare if she becomes ill again. She is undocumented, uninsured, and dependent on her income as a house cleaner (now part-time due to cancer treatments). Of primary concern is her report that she has frequent thoughts of jumping in front of a train near her home. However, she cites her 5 year-old son as a reason not to commit suicide, as worry about her son both exacerbates her anxiety and protects from self- harm. Carmen had been prescribed citalopram, which she took briefly but discontinued. She declines a referral for inpatient treatment because she can identify no one to care for her son. The team considers the risks and benefits of facilitating a psychiatric admission, which is likely to result in child protective service involvement. Furthermore, her insurance status complicates expediting referral to outpatient treatment. To address these barriers, an embedded Behavioral Health Consultant conducts a risk assessment during the office visit. She arranges a teleconference with a psychiatrist, who interviews Carmen and recommends resuming Citalopram at a higher dose in addition to a brief course of clonazepam. Carmen returns home with a safety plan. Meanwhile, the team monitors her clinical status with telephone calls, investigates child care support services that might facilitate hospitalization and aids with solution-focused counseling sessions. Her mood improves over the next several weeks and by the time a grandparent is identified to care for the child, hospitalization is deemed unnecessary.

IMPACT: Engaging a remote psychiatrist for a consultation is an efficient way to manage mental health crises in primary care. Psychosocial barriers can alter the costs/benefits of off-site evaluation and emergent hospitalization. On-site behavioral health consultants can provide crisis assessment and facilitate psychiatric evaluation to stabilize a patient and avoid hospitalizations that are ultimately unnecessary.

DISCUSSION: The case of Carmen illustrates how outpatients with urgent psychiatric needs can be managed within an interdisciplinary team. This patient met criteria for hospitalization but practical barriers made this option untenable and might have even exacerbated her symptoms. Patients such as Carmen are less likely to pursue specialists, follow or adhere to medication regimens. An integrated behavioral health program provides an important clinical service for patient stabilization outside of the emergency room.

INTRAABDOMINAL MAC INFECTION IN AN IMMUNOCOMPETENT CROHN’S DISEASE PATIENT Harry R. Powers; Lennox Archibald. University of Florida, Gainesville, FL. (Control ID #2707083)

LEARNING OBJECTIVE #1: Recognize MAC as a cause of intraabdominal abscess in immunocompetent patients

CASE: The patient was a 29 year old man who was evaluated for abdominal pain and anemia in an outpatient setting. He reported that the abdominal pain was localized to the umbilicus and was cramping in nature. He also reported having watery diarrhea. He endorsed drenching night sweats and 12 pound weight loss. His initially work up was significant for iron deficiency anemia. Computed tomography (CT) of abdomen and pelvis was performed to evaluate the abdominal pain. The scan revealed inflammation of terminal ileum and multiple abscesses. The patient was admitted to the hospital for further evaluation. On admission, the patient had normal vital signs. His physical exam was only significant for extremely thin appearance. His labs were significant for low hemoglobin and elevated white blood cell count. Colonoscopy was performed and showed severe ileitis with stricture in the terminal ileum. Pathology from terminal ileum showed ulceration and granulation tissue. He was tenatively diagnosed with Crohns' disease. The patient underwent CT-guided drainage of abscess by interventional radiology. He was put on oral antibiotics and discharged from the hospital. The patient was readmitted 20 days later for similar complaints. The abscess was noted to be growing *Candida albicans* and mycobacterium avium complex (MAC). The patient was started on fluconazole for candida, and clarithromycin, rifampin, and ethambutol for MAC. The patient was discharged from the hospital with drain in place. He completed 6 weeks of antifungal therapy. He was to continue on the anti-MAC therapy for 12 months.

IMPACT: This case has a practical effect on the approach to infected patients. In immunocompetent individuals, atypical organisms are often overlooked on initial diagnosis. Overlooking these organisms can lead to prolonged hospital course and complications such as from unnecessary antibiotics. This case also demonstrates the difficultly in diagnosing MAC infection, because it is a very slow growing organism. In cases where MAC infection is a possibility, culture results need to be followed up on passed the usual five days.

DISCUSSION: This is the first reported case of MAC leading to intraabdominal abscess in an immunocompetent patient. The vast majority of extrapulmonary MAC infections are found in patients with compromised immune systems. Rarely, extrapulmonary MAC can be found in individuals without any apparent immunodeficiency. Interestingly, there has been an association between the MAC subtype paratuberculosis and Crohn's disease noted. Some believe that MAC may contribute to the development of Crohn's disease. However, it has never been noted to cause an intraabdominal abscess in a Crohn's patient. This case gives insight into the ability of MAC to cause intraabdominal infections in patients that were previously not thought susceptible to them.

INTRACRANIAL HYPOTENSION SYNDROME IN A PATIENT WITH DOWN AND OUT PUPIL. Maria D. Garcia-Jimenez; Maranatha Gabaud; Douglass Bails. New York University School of Medicine, New York, NY. (Control ID #2670735)

LEARNING OBJECTIVE #1: Recognize the risk of intracranial hypotension after dura mater invading procedures.

LEARNING OBJECTIVE #2: Review symptoms and treatment of intracranial hypotension, emphasizing high clinical suspicion needed to identify it.

CASE: A 26 year-old man with left hemicraniectomy a month prior presented with one week of headache and neck pain. Vital signs were normal and non-contrast head computed tomography (NCHCT) was unremarkable. Lumbar puncture was performed; CSF studies were negative for infection. He was discharged with improved symptoms after Vicodin. He presented two days later reporting double vision, headache worse with standing, relieved by lying flat, and neck stiffness. Vital signs were normal, and he was alert, oriented, with normal neurological exam and intact extraocular muscles. His complex medical history, however, led to his admission and initiation of empiric antibiotics for treatment of meningoencephalitis. On hospital day one he exhibited new right ptosis, right pupil dilation, and right "down and out" gaze concerning for partial right CN III palsy. NCHCT showed mild midline shift. He was placed in Trendelenburg and given 1 Liter intravenous fluids with stabilization of symptoms. The next day he became somnolent with progressing right eye symptoms now including impaired right eye adduction indicating complete CN III palsy. Repeat NCHCT showed sinking of the cranioplasty skin flap, increased midline shift, and medial displacement of the left uncus. MRI confirmed this and noted enlargement of dural venous sinuses, consistent with intracranial hypotension. Antibiotics were stopped and an epidural blood patch was placed with gradual resolution of symptoms.

IMPACT: In this case re-evaluating the diagnosis as the physical exam evolved was crucial to appropriate therapy. This taught us the diagnostic impact of frequent serial physical exams, and the importance of seeking alternative diagnoses if aspects of the case do not fit or are changing.

DISCUSSION: Symptoms of intracranial hypotension syndrome (IHS) include orthostatic headache, nausea, diplopia, mental status changes, and cranial nerve palsies. CN VI palsy is seen in 83% of cases but CN III is rare. IHS can occur spontaneously or after spinal trauma or dura mater disrupting procedures. It can occur days to weeks post procedure and is associated with decreased CSF opening pressure or imaging suggesting CSF leak, such as dilated epidural venous plexus. High clinical suspicion for IHS is crucial in individuals post lumbar puncture with orthostatic headache and cranial nerve abnormalities. Delay in diagnosis, as in this patient, can lead to worsening brain parenchyma shifts. Conservative management includes bed rest, intravenous fluids (IV), or IV caffeine. Trendelenburg positioning, an established treatment for "sagging brain," is also used. If these fail, epidural blood patch can result in dramatic symptom improvement, though the amount of blood and number of blood patches is not standardized.

INTRAMURAL DUODENAL HEMATOMA: A CASE OF PANCREATITIS AND A BLEEDING ANEURYSM Lorick E. Andersen[3]; Joel H. Witter[1, 2]. [1]Presbyterian/St. Lukes Hospital, Denver, CO; [2]University of Denver, Aurora, CO; [3]Colorado Health Foundation, Denver, CO. (Control ID #2706185)

LEARNING OBJECTIVE #1: Recognize intramural duodenal hematoma (IDH) as unique complication of acute pancreatitis

LEARNING OBJECTIVE #2: Diagnose etiology of IDH using visceral angiography

CASE: 52-year-old African-American male with a PMH of HTN, alcoholism and pancreatitis presented to ER with complaint of right > left lower back and abdominal pain. The pain started a month prior and had been gradually getting more severe in the past week, becoming a constant, sharp pain with associated nausea and vomiting. He had a previous episode of pancreatitis four months ago thought to be attributed to his heavy alcohol use. Exam was remarkable for tenderness to palpation in the right upper and lower quadrants. Labs were notable for a lipase of 5171, WBC of 13.56, and Hgb of 12.6. In addition to evidence of acute moderate pancreatitis, CT imaging of the abdomen showed a large,

retroperitoneal 13x7 cm ovoid IDH and a small amount of ascites in the right retroperitoneum extending along the psoas muscle. CTA was subsequently performed which showed a small foci of active bleeding in duodenum. The patient was hemodynamically stable at the time and the decision was made to admit for management of pancreatitis and further evaluation of IDH with visceral angiography. A coil embolization of a pancreaticoduodenal artery pseudoaneursym was performed by IR; this was likely the cause of the intramural duodenal hematoma. His hemoglobin dropped to 8.6 after admission but then remained stable without intervention through the remainder of his hospital course. The patient was discharged home after six days with close follow up for resolution of hematoma.

IMPACT: IDH is a relatively rare condition and is even less common in the absence of trauma. Previous case reports suggest spontaneous IDH as an etiology for pancreatitis via obstruction; however, this case supports pancreatitis as the ultimate cause of IDH through local inflammation of the visceral vasculature and subsequent pancreaticoduodenal artery aneurysm (PDAA) and rupture.

DISCUSSION: IDH is an uncommon condition in adults with few case reports described in the literature. Causes include abdominal trauma, underlying vascular malformations, pancreatitis and idiopathic. In this case, the finding of a PDAA in this patient with pancreatitis in the absence of trauma suggests the pseudoaneurysm and subsequent hemorrhage were related to inflammation from pancreatitis. Signs and symptoms are nonspecific and typically include abdominal pain, nausea and vomiting. A high index of suspicion is needed in those patients at risk to identify IDH given the morbidity and mortality associated with its complications, specifically the possibility of ongoing hemorrhage. Utilization of visceral angiography after initial diagnosis of IDH is made with abdominal imagaing is suggested by some in the literature. In this case, angiography was both diagnostic of PDAA and therapeutic to control the source of hemorrhage. This case supports the use of angiography in the evaluation of IDH in those with pancreatitis.

IRONING-OUT ABNORMAL URINE: A CASE OF VIN ROSé

Peter M. Finin; Clark A. Veet; Eliana Bonifacino. UPMC, Pittsburgh, PA. (Control ID #2675638)

LEARNING OBJECTIVE #1: Differentiate causes of red urine discoloration

LEARNING OBJECTIVE #2: Identify indications and side effects of iron chelation

CASE: A 59 year old man with a history of sickle cell disease requiring frequent blood transfusions causing hemosiderosis-induced cirrhosis managed with regular large volume paracentesis and oral iron chelation with deferiprone presented with abdominal distention and new atrial fibrillation. As both his cirrhosis and arrhythmia were attributed to iron overload, iron chelation was intensified with the addition of intravenous deferoxamine. To facilitate ongoing large volume paracentesis, a peritoneal pigtail catheter was placed. Later that day, he reported red urine without abdominal pain, dysuria, or other new symptoms. Urine centrifugation with microscopic analysis showed only 1–2 RBCs per high powered field. The red color remained in the supernatant with a bland urine pellet. His urine discoloration was judged not to be hematuria but rather medication induced discoloration.

IMPACT: Urine discoloration commonly signals illness and causes consternation among patients and physicians. This case illustrates the well-known side effect of urinary discoloration associated with iron chelation and outlines a general approach to red urine.

DISCUSSION: Bright red urine is an alarming finding that warrants careful workup. The patient was asymptomatic without flank pain to suggest nephrolithiasis. Urine microscopy showed few red cells and urinalysis showed no significant blood. This patient developed hemosiderosis from red blood cell transfusion in the context of chronic hemolytic anemia due to sickle cell disease. In these cases, iron chelation is generally recommended to maintain ferritin between 1000–1500 ng/mL. The patient's ferritin was 3058 ng/mL. In order to manage this, the patient received daily infusions of deferoxamine at 30 mg/kg prior to development of red urine. Deferoxamine is a specific iron chelator that binds ferric iron and forms a water-soluble compound that is excreted by the kidney, causing a "vin rosé" discoloration of urine. The presence of color change serves as an indicator of effective iron chelation. Careful history and exam of urine can help identify patients who may be at risk for non-adherence and sequelae of iron overload. Urine discoloration should always prompt careful medication history, urinalysis and a focused examination including assessment for costovertebral tenderness and genitourinary abnormalities. Many processes and agents can change urine color red. Most commonly, red urine is due to blood in the genitourinary tract. However, medications including deferoxamine, rifampin, warfarin, phenazopyridine, chloroquine, and ibuprofen can cause red urine discoloration. In addition, processes such as intravascular hemolysis including G6PD deficiency or hemolytic anemias, nephrolithiasis, porphyria, or Nutcracker syndrome can cause urine color changes from hemoglobinuria. Finally, foods including beets, blackberries, and carrots can dye the urine red.

IS IT WORTH THE POUND? THINK TWICE! Majlinda Xhikola; Daniel Goldsmith; Abisoye V. Fakayode. Capital Health Regional Medical Center, Trenton, NJ. (Control ID #2701685)

LEARNING OBJECTIVE #1: Recognize the significance of depression, suicidality and seizure in patients treated with naltrexone/bupropion for obesity

LEARNING OBJECTIVE #2: Recognize the limited post marketing data available for naltrexone/bupropion use

CASE: We present the case of a 67 year old caucasian female with medical history of dyslipedemia, hypertention and obesity who was admitted to critical care unit for new onset witnessed seizure activity resulting in airway compromise. Witnesses of the seizure reported that the patient confessed to having swallowed several weight loss pills prior to the event and that she was holding a note saying: "Can't go on like this anymore" From her family and co-workers we learned that the patient was recently started on naltrexone/bupropion. They described the patient as a very energetic and pleasant person with future oriented goals. She enjoyed her job as a high school clerk. Patient had been trying to lose weight and was started on naltrexone/bupropion therapy 25 days prior to this event with up-titrating doses. Once the patient was out of the critical care, she explained that after starting naltrexone/bupropion, she started feeling "queasy" and "listless" at around week 3 of therapy. "I had never felt like this before" she noted. As the days progressed the nausea and the state of depressed mood got worse and nothing seemed to help. She reported ingesting "a dozen" of the naltrexone/bupropion pills in a suicide attempt on the day of the hospitalization.Soon after the ingestion, she developed generalized seizures which led to airway compromise and critical care was required.

IMPACT: New recognized case of acute progressive mood changes that led to a serious suicide attempt after starting naltrexone/bupropion for obesity. Need for close follow up on not only efficacy and common side effects but dedicated focus on mood assesment, expecially in the dose escalation phase. Allow for more post marketing data before widely reccomending naltrexone/bupropion for obesity.

DISCUSSION: Efficacy and safety of naltrexone/bupropion was studied in 4 phase 3 trials.Results of these studies looking at the weight loss endpoint were reported as statistically significant and clinically meaningful weight loss compared to placebo.Average weight loss from baseline observed with treatment across the 4 studies corresponded to between approximately 11–22 pounds in 56 weeks. Nausea was a common side effect(31% vs 6.7% in placebo)and was noted to happen during the dose-escalation phase as happened to our patient. Seizures incidence <0.1% vs 0 in placebo. Depression incidence 2.8% vs 3.4% in placebo. Suicidality incidence <0.1% vs 0.2% in placebo. Although these trials showed a lower incidence of depression and suicidality compared to the placebo group, our patient developed acute progressive mood changes that led to a serious suicide attempt. New pharmaceutical products must be evaluated regarding benefit versus risk in light of the fact that little time for post marketing monitoring has occurred

IS RIGIDITY REQUIRED FOR DIAGNOSIS OF NEUROLEPTIC MALIGNANT SYNDROME NMS? Nabil Mesiha[2]; Nagham Jafar[2]; Hossein Sadrzadeh[1]; Sree Yelamanchili[1]; Manish Gugnani[1]; Daniel Goldsmith[1]. [1]Capital Health Regional Medical Center, Trenton, NJ; [2]Capital health Regional Medical Center, Trenton, NJ. (Control ID #2698371)

LEARNING OBJECTIVE #1: To demonstrate that rigidity and elevated CK is not mandatory for diagnosis of NMS.
LEARNING OBJECTIVE #2: Significant elevated temperature should draw the attention for other unusual etiology.
CASE: Neuroleptic malignant syndrome is a life-threatening, neurological disorder most often caused by an adverse reaction to neuroleptic or antipsychotic drugs.In most cases, the disorder develops within the first 2 weeks of treatment, however, it may develop any time during therapy. Morbidity and mortality results from systemic complications and from dysautonomic manifestations, including high fever, sweating, unstable blood pressure, stupor, and muscular rigidity. We report one case with a temperature of 108 F who was eventually diagnosed with NMS with neither significantly elevated creatinine kinase nor rigidity. A 52 year old male with history of schizoaffective disorder presented from his group home in summer with altered mental status and suspected seizure. He had been sweating for several days despite working air conditioning and confused. He was evaluated in the ED one day prior for bizarre behavior, and discharged home on the same day. Medications were trazodone, ziprasedone (recently prescribed), lithium, and clonazepam. Physical examination showed T 108.3 F, BP 170/99, Heart rate 132, RR 25, O2sat 99%. Patient was not seizing and showed no rigidity, but he was obtunded, perspiring, and no signs of acute trauma. Neck was supple. Laboratory showed WBC 14.4 without bandemia. Lactate and CK were normal. UDS was negative. Patient was intubated in ED to secure airway. Continuous EEG showed no seizure activity. Lumbar puncture showed no meningitis. Cold IV fluids, cool saline through NG-tube and Foley' catheter and cooling blankets brought the temperature to 104 after a few hours. Because of high suspension of NMS, all antipsychotic medications were held and started on dantrolene and bromocriptine. On the second day, temperature and BP normalized. HR fluctuated between 50–120 bpm. Results of all cultures came back negative, and he was successfully extubated. Valproic acid was started, and he was transferred to inpatient psychiatry for further management
IMPACT: We should suspect NMS as a diagnosis in patient with 2 or more of 4 features in the setting of neuroleptic use. Diagnosis is always challenging and other serious condition should be ruled out.
DISCUSSION: Diagnosis of NMS can be challenging, and should be suspected with 2 or more of the 4 cardinal features: mental status changes, rigidity, fever, and dysautonomia, appearing in the setting of neuroleptic use or dopamine withdrawal. Diagnostic evaluation is aimed at ruling out other possible diagnoses, and treatment includes withholding of all neuroleptics, supportive care, dantrolene, and bromocriptine should be considered. Clinicians must recognize that rigidity and elevated CK may not be present in severe NMS cases, and a high index of suspicion is required to correctly identify NMS and differentiate from other critical conditions.

ISCHEMIC STROKE: THE GREAT MASQUERADER OF AN AORTIC DISSECTION Lakshmi Kallur; Nanette Bentley. East Tennessee State University, Johnson City, TN. (Control ID #2706426)

LEARNING OBJECTIVE #1: Diagnosing an aortic dissection with an initial presentation of neurological deficit
CASE: A 48- year old obese, non smoker, female with a past medical history of untreated hypertension presented to the emergency department with confusion, lethargy and altered mental status that began the day of presentation. She was unable to provide a detailed history but could sluggishly respond to verbal commands. Upon questioning, she specified that she had chest pain earlier in the day for ten min accompanied by nausea, dizziness, dyspnea, lightheadedness and fatigue. Patient has not followed with a physician since 2009 and was not on any medications. Vitals included blood pressure 162/105, pulse 75 and oxygen saturation on room air of 97. Her speech and responses were slurred and slow. All other systemic exams were unremarkable. Initial ABG showed pO2 51, CMP 3.1 and cardiac troponins and CBC within normal limits. EKG revealed T wave inversions in lead I and aVL with ST elevation in lead III only. Shortly after admission, her respiratory status declined and she was intubated. CT Head showed hypodensities in the white matter reflecting chronic small vessel ischemic changes. MRI of Head confirmed acute ischemic process/multifocal lacunar infarct, representing showering emboli. Given the patient's symptoms of chest pain earlier, a CT chest was ordered, indicating a thrombosed type B aortic dissection (AD). A continuous infusion of esmolol and nicardipine were initiated with a goal systolic blood pressure of 100–120.
IMPACT: Ischemic stroke presentation combined with vague cardiac symptoms should lead to investigation of the aortic arch to exclude a dissection. The case highlights the many ways that a diagnosis of AD can be delayed while a stroke presentation is being pursued.
DISCUSSION: Cerebral ischemic complications occur in 18-30% of aortic dissections. While the complications of stroke are expected in these patients, it may be difficult to evaluate further in a patient with presenting symptoms of altered mental status. Atypical chest pain should be carefully evaluated in stroke patients with a differential diagnosis including AD. Past medical history can assist in diagnosis as chronic systemic hypertension is the most common risk factor for an AD. In a retrospective study performed by Seung-J et al., analyzing 278 patients with AD, the dominance of neurological symptoms in the initial stages of presenting may make its diagnosis challenging. Ischemic strokes are the most frequent neurologic manifestation. Another complication can be if the stroke is originally found and IV thrombolysis is administered leading to disastorous outcomes. Per Seung et al., a literature review of 8 cases of patients with AD treated with full dose IV thrombolysis resulted in 3 out of 4 patients dying of hemorrhagic complications. It is fortunate that for our patient, the underlying pathology of aortic dissection was identified not too far along her clinical course and treated accordingly.

ISOLATED MONOPARESIS IN AN ADULT WITH SICKLE CELL DISEASE. Nurilign A. Bulcha. Montefiore Medical Center, Bronx, NY. (Control ID #2707616)

LEARNING OBJECTIVE #1: Diagnose strokes in adults with sickle cell disease
LEARNING OBJECTIVE #2: Recognize the mechanism of stroke in sickle cell disease
CASE: A 27 year old man presented with difficulty gra with his left hand. He had a history of Hemoglobin SC disease and a left cerebellar stroke one year prior. He was not on aspirin. Physical examination revealed a power of 1/5 on the flexor, extensor and intrinsic muscles of the left hand. Deep tendon reflexes were 3+ on the left upper extremity. The rest of the neurological exam was unremarkable. His laboratory tests revealed a white blood cell count of 11,200 and hemoglobin of 13.1 g/dl. Liver function tests, haptoglobin and serum lactate dehydrogenase were normal. An MRI of the brain revealed an acute segmental right pre-central gyrus infarct. The patient was started on aspirin and underwent red blood cell exchange transfusion.
IMPACT: Recognition of stroke and initiation of preventive therapy in adults with Sickle cell disease is essential to avoid recurrence
DISCUSSION: Strokes are frequently seen in patients with sickle cell disease and may be ischemic or hemorrhagic. Ischemic are more common with an occurrence rate of 54%. Patients with Hemoglobin S disease have a much higher risk of stroke. Baseline low hemoglobin and a high white cell count may also be associated with higher incidence of stroke in sickle cell disease. In contrast to most ischemic strokes that involve emboli affecting mostly smaller vessels, ischemic strokes in sickle cell disease involve large vessels such as the middle cerebral artery. The mechanism is not yet well understood but likely involves vascular occlusion due to intimal proliferation and thrombus formation. Sickle red cells adhere to endothelial cells through Von Willebrand's factor. Abnormalities within their membranes, then act as a pro-coagulant initiating the coagulation cascade and thrombus formation. Sickle cell disease patients with ischemic strokes are also at risk for intracranial hemorrhage due to formation of aneurysms and Moya Moya vessels which are a network of small, delicate vessels with a high risk of rupture. Due to high risk of recurrence, prevention is the main component of therapy in adults with SCD. Current guidelines recommend antiplatelet therapy. Unlike in children, however, there is a lack of evidence to support chronic transfusions for stroke prevention in adults with sickle cell disease. Our patient's presentation with isolated monoparesis is rare accounting for about 1% of all strokes. Isolated monoparesis is due to small branch vessel involvement which is very rare in sickle cell disease. It is important to recognize unusual presentations of stroke especially in sickle cell disease as treatment can prevent severe morbidities associated with recurrence. Our case also illustrates the need for further research to establish the efficacy, goals and duration of other preventive therapy including chronic transfusions in patients with sickle cell disease.

ISOLATED THROMBOCYTOSIS AND A MASS IN THE HEART
Milna Rufin; Fiyinfolu Balogun; Diana Randlett. New York University, New York, NY. (Control ID #2704760)

LEARNING OBJECTIVE #1: Recognize historical and clinical findings to diagnose Essential Thrombocythemia
CASE: An 84-year-old woman with diabetes, hypertension and hyperlipidemia presented after a 30-min episode of slurred speech, lip numbness, and confusion. She also reported 1 week of intermittent tongue and lip tingling. A complete physical exam was notably absent of neurological or cardiovascular abnormalities. She was admitted for a transient ischemic attack (TIA) with laboratory values significant for chronically elevated platelet counts of 778K. Studies of the brain and head/neck vessels were unremarkable except for a chronic cerebellar infarct. A transthoracic echocardiogram (TTE) revealed a large mobile mass in the right atrial cavity. At this time, the mass was thought to be a primary cardiac tumor with concern for a hypercoagulable state of malignancy causing the TIA or a benign mass with embolic phenomena. A repeat TTE with a bubble study showed an atrial right-to-left shunt and a subsequent transesophageal echocardiogram confirmed a 2cm shaggy mass, concerning for thrombus. With imaging studies that better characterized the mass and revealed an atrial shunt, the etiology of her TIA became more likely secondary to emboli from a thrombotic mass versus a diseased aortic arch. Her severe thrombocytosis raised the concern for a hematologic process. She was discharged on Aspirin, Statin, and Coumadin to prevent further clot formation. At hematology clinic follow up, her counts remained elevated in spite of iron supplementation. Bone marrow biopsy was deferred given the patient's age and fragility. She was empirically treated with hydroxyurea, improving platelet counts to 200K. The JAK2-V617F mutation was detected, confirming the diagnosis of Essential Thrombocythemia (ET).
IMPACT: Our case highlights the need for a thorough evaluation of platelet aberrations, which can aid in the diagnosis and treatment of disorders like ET. In our patient's case, several clinical encounters showed sustained thrombocytosis of more than 600K, without any ensuing significant etiological inquiry. Given the heightened risk for thrombotic or hemorrhagic events in patients with ET, who often have multiple comorbidities, the diagnosis is paramount to risk reduction with therapy.
DISCUSSION: ET is a myeloproliferative disorder, usually diagnosed after 60 years of age, with a female predominance. Only 1/3 of patients are symptomatic, typically with hemorrhage or thrombotic/embolic episodes like TIA. As was the case for our patient, a handful of reports have shown the formation of intracardiac thrombi in the setting of ET. The diagnosis of ET requires all four major criteria: a sustained platelet count of more than 450K; a bone marrow sample showing primarily megakaryocytic proliferation; presence of a JAK2 or MPL mutation; and no evidence of reactive thrombocytosis. Treatment is usually aimed at decreasing platelet counts to prevent thrombotic events, especially in patients with heightened risk (prior thrombosis).

IT'S GETTING HOT IN HERE: A CASE OF HEAT STROKE CAUSING HYPONATREMIA AND SUBSEQUENT RHABDOMYOLYSIS
Claire Popplewell[2]; Jennifer Verbsky[1]. [1]North Shore LIJ Health System, Great Neck, NY; [2]Northwell Health, Manhasset, NY. (Control ID #2702567)

LEARNING OBJECTIVE #1: Recognize symptoms and complications of hyponatremia and its treatment
LEARNING OBJECTIVE #2: Manage hyponatremia complicated by rhabdomyolysis
CASE: A 49-year-old man was brought to the Emergency Room in July by his family due to altered mental status. The patient had been in his usual state of health until 8 days prior to presentation when he developed headaches, dizziness, and malaise. He was initially diagnosed with a viral syndrome by his physician, but his symptoms worsened over the next few days with development of abdominal pain and nausea. On the 8th day, his family found him in

bed confused and agitated and brought him immediately to the hospital. His medical history was significant for chronic hepatitis B, for which he had been taking Viread for years. He had no significant surgical or family history. He denied tobacco, alcohol, or drug use. He worked in a local warehouse and had been working more lately due to layoffs. He did a great deal of manual labor, and the warehouse was not air-conditioned during the hot summer. He frequently skipped meals and did not stay well-hydrated at work. Upon presentation to the ER, the man was afebrile and normotensive. His physical exam was significant for agitation and inability to answer simple questions. Labwork showed a sodium level of 112, a serum osmolality of 255, and a creatine kinase (CK) level of 4338. The patient was admitted to the Medical Intensive Care Unit with a diagnosis of severe hypovolemic hyponatremia caused by heat stroke. Sodium correction was initiated, but as the patient's sodium level corrected, his CK levels rose to above 200,000. The patient's IV fluids were then changed to include both 0.045% Normal Saline and Lactated Ringers, in an effort to slowly correct his hyponatremia and manage his severe rhabdomyolysis. The patient's mental status improved with sodium correction, and CK levels improved with aggressive hydration. The patient was discharged with a sodium level of 139 and CK level of 11,405.

IMPACT: This case adds a great deal to the literature. This patient presented with hyponatremia caused by volume depletion and sweltering work environment. His medical condition was further complicated by rhabdomyolysis, which in this case was due both to the initial hyponatremia and its subsequent correction. Rhabdomyolysis is a serious complication of hyponatremia that occurs infrequently, and it is an important consideration for anyone diagnosing or treating this condition.

DISCUSSION: Hyponatremia should always be considered in a patient presenting with altered mental status. A comprehensive history can provide clues as to the etiology of the hyponatremia. Rhabdomyolysis is a complication of both hyponatremia and the correction of hyponatremia; the literature shows few case reports of this phenomenon. Fluid management is extremely important in patients with both hyponatremia and rhabdomyolysis.

IT'S TB. NO REALLY, IT'S TB! Heather Root. Emory University, Atlanta, GA. (Control ID #2706103)

LEARNING OBJECTIVE #1: Recognize the clinical presentation of pulmonary TB.

LEARNING OBJECTIVE #2: Review the diagnostic testing for latent and active TB.

CASE: A 43 year-old woman presents following an assault is incidentally found to have bilateral upper lung field cavitary lesions. She reported 10-months of productive cough without hemoptysis and 30-pound weight loss over the 8 months prior. TB risk factor exposure included homeless shelters and prison. She reported a negative PPD, 30 pack-years tobacco, everyday beer drinker and past cocaine use. Non-contrast chest CT showed multiple bilateral upper lung nodular opacities (some cavitary) and a large mediastinal node. AFB sputum stain x3, PPD, quantiferon gold, MTB-PCR sputum and HIV tests were negative. ID was consulted. She underwent bronchoscopy and biopsy of the LN. Cytology was negative for malignancy and showed non-necrotizing granulomatous inflammation; AFB and GMS stains were negative. Despite negative testing, given the high suspicion for TB, the patient was discharged to a TB hotel on RIPE therapy. All AFB cultures remained no growth except for one positive for mycobacterium avium complex.

IMPACT: This case highlights the challenges and complexity of diagnosing TB. Even after sending off many diagnostic tests, we were unable to confirm the clinical suspicion for TB. In the end, clinical judgment in the setting of years of experience dictated the presumed diagnosis and thus treatment.

DISCUSSION: TB is a communicable infectious disease transmitted by cough aerosol, caused by the *Mycobacterium tuberculosis* complex, and characterized pathologically by necrotizing granulomas. Presenting symptoms include fever, weight loss, drenching night sweats, productive cough, and sometimes hemoptysis. Classic imaging shows unilateral upper zone infiltrates, often with cavitation. Diagnosing latent TB cannot be made with certainty. The likelihood of latent TB is inferred via skin tests (e.g. TST) or blood assays (e.g. Quantiferon Gold). Neither test can distinguish latent from active TB. A positive result might signify active TB, previous TB, recent or remote exposure, latent TB, or exposure to specific environmental mycobacteria. One should target screening of high-risk groups - people with HIV, in shelters or in/from high prevalence settings, prisoners, close contacts. Despite suboptimum sensitivity (50%), smear microscopy is the standard of care in most settings. Same-day microscopy of 2 specimens is recommended. Automated liquid culture is regarded as the gold standard diagnostic confirmatory test. Nucleic acid amplification tests are other confirmatory tests that are fairly expensive, miss roughly one-third of smear-negative cases, perform poorly in some forms of extrapulmonary TB, and are not ideal point-of-care tests. This case highlights testing for TB and how the clinical presentation can be diagnostic as well. Despite all negative tests, ID specialists felt that her overall clinical picture was strongly suggestive of active TB and should therefore be treated as such.

JUST A BAD CASE OF PSORIASIS? Erick Oran; Danit Arad. Montefiore Medical Center, Bronx, NY. (Control ID #2705836)

LEARNING OBJECTIVE #1: Identify the differential diagnosis of rupioid rash associated with arthritis

LEARNING OBJECTIVE #2: Recognize challenges associated with treatment of psoriatic arthritis

CASE: A 41-year-old man with psoriasis, untreated latent tuberculosis and renal cell carcinoma status post resection two months ago presented with two weeks of diffuse large joint pains and worsening rash. The patient had applied topical corticosteroids without significant improvement for the last six weeks. He had no fevers, chills or sick contacts. He had lost two or three pant sizes in the last six months. He was afebrile and normotensive. He appeared cachectic. His scalp, back and abdomen exhibited patchy erythema diffuse scaly plaques. Both arms and legs were covered with hyperkeratotic, rupioid brown plaques. His nails showed onychomadesis. Labs revealed leukocytosis, microcytic anemia and elevated alkaline phosphatase. CT imaging revealed collection at nephrectomy surgical site and multiple hepatic lesions. Follow up imaging showed no evidence of metastatic disease. Final skin biopsy showed confluent mounds of parakeratosis and psoriasiform epidermal hyperplasia consistent with psoriasis. Patient was started isoniazid and discharged on methotrexate with rheumatology follow up.

IMPACT: Joint pain and skin rashes are common conditions encountered in the realm of general medicine. This case illustrates the importance of considering a broad differential given this particular patient's comorbidities and severity of rash. Furthermore, it highlights some of the limitations of current available treatments and controversies around the use of systemic corticosteroids.

DISCUSSION: Psoriatic arthritis affects as many as 2 per 1000 in the general population. The hallmark of disease consists of psoriasiform lesions plus a combination of arthritis, enthesitis, dactylitis and nail disease. Psoriasis precedes the onset of psoriatic arthritis in 60-80% of patients. Based on physical exam alone, psoriatic flares can be indistinguishable from other severe inflammatory dermatoses, such as acrokeratosis neoplastica, disseminated histoplasmosis and secondary syphilis. Hence, the gold standard for diagnosis remains a 4mm punch biopsy looking for parakeratosis, neutrophils in the stratum corneum and thinning of the supra-papillary dermal plates. Once appropriately diagnosed, treatment will differ based on the severity of dermato-articular disease and comorbidities. Mild disease can be managed with nonsteroidal anti-flammatory drugs and topical steroids. Moderate to severe disease requires the use of conventional disease modifying antirheumatic drugs (DMARD) and tumor necrosis factor (TNF) inhibitors if disease persists. The use of anti-TNF agents, however, requires screening for latent tuberculosis and are relatively contraindicated with active malignancy. Systemic steroids are reserved for severe flares unresponsive to conventional or biologic DMARDs as prompt discontinuation of steroids may trigger a severe erythrodermic psoriasis flare.

KAPOSI SARCOMA WITH PULMONARY MANIFESTATION: A DISSEMINATED PRESENTATION SUMAIRA ZAREEF MD, DIPEN KHANAPARA MD, PRANAV PATEL MD. Sumaira Zareef. Montefiore Medical Centre, Bronx, NY. (Control ID #2704331)

LEARNING OBJECTIVE #1: Recognize pulmonary presentation of Kaposi sarcoma (KS) in Acquired Immune Deficiency Syndrome (AIDS)-related complex.

LEARNING OBJECTIVE #2: Recognize steroid use can cause worsening of the KS in AIDS.

CASE: A 53 year-old woman with AIDS was admitted for altered mental status, fever, hemoptysis, and cough. She was not adherent to anti-retroviral medication and had CD4 count of 9 cells/µl. Physical examination was significant for multiple scattered small brown/violaceous nodules extending all over the body. Her initial blood gases were significant for PaO2 on room air of 52 mmhg. In view of bilateral nodular opacities in chest X-ray, empiric treatment with antibiotics and steroids were initiated. CT chest revealed bilateral nodules and mass-like opacities. Microbiology including sputum for acid fast bacilli and blood and urine cultures were unremarkable. Skin lesion biopsy was positive for KS. Steroids were discontinued; however she did not improve clinically despite appropriate anti-microbial coverage. CT-guided biopsy of pulmonary nodules revealed disseminated KS. She developed acute respiratory distress syndrome (ARDS) followed by alveolar hemorrhage.

IMPACT: Clinicians should have a high suspicion for pulmonary KS in patients with AIDS with skin lesions along with radiological findings of reticulonodular opacities. It is also important to consider the fact that treatment with steroids causes rapid progression of KS.

DISCUSSION: Pulmonary malignancies contribute significantly to morbidity and mortality in HIV-infected individuals. KS and pulmonary lymphoma are the two most common AIDS-defining lung malignancies. Overall, KS is the most prevalent AIDS-defining malignancy. KS is a micro-vascular tumor derived from lymphatic endothelium, which progresses from an early patch stage to tumor nodules. It originates due to uncontrolled expression of latency genes of Human Herpesvirus-8. Ninety percent of KS lesions are cutaneous, but it can involve any site in the body in advanced stage. KS has been seen to involve heart, pericardium, lung, bone marrow, GI tract, and other viscera. Pulmonary KS is rare, but can be indistinguishable from other AIDS-related infections. Pulmonary KS generally appear as reticulonodular opacities (often described as flame shaped lesions), hilar adenopathy, peripheral infiltrates, and pleural effusions on chest imaging. Steroid use in PCP has showed mortality benefit, but KS is one of the conditions that have been identified to rapidly progress with steroid use. Thus it is very crucial to avoid steroid use when clinical suspicion for KS is high. Advanced broncho-pulmonary involvement in KS often leads to fatal alveolar hemorrhage, as seen in our patient. Overall, KS has high malignant potential with short median survival times. Liposomal anthracyclines and paclitaxel are used as therapeutic options for advanced disease.

KEEP AN EYE OUT FOR THIS GRAVE DIAGNOSIS! Katherine Baker[1]; Ryan Nall[2]. [1]University of Florida, Gainesville, FL; [2]University of Florida, Gainseville, FL. (Control ID #2705328)

LEARNING OBJECTIVE #1: Recognize the diverse presentation of thyroid orbitopathy

CASE: A 49yo male with no significant PMHx presented with a 3-week history of painful left proptosis, periorbital edema, and conjunctival chemosis. Pt noted paint splashing into eyes prior to onset of symptoms. Prior to admission, patient was prescribed oral antibiotics and switched to steroid eye drops due to lack of improvement. At the time of admission, ROS was positive for blurred vision and watery discharge and negative for fever, weight gain or loss, constipation, or diarrhea. FHx was non-contributory. Physical exam showed bilateral periorbital edema, conjunctival erythema, and severe chemosis of left eye extending 270° with bulging towards the cornea. EOM were intact. Visual acuity was 20/20 OD, 20/40 + 2 OS and there was no loss of color vision. CT orbit performed at OSH showed preseptal and postseptal tissue swelling with inflammatory changes along the superior rectus muscle of both orbits with greater involvement of the left. TSH was elevated at 77.40mIU/L, free T4 was low at 0.66ng/dL and free T3 was elevated at 9.7pg/mL.

IMPACT: This patient with significant asymmetric eye involvement and lack of clear hyperthyroidism demonstrates a unique presentation of thyroid orbitopathy. This led us to consider a differential diagnosis of unilateral proptosis including orbital cellulitis, orbital pseudotumor, and other neoplastic processes as opposed to thyroid orbitopathy. Accordingly, this case contributes to the understanding of the diverse presentation of thyroid orbitopathy.

DISCUSSION: Thyroid orbitopathy has an annual incidence rate of 16 women and 3 men per 100,000 population. The condition generally occurs in hyperthyroid patients but can sometimes occur in patients with euthyroid or chronic autoimmune thyroiditis. The 5% of patients who are euthyroid or hypothyroid generally have low titers of anti-thyrotropin-receptor antibodies which can be difficult to detect in some assays. Euthyroid Grave's disease is the presence of thyroid orbitopathy in patients with thyroid hormone levels within normal limits and no prior treatment for hyperthyroidism. However, with further examination, most of these patients can be shown to have some degree of thyroid dysfunction and are also more likely to manifest eye disease before hyperthyroidism. While thyroid orbitopathy typically is bilateral, unilateral eye disease occurs in 5-14% of patients. However, in 50- 90% of these patients CT demonstrates contralateral eye muscle involvement. Unilateral eye involvement is important because it requires rapid exclusion of other causes of unilateral proptosis, many of which

are neoplastic in nature. In contrast to true unilateral disease, asymmetric eye involvement is common occurring in 22% of patients. However, a proptosis distance greater than 6mm should raise concern for a space-occupying lesion. In summary, thyroid orbitopathy is a condition with a diverse presentation both in terms of thyroid function testing and laterality.

KEEPING ABREAST OF ATYPICAL BREAST CANCER

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LEARNING OBJECTIVE #1: Review the epidemiology and presentation of breast cancer in men

LEARNING OBJECTIVE #2: Recognize the value of the physical exam in the work-up of breast cancer

CASE: Clinicians emphasize early detection of breast cancer in women, but the disease occurs in both men and women, and early recognition in men can also be vital to identifying appropriate therapy. A 55 year-old man with a history of hypertension, factor V Leiden, deep vein thrombosis, anxiety, and drug dependence presented with left chest and neck pain for six months following a motor vehicle collision. His chest wall was tender to palpation. He denied any exertional pain, dyspnea, fevers, weight loss, or GI symptoms. His exam revealed a hyperpigmented plaque with raised borders extending from the left sternoclavicular joint down to the fourth intercostal space, extending laterally to the midaxillary line. Two irregular masses were palpated on the left breast. No nipple discharge or lymphadenopathy was noted. Labs were unrevealing. His ultrasound revealed two irregular high density masses in the left breast and axilla measuring $6x1x1cm^3$ with internal vascularity. Biopsy and immunohistochemical staining revealed CD-20(+) and Bcl-2(+) with a high Ki-67 proliferative index suggestive of a mature B-cell lymphoma consistent with nHL (non-Hodgkin lymphoma). Cervical MRI revealed lymphadenopathy at C5. PET/CT revealed a left anterior chest wall mass with diffuse lymphadenopathy. The patient started chemotherapy for Stage III nHL of the breast with six cycles of R-bendamustine and restaging for further evaluation.

IMPACT: The case emphasizes the need for clinicians to be keenly aware of the possibility of breast cancer in men and diagnose the condition early to facilitate treatment. It also underscores the role of the physical exam in initiating diagnosis of life-threatening diseases.

DISCUSSION: Less than 1% all breast cancer diagnosed in the U.S. occurs in men. Risk factors include a strong family history of breast cancer, conditions with abnormal estrogen-to-androgen ratios (such as Kleinfelter syndrome or obesity), radiation exposure, age, sedentary lifestyle or exposure to volatile organic compounds. Due to lack of systematic screening, clinicians often diagnose male breast cancer at an advanced stage. It often presents with painless, firm, sub-areolar masses or lumps with bloody discharge in about half of all cases. Breast masses in men have a wide differential, including cysts, abscesses, gynecomastia or lipomas. In many cases, treatment comprises mastectomy with or without radiation or systemic antihormonal therapy. This patient's primary nHL of the breast is exceedingly rare, given the lifetime probability of nHL in men is near 2 and breast invasion represents only up to 0.5% of all breast cancers. No available data exists to measure the incidence of nHL of the breast especially in men and most literature on nHL of the breast is through various case series and case reports, making its prognosis and natural history poorly defined.

KIKUCHI DISEASE PRESENTING AS NEUTROPENIC FEVER OF UNKNOWN ORIGIN

David Olshan[2]; Emily Fessler[1]; Nancy Aitcheson[1]. [1]Hospital of the University of Pennsylvania, Philadelphia, PA; [2]University of Pennsylvania, Philadelphia, PA. (Control ID #2706529)

LEARNING OBJECTIVE #1: Appreciate the role of tissue diagnosis in fever of unknown origin

LEARNING OBJECTIVE #2: Recognize the clinical presentation of Kikuchi disease

CASE: A 33-year-old previously healthy woman presented with 3 months of intermittent fevers, night sweats, and hand stiffness. She had no sick contacts, family history of autoimmune disease, or relevant travel or exposures. During two recent admissions an extensive infectious, rheumatologic, and hematologic workup was only notable for neutropenia and mildly elevated erythrocyte sedimentation rate (ESR). Autoimmune serologies were negative, HIV was nonreactive, and EBV panel was consistent with prior infection. A bone marrow biopsy was unremarkable. A bronchoscopy with biopsy, obtained given small ground glass nodules on chest CT, showed normal lung parenchyma. The patient was re-admitted after spiking high fevers now associated with tender cervical lymphadenopathy. Her absolute neutrophil count fell to 380/mm3 and she was placed on empiric cefepime. Culture data was negative. Differential included rheumatologic disorders (e.g. seronegative-systemic lupus erythematosus (SLE)), primary hematologic disorders (e.g. Castleman's Disease, cyclic neutropenia), or malignancy. An excisional cervical lymph node (LN) biopsy was performed. In addition, review of her bone marrow slides showed a minute non-necrotizing granuloma. The patient was therefore started on prednisone with a provisional diagnosis of sarcoid. After discharge, LN biopsy revealed necrotizing histiocytic lymphadenitis consistent with Kikuchi disease.

IMPACT: In this case, multiple tissue samples were obtained before reaching a final diagnosis. A LN biopsy was ultimately key to finding a unifying explanation for the patient's symptoms. Her clinical course underscores the value of tissue diagnosis, particularly when a) symptoms are protracted and debilitating, b) extensive non-invasive workup is unrevealing, and c) life-threatening conditions (e.g. malignancy) remain high on the differential.

DISCUSSION: Kikuchi-Fujimoto disease is a rare, generally benign disease of unknown etiology. Clinical presentation is characterized by tender lymphadenopathy but can otherwise vary; common findings include fever, leukopenia, high ESR, and anemia[1]. It usually self-resolves within 1–4 months[2]. Epidemiologically, Kikuchi is diagnosed most often in Asian women under age 40[2,3]. It may be precipitated by prior EBV infection, though this remains controversial. In addition, a subset of patients with Kikuchi disease may develop SLE suggesting possible autoimmune etiology[2]. Diagnosis requires histopathologic confirmation via excisional LN biopsy: involved nodes show characteristic necrotic foci with karyorrhectic debris and surrounding histiocytes[2,3]. Tissue pathology allows for alternative diagnoses, namely SLE, viral infection, and lymphoma, to be excluded[3].

1. Kucukardali et al. Clin Rheumatol. 2007;26(1):50–4 2. Bosch et al. Am J Clin Pathol. 2004;122(1):141–52 3. Hutchinson & Wang. Arch Pathol Lab Med. 2010;134(2):289–93

KILL TWO BIRDS WITH ONE STONE

Nabil Mesiha[2]; Stephen Tieku[3]; Naresh Nagella[4]; Pirouz Parang[1]; Daniel Goldsmith[1]. [1]Capital Health Regional Medical Center, Trenton, NJ; [2]Capital health Regional Medical Center, Trenton, NJ; [3]Capital Health Medical Regional Center, Trenton, NJ; [4]Robert Wood Johnson University, New Brunswick, NJ. (Control ID #2697439)

LEARNING OBJECTIVE #1: To demonstrate that aquired vWD (Heyde syndrome) due to any cause of shear stress blood flow, can be a cause of recurrent GI bleeding.

LEARNING OBJECTIVE #2: To be aware that routine screen for aquired vWD is not diagnostic,and more detailed laboratory testing should be considered for diagnosis.

CASE: Acute lower GI bleeding is a medical and potentially surgical emergency, requiring urgent attention of the treating team. Management includes resuscitation with intravenous crystalloids and blood products. After stabilization, it is mandatory to find the bleeding source. We report one case of recurrent GI bleeding found to be from angiodysplasia, secondary to a cardiac cause. A 71 year old woman with history of paroxysmal atrial flutter, hypertrophic cardiomyopathy, and transient ischemic attack, was admitted three times in one year with massive GI bleeding and severe symptomatic anemia, requiring multiple blood transfusions. During the first admission the patient was on rivaroxaban for atrial flutter. A GI work up, including upper GI endoscopy, colonoscopy, and capsule endoscopy showed duodenal angiodysplasia. Rivaroxaban was discontinued, and after a period of time with no bleeding, she was placed on warfarin. A few months later, she had another lower GI bleed. At that time, upper and lower endoscopy found no significant abnormality. Warfarin was discontinued, but she had a third massive lower GI bleed, despite cessation of anticoagulants. Echocardiogram showed moderate concentric left ventricular hypertrophy with normal EF, and hematological evaluation showed high partial thromboplastin time (PTT). Routine testing for von Willebrand disease(vWD) was normal. The patient was sent to a tertiary center for a left ventricular myomectomy, maze procedure, and left atrial appendage excision. After surgery PTT was normal. She resumed anticoagulants and is currently in good health in outpatient care. For the last 8 months, she has not had any further episodes of bleeding.

IMPACT: Recurrent GI bleeding in patients with a clinical reason for turbulent blood flow should undergo more detailed laboratory testing for acquired vW factor deficiency than the routine screen

DISCUSSION: Heyde syndrome is a triad of acquired vWD, aortic stenosis, and bleeding from intestinal angiodysplasia. The mechanism of bleeding is from degradation of vW factor multimers by shear stress through the diseased aortic valve leading to significant blood loss through areas of angiodysplasia. We postulate that hypertrophic cardiomyopathy, or any cause of shear stress of blood flow similar to aortic stenosis, is another condition which may be associated with acquired vWD. Definitive management of GI bleeding in the setting of Heyde syndrome should be directed to the cause of turbulence of the blood flow inside or outside the heart. Routine screening tests for acquired vWD are usually normal, therefore to confirm acquired vWD a gel electrophoresis is required..

LARYNGEAL ACTINOMYCOSIS CAUSING AIRWAY OBSTRUCTION REQUIRING INTUBATION, MECHANICAL VENTILATION, AND TRACHEOSTOMY Fahad Juboori[1]; Jannatun Sikder[2]; Kayur Shah[1]. [1]NY Presbyterian Brooklyn Methodist Hospital, Jersey City, NJ; [2]New York Medical College, Valhalla, NY. (Control ID #2707258)

LEARNING OBJECTIVE #1: Recognize the risk factors for actinomycosis infection.

LEARNING OBJECTIVE #2: Recognize actinomycosis as a common infection in the head and neck region with atypical presentations.

CASE: A 55-year-old female with a medical history of uncontrolled type II diabetes mellitus, polymyositis, and coronary artery disease presented with low grade fevers, odynophagia, dysphagia, and dysphonia that was worsening over the past three weeks. She is a non-smoker and does not drink alcohol. On presentation, she was noted to have a hoarse voice. She was afebrile, saturating 100% on room air, and vitals were within normal limits. Physical exam was negative for oropharyngeal erythema, lymphadenopathy, and thyromegaly. Her labs were notable for a leukocytosis of 13.2 and ESR of 110. Initial laryngoscopy revealed a 1.5 mm, adherent, white supraglottic mass over the left true vocal cord grossly suggestive of malignancy. CT of the neck revealed a heterogeneous collection of air, soft tissue, and fluid extending from the epiglottis to the vocal cord with an air-filled tract from the larynx to the esophagus. She was empirically started on IV clindamycin. The next morning, she developed stridor with dyspnea requiring supplemental oxygen. Repeat laryngoscopy revealed partial airway obstruction requiring emergent intubation and subsequent tracheostomy. Pathology results from the biopsy demonstrated extensive acute necrotizing soft tissue with ulceration, polymicrobial overgrowth, and filamentous organisms with sulfur granules suggestive of actinomyces. No malignant cells were identified. Antibiotics were switched to ampicillin-sulbactam with significant improvement in mass size on repeat laryngoscopy.

IMPACT: This case provides an atypical presentation of a classic head and neck infection. Actinomycosis usually manifests in three ways: cervicofacial, abdomino-pelvic, or pulmonary. Laryngeal actinomycosis is rare. Actinomycosis has a long-standing reputation of being the great masquerader of head and neck disease. This comes from its ability to mimic malignancy, its chronic course, and due to its lack of familiarity to many clinicians.

DISCUSSION: Actinomycosis is a disease mainly caused by Actinomyces israelii, which is a gram positive, non-spore forming, anaerobe. It is a normal constituent of the oral cavity and is found within gingival crevices and tonsillar crypts. Risk factors for infection include poor oral hygiene, diabetes mellitus, immunosuppression, malnutrition, and local tissue damage. Due to its nonspecific presentation, it is often missed or commonly mistaken for malignancy. Actinomyces has the ability to invade fascial planes and create draining sinus fistulas. In this patient, it presented as a mass on the larynx and progressed to airway obstruction requiring intubation. Laryngoscopy with biopsy would be ideal for definitive diagnosis, as it is a potentially curative disease process. The drug of choice is penicillin, with tetracyclines and clindamycin as an alternative.

LEFT MANDIBULAR PAIN: A RARE INITIAL SYMPTOM OF ACUTE AORTIC DISSECTION WITHOUT CORONARY OBSTRUCTION Masaki Tago; Naoko E. Furukawa; Hidetoshi Aihara; Shu-ichi Yamashita. Saga University Hospital, Saga, Japan. (Control ID #2673549)

LEARNING OBJECTIVE #1: Recognize mandibular pain as a possible initial symptom of acute aortic dissection without myocardial ischemia.

CASE: An 88-year-old woman with chronic kidney disease and mild cognitive dysfunction experienced sharp pain in the left mandible for a few min 3 days prior to hospital presentation. At 4:00 am on the day of hospital presentation, the patient experienced sudden pain for more than an hour with a feeling of stiffness in the left mandible, cold sweating, nausea, vomiting and blurred vision, which left her unable to stand. On arrival at 5:30 am, there was only mild discomfort ranging from the left mandible to the neck, without definite pain. Physical examination revealed normal findings without tenderness from the left mandible to the neck. The laboratory findings revealed renal dysfunction (BUN 40.3 mg/dL, Cr 4.1 mg/dL), anemia (Hb 8.5 g/dL), and elevated aspartate aminotransferase (58 U/L), alkaline phosphatase (878 U/L) and C-

reactive protein (6.00 mg/dL). Chest radiography showed heart enlargement and a widened mediastinum. Electrocardiography did not show ST segment elevation or depression. Chest and neck computed tomography revealed cardiac effusion and slightly attenuated lesions in the vascular walls of the ascending and proximal aortic arch, brachiocephalic artery and left common carotid artery. Thus, an acute aortic dissection of Stanford type A was diagnosed. Surgical reparation of proximal cervical vascular and hemi-arch replacement was performed. The coronary arteries were found to be intact without myocardial infarction.

IMPACT: What does this case add to the literature? This case adds that mandibular pain is one of the first complaints of aortic dissection without obstruction of coronary arteries. Mandibular pain can be the only symptom of aortic dissection.

DISCUSSION: From 4-6% of acute aortic dissection occurs without any pain. The present case is the first presentation in which the patient had mandibular pain as the first complaint of aortic dissection without any chest or back pain, syncope, heart failure, cerebral infarction, or neurologic symptom. The mandibular pain was considered to be radiating pain elicited by the aortic dissection. Recurrent branches running around aortic arch, which contains visceral afferent fibers carrying sensory information from chest and abdominal organs, could be the route of radiating pain caused by an aortic dissection and cardiac diseases. Complaints, symptoms, and physical findings of elderly people can be atypical and elusive because of their impaired cognitive function, though the morbidity and mortality of them are higher. When seeing elderly patients, physicians should take possible keywords, such as "sudden", into serious account.

LEMIERRE'S SYNDROME: A POTENTIALLY DEADLY SORE THROAT Samir Bhalla[2]; Sara Stream[2]; Kevin Hauck[1]. [1]NYU Langone Medical Center, Brooklyn, NY; [2]NYU School of Medicine, New York, NY. (Control ID #2706346)

LEARNING OBJECTIVE #1: Recognize the clinical features and complications of Lemierre's syndrome.

CASE: A healthy 25-year-old male presented with 8 days of progressively worsening sore throat, fever and neck swelling which were unresponsive to 2 outpatient courses of clarithromycin. On presentation, he was febrile, tachycardic, hypotensive, tachypneic and hypoxic. Physical examination was significant for a palpable left-sided neck mass, trismus, and muffled voice. Initial labs revealed a white blood cell count of 26k, creatinine of 1.9mg/dL, and serum lactate of 4.5mg/dL. The patient was intubated for airway protection, and started on antibiotics and vasopressors. Ultrasound and CT imaging revealed left tonsillar, peritonsillar, and sublingual abscesses, pulmonary septic emboli, bilateral parapneumonic effusions and left internal jugular (IJ) thrombus. Wound cultures of left tonsillar abscess grew *Fusobacterium necrophorum* and antibiotics were narrowed to piperacillin-tazobactam. He underwent left IJ ligation and left lower lobe lobectomy, and gradually improved and was discharged home on a prolonged course of antibiotics.

IMPACT: Lemierre's syndrome is a potentially fatal disease that can cause rapid decompensation if untreated. When a young adult presents with worsening symptoms of acute pharyngitis, one must have a high suspicion for this disease in order to diagnose and treat it early.

DISCUSSION: Lemierre's syndrome is a rare and serious disease entity that primarily affects healthy young adults with an incidence of 1 in 1 million and a mortality rate of 4-12%. It involves oropharyngeal fusobacterium infection that can form abscesses and internal jugular thrombophlebitis. IJ thrombophlebitis results in bacteremia with septic emboli, commonly to the lungs and joints. The prevalence of Lemierre's syndrome has been rising in recent years due to more judicious use of antibiotics for acute pharyngitis.[2] This is also attributed to rising resistance of *fusobacterium* to macrolides that are often prescribed for pharyngitis, as illustrated by our patient who was initially treated with clarithromycin.

LESSON LEARNED FROM A CASE OF MULTIPLE SYSTEM ATROPHY Julie Worthington[1]; Charis Whitney[1]; Himabindu Lanka[1]; Chris Yeisley[2]. [1]Pinnacle Health System, Hummelstown, PA; [2]Pennsylvania State University College of Medicine, Hershey, PA. (Control ID #2706387)

LEARNING OBJECTIVE #1: Recognize multiple system atrophy in a patient already diagnosed with Parkinson's disease.

CASE: A 60 year old female with past medical history of Parkinson's disease was admitted to the hospital. Earlier the same day, she felt so fatigued that she was unable to stand. She admitted to not taking her prescribed fludrocortisone and midodrine. On exam, she had significant orthostatic hypotension (systolic blood pressure 160 millimeter of mercury while sitting versus systolic blood pressure 94 millimeter of mercury upon standing). Complete blood count and basic metabolic panel were within normal limits. Magnetic resonance imaging of the brain was stable and did not show any signs of atrophy.

IMPACT: Multiple system atrophy is a progressive neurodegenerative disorder with dysautonomia and abnormal movement. Presenting symptoms of multiple system atrophy, especially in the early stages, are similar to Parkinson's disease, making multiple system atrophy difficult to diagnose. During her hospital stay, she was found to have increased urinary frequency, urinary incontinence, impaired balance, tremor, and unconscious movements. Therefore, her initial diagnosis of Parkinson's disease was changed to multiple system atrophy. Her lightheadedness improved, so she was discharged to a skilled nursing facility for rehabilitation with a new diagnosis of multiple system atrophy.

DISCUSSION: This case demonstrates the difficulty in distinguishing Parkinson's disease from multiple system atrophy. Initially, the patient was diagnosed with Parkinson's disease and failed treatment with carbidopa-levodopa. On this presentation, she had increased urinary frequency and worsening hypotension. This presentation of parkinsonism, urinary incontinence, and hypotension is consistent with a diagnosis of multiple system atrophy, the parkinsonian type.

LET IT BLEED A CASE OF ACQUIRED HEMOPHILIA Margaret Zupa; Amar Kohli; Anita B. Lyons. UPMC, Pittsburgh, PA. (Control ID #2691942)

LEARNING OBJECTIVE #1: Identify at least 3 differential diagnoses for prolonged PTT

LEARNING OBJECTIVE #2: Determine the most appropriate initial laboratory workup for patients with spontaneous soft tissue hemorrhage

CASE: A 63 year old man with history of retroperitoneal fibrosis presented with acute left groin pain without trauma. Exam was notable for swollen left thigh, 2/5 strength in left hip flexion, and reduced sensation over medial and anterior thigh. CT scan showed left psoas mass, consistent with hemorrhage versus abscess. He had no fevers or leukocytosis. Labs revealed prolonged PTT to 69.5s with normal PT/INR. He denied easy bleeding or bruising and his only medication was aspirin. Records showed his PTT had been normal six months prior. A

mixing study failed to correct the PTT, suggesting the presence of a factor inhibitor. Recombinant factor VIIa was immediately started for acute bleeding and his aspirin was held. Further labs showed presence of Factor VIII inhibitor and he was treated with prednisone and cyclophosphamide long-term. His weakness improved and follow-up imaging showed resolving psoas hematoma.
IMPACT: This case changed my thinking about causes of spontaneous hemorrhage and the significance of an isolated prolonged PTT. My workup will now be focused on two branch points in diagnosis: type of coagulation abnormality (PT/INR, PTT or both) and the mixing study. This will facilitate prompt diagnosis of the defect in the coagulation cascade while avoiding unnecessary testing.
DISCUSSION: The differential diagnosis for isolated prolonged PTT includes hemophilia A and B, Von Willebrand disease, presence of a clotting factor inhibitor (acquired hemophilia), antiphospholipid antibodies (APLA) and heparin use. A mixing study measures coagulation time after a patient's blood is mixed with normal plasma. If clotting factors in the normal plasma do not correct the prolonged coagulation time, it suggests the presence of a factor inhibitor, APLA, or heparin. These diagnoses can be differentiated by measuring factor and inhibitor levels, the dilute Russell viper venom time for APLA, reptilase time to detect heparin, and the clinical presentation. Acquired hemophilia is a rare disorder with incidence estimated at 1 per million, most frequently due to an inhibitor of factor VIII. Usual onset is in women postpartum and in patients aged 68–80. Half of patients have an underlying cause including autoimmune disease, malignancy, infection and medications. Acquired hemophilia differs from congenital hemophilia in that patients with acquired inhibitors often present with spontaneous bleeding into soft tissue, muscle, or GI tract. In contrast, patients with congenital hemophilia due to factor deficiency present with hemarthroses of large joints. Treatment for acquired hemophilia involves acute therapy with recombinant factor VIIa and long-term therapy to eradicate the inhibitor with immunosuppression, most commonly prednisone and cyclophosphamide.

LET'S TAKE A PAUSE: A CASE OF SEVERE VASOVAGAL SYNCOPE

Amy D. Lu[2]; Jamie L. Stern[1]. [1]University of Pittsburgh, Pittsburgh, PA; [2]University of Pittsburgh Medical Center, Pittsburgh, PA. (Control ID #2706703)

LEARNING OBJECTIVE #1: Utilize tilt table testing (TTT) appropriately in the diagnosis of syncope.
LEARNING OBJECTIVE #2: Recognize clinical indications for pacemaker placement for cardioinhibitory syncope.
CASE: A 25 year-old previously healthy female presents to the office with a dramatic episode of syncope. The episode occurred after exercise and her boyfriend, who witnessed the event, described it as her "eyes suddenly rolled back and she fell to the floor." She was noted to have posturing of her upper extremities and cyanosis of her lips. She regained consciousness within min and denied loss of bowel or bladder function. She did not exhibit any significant confusion. She denies prolonged fasting, dehydration, or any recent illness. She is otherwise healthy and takes no medications. She does admit to prior episodes of syncope preceded by prodromal lightheadedness. Family history is negative for sudden cardiac death, arrhythmia, early CAD, or cardiomyopathy. Orthostatic vital signs and physical exam were unremarkable. Laboratory studies including complete blood count and complete metabolic panel were within normal limits. Urine pregnancy test was negative. Electrocardiogram showed normal sinus rhythm without ischemia or arrhythmia. Transthoracic echocardiogram was normal. Tilt table testing resulted in rapid slowing of heart rate with a 20 second asystolic pause with reproducible syncope and tonic-clonic movements. Once returned to a supine position, she returned to a slow junctional rhythm at 40bpm which increased back to normal sinus rhythm of 80bpm. She eventually underwent placement of permanent pacemaker at the advice of her cardiologist.
IMPACT: This case highlights clinical considerations for pursuing TTT in the workup for suspected vasovagal syncope as well as indications for pacemaker insertion for cardioinhibitory vasovagal syncope.
DISCUSSION: Vasovagal syncope is the most common cause of syncope in the general population and can divided into three types of responses: cardioinhibitory, vasodepressor, or mixed. While cardioinhibitory response with asystole is rare, it is associated with more severe symptoms, physical injury, and recurrence. Tilt table testing is indicated in cases of unexplained syncope with questionable neurogenic features but without presence of organic heart disease. TTT has a sensitivity of 78–92 and specificity of 87–92%. An asystolic response provoked during testing is indicative of asystole occurring during spontaneous syncope with a positive predictive value of 75–80%. Patients with severe, recurrent cardioinhibitory syncope who are >40 years of age may benefit from pacemaker placement, though the effectiveness of pacing in preventing episodes of syncope remains unclear, especially in younger individuals <40 years of age. The optimal diagnostic tool to guide pacemaker insertion is also debated as implantable loop recorders enable identification of asystole during spontaneous syncope but may not be as cost effective as TTT.

LEUKOCYTOCLASTIC VASCULITIS AND COLONIC INVOLVEMENT

Manisha shastry[1]; Jill Elwing[2]; Marc Levin[2]; Detlef Ritter[3]. [1]Mercy hospital, St.louis, MO; [2]VA.St.louis health care system, St.Louis, MO; [3]St.Louis Va health care system, St.Louis, MO. (Control ID #2708692)

LEARNING OBJECTIVE #1: Leukocytoclastic vasculitis(LV) is a type of vasculitis that is characterized by transmural inflammation of blood vessels associated with fibrinoid necrosis of the vessel wall. It usually presents with cutaneous manifestations. There is paucity of literature of LV involving gastrointestinal tract(GI). This is a case describes vasculitis of GI tract with a brief review of manifestations.
CASE: A 63-year-old man was admitted with syncope and hematochezia of 3 days duration. His past medical problems include hypertension, congestive heart failure, diabetes mellitus, chronic eosinophilia, chronic osteomyelitis, venous insufficiency and cutaneous LV. Diagnostic workup showed an elevated ESR, CRP, CCP, ASO. Serologic studies including ANCA, ANA, ANTI-GBM, RF, cryoglobulins and stool studies were negative. Colonoscopy showed a large clean-based ulcer with ischemic features in the descending colon. Biopsy of the lesion was significant for mucosa with focal ulceration with predominant neutrophilic and eosinophilic infiltration. Differentials included systemic LV, infection, and drugs. CTA was negative for any large vessel involvement. He was started on prednisone for possible systemic vasculitis, given the negative workup and noticed resolution of symptoms in few days.
IMPACT: There have been very few cases of vasculitis involving GI tract, vasculitis should be in the differential diagnosis especially in a patient with rash and GI manifestations. There is no clear data about what dose of steroids is

used and for how long, often a multi-disciplinary approach is required, treatment is decided on case by case basis.Further studies are required on this uncommon condition.

DISCUSSION: LV is mainly a cutaneous disorder with rare Gastrointestinal (GI) manifestations. GImanifestations can vary from abdominal pain, nausea, vomiting, hematochezia, more serious presentations include ischemic colitis, acute diverticulitis and toxic megacolon. Vasculitis should be considered in the differential in a patient with GI symptoms and cutaneous rash. Common causes such as infections, drugs, other autoimmune disorders should be ruled out. In our patient, there was a high suspicion for LV involving the GI tract considering all the negative work up. Treatment usually involves steroids, refractory cases biologics and in severe or acute cases surgery may be required. Prompt diagnosis and treatment with steroids or biological agents could decrease the mortality and morbidity.

LEUKOCYTOCLASTIC VASCULITIS IN AN INJECTION DRUG USER

Eliezer Zachary Nussbaum; Gabriel Wishik. Boston University School of Medicine, Boston, MA. (Control ID #2700877)

LEARNING OBJECTIVE #1: Recognize the clinical appearance and histopathological features of leukocytoclastic vasculitis (LCV)

LEARNING OBJECTIVE #2: Formulate and prioritize a robust differential diagnosis for adults with LCV

CASE: A 53 y/o male with a history of active intravenous heroin use and hepatitis C presented with general malaise, diffuse arthralgias, and a bilateral lower extremity rash of two weeks duration. He was afebrile, with a pulse of 118, BP 110/60 and RR 18. Exam revealed a prominent non-blanching palpable purpuric rash on his feet and ankles as well as a tender left shoulder with limited ROM. Basic labwork was remarkable for WBC 28.4 and Creatinine 2.11 (baseline 0.9). 3/3 blood cultures and shoulder arthrocentesis were all positive for MRSA. Subsequent skin biopsy revealed superficial perivascular and interstitial neutrophilic infiltrate, leukocytoclasia, extravasated erythrocytes, focal thrombosis of small blood vessels and fibrinoid necrosis of vessel walls. Additional labwork for cryoglobulins, rheumatoid factor, ANA, and ANCA's was entirely negative. The patient was started on IV vancomycin and taken to the OR for washout of the shoulder joint. The rash disappeared within a week and upon completion of 6 weeks of antibiotic therapy he made a full recovery.

IMPACT: This case changed my thinking about the diagnostic approach to the patient with LCV by highlighting the need to search for underlying infection as the first step. Particularly in patients who use IV drugs, the finding of cutaneous LCV should heighten suspicion for a bacteremia.

DISCUSSION: This patient had LCV as a prominent presenting symptom of his MRSA bacteremia. LCV is a histopathologic term describing infiltration of small vessel walls by neutrophils leading to extravasation of blood into the cutaneous tissue. Clinically, this process results in the appearance of non-blanching, palpable purpura; the hallmark lesion of LCV. The etiologies of LCV can be divided into primary and secondary causes. Primary causes include various systemic vasculidites which, taken together, account for only 4% of cases. More commonly, LCV is secondary to an underlying disease process such as infection, medication-induced, connective tissue disease or malignancy. Infection accounts for a quarter of all cases of LCV. This case highlights the need to correctly prioritize a lengthy differential. In patients with hep C and a rash, cryoglobulinemia is a rare but well known consideration. However, the drug injecting population is also at high risk for bacteremia. Initial treatment for LCV prior to the resulting of confirmatory tests should focus on infection as it is the most common cause of LCV. Empiric steroid treatment for cryoglobulinemia is not advisable until bacteremia is ruled out. Testing for primary vasculitis as well as connective tissue disease was appropriate in this case, however only after the infectious workup had been completed.

LEVAMISOLE- COCAINE INDUCED NEUTROPENIA

Thamer A. Kassim[1]; Mohammad A. Selim[4]; Osman Bhatty[2]; Osama Diab[1]; Lakshmi Manogna Chintalacheruvu[3]; Maryam Gbadamosi-Akindele[1]. [1]Creighton University, Omaha, NE; [2]Creighton University GME, Omaha, NE; [3]Creighton University medical center, Omaha, NE; [4]Creighton university, Omaha, NE. (Control ID #2706972)

LEARNING OBJECTIVE #1: Raise the awareness that Levamisole have been contained in cocaine batches.

LEARNING OBJECTIVE #2: Diagnose Levamisole induced agranulocytosis and neutropenic fever in cocaine drug users.

CASE: By 2009, almost 70% of confiscated cocaine shipments were adulterated with Levamisole. We present a rare case of Levamisole - Cocaine induced neutropenia. 68 years old male patient presented with recurrent diarrhea and was found to have a very low White Blood Cell (WBC) count of 1.1 with an Absolute Neutrophil Count (ANC) of Zero. During first day of hospitalization the patient's diarrhea resolved but he started to spike a fever with his temperature maximum of 104.9. The patient was started on cefepime empirically. Blood cultures, urine analysis and culture and stool analysis and culture were negative. Chest/Abdomen CT scan showed no lung pathology but a small fluid collection in the abdomen was found. Paracentesis was performed for the concern of spontaneous bacterial peritonitis but fluid analysis yielded no abnormalities. Infectious disease and Hematology/Oncology teams were consulted for a source of infection and for the patient's isolated neutropenia, but the patient refused bone marrow biopsy and no source was found. Given that the patient's extensive history of cocaine dependence and use before admission, his recent WBC count of 4.1 a month before hospitalization, and the fact that his WBC/ANC started to elevate after three days of not using cocaine, his neutropenia was attributed to cocaine containing Levamisole.

IMPACT: Per the national institute of drug abuse, In 2014, there were an estimated 1.5 million current cocaine users and is trending up. This case has a significant impact on our approach to Agranulocytosis and neutropenic fever. Since cocaine drug abuse is getting more common, our role as physicians is to be prepared to manage the outcome. This type of neutropenia is rare which makes it easy to be overlooked. Being aware of such complications will raise the physician's attention and will reduce the costs of unnecessary investigations.

DISCUSSION: Neutrophils are the major white blood cells in our innate immune system defending against infections. Neutropenia is defined as ANC of less than 1500 cells/mm^3 with less than 500 cells/mm^3 being severe. Drug Induced Neutropenia is of rapid onset occurring within hours to 1–2 days. The drug acts as a Hapten inducing autoantibodies against neutrophils causing destruction. Levamisole is an immunomodulator that was used in the treatment of rheumatoid arthritis and colon cancer before it was withdrawn from the

market in 2005. It was found to cause agranulocytosis in 0.08-0.5%. Levamisole have been used an adulterant in cocaine since 2009. Since cocaine use is trending up, more cases of agranulocytosis and neutropenic fever are expected to be encountered. Recognizing this as a cause of neutropenia, providing appropriate medical management and treating cocaine dependence should be our primary goal as medical care providers for this target population.

LIMITATIONS OF NOVEL ANTICOAGULANT USE IN CANCER ASSOCIATED VENOUS THROMBOEMBOLISM Adil Yunis. Boston Medical Center, Boston, MA. (Control ID #2707551)

LEARNING OBJECTIVE #1: Recognize limitations of novel anticoagulants (NOAC) in cancer

LEARNING OBJECTIVE #2: Assessing bleeding risk when starting anticoagulation

CASE: A 65 year-old male with a history of pulmonary neuroendocrine carcinoma with liver and bone metastasis undergoing carboplatin/paclitaxel chemotherapy and complicated by port-a-cath associated thrombosis, now on *rivaroxaban*, presented to the hospital after a self-limited episode of hemoptysis with lightheadedness. He was otherwise asymptomatic with stable vital signs and a benign physical exam. Labs were significant for Hg 10.9 (his baseline), PLT 197, INR 1.07, PTT 29 and normal electrolytes and liver function tests. CT-PA showed no pulmonary embolism but interval increase of his pulmonary malignancy with new invasion of both the left bronchi and pulmonary artery branches as well as new thrombosis of the SVC surrounding the port-a-cath. Of note, 6 months prior to presentation a previous incidental SVC thrombus was treated with 3 months of low molecular weight heparin (LMWH) then transitioned to rivaroxaban when repeat imaging demonstrated thrombus resolution. Overnight, rivaroxaban was held and the patient had no episodes of hemoptysis. The next day he developed persistent sinus tachycardia and tachypnea with normal oxygen saturation while afebrile and normotensive. Facial plethora and edema were appreciated on repeat physical exam. SVC syndrome was diagnosed and anticoagulation with unfractionated heparin initiated. Interventional radiology subsequently performed thrombectomy with angioplasty and SVC patency returned. The port-a-cath was replaced for ongoing chemotherapy. At discharge rivaroxaban was discontinued and LMWH restarted. No hemoptysis was observed after restarting anticoagulation and repeat imaging at 3 months showed no thrombus.

IMPACT: As a result of this case I have continued to use LMWH in treating venous thromboembolism (VTE) in cancer pending further studies using NOAC's

DISCUSSION: Pathogenesis of VTE in cancer is multifactorial, resulting from direct and indirect activation of procoagulant pathways. Both VTE incidence and recurrence are higher compared to non-cancer patients. Though first line therapy in other forms of VTE, NOAC's are not recommended in cancer patients, including catheter associated thrombosis, due to a lack of prospective clinical trials on efficacy and safety in this patient population. In this case, the resolution of VTE with LMWH, and interval recurrence when on a NOAC supports LMWH as the conventional treatment for VTE in cancer. This case also depicts the clinical decision making process of anticoagulation in hypercoagualable patients with concurrent bleeding risks. This patient had a single self-limited and non-hemodynamically significant episode of hemoptysis, but his risk for clinical deterioration with symptomatic SVC syndrome was high. Had bleeding recurred with anticoagulation, heparin would be stopped, IV fluids and blood products provided for hemodynamic support, and urgent catheter embolization performed.

LISTERIA LURKING IN THE LIVER Jillian F. Sinkoff[1]; Pinky Jha[2]. [1]Medical College of Wisconsin, Milwaukee, WI; [2]medical college of wisconsin, Milwaukee, WI. (Control ID #2687520)

LEARNING OBJECTIVE #1: Recognition of liver abscesses secondary to *Listeria monocytogenes*

LEARNING OBJECTIVE #2: Management of *Listeria monocytogenes* infection in an immunocompromised patient

CASE: A 68 YO Hmong female with past medical history significant for ESRD on dialysis and rheumatoid arthritis was referred to an ED from outpatient clinic with a one day history of fever and RUQ pain. Prior to this presentation, the patient had been on prednisone 10 mg and azathioprine 25 mg daily for 4 weeks. Upon presentation, the patient was febrile, tachycardic, and tachypneic. Physical examination was benign except for RUQ tenderness. Significant laboratory results included a WBC of 19K, ANC of 14.44, CRP of 18.20, ESR of 116, AST of 40, and ALT of 16. CT scan of the abdomen showed >8 small bilobar hepatic lesions up to 1.3 cm in size concerning for micro-abscesses. The patient was empirically started on piperacillin-tazobactam and vancomycin. Initial blood cultures grew *L. monocytogenes* after 48 hours and piperacillin-tazobactam was then discontinued. IV Ampicillin and gentamicin were started and vancomycin was continued until 72 hours when the *L. monocytogenes* returned sensitive to ampicillin and gentamicin. IR felt abscesses were too small to be drained percutaneously. The patient remained afebrile from hospital day 3 until discharge on hospital day 8. Follow-up CT scan 1 week after discharge showed liver abscesses had resolved or decreased in size. The patient received 3 days of gentamicin and 4 weeks of IV ampicillin. At the 4 week follow-up WBC count was 24K and patient received an additional 6 weeks of IV ampicillin without complications.

IMPACT: No definitive guidelines are available for management of patients with these scenarios. Outcomes appear favorable with extended treatment with IV ampicillin and gentamycin as described in this case. Increased morbidity and mortality are seen in cases with multiple abscess and abscesses that are not suitable for drainage; increased vigilance is warranted in these patients.

DISCUSSION: *L. monocytogenes* involvement of the liver is exceptionally rare and often presents with nonspecific symptoms including fever and RUQ pain in immunocompromised people. 36 cases have documented a liver abscess secondary to *L. monocytogenes*. Here we report a rare case of multiple liver abscesses secondary to *L. monocytogenes* successfully treated with 10 weeks of IV ampicillin. Types of liver involvement include solitary abscess, multiple abscesses, and hepatitis. Multiple liver abscesses is a poor prognostic factor with only a 27% survival rate seen in the literature. This would be the first documented case of a patient surviving multiple abscesses without percutaneous drainage as part of their treatment. A current review of case reports shows outcomes are most favorable using a penicillin in combination with an aminoglycoside for at least 3 weeks and oftentimes longer. No controlled trials have been done to date to assess the best antibiotic protocol.

LITHIUM TOXICITY IN A PATIENT WITH A CONGENITAL SOLITARY KIDNEY - AVOIDING PITFALLS Aparna S. Daley; Daniel Goldsmith; Stephen Tieku; Iram Mahmood Arif. Capital Health Regional Medical Center, Trenton, NJ. (Control ID #2706385)

LEARNING OBJECTIVE #1: Recognize the importance of careful monitoring of lithium levels and avoidance of precipitants of lithium toxicity including dehydration and nephrogenic drug interactions.

LEARNING OBJECTIVE #2: Recognise patients with potential for substantial renal decline secondary to lithium toxicity, such as those with a solitary kidney.

CASE: A 41 year-old male with a history of schizophrenia was referred from a psychiatric facility for evaluation of leukocytosis and flu-like symptoms. He had been evaluated ten days prior for an asthma exacerbation and was discharged on prednisone and ibuprofen. He was fully alert and oriented but was a poor historian. He had been started on Lithium one month ago. Physical examination was unremarkable. Diagnostic tests were notable for mild hyperkalemia, marked leukocytosis, thrombocytosis and significantly elevated blood urea nitrogen of 62mg/dL and creatinine of 8.88 mg/dL. Urinalysis showed few eosinophils but no proteinuria. The Lithium level was 2.09 mmol/L, signifying Lithium toxicity. At the time of admission, there were no previous records at our hospital. The patient was admitted for acute kidney injury secondary to Lithium toxicity. Lithium was discontinued and the patient was given intravenous hydration. Records from a previous hospital were obtained the following day, which revealed a congenital left solitary kidney, and a previous admission for acute kidney injury secondary to rhabdomyolysis. The patient's creatinine and Lithium levels were normal six days prior to his current admission. Repeat ultrasound confirmed the presence of a sizable 19 cm solitary left kidney with compensatory hypertrophy. A screen for autoimmune causes was negative. Intravenous fluids were continued for several days and the patient's Lithium level normalized and his creatinine level gradually trended down to 2.31mg/dL.

IMPACT: This case served as an important reminder to me of the importance of careful monitoring in patients taking lithium, especially in patients who are unable to provide a comprehensive history and who are seen by multiple healthcare providers in different settings. This is particularly important in patients with a solitary kidney who may have potential for rapid renal decline. It is a reminder of the importance of attaining a comprehensive medication history.

DISCUSSION: This case illustrates the importance of close monitoring of medications administered in all contexts to a patient with a solitary kidney who is taking Lithium, which could easily result in renal toxicity. NSAIDs are known precipitants of Lithium toxicity and should be avoided in such patients. When a patient is unable to provide a good history, providers must be meticulous in tracking down all medical records to determine a patient's history and risk factors and to avoid precipitating lithium toxicity and renal injury in a patient with a solitary kidney.

LOOKING PAST PSYCHIATRIC LABELS: A NOT-SO-HIDDEN CAUSE OF CATATONIC DEPRESSION Michael D. Richter[1]; Adrian Vella[2]. [1]Mayo Clinic, Rochester, Rochester, MN; [2]Mayo Clinic, Rochester, MN. (Control ID #2701874)

LEARNING OBJECTIVE #1: Recognize the potential psychiatric manifestations of Cushing's Disease.

CASE: A 33-year-old man presented acutely for a second opinion regarding his severe depression. He had an eight-month history of progressive fatigue, weakness, depressed mood, and periods of confusion with memory impairment. A recent 17 day hospitalization for encephalopathy, which included evaluation by neurology, neurosurgery, and psychiatry, resulted in a diagnosis of catatonic depression with possible conversion disorder. An MRI from this visit was noted to have no significant findings. His medical history was also notable for hypertension, type 2 diabetes mellitus, and obesity. These comorbidities were all diagnosed within the past two years. Upon admission, physical exam revealed facial flushing, prominent preauricular and supraclavicular fat pads, central obesity, and proximal muscle weakness. Laboratory workup revealed an elevated 24-hour urine free cortisol at 1933μg/24h, and a morning cortisol of 13μg/dL after dexamethasone suppression test. MRI of the pituitary gland noted a 9mm heterogenously hypoenhancing mass in the anterolateral right sella. CT scan of the chest, abdomen, and pelvis was unremarkable. He was diagnosed with ACTH-dependent pituitary Cushing disease and underwent transsphenoidal resection of the mass. Pathology confirmed the diagnosis with staining positive for ACTH and chromogranin. He was treated with a postoperative course of prednisone for symptoms and signs of adrenal insufficiency, and one month later he resumed working and reported significant improvement in all of his presenting symptoms.

IMPACT: This case illustrates the psychiatric symptoms associated with Cushing's Disease and emphasizes the high degree of suspicion necessary for diagnosis. This can be challenging as many of the disease features, namely obesity, hypertension, diabetes, and depression, are remarkably common. Screening with overnight dexamethasone suppression test, 24-hour urine cortisol, and late-night salivary cortisol should be considered in patient with these comorbidities and characteristic physical findings.

DISCUSSION: The most common psychiatric disorders observed in patients with Cushing Disease are major depression (50-80%), anxiety or panic disorders (66%), and memory impairment (83%). Severe disease may present as psychosis or a catatonic state, characterized by immobility, mutism, and automatic obedience. Neuropsychiatric disorders usually improve after disease remission, though they can persist even after resolution of hypercortisolism.

LUMBAR ARTERY RUPTURE RESULTING IN RETROPERITONEAL BLEED LATE IN THE POST-OPERATIVE PERIOD Nilima Shet; Prashanth Venkatesh; James M. Horowitz. NYPH – Weill Cornell, New York, NY. (Control ID #2703284)

LEARNING OBJECTIVE #1: Observe clinical manifestations of spontaneous arterial RP bleed in the late post-operative period.

LEARNING OBJECTIVE #2: Note the increased risk of RP bleeds in a patient with CKD receiving anticoagulation.

CASE: A 67 year-old man with medical history significant for coronary artery disease, chronic renal insufficiency, insulin-dependent diabetes, and systolic heart failure (EF 45%) developed acute hypoxic respiratory failure 48 hours after L1-L2 laminectomy. He was emergently intubated and transferred to the cardiac care unit (CCU). Workup revealed non-ST elevation myocardial infarction, acute on chronic renal failure and a chest x-ray consistent with acute pulmonary edema. Cardiac catheterization was deferred due to instability and concern for irreversible renal insult. The patient was maintained on aspirin and clopidogrel. Renal replacement was started for persistent oliguria and need for ultrafiltration. He developed persistent atrial flutter refractory to anti-arrhythmics and was started on unfractionated heparin infusion in consult with orthopedics. The patient was transferred to the floor with plans for elective catheterization. Yet, he developed acute onset back and abdominal pain with rebound tenderness, altered mental status, hypotension and tachycardia. Labs revealed an acute hemoglobin drop from 8.0 to 4.5 g/dL with a lactate level of 8. Anticoagulation was held and reversed with protamine sulfate. CT scan revealed a new psoas hematoma near the site of laminectomy done 21 days

prior. He was taken to interventional radiology where an actively bleeding L3 lumbar artery was embolized.

IMPACT: Though spontaneous retroperitoneal (RP) hematomas are rare and usually venous, this case underscores the importance of lumbar arterial RP bleed in the differential diagnosis of shock in a patient on triple antithrombotic therapy. This case adds to the few existing reports describing this complication in a patient on anticoagulation. This, to our knowledge, is the only one describing spontaneous lumbar arterial bleed late after lumbar laminectomy.

DISCUSSION: RP bleeding can vary in presentation from minimal pain to hemodynamic collapse[1]. Spontaneous RP hematomas are most commonly diagnosed among patients on anticoagulation as well as those on hemodialysis though the specific mechanisms are not understood[2,3]. Spontaneous lumbar artery rupture is rarer still and the incidence is unknown with few reports in literature[4]. When Mr. G first began to decompensate, it was thought he may have been septic. Hypotensive and altered - he had plausible sources for infection: a central line, a large wound post-operatively, and a sacral decubitus ulcer. A new bleed was thought less likely given the patient had been three weeks post-procedure and vascular complications were known to occur earlier in the post-operative period[5]. Given Mr. G was both on dialysis and anticoagulated on numerous agents, considering an RP bleed may have allowed for sooner imaging or a shorter delay before undergoing embolization.

LUMP IN THE BREAST: CLEARED THE LITMUS TEST?

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LEARNING OBJECTIVE #1: Distinguish between granulomatous mastitis and breast cancer.

LEARNING OBJECTIVE #2: Diagnose and treat a patient with granulomatous mastitis.

CASE: A 30-year-old female presented to an outpatient clinic for evaluation of an accidentally noted right breast lump. The patient denied any weight loss, appetite change or use of oral contraceptives. There was no significant personal or family history of cancer. Spot urine pregnancy test was negative and the patient was not lactating. On examination, a 60 × 60 × 30 mm, firm lump was noted in the upper inner quadrant of the right breast. Nipple, areola, the skin overlying the breast were unremarkable and lymphadenopathy was absent. Left breast was normal on exam. Empiric treatment with trimethoprim-sulphamethoxazole for acute mastitis did not show any improvement. Subsequently, a diagnostic mammography and right breast ultrasound was performed, which showed a hypervascular, hypoechoic, 57 × 57 × 27 mm mass along with enlarged right axillary lymph-nodes, raising suspicion for malignancy. An ultrasound guided core biopsy of the nodule was performed. Surprisingly, on histopathologic analysis, patient was diagnosed with granulomatous mastitis (GM), with negative acid-fast bacilli stain and gram stain. The patient was treated with 40 mg of prednisone, which was tapered over a period of 8 weeks. This resulted in a significant improvement in the size of the breast lesion, but it did not resolve completely. Eventually the lesion was surgically excised and a diagnosis of GM was re-confirmed on histological exam.

IMPACT: How did this case change your thinking? GM is an uncommon benign breast disease that often masquerades as two other common conditions, breast abscess or carcinoma. Hence, GM should be included in the differential diagnosis when a woman of childbearing age presents with a lump in the breast.

DISCUSSION: GM is a rare chronic inflammatory disease that has clinical and radiologic findings similar to those of breast cancer. It usually affects women of childbearing age or those with a history of oral contraceptive use. It is not associated with trauma, specific infection, or foreign material. On examination, it generally manifests as a distinct, firm to hard mass that may involve any part of the breast. Reactive lymphadenopathy may be present in up to 15% of cases. Mammographic features can be variable, ranging from normal findings in patients with dense breasts to masses with benign or malignant features. A definitive etiology is unknown but an autoimmune factor is favored. It should be differentiated from other chronic inflammatory breast diseases such as plasma cell mastitis, Wegener's granulomatosis, sarcoidosis, tuberculosis, abscess, carcinoma, and fungal infection. Diagnosis is made by pathologic review where, chronic granulomatous inflammation of the breast lobules without necrosis is seen. Treatment depends on the severity of disease and may include observation, systemic steroids, methotrexate or surgery.

LUNG CANCER AND JOINTS: COMMON LINK?

Yekaterina Kim; Andrei Assa; Myung Woo; Geetali Mohan. Montefiore Medical Center, Bronx, NY. (Control ID #2699417)

LEARNING OBJECTIVE #1: Recognize physical exam findings of hypertrophic pulmonary osteoarthropathy

LEARNING OBJECTIVE #2: Recognize that hypertrophic pulmonary osteoarthropathy is associated with lung malignancy

CASE: A 47 year-old man with 20 pack-year smoking history, presented with three weeks of right-sided chest pain with bilateral knee and wrist swelling. Patient was febrile and tachycardic, with decreased breath sounds in upper lobes. He had increased girth of bilateral wrists, digital clubbing, bilateral knee synovitis, and symmetrical lower extremity edema. He denied cough, shortness of breath or weight loss. CT chest showed large right apical bulla with air-fluid level with questionable area of denser nodularity. Xray of bilateral wrists and feet showed periosteal reaction, suggestive of hypertrophic pulmonary osteoarthropathy. He was started on antibiotic therapy for suprainfected bulla for three weeks. Given high suspicion for lung malignancy based on HPO findings, follow up CT was obtained. It showed enlargement of right upper lung lesion. Patient underwent lung biopsy followed by right upper lobectomy revealing non-small cell carcinoma.

IMPACT: This case illustrates the importance of recognizing the physical exam findings of hypertrophic pulmonary osteoarthropathy and initiating timely workup for underlying chest pathology and possibly malignancy in patients without constitutional or pulmonary symptoms.

DISCUSSION: Hypertrophic osteoarthropathy (HOA) is a syndrome characterized by digital clubbing, inflammation of trabecular bones, and synovial effusions. Primary HOA is a rare, hereditary condition. Secondary HOA is more common than primary, comprising more than 95% of all cases, and is associated with lung malignancies, cystic fibrosis, pulmonary infections, and intra-cardiac shunts. When secondary HOA is of pulmonary origin, term hypertrophic pulmonary osteoarthropathy (HPO) is used. Majority of clinicians are familiar with clubbing, but other physical exam findings of HPO are not quickly recognized given rarity of the presentation, therefore prompting inappropriate referral to rheumatology. HPO has been associated with all

histological types of lung cancer, most commonly with non-small cell carcinoma. It is hypothesized that release of growth factors from abnormal malignant tissue, causes increased connective tissue and osteoid matrix deposition resulting in clubbing and periostosis. Clinical presentation of HPO can range from asymptomatic changes to extensive pain in bones. Important physical exam findings of HPO are digital clubbing, edema of extremities with increased girth of tubular bones near metaphysis, large symmetric joint swelling and effusions. Periosteal changes are most commonly seen in tibia, fibula, radius and ulna. They can precede other clinical presentations of underlying lung disease, therefore timely identification of these physical exam findings may lead to early diagnosis of lung malignancy.

MAKE ME LOSE MY BREATH: SUBMASSIVE PULMONARY EMBOLISM AND ANCILLARY DIAGNOSTICS Andy Y. Cheng[2]; Amar Kohli[1]. [1]UPMC, Mars, PA; [2]University of Pittsburgh Medical Center, Pittsburgh, PA. (Control ID #2671988)

LEARNING OBJECTIVE #1: Recognize ancillary diagnostics pertinent to the management of pulmonary embolism (PE)

LEARNING OBJECTIVE #2: Interpret the significance of ancillary diagnostics in prognosticating PE outcomes

CASE: A 58-year-old woman afflicted by progressive supranuclear palsy rendering her bedbound for the past five years presented with chest pain and dyspnea. The patient experienced stabbing left-sided chest pain, worsened by inspiration, over the past 24 hours. Given persistent chest pain and worsening dyspnea, she saw her primary care physician, who then referred her to the Emergency Department for further evaluation. Initial laboratory studies revealed brain natriuretic peptide (BNP) of 583 pg/mL, troponin of 0.0 ng/mL, and D-Dimer of 432 ng/mL. Computed Tomography Pulmonary Angiogram (CTPA) demonstrated a saddle embolus, as well as extensive embolic burden extending throughout bilateral pulmonary vasculature. A Transthoracic Echocardiogram (TTE) demonstrated severely decreased right ventricular function, a flattened interventricular septum, and the presence of McConnell's Sign. An electrocardiogram (EKG) showed a "S1Q3" pattern, with reports that an initial outpatient EKG showed a full "S1Q3T3" pattern. Given a stable blood pressure of 104/74, but signs of right ventricular dysfunction, the patient was diagnosed with submassive PE and admitted to the Medical Intensive Care Unit for further management.

IMPACT: Ancillary diagnostics such as TTE and EKG help prognosticate PE severity and guide further treatment decisions, but do not replace Pulmonary Angiography, CTPA, or Ventilation-Perfusion Lung Scanning in the diagnosis of PE.

DISCUSSION: While Pulmonary Angiography remains the gold standard in diagnosing PE, its invasive nature has led to the development of noninvasive methods, including CTPA and Ventilation-Perfusion Lung Scanning, as alternative diagnostic modalities. There are also several ancillary diagnostics that play important roles in the prognostication of PE. -"McConnell's Sign" on TTE: Defined as hypokinesis or akinesis of the right ventricular free wall with preserved right ventricular apical motion, McConnell's Sign carries a low sensitivity of 77% but high specificity of 94% for PE detection. It is also seen more frequently in patients with high-risk PE, specifically those who have a systolic blood pressure of less than 90 or require vasopressor support. -"S1Q3T3" EKG Pattern: This classic finding continues to be taught in medical school as strongly suggestive of pulmonary embolism. However, one study found it to have a sensitivity of only 35%, while another found it to have no statistical significance when matched for age and sex to controls who did not have PE. Nevertheless, the S1Q3T3 finding does seem to be associated with higher frequency of right ventricular dysfunction, as well as increased risk of hemodynamic collapse and death within thirty days after initial diagnosis of PE. It also has a 90% specificity.

MAKE NO BONES ABOUT CANCER Reza Parungao; Danit Arad. Montefiore Medical Center, Bronx, NY. (Control ID #2703582)

LEARNING OBJECTIVE #1: Identify alarming signs for underlying malignancy in patients presenting with back pain

LEARNING OBJECTIVE #2: Recognize the clinical presentation of spinal cord compression

CASE: A 63 year-old woman presented with one month of worsening thoracic back pain radiating down her legs and two weeks of right leg numbness. She had no history of back pain or unexplained weight loss. She went to the ER and was treated conservatively. No imaging studies were done. She received opioids and outpatient follow up. One week later, she had acute right leg weakness along with difficulty walking. She presented again ten days later with inability to bear weight and urinary retention. Her medical history includes invasive ductal carcinoma thirteen years ago treated with mastectomy, chemotherapy, and radiation therapy. She had decreased proximal hip flexor strength, knee flexion and extension, ankle dorsiflexion and plantar flexion bilaterally and decreased sensation to pinprick. Knee and ankle reflexes were not elicited. An expansile mass at the left T5-T6 pedicle causing spinal cord compression was seen on MRI. She was evaluated by neurosurgery but due to tumor location and risk of cord instability, surgery was not offered. She was started on dexamethasone and emergent radiation treatment to T3-T7. However, she remained permanently paraplegic. Biopsy showed metastatic adenocarcinoma.

IMPACT: This case illustrates the importance of immediate evaluation for metastatic disease in patients with history of cancer presenting with back pain.

DISCUSSION: Back pain is a commonly encountered problem by the internist. Identifying "red flag" symptoms is important to risk stratify patients that could have underlying malignancy. The American College of Physician guidelines list the following as risk factors for malignancy: history of cancer, clinical suspicion, age greater than 50, unexplained weight loss, failure to improve after one month. There is no consensus among clinical practice guidelines on which symptoms have sufficient diagnostic accuracy. Thus, their value in clinical decision making is unclear. Based on literature review, the only "red flag" for which diagnostic accuracy data is available is "history of cancer." It has a positive likelihood ratio (+LR) of 14.7 whereas unexplained weight loss has a + LR of 2.7. Early diagnosis of back pain due to malignancy is crucial. It is the most common presentation of metastatic disease, namely prostate (19%), lung (18%) and breast (14%) cancer. Back pain often precedes development of neurologic deficits by weeks or months. Neoplastic epidural spinal cord compression is a complication that can cause irreversible loss of neurologic function. Clinical features to recognize include radicular pain, lower extremity weakness, saddle anesthesia, and bowel or bladder dysfunction. New onset back pain in a patient with history of malignancy should be considered spinal metastatic disease unless proven otherwise. It should prompt an immediate MRI as it can proceed into a neurologic emergency.

MALADY OR NOT? EXPLORING THE EVIDENCE BEHIND METFORMIN ASSOCIATED LACTIC ACIDOSIS. Galina S. Tan[2]; David Bor[1]; Richard Pels[1]. [1]Cambridge Health Alliance, Cambridge, MA; [2]Cambridge Health Alliance, SOMERVILLE, MA. (Control ID #2671068)

LEARNING OBJECTIVE #1: Assess the clinical significance of metformin associated lactic acidosis (MALA) and apply it to a patient case scenario.

CASE: 72yo female with history of DM2, CHF, Afib, HTN, CVA, dementia presenting to the ICU with acute progressive dyspnea, lactic acidosis, and multiorgan dysfunction without hemodynamic instability. Studies of note: Cr 3.3 (baseline 1), K 6.9 with tall T waves on EKG AST >3000, ALT >3500, elevated PT/INR NT-proBNP 12,425, trop 0.1, echo new EF 25%, EKG new LBBB WBC 13.3, RLL opacity/effusion on CXR, procalcitonin 0.29 ABG pH 7.36, pCO2 28, pO2 72, bicarb 20, AG 19 Lactic acid 10.7 Initial leading differential diagnoses included septic shock, cardiogenic shock, and metformin associated lactic acidosis. The patient's presentation was ultimately attributed to severe organ hypoperfusion due to a subacute anterolateral myocardial infarction. Her cardiac and renal function recovered partially by the end of this hospitalization. She was discharged on half her home dose of metformin and insulin. Of note, her hemoglobin A1C was 6% 4 months prior to this admission. Could metformin associated lactic acidosis (MALA) still partially explain this patient's initial presentation? Should the patient be restarted on her home metformin upon discharge from the hospital?

IMPACT: A thorough review of the literature on metformin associated lactic acidosis (MALA), as well as an understanding of its background and pathophysiology, suggests that the perceived risk of MALA is much higher than its clinical significance. MALA should not necessarily be considered in the differential diagnosis for all patients presenting with lactic acidosis who are taking metformin. Furthermore, we should reconsider whether the contraindications to metformin are overly conservative.

DISCUSSION: MALA is extremely rare with an incidence rate around 2–9 cases per 100,000 patient-years. The pathophysiology behind MALA is different from that of its biguanide cousin phenformin, which previously led to much higher rates of lactic acidosis. Case reports in MALA are often confounded by other acute conditions that predispose those patients to lactic acidosis, making the diagnosis of MALA difficult to establish. Furthermore, it is reassuring that patients with the traditional contraindications to metformin are often prescribed metformin in practice, and these cohorts have not been shown to have a significantly higher risk of MALA. However, there are limitations to the available studies on MALA, so its level of clinical significance would have to be appreciated on a case-by-case basis. For example, what we cannot rule out at this time is whether metformin itself confers additional risk of lactic acidosis in patients with severe underlying cardiac or renal disease, because these patient populations have been largely excluded in trials. For an incredibly rare event such as MALA, much larger-sized studies would need to be done to fully appreciate the clinical significance of this entity.

MALE BREAST CANCER IN A PATIENT WITH CIRRHOSIS AND MULTIPLE MALIGNANCIES Omotayo A. Arowojolu[1]; Michael Lattanzi[1]; Saleem Ali[1, 2]. [1]NYU School of Medicine, New York, NY; [2]New York Harbor VA Healthcare System, New York, NY. (Control ID #2700185)

LEARNING OBJECTIVE #1: Recognize the importance of the male breast exam

LEARNING OBJECTIVE #2: Workup a solitary brain metastasis

CASE: A 71-year-old man with HCV cirrhosis and a 50-pack-year smoking history presented to the VA Hospital with subacute left arm weakness. The physical exam at presentation was notable for cachexia, slurred speech, left arm hemiplegia, and ataxia. A non-contrast head CT was obtained, revealing a right frontal mass. The subsequent brain MRI identified a 1.2 cm mass in the right frontal lobe, concerning for a brain metastasis of unknown primary. A CT chest/abdomen/pelvis revealed multiple pulmonary nodules, thoracic lymphadenopathy, a small duodenal mass, and a 1.5 cm soft tissue density in the retroareolar region of the left breast. Upon further physical examination, a small breast mass was palpated, and a slight nipple retraction was noted. Breast biopsy subsequently confirmed adenocarcinoma, ER+/PR+/Her2-. In addition to steroids, the patient underwent prompt neurosurgical resection of the solitary brain metastasis. Unexpectedly, this brain mass was found to be most consistent with giant cell carcinoma of the lung. Additional workup and treatment is ongoing.

IMPACT: Male breast cancer is rare; therefore, men are identified at a later stage than women. Given the potential for elevated serum estrogen to drive the growth certain cancers, physicians should consider routine male breast exams among men with hyperestrogenic states such as cirrhosis. Increased surveillance for male breast cancer is particularly important for VA hospitals which serve a predominantly male patient population.

DISCUSSION: Male breast cancer accounts for 1% of all cases in the US. Incidence peaks in the 7th decade and presents at a more advanced stage than female breast cancer. Increased circulating estrogen, which is common in cirrhosis, is a major risk factor for male breast cancer; this phenomenon has also been well-documented in Klinefelter syndrome. Given the low incidence of male breast cancer, screening by mammography and breast exams are not routine in male patients. In fact, males are often reassured that asymmetric gynecomastia is usually benign or even anticipated. In the setting of a symptomatic solitary intracranial brain metastasis with cerebral edema, the standard of care definitive therapy is neurosurgical resection; this is particularly true of larger lesions. With regard to systemic treatments for ER+/PR+ breast cancer, palbociclib and ribociclib, two recently-approved CDK 4/6 inhibitors, have both been shown to increase the progression free survival in ER+/PR+/Her2- breast cancer among female patients receiving concurrent aromatase inhibitor. In conclusion, male breast cancer should be considered in men with hyperestrogenic states such as cirrhosis, especially in patients undergoing a workup for metastatic disease of unknown primary.

MALIGNANT BOWEL OBSTRUCTION IN ADVANCED ABDOMINAL MALIGNANCY Paul J. Pokrandt[3]; Christopher R. Smith[3]; Joseph A. Simonetti[1, 2]. [1]School of Medicine, University of Colorado, Denver, CO; [2]Denver VA Medical Center, Denver, CO; [3]University of Colorado, Denver, CO. (Control ID #2699886)

LEARNING OBJECTIVE #1: Distinguish functional ileus from mechanical obstruction by history, exam, and imaging.

LEARNING OBJECTIVE #2: Manage malignant bowel obstruction using pharmacologic and procedural options.

CASE: A 47-year-old man with family history of early colon cancer was admitted due to worsening abdominal pain, 30lb weight loss, and food intolerance due to pain and vomiting for 5 days. Symptoms began 4 weeks prior to admission. He was afebrile with stable vitals. His abdomen was diffusely tender with hypoactive bowel sounds but no rebound/guarding. Abdominal X-ray showed scattered, gas-filled 4cm small bowel loops and gas in the large

bowel. CT with IV contrast showed ascites and omental nodularity without focal obstruction. He was admitted for management of ileus due to presumed abdominal malignancy. His ileus was managed with nasogastric suction, anti-emetics, and pain control. Ascitic fluid analysis yielded no malignant cells and tumor markers were negative. Laparoscopy on day 16 revealed no mechanical obstruction and biopsy showed poorly differentiated mucinous adenocarcinoma with signet-ring features. After 3 weeks of persistent ileus, a PEG tube was placed for comfort and he pursued palliative chemotherapy given his poor prognosis.

IMPACT: Key history, clinical and radiographic features can help distinguish between mechanical obstruction and functional ileus in the setting of advanced abdominal malignancy. Differentiating between them is critical to guide treatment options; though the prognosis among such patients is extremely poor and early palliative care referral is recommended.

DISCUSSION: Malignant bowel obstruction (MBO) includes either functional (ileus) or mechanical obstruction. Mechanical obstruction presents with colicky pain and hyperactive bowel sounds because bowel repeatedly contracts against the blockage. Ileus presents with constant pain and hypoactive bowel sounds as inflammation paralyzes the bowel. Radiograph or CT (ideally with PO/IV contrast) often reveals dilated loops of bowel with air fluid levels proximal to mechanical obstruction and diminished air distally. Imaging of functional ileus shows gas throughout the small and large bowel and rectum without a transition point. Patients with MBO have a median life expectancy of 4–5 weeks; though this can be extended by nearly 6 months if obstruction can be relieved by endoscopic stenting or surgery. Treatment is often palliative. Bowel decompression with PEG tube may be more comfortable and effective at relieving nausea and vomiting than nasogastric suction. Haloperidol and ondansetron can be used to control nausea and vomiting. Though not well-studied among patients with MBO, steroids have antiemetic properties and may also reduce bowel inflammation and edema. Strong evidence supports using octreotide in reducing gastric secretions, intestinal motility, and edema. Opiate medications can be used to alleviate pain, but may also worsen functional ileus.

MALIGNANT MELANOMA- A RARE CAUSE OF METASTATIC PANCREATIC CANCER

Aneesh Kuruvilla; Anamaria Milas; Elizabeth Brindise; Amer Al Homssi; Tarek Almouradi. University of illinois/christ, Chicago, IL. (Control ID #2706348)

LEARNING OBJECTIVE #1: Diagnosing metastatic malignant melanoma after resection of superficial melanoma.

CASE: A 56-year-old Caucasian female who is a practicing minister started behaving unusually during one of her services. She began walking up to the alter at inappropriate times and her family was concerned about her behavior. This change in mentation continued into the next day and the decision was made to bring her to the hospital. The patient had a history of superficial malignant melanoma to the left axilla, which was treated with axillary dissection 13 years ago. Sentinel lymph node biopsy at the time was negative and the patient did not receive any further chemotherapy or radiation. She was monitored for 5 years with serial PET scans every 6 months along with chest X-rays, routine blood work and annual skin exams without evidence of disease recurrence. On this presentation, the patient had multiple episodes of tonic-clonic seizures while in the ED for which she was given Ativan, Versed and IV Keppra. The patient denied previous CNS symptoms including headache, seizures, or vision changes. Imaging of the head revealed a large hemorrhagic frontal temporal brain lesion with smaller scattered lesions concerning for metastatic disease. CT scan of the chest, abdomen and pelvis showed a 2.2 × 1.6 cm peripancreatic tail mass. An endoscopic ultrasound was performed which showed a mass in the region of the tail of the pancreas. FNA was done with pathology positive for metastatic melanoma. Patient was referred to Oncology service for further management.

IMPACT: Most pancreatic metastases occur in the first 1–3 years after treatment of the primary tumor and current guidelines recommend follow up 3–5 years thereafter. This case report raises a question about how long patient should be monitored after the successful treatment of superficial malignant melanoma.

DISCUSSION: A variety of primary neoplasms metastasize to the pancreas. About 2% of pancreatic tumors are metastatic tumors. Common metastatic sites include the kidney, lung and colon. Metastasis of malignant melanoma to pancreas occurs as manifestation of widespread disease burden. Several factors influence survival in patients with primary melanoma, including specific clinical and pathological factors, histological subtype, anatomical location and lymph node involvement. Prognostic factors influencing survival in patients with malignant melanoma are largely unknown, but a longer disease free interval between the successful resection of primary malignancy and eventual development of metastasis to the pancreas has been reported to be associated with improved survival. Our patient presented 13 years following the treatment of primary melanoma. The prognosis of metastatic malignant melanoma is poor. Studies suggest a mean survival of only 6–8 months in patients with systemic disease from melanoma. In several case series five-year survival rates are reported at less than 10%.

MALIGNANT OTITIS EXTERNA: IATROGENIC AND SOCIAL ORIGINS

Ann Wang; Darlene LeFrancois. Montefiore Medical Center, Bronx, NY. (Control ID #2701785)

LEARNING OBJECTIVE #1: Recognize the clinical presentation of malignant otitis externa (MOE)

LEARNING OBJECTIVE #2: Appreciate that socioeconomic barriers significantly add to clinical morbidity

CASE: A 55 year old Spanish speaking, uninsured, and legally undocumented male with uncontrolled type 2 diabetes mellitus presented with 5 months of progressive right ear otalgia and otorrhea. Bloody and then purulent ear discharge initially started while hospitalized for a stroke, secondary to the iatrogenic trauma of repeated aural thermometer measurements. Despite multiple subsequent visits to the ED, and repeated short courses of oral and topical antibiotics, his symptoms progressed with tinnitus, hearing loss, and TMJ involvement. He was unable to afford insulin and other medications during this period, but did obtain the antibiotics. He was referred to ENT, but he could not get an appointment until one week prior to admission. In addition to granulations in the external auditory canal (EAC) and otorrhea, a CT revealed findings of MOE with extension into the middle cranial fossa. IV antibiotics and tight glucose control, without initial surgical intervention, were started. Charity antibiotic infusion for 6 weeks and follow up were arranged.

IMPACT: This case illustrates an uncommon entity - MOE with skull base involvement - where morbidity was caused by an unfortunately common situation - lack of access. It is critical for clinicians to assess and address social determinants of health.

DISCUSSION: MOE is a rare but serious complication of otitis externa. Infection spreads from the EAC to the stylomastoid foramen, mastoid tip,

and jugular foramen. Severe disease can involve the cranial nerves (most often facial) and skull base, and can be fatal. Patients at highest risk for MOE are elderly, male, and immunocompromised (including diabetics). The diagnostic criteria for MOE include otalgia usually lasting >1 month, otorrhea, edema, granulations in the EAC, microabscesses, and failure to respond to topical antibiotics. Pseudomonas aeruginosa remains the most common causative organism, although blood and EAC cultures are most often negative. Due to emerging resistance, biopsy and culture for targeted antimicrobial therapy has become important in contemporary care. Treatment typically involves long term antibiotics, tight glucose control in diabetics, and surgical debridement for refractory or complicated disease. Social determinants of health (SDH) contribute significantly to morbidity and mortality. Approximately 10% of diabetic patients in the USA are uninsured. Uninsured diabetic patients are significantly less likely to have had a medical checkup in the last 2 years, or A1C, foot, or retinopathy screening in the last year. Diabetics with any financial barriers to care (including uninsurance) had higher rates of stroke, retinopathy, and non-healing foot sores compared to those without barriers. Screening for healthcare barriers and subsequent intervention in vulnerable diabetic patients can significantly reduce clinical morbidity.

MALIGNANT SYPHILIS: A CASE OF ULCERONODULAR SECONDARY SYPHILIS Swalpa Udit. UCSF, San Francisco, CA. (Control ID #2707064)

LEARNING OBJECTIVE #1: Diagnose lues maligna (ulceronodular secondary syphilis)

LEARNING OBJECTIVE #2: Utilize molecular techniques in diagnosis of syphilis

CASE: A 52 year old male with well-controlled HIV presented with 3 weeks of painful genital ulceration associated with chills, weight loss, and malaise. Exam revealed normal vitals except for mild tachycardia, diffuse edema of glans penis with large ulcerated plaque extending circumferentially around penile shaft and scrotum, and small ulcerative lesions on scalp, torso, chin, and heel with purulent discharge. Laboratory evaluation was notable for elevated WBC count of 16.8 ($\times 10^9$/L). Data was otherwise unremarkable with suppressed HIV VL and preserved CD4 count. Peripheral blood cultures were negative, and wound swab of ulcer grew Staph aureus. He was started on Vancomycin and Ertapenem but experienced no improvement. RPR then returned positive at a titer of 1:128 with positive Treponema Pallidum antibody. Patient declined skin biopsy, so a T. pallidum PCR was conducted on a skin lesion swab and returned positive, confirming a diagnosis of lues maligna or ulceronodular secondary syphilis. He was treated with a single dose of IM Penicillin with dramatic resolution of symptoms and lesions.

IMPACT: This case highlights an uncommon presentation of a clinical entity seen by general internists which requires a high index of suspicion for diagnosis. The presentation, as in this case, is initially concerning for a typical purulent bacterial infection, with the correct diagnosis only suspected when the patient fails to respond to therapy. This case also highlights diagnostic approaches to syphilis. Diagnosis of lues maligna is generally made with a skin biopsy based on pathologic appearance or immunofluorescence. As our patient declined invasive testing, we utilized PCR of T. Pallidum from swab of skin lesions, with confirmation from swift therapeutic response.

DISCUSSION: Lues maligna, also known as ulceronodular syphilis, is a rare, aggressive form of secondary syphilis, seen most frequently with HIV co-infection. It is characterized by multiple, polymorphic skin lesions, generally well-demarcated with central ulceration, thick crusts, and with minimal erythema of surrounding skin. Unlike chancres, these lesions are painful, and palmoplantar involvement is rare. Patients generally have constitutional symptoms and high RPR titers. Diagnostic criteria for lues maligna include: compatible gross and microscopic morphology of lesions; high RPR titer; development of a severe Jarisch-Herxheimer reaction upon therapy; and marked response to therapy. Historically, it was believed that the lesions of secondary syphilis are depleted of Treponemes, but molecular testing of skin lesions can identify organisms and increase diagnostic sensitivity. The CDC syphilis treatment guidelines have no specific recommendation for treatment, but lues maligna is treated most commonly as late latent syphilis with 3 doses of IM Penicillin.

MANIFESTATION OF STROKE AS ONE-AND-A-HALF SYNDROME IN PATIENT WITH ACUTE CORONARY SYNDROME
Prakrity Urja; Lakshmi M. Chintalacheruvu; Jason E. Lambrecht. Creighton University, Omaha, NE. (Control ID #2704066)

LEARNING OBJECTIVE #1: Identify the rare diagnosis if it is present simultaneously with the more prevelant disease condition.

LEARNING OBJECTIVE #2: Importance of the thorough history taking and careful physical examination.

CASE: A 54-year-old male with medical history of insulin-dependent diabetes mellitus, coronary artery disease, peripheral vascular disease, and heart failure with reduced ejection fraction was transferred from outside hospital for NSTEMI followed by a fall. On admission patient was confused, had short term amnesia, and was disoriented to time and place with negative infectious and toxicology screening. Computed Tomography(CT) head was unremarkable. His peak troponin was 0.79 and electrocardiogram showed sinus rhythm with no acute ST-T wave changes. Echocardiogram on admission showed severely reduced ejection fraction with no regional wall motion abnormalities. He was started on optimal medical management with no intervention planned per cardiology recommendations. On focused neurological examination, his motor and sensory examination was normal. But the cranial nerve examination showed loss of abduction and adduction on the right side and loss of abduction on the left side which is known as one-and-a-half syndrome. MRI brain was done to further evaluate the cause which showed subacute-appearing infarcts in the pons, right tegmentum, and right parietal periventricular white matter. Neurology recommended transesophageal echocardiography(TEE) to rule out embolic stroke. His TEE did not show a thrombus in the ventricles or atria but showed smoke in the left atrium. Cardiology thought that he could have had cryptic emboli and the smoke on TEE was secondary to sluggish blood flow. Anticoagulation was started. One-and-a-half syndrome was believed to be a manifestation from the brain stem stroke secondary to cryptic emboli. During his hospital course his memory gradually improved and he was discharged to a nursing facility for rehabilitation.

IMPACT: Rare conditions are easily missed when more prevalent disease and associated comorbidities are present and require management. This is an excellent case highlighting the importance of a thorough physical examine and recognition of a rare and unusual syndrome that help guide further investigation and management to improve the patient’s outcome.

DISCUSSION: One-and-a-half syndrome is a rare pathology of the conjugated horizontal eye movement of one eye and the intranuclear ophthalmoplegia of the opposite eye. This is caused by a lesion in the paramedian reticular formation (PPRF) and/or abducens nucleus and the median longitudinal fasciculus on the same side. Common causes are pontine or thalamus lesions including hemorrhage, embolic or ischemic stroke, tumor and multiple sclerosis. It can also be seen in tuberculoma, neurocycticercosis, acute myeloid leukemia and systemic lupus erythematosus.

MASTITIS - A RARE CAUSE OF TOXIC SHOCK SYNDROME

Santhi Gokaraju; Nancy Mutoro; Mark Feldman. Texas Health Presbyterian Hospital, Dallas, TX. (Control ID #2703801)

LEARNING OBJECTIVE #1: Recognize mastitis as a rare non-menstrual cause of Toxic Shock Syndrome (TSS)

CASE: A 28-year-old previously healthy female, presented 12 days after an uncomplicated vaginal delivery with a 2-day history of fever, nausea, vomiting and diarrhea. Her BP was 70/40 mmHg, HR 130/min, Temp 99.6 °F. She had dry mucous membranes and congenitally inverted nipples. Her left breast was engorged with a tender palpable mass in the left upper outer quadrant. Abdominal exam revealed mild right lower quadrant and suprapubic tenderness. Extremities were cool with 1+ pitting edema. Her skin was warm with diffuse erythema on the neck, abdomen and back. Pelvic exam was unremarkable. Her WBC count was 44,000/uL with 87% neutrophils, INR 1.6, bicarbonate 7 mmol/L, anion gap 26 mmol/L, BUN 31 mg/dL, Creatinine 3.5 mg/dL, AST 74 U/L, lactic acid 6.5 mmol/L, CRP 16 mg/dL and CK 388 U/L. She remained hypotensive despite aggressive fluid resuscitation, requiring norepinephrine and vasopressin infusion. Vancomycin, piperacillin/tazobactam and clindamycin were initiated. Stool and urine cultures were negative, as were ASO titers and rickettsial serologies. Blood cultures grew methicillin sensitive *Staphylococcus aureus*. Antibiotics were switched to naficillin and clindamycin. TTE/TEE were negative for endocarditis. Pelvic ultrasound and CT abdomen/pelvis were non-revealing. Gallium scan showed bilateral breast accumulations of radiotracer, consistent with mastitis. Patient had desquamation of her face, perioral and back region followed by her hands and feet 5–6 days after admission.

IMPACT: Emphasizes the need for a thorough physical exam in the clinical diagnosis of TSS and early initiation of antibiotic regimen to improve mortality

DISCUSSION: TSS is a life-threatening illness from colonization or local infection by *Staphylococcus aureus*. It is caused by the super antigen TSST-1, enterotoxin type B or C. TSS is characterized by fever, shock, multiple organ involvement, and an erythematous rash with subsequent desquamation. There have been many cases of menstrual-associated TSS with the use of absorbent tampons but lately, non-menstrual cases of TSS related to surgical and post-partum wound infections, as well as mastitis have been reported. In a literature review, only 5 cases of TSS secondary to mastitis have been reported. Three of these cases had isolates of *Staphylococcus aureus* from breast milk. TSS is diagnosed based upon clinical presentation and does not require isolation of *Staphylococcus aureus*. Our patient is non-lactating due to congenital inverted nipples but the cause of mastitis could still be pregnancy related. Although TSS secondary to mastitis is rarely described, the internist should be aware of non-menstrual TSS and have a high degree of clinical suspicion requiring thorough physical exam, especially when patient is too sick to provide any clinical history. The addition of clindamycin to antibiotic regimen inhibits both enterotoxins and TSST-1.

MAY THURNER SYNDROME: A RARE CAUSE OF DEEP VENOUS THROMBOSIS (DVT) Sidra Khalid; Tessy Meridores; Hamed Daw. Fariview Hospital - Cleveland Clinic, Cleveland, OH. (Control ID #2706611)

LEARNING OBJECTIVE #1: − to recognize and manage May Thurner Syndrome when it is the underlying etiology of lower extremity DVT

CASE: A 67-year-old female presented to the ED with worsening left leg pain and swelling for 2 days. On presentation, her vital signs and physical examination were unremarkable except for an extensive swelling and edema of the left lower leg. DVT ultrasound of the lower extremities revealed acute DVT of the left distal external iliac, common and superficial femoral veins. Heparin infusion was initiated. Since, the clot was large and recent, thrombolytic therapy was planned. From an ultrasound guided cannulation of the left popliteal vein, catheterization of the inferior vena cava (IVC) from the popliteal vein was performed. A left leg and abdominal venogram showed a patent dilated superficial femoral vein, with a dense thrombus involving the proximal superficial femoral vein extending into the common femoral, external and common iliac veins. 12 mg of alteplase was infused into the thrombus. Subsequently, an AngioJet catheter was passed through the veins. This led to a resolution of thrombus in the superficial and common femoral veins, but there was significant residual stenosis and thrombus in the left common and external iliac veins. Angioplasty of the left common and external iliac, superficial and common femoral veins was performed. Catheter directed therapy with alteplase at 0.5 mg/hr was infused overnight. The following day, angiography showed patency of the left femoral and external iliac veins, but no forward flow in the left common iliac vein. IVUS revealed a residual thrombus and extrinsic compression of the common iliac vein from the crossing artery. A diagnosis of May Thurner Syndrome was made. Stents were placed in the common and external iliac veins, after which there was no residual irregularity, and a forward flow into the IVC was achieved. There were no further complications and she was discharged on long-term oral anticoagulation therapy with warfarin.

IMPACT: In patients with extensive and recurrent DVT of the lower extremities, May Thurner Syndrome should be considered. A high index of clinical suspicion is required to make the diagnosis both in inpatient and outpatient settings. This case supports the literature regarding the management of this condition, which includes a combination of anticoagulation and interventional approach.

DISCUSSION: May Thurner Syndrome occurs when the left common iliac vein is compressed between the overlying right common iliac artery and the lumbar spine. It is a cause of DVT in 2–3% of cases. Management includes anticoagulation, catheter-directed thrombolysis, and/or intravascular stenting. Hence, May Turner Syndrome should be included in the differential diagnosis in order to prevent recurrent DVT and additional complications, such as pulmonary emboli, iliac vein rupture and chronic venous stasis.

MECKEL'S DIVERTICULUM, NOT JUST A PEDIATRIC DIAGNOSIS Claire L. Jansson-Knodell; Dante Schiavo. Mayo Clinic, Rochester, MN. (Control ID #2706704)

LEARNING OBJECTIVE #1: Diagnose Meckel's diverticulum as a cause of obscure gastrointestinal bleeding in an adult.

LEARNING OBJECTIVE #2: Recognize the changing differential diagnosis for hematochezia based on age.

CASE: A 19-year-old male with a history of spondylosis and asthma presented with upper respiratory symptoms, fever and headache and had been using daily NSAIDs for symptom relief. He was found to have *Fusobacterium* bacteremia

likely related to sinusitis. During his hospitalization, he had persistent headaches and imaging revealed a cavernous sinus thrombosis that required anticoagulation. Prior to antithrombotic therapy, he developed severe hematochezia with output of 1.5 L of bloody stool over a few hours. Physical exam showed vitals of HR 94/min and BP 99/57 mmHg. The abdomen was soft, diffusely tender, not distended with normal bowel sounds. Bright red blood was seen on rectal exam. Laboratory studies showed a significant hemoglobin drop from 14 g/dL to 6.9 g/dL. He required 3 units of packed RBCs for resuscitation in addition to vasopressors for septic shock. EGD and colonoscopy including intubation of the terminal ileum were unremarkable. CT enterography revealed a thickened, blind-ending segment of small bowel extending from the ileum concerning for Meckel's diverticulum. An open surgical resection was performed. Pathology revealed a 2-cm diverticulum with focal ulceration and gastric heterotopia. The ulceration and bleeding were likely related to his heavy NSAID use before admission. After the procedure his bleeding resolved and he was able to initiate warfarin as treatment for his cavernous sinus thrombosis.

IMPACT: Meckel's diverticulum is an important part of the differential diagnosis for GI bleeding, particularly in patients under age 40. The differential of hematochezia changes based on age. In older individuals angioectasias and diverticulosis are common. IBD, Dieulafoy lesions, neoplasia, and polyposis syndromes also need to be considered in young adults. This case serves as a reminder that congenital anomalies extend beyond the scope of pediatrics and have clinical relevance in adult practice.

DISCUSSION: While Meckel's diverticulum ranks as the most common congenital anomaly of a child's gastrointestinal tract, it is somewhat rare for it to become clinically significant in an adult. Meckel's diverticulum is notable in medical texts for the rule of 2's: 2% of the population, symptomatic before age 2, length of 2 inches, 2 feet from the ileocecal valve, and 2 types of heterotopic mucosa. Epidemiologic studies estimate actual prevalence to be 1.2%. Approximately 6% of those with a diverticulum will develop a complication such as bleeding, which requires surgery. This case highlights the role of age in causes of hematochezia and the need to consider a traditionally pediatric pathology manifesting later in adulthood.

MEDICAL MANAGEMENT OF AN INFECTED BRONCHOGENIC CYST PRIOR TO SURGERY: AN ALTERNATIVE TO MECHANICAL DRAINAGE

Hadas Reich[1]; David Wei[2]. [1]New York University, NEW YORK, NY; [2]New York University, New York, NY. (Control ID #2706575)

LEARNING OBJECTIVE #1: Diagnose and manage an infected bronchogenic cyst

CASE: A 35 year old man without any past medical history presented with 1 week of cough, associated with blood-tinged sputum and subjective fevers and night sweats. He emigrated from Mexico 12 years prior and had been living in a shelter for 1 year. He had a 10 pack-year history but had quit 10 years prior to presentation. On exam, he had normal vital signs with a mild decrease in breath sounds over the left middle lobe, but an otherwise unremarkable physical exam. Chest X-ray demonstrated a 9cm lesion with an air fluid level in the left hemithorax, with subsequent chest computed tomography demonstrating a thin-walled cystic lesion. He was ruled out for tuberculosis with 3 negative sputum samples. Due to his mild infectious symptoms, we decided to treat with empiric antibiotics. Interval imaging showed a persistent thin-walled cavity without a fluid level. He underwent video-assisted thoracic surgery (VATS) guided wedge resection; pathology confirmed a bronchogenic cyst.

IMPACT: Our patient presented with mild symptoms and a large bronchogenic cyst. Most case reports involve mechanical drainage of the cyst prior to surgery. Our case demonstrates that medical management may be an alternative to mechanical cyst drainage prior to resection.

DISCUSSION: Bronchogenic cysts are congenital lesions caused by outpouchings of the foregut during development. They have been described in multiple locations, including the mediastinum, diaphragm, neck, and abdomen, with 15–20% found in the lung.(Jiang et al. 2015) They can vary in size, with different reviews reporting average sizes of 4–6cm.(Patel et al. 1994, Jiang et al. 2015) Bronchogenic cysts are often incidentally diagnosed in asymptomatic patients, however the literature suggests most will eventually become symptomatic. Symptoms develop if a cyst becomes large enough to compress contiguous structures (such as the esophagus, IVC, or trachea), or if the cyst becomes infected. Symptoms can include cough, dyspnea, fever, chest pain, or dysphagia, and can progress to respiratory distress.(St-Georges et al. 1991) When a cyst becomes infected, most are treated by either early surgical excision, or by drainage (through endoscopy, bronchoscopy, mediastionoscopy, or percutaneously), followed by surgical resection.(Kawaguchi et al. 2014) Surgical resection is needed for definitive cure, prevention of recurrence, and pathologic diagnosis. Excision of asymptomatic bronchogenic cysts is controversial, but is typically recommended to prevent subsequent infection and complications. There have not been many reports in the literature of treatment with antibiotics as a means of emptying the cyst. In our case, given that the patient was clinically well, empiric antibiotics were used to treat the infection, which led to subsequent drainage of the cyst. Our patient underwent VATS excision after a course of antibiotics to prevent recurrence.

MESALAMINE-INDUCED EOSINOPHILIC PNEUMONIA

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LEARNING OBJECTIVE #1: Ulcerative colitis (UC) can have extra-intestinal manifestations and present as new onset pulmonary disease. Patients who suffer from UC are commonly treated with mesalamine, which has been reported to rarely cause mesalamine-induced lung disease (MILD). An objective of this clinical vignette is to present a case in which it is important to recognize the possibility for MILD in patients with UC who present with new onset lung disease.

CASE: A 27 year old male with ulcerative colitis (UC) and childhood asthma presented with a dry cough, fever and weight loss for 6 weeks. One and a half years prior to admission, he was diagnosed with UC for which he was started on oral mesalamine 1.2 g/day. Prior to admission, he visited an outpatient clinic because of shortness of breath. CXR demonstrated bilateral upper lobe opacities that subsequently did not respond to a 7 day course of antibiotics. Physical examination on admission: Temp100°F, BP 112/95, HR 126, RR 20, O_2 sat of 94% RA and decreased lung sounds at the bases bilaterally. WBC 14.8K/uL (nl 4.5-10.8) with repeat peripheral eosinophils 1.0K/uL ($x < 0.9$). CT chest demonstrated dense peripheral opacities in both upper lobes. Blood, fungal and resp cultures were negative. TB, HIV, Legionella, Histo, Coccidio, Aspergillus and stool O + P tests were negative also. A transbronchial lung biopsy disclosed increased eosinophils, fibroblastic tissue and foamy macrophage accumulation consistent with eosinophilic pneumonia. There were no viral

cytopathic changes, granulomas or malignancy noted. Broncho-alveolar lavage cytology showed increased eosinophils. Eosinophilic pneumonia secondary to mesalamine was suspected. With the discontinuation of mesalamine and subsequent treatment with steroids, the patient's symptoms resolved. Repeat CBC 2 weeks after treatment revealed normal WBC and eosinophils. Repeat CXR showed clearance of pneumonia.

IMPACT: This clinical vignette provides a case in which MILD was suspected. Once mesalamine was discontinued, symptoms almost immediately improved. MILD should be considered in any patient that presents with respiratory symptoms on such medication. Medication discontinuation will provide symptom improvement.

DISCUSSION: Sulfasalazine is an important drug in the treatment of inflammatory bowel disease (IBD). Unfortunately it is known to cause pneumonitis and, rarely, an eosinophilic pneumonia. Mesalamine contains the active ingredient (5-ASA) in Sulfasalazine but without the sulfa moiety, it is associated with less side effects and allergic reactions. Mesalamine's common side effects include headache, nausea, abdominal pain and diarrhea. Only scattered case reports exist regarding Mesalamine-induced lung disease (MILD) and its pathogenesis remains unclear. It appears that in MILD, pulmonary symptoms (usually fever, cough and dyspnea) appear within 5 days to 44 months of drug initiation. It is more common in women than men and is not dose dependent. Also peripheral eosinophilia and CXR findings are variable.

METASTATIC BREAST CANCER PRESENTING AS PANCREATITIS

Chandana Shekar; Niralee Patel; Arundati Rao. University of Connecticut School of Medicine, Farmington, CT. (Control ID #2706689)

LEARNING OBJECTIVE #1: Recognising a rare complication of malignancy as the presenting symptom.

CASE: A 33 year old female with no significant medical problems presented to our hospital with severe epigastric pain, radiating to the back for 3 days. Pertinent positive history included nausea, vomiting and constipation. She had intermittent abdominal pain and nausea for a month which had now worsened. She had been prescribed proton pump inhibitors by her primary care physician, but with no relief. There was no history of any other medication use, alcohol use or hyperlipidemia. Physical examination revealed tachycardia with a heart rate of 110 beats per minute and tenderness to palpation in the epigastric area of the abdomen. Rest of the examination was within normal limits. Lab investigations showed a leucocytosis of11,600/mL, total calcium of 15.4 mg/dl and ionized calcium of 2.02 mmol/L. The rest of complete blood count and chemistries were normal. Other abnormalities included lipase 1376 U/L, total bilirubin 4.2mg/dL, direct bilirubin 3.1 mg/dL, alkaline phosphatase of 414 U/L, aspartate transaminase of 351 U/L, alanine transaminase of 160 U/L and triglycerides 153 mg/dL. Hepatitis and iron panel were normal. Computed tomography scan of the chest and abdomen revealed right axillary lymphadenopathy, innumerable hypodense lesions scattered throughout the liver parenchyma and innumerable lytic lesions throughout the thoracic and lumbar spine. Pancreas was unremarkable and no cholelithiasis was noted. Given the pattern of metastases, mammogram and ultrasound of the breasts were done. They revealed multiple irregular right breast masses concerning for malignancy with a multifocal pattern and multiple abnormal right axillary lymph nodes most compatible with metastatic disease. Right breast biopsy showed invasive mammary carcinoma with mixed ductal and lobar features. Receptors were ER and PR positive and HER-2 negative. Liver biopsy showed metastatic carcinoma with features similar to the breast malignancy. She was managed with supportive care, zoledronic acid and calcitonin for the hypercalcemia induced pancreatitis. She also received chemotherapy with Adriamycin and cyclophosphamide and follows up with Oncology.

IMPACT: This case reiterates the fact that we should not be overcome by tunnel vision and have a wide differential diagnosis will eliminate the human error of missing a diagnosis, even a fatal one.

DISCUSSION: Acute pancreatitis induced by cancer-related hypercalcemia has been rarely reported. Reviewing related references between 1990 and 2013, we came across only 8 reported cases; mostly from T-cell leukemia or multiple myeloma and 1 from metastatic breast cancer. A single case of autoimmune pancreatitis secondary to breast cancer has also been reported in the past, however IgG4 was negative in our patient. Pancreatitis being the presenting symptom without warning signs of cancer is furthermore rare. The pathophysiology of acute pancreatitis induced by hypercalcemia still remains unclear.

METASTATIC LESIONS IN LUNG AND BRAIN DUE TO NOCARDIA ENDOCARDITIS SEPTIC EMBOLI

Krista N. Larson; Cecil A. Rambarat; Denise C. Schain. University of Florida, Gainesville, FL. (Control ID #2704045)

LEARNING OBJECTIVE #1: Recognize endocarditis with septic emboli can present like metastatic disease

LEARNING OBJECTIVE #2: Reassess cases frequently without a diagnosis and from different perspectives to avoid cognitive bias

CASE: An 80-year-old Caucasian male with a past medical history of CAD, ICD placement, DM type II, thrombocytopenia, stage 1 adenocarcinoma of the colon in 2012, squamous cell carcinoma of the left arm in 2015, colitis treated with prednisone 10 mg PO daily, and a 40 lb unintentional weight loss over the last year presented with an acute episode of dsyarthia. CT head found left parietal and left cerebellar masses consistent with metastatic disease. IV dexamethasone was administered and patient's speech returned to baseline. CT chest/abdomen/pelvis showed two cavitary lesions in his right lung concerning for metastatic disease. Transthoracic biopsy was non-diagnostic. Bronchoscopy was not able to reach the lesions for biopsy and BAL was performed. Cytology was negative for malignancy, fungal, and AFB organisms; bacteria, fungi, and AFB cultures were negative. Given the history of stage I adenocarcinoma of the colon, an EGD/colonoscopy was performed and was negative for cancer. A second CT chest to further evaluate the cavitary lesions showed multiple new septic emboli. Transesophageal echocardiogram revealed vegetations on the mitral valve and on the ICD leads. Antibiotics were started and the ICD was removed. Brain biopsy was performed removing copious purulent material; cultures grew *Nocardia cyriacigeorgica*/*asteroids*. Antibiotic coverage was narrowed based on susceptibility testing. The patient began medically improving in response to treatment.

IMPACT: Our case highlights an unusual presentation of Nocardia endocarditis with septic emboli. It also emphasizes the importance of keeping an open differential diagnosis throughout the diagnostic evaluation of the patient.

DISCUSSION: Nocardia typically causes infections in immunocompromised hosts and most commonly presents as pulmonary nocardosis[1]. Most cases of reported Nocardia endocarditis involve prosthetic valves[2]. A few cases of Nocardia endocarditis in native valves have been described following a dental extraction[3], a Nocardia skin/soft tissue infection[4]; and, a case in an IV drug

user[2]. Our case occurred in an elderly man on long term prednisone presenting with dysarthria and weight loss, a history of two primary cancers, and no symptoms to suggest infection. This case highlights an unusual presentation of a rare diagnosis and the importance of keeping an open differential diagnosis throughout evaluation to prevent cognitive bias. 1. Wilson JW. Nocardosis: Update and Clinical Overview. Mayo Clin Proc. 2012 Apr;87(4):403–407 2. Watson A et al. Nocardia asteroides native valve endocarditis. Clin Infect Dis. 2001 Feb;32(4):660–1 3. Lazo Torres AM et al. Nocardia endocarditis in a native mitral valve. Rev Esp Cardiol.2004 Aug;57(8):787–8 4. Dhawan VK et al. Native valve endocarditis due to a Nocardia-like organism. Clin Infect Dis.1998 Oct;27(4):902–4

METHAMPHETAMINE CARDIOMYOPATHY WITH A SHOWERING OF PULMONARY EMBOLI

Ali Al-Hilli; Joanna Pluta; David Heegeman. Marshfield Clinic, Marshfield, WI. (Control ID #2703058)

LEARNING OBJECTIVE #1: Recognize that cardiomyopathy from abusing Amphetamines Type Stimulants (ATS) can mimic various pathologic processes, thereby presenting a diagnostic challenge.

LEARNING OBJECTIVE #2: Be aware that ATS abuse and related complications are on the rise.

CASE: A 35-year-old male presented to the Emergency Department with a 2-week history of progressive dyspnea and a 3-day history of hemoptysis. He also complained of fatigue, cough, pleurisy, chest pain, calf pain with swelling and erythema. He denied any recent trauma, infection, long distance travel, surgery, immobilization, fever, chills, weight loss, or orthopnea. His past medical history is significant for deep venous thrombosis (DVT) 1 year ago, treated for 6 months with warfarin. He works as a driver for the local Amish community. He is a light smoker and occasionally drinks alcohol. He admitted to using intravenous methamphetamine in the past, but none in the last 6 months. His mother suffered from DVTs. He takes no medications. On examination, the patient was afebrile, tachycardic at 117 beats per minute, normotensive, in moderate respiratory distress but saturating 94% on room air. Jugular venous pressure was elevated, an S3 gallop was heard, lung sounds were clear and abdominal exam was unremarkable. The calves were symmetric bilaterally with 1+ pitting edema to mid shins and apparent stasis dermatitis. Point of Care Ultrasound (POCUS) showed a dilated inferior cava and a severely reduced left ventricular ejection fraction (LVEF) visually estimated to be less than 20%. This warranted admission to hospital. Laboratory studies showed a mildly raised troponin, and a high B-type Natriuretic Peptide (BNP). ECG revealed sinus tachycardia. Chest X-Ray demonstrated cardiomegaly without pulmonary edema. Transthoracic echocardiography (TTE) showed an LVEF of only 10%. Chest Computed Tomography (CT) was notable for multiple acute bilateral pulmonary emboli. A pericarditis panel and hypercoagulable workup were negative. Cardiac catheterization revealed clean coronary arteries. A urine drug test was positive for methamphetamine. In light of this result, he admitted to a recent methamphetamine binge. He left the hospital against medical advice shortly thereafter.

IMPACT: This is the second reported case of methamphetamine cardiomyopathy presenting with multiple pulmonary emboli. However, it is the first in the literature to describe such a markedly depressed LVEF of 10%.

DISCUSSION: Nonischemic cardiomyopathies due to ATS abuse are becoming increasingly prevalent owing to the widespread availability of such drugs. Common cardiac manifestations from methamphetamine-driven sympathetic activity include hypertension, arrhythmias, acute coronary syndromes and sudden cardiac death. Cardiac dysfunction is thought to be related to vasospastic and ischemic changes, direct drug toxicity, and sympathetic effects of catecholamines on the myocytes. When unexplained cardiomyopathy is encountered, ATS abuse should be considered in the differential diagnosis.

MIGRATING PARASITES!

Sreelakshmi Panginikkod[3]; Venu Pararath Gopalakrishnan[3]; Pratyusha Bollimunta[3]; Niyati M. Gupta[2]; Malav P. Parikh[1]. [1]Cleveland Clinic Foundation, Cleveland, OH; [2]Cleveland Clinic Foundation. Grant Medical College and Sir J.J. Group of Hospitals.., Cleveland, OH; [3]Presence Saint Francis Hospital, Evanston, IL. (Control ID #2706904)

LEARNING OBJECTIVE #1: Recognize Neurocysticercosis (NCC) as a cause of headache and seizure

LEARNING OBJECTIVE #2: Recognize the appropriate management of NCC

CASE: A 63-year-old male immigrant from Ecuador was brought to Emergency Department after a seizure episode. He endorsed headache, abdominal pain, and nausea with scanty non-bilious vomiting for 1 week prior to presentation. He had travelled to Ecuador 1 year ago, and also enjoys eating raw pork. Physical examination including neurological exam was normal with stable vitals. Laboratory investigations revealed normal hemoglobin, leukocytosis with eosinophilic predominance (1500) and a normal comprehensive metabolic panel. Autoimmune panel and tests for HIV and hepatitis panel were negative. Computed tomography of brain showed multiple nodular calcified and cystic lesions throughout the brain parenchyma with surrounding edema. Furthermore, magnetic resonance imaging (MRI) of brain reveled multiple intra-axial CSF intensity masses, with associated rim enhancement, calcifications, and perilesional edema with mass effect, compatible with Neurocysticercosis (NCC) in colloidal vesicular and granular nodular stages. Plain X-Ray of all extremities did not reveal any lesions in the soft tissues and a subsequent serum cysticercus antibody test with ELISA was positive with high titres. Fundoscopic examination ruled out ocular cysticercosis. He was treated with albendazole for 2 weeks, levetiracetam and tapering dose of dexamethasone. His symptoms resolved and was discharged after 7 days. On a 2 month follow up, he was asymptomatic and repeat MRI brain showed interval improvement in edema and also replacement of cystic lesion to granular stage that suggests resolution of infection.

IMPACT: With ever increasing worldwide migration, the diagnosis of NCC is more common. Treatment includes anti-parasitic, anti-epileptic, or anti-inflammatory treatments and surgery. Careful fundoscopy and plain film radiology are mandatory for all in whom the diagnosis is suspected

DISCUSSION: NCC is one of the seven neglected endemic zoonosis targeted by the World Health Organization. Sufferers often experience a long asymptomatic period, and can present with a variety of neurological manifestations, including focal neurological deficits, headache, and seizures. Extra-neurological manifestations include ocular deposition and skeletal muscle nodules. Management of NCC needs to be individualized. Treatment with albendazole and praziquantel may be associated with severe adverse reactions, which result from a massive release of antigens. Use of a corticosteroid would likely decrease the incidence of such complications. Cysticidal therapy should not be used in cases with markedly elevated intracranial pressure or in intraocular NCC, to avoid any worsening of intracranial pressure and damage to the eye, respectively. Steroids alone are used in these situations. Cysticidal therapy is of no use for calcified lesion. The patient will need repeat imaging after several months to ensure complete eradication.

MIND ALTERING ANTIBODIES: A TREATABLE CAUSE OF ALTERED MENTAL STATUS Alyson Michener[1]; Jill Huded[2]. [1]Case Western Reserve University, Cleveland, OH; [2]Cleveland VA Medical Center, Cleveland, OH. (Control ID #2706803)

LEARNING OBJECTIVE #1: Consider an important differential diagnosis for a patient presenting with altered mental status

CASE: WM is an 80-year-old male with past medical history of dementia who presented to the ED after he sustained a witnessed fall at home. Prior to losing his balance he appeared to be trembling but did not lose consciousness. The patient endorsed generalized weakness but denied any other complaints. His wife reported worsening of the patient's "dementia" over the prior two months with increased confusion. At time of presentation, the patient was febrile and tachycardic. His neurological exam was nonfocal. Labs were notable for a white blood cell count of 9.95 and 92% neutrophils. CT head and neck showed only multilevel degenerative disc disease. MRI brain revealed enhancement along the left insular cortex. CSF analysis revealed negative gram stain, normal glucose, protein of 95, and no white blood cells. EEG showed intermittent delta slowing over the posterior temporal area. The patient was started on leviteracetam due to concern for seizures and treated empirically for herpes encephalitis with IV acyclovir. He also received a three-day prednisone burst as limbic encephalitis remained on the differential. Shortly after discharge, the medical team was contacted by an outside laboratory and informed that the patient's autoimmune encephalitis antibody was positive for anti-leucine-rich glioma inactivated-1 (LGI1) antibody. The patient was readmitted for five days of IVIG, which he tolerated without complication. At one month follow up, the patient and his wife reported improvement in his functional status

IMPACT: Limbic encephalitis is a treatable cause of altered mental status and should be included in the differential for older patients presenting with behavioral and memory disturbances.

DISCUSSION: Limbic encephalitis is a subacute disturbance in memory and behavior which is often accompanied by seizures. When it occurs in elderly patients who have underlying cognitive impairment, it may be difficult to identify or differentiate from chronic dementia or acute delirium from other causes. Because our patient had baseline dementia, his family initially believed that his subacute clinical deterioration was progression of his underlying cognitive disease. It was not until he presented with a fall suggestive of a seizure that further investigation revealed the true diagnosis. Limbic encephalitis, which typically presents with memory disturbance, confusion, neuropsychiatric features, and seizures, may be autoimmune or paraneoplastic. Autoimmune encephalopathies are associated with antibodies, such as anti-LGI-1, that target extracellular epitopes of cell-surface or synaptic proteins. Once a diagnosis of limbic encephalitis is established, treatment may be initiated with immunotherapy. As many as 90% of patients with anti-LGI1 encephalitis respond favorably treatment, emphasizing the point that clinicians should be aware of this relatively rare but treatable cause of altered mental status.

MISSING POUNDS; MISSED DIAGNOSIS Rachel Solomon[2]; Ariela Holmer[1]; Aparna Sarin[1]. [1]Mount Sinai, New York, NY; [2]Mount Sinai Medical Center, New York, NY. (Control ID #2707127)

LEARNING OBJECTIVE #1: Identify early satiety as a symptom of dyspepsia and H. pylori infection

CASE: A 65 year-old female smoker with diabetes, distant IV drug use on methadone, and dyspepsia treated with ppi for over 10 years presented to clinic with unintentional 30-pound weight loss over a year. She denied abdominal pain, bleeding, melena, fevers, night sweats, and cough. There was breast cancer in her mother and gastrointestinal cancer in a grandfather. Pap smear was up to date; mammogram and colonoscopy were overdue. No abnormalities were noted on exam. Initial diagnostics - cbc, cmp, TSH, HIV, HCV, ESR, CRP and chest x-ray - were unremarkable. A1c was low, 5.8. Screening mammogram showed breast asymmetry that was not reproduced on diagnostic test. CT chest, abdomen, pelvis, revealed dilated common bile duct diagnosed as choledochal cyst on MRCP. She deferred colonoscopy. 5 months later, she described "forcing" herself to eat to combat poor appetite and early satiety. Weight was stable. Chart review found low B12 (198) three years prior attributed to metformin. She had never been tested or treated for Helicobacter pylori. Serum antibody returned positive. Following 14-days of triple therapy, the patient's appetite returned. She regained 10 pounds in 2 months and is awaiting endoscopy.

IMPACT: When evaluating unintentional weight loss, assessing for early satiety and accounting for dyspepsia history may provide direction and prevent excess testing and patient stress.

DISCUSSION: Unintentional weight loss presents commonly in primary care. Incidence is 5–7%, but risk increases with age, smoking, and poor reported self-health. Association with increased mortality demands prompt attention. Absent suggestive findings, guidelines support casting a wide diagnostic net. Where diagnostic clues are sparse, initial evaluation must incorporate reexamination of standing diagnoses and medication histories - particularly as regards dyspepsia and chronic ppi use - to guide appropriate work-up. Dyspepsia, defined by postprandial fullness, early satiety, *and/or* epigastric pain, impacts 25% of the population. H. pylori is an organic cause of dyspepsia and, untreated, linked to peptic ulcer disease and malignancy. Though more common in the developing world, prevalence in the US is 30–40%. The ACG recommends *testing and treating* patients in prevalence areas over 10% who are under 55 without alarm symptoms. Urea breath and fecal antigen tests are preferred; the serum antibody test is an alternative in untreated patients. Despite 10 years of ppi therapy and unexplained vitamin B12 deficiency, our patient had not been tested. Given the history, had early satiety been identified at current presentation, our patient would have been sent for early EGD. Because this was missed, EGD was delayed by red-herrings identified on excess diagnostic imaging. Where there is delay or difficulty in accessing EGD, using less invasive tests to assess for H.pylori infection is an important first step in making an intervenable diagnosis.

MMIND THE GAP: FLIMSY FOLLOW-UP LEADS TO TOXIC THYROID Zieanna Chang. University of Pittsburgh Medical Center, Pittsburgh, PA. (Control ID #2703213)

LEARNING OBJECTIVE #1: Describe the initial treatment and definitive therapy of toxic multinodular goiter

LEARNING OBJECTIVE #2: Manage thyrotoxic periodic paralysis

CASE: A 58-year-old woman presented to the emergency department with one week of generalized muscle weakness characterized by difficulty walking, multiple falls, and inability to prepare meals. She also reported a new tremor in her hands. She denied fevers, palpitations, dyspnea, nausea, diarrhea, or abdominal pain. Examination revealed marked weakness and prolonged 3+

reflexes in all four extremities. Thyroid palpation was unremarkable without thyromegaly, nodularity, or tenderness. EKG showed sinus tachycardia to 118bpm with exaggerated P waves, J point depression, and possible U waves. Laboratories were remarkable for a potassium level of 1.4mMol/L. TSH was undetectable, and free T4 was elevated to 1.83ng/dL. The patient was started on methimazole (MMI) 20mg daily and atenolol 50mg daily. She received 100 milliequivalents of potassium repletion daily for 48–72 h, and her weakness improved. Careful history revealed that the patient had a known history of multinodular goiter and was previously maintained on methimazole. Her endocrinologist had moved away one year ago, and she ran out of medication. Repeat thyroid ultrasound revealed two stable nodules as large as 1.6cm. Two months after hospitalization, she underwent successful total thyroidectomy.

IMPACT: This case emphasizes that primary care and specialty providers have an important role in communicating the potential severity of chronic diseases that require maintenance therapy. Thyrotoxic periodic paralysis is a rare but dramatic complication of uncontrolled hyperthyroidism that should also be recognized and treated early.

DISCUSSION: Physical exam findings of hyperreflexia, tremor, and tachycardia are suggestive of hyperthyroidism. This patient's weakness resulted from an uncommon complication of hyperthyroidism known as thyrotoxic periodic paralysis. Often associated with severe hypokalemia, it typically improves with potassium repletion and appropriate management of hyperthyroidism. The mainstay of therapy for hyperthyroidism is a beta blocker (atenolol or propranolol) to reduce the thyroid hormone's sympathetic-activating effects. Methimazole is used concomitantly to inhibit thyroid hormone synthesis. Propylthiouracil can cause agranulocytosis and liver injury, but it is the safer agent in the first trimester of pregnancy. Toxic multinodular goiter is the second most common cause of hyperthyroidism in the United States, second only to Graves disease. Definitive treatment requires either radioiodine ablation or thyroidectomy, neither of which were performed prior to this patient's acute presentation. Therefore, the importance of follow up and definitive treatment must be emphasized to avoid complications of untreated hypothyroidism such as thyroid storm.

MOLLARET'S MENINGITIS: AN ATYPICAL PRESENTATION WITH HYPOGLYCORRHACHIA

Natalie Klar[1]; Shelly Kakar[1]; Amar Kohli[2]. [1]UPMC, Pittsburgh, PA; [2]UPMC, Mars, PA. (Control ID #2702874)

LEARNING OBJECTIVE #1: Detail the diagnostic criteria and treatment for Mollaret's meningitis (MM) in patients with recurrent and non-specific neurological symptoms.

LEARNING OBJECTIVE #2: Define hypoglycorrhachia and recognize the differential diagnosis that may cause this.

CASE: A 67 year-old male with history of IDDM type II, OSA and obesity presented with worsening occipital headaches, blurred vision and ataxia. He had a 6 month history of intermittent confusion and syncopal episodes which would resolve spontaneously. Pertinent exam findings included papilledema, positive Babinski, waddling gait, and no signs of meningismus. ECHO, carotid dopplers and head CT and MRI were unremarkable. Lumbar puncture (LP) showed 315 WBC (73% lymphs, 27% monocytes), glucose 5 mg/dl (serum 101), opening pressure 38 cm H20 and total protein 154 mg/dl. Given his hypoglycorrhachia, increased intracranial pressure and lymphocytic pleocytosis, fungal or TB meningitis was highest on the differential. He was started on amphotericin with minimal clinical improvement. Histoplasmosis antigen (serum, urine and CSF), Cryptococcus antigen (serum and CSF), TB (CSF PCR and QuantiFERON) were negative in addition to negative CSF gram stain, India ink and AFB culture. CSF VZV, CMV, EBV, HSV-1, HHV-6, Lyme and VDRL were all negative. CSF HSV-2 PCR and serum HSV-2 IgG returned positive. MM was diagnosed with these findings and bi-lobulated lymphocytes in CSF cytology. The patient reported genital herpes 40 years ago without recent recurrences or lesions. Repeat LP, following 7 days of Acyclovir, showed 202 WBC (82% lymphs), glucose 62 mg/dl (serum 177), opening pressure <40 cmH20 and total protein 151 mg/dl. The patient noted resolution of headaches, blurred vision and LP showed resolving hypoglycorrhachia.

IMPACT: This unique case highlighted non-specific neurological symptoms and CSF findings consistent with MM which improved with Acyclovir. This case illustrated hypoglycorrhachia can be seen in MM and can improve with Acyclovir.

DISCUSSION: MM is a rare entity with <100 cases published making it a challenging diagnosis. MM is defined as benign recurrent lymphocytic meningitis characterized by repeated episodes of headaches, photophobia, mental status changes, and meningismus. These episodes last 2–7 days and resolve on their own followed by symptom-free intervals. MM is diagnosed with lymphocytic pleocytosis and positive CSF HSV-2 PCR. Features in MM include hypercellularity with pleocytosis and atypia with deeply lobulated/cleft nuclei. Hypoglycorrhachia is defined as CSF glucose <40mg/dl with CSF/serum glucose ratio <0.6. Hypoglycorrhachia is typically seen in bacterial, fungal, TB meningitis and malignancy. It has been reported, although rare, with HSV-2 meningitis and typically never <25mg/dl. MM treatment is controversial with recommendations ranging from no treatment to 7–10 days to 14–21 days of IV Acyclovir to lifelong prophylactic PO Acyclovir.

MORE COMPLICATED THAN ASTHMA AND ALLERGIES

Joseph M. Rocco; Lee Rabinowitz. University of Pittsburgh, Pittsburgh, PA. (Control ID #2698945)

LEARNING OBJECTIVE #1: Recognize the clinical features in asthma that increase the risk of underlying vasculitis

LEARNING OBJECTIVE #2: Diagnose Eosinophilic Granulomatosis with Polyangiitis (EGPA) in the setting of asthma, peripheral eosinophilia and evidence of vasculitis

CASE: A 65-year old woman with a history of asthma and pansinusitis presents with fever and hypoxemia. Over the last year, she had recurrent hospitalizations for pneumonia and received multiple courses of antibiotics and steroids. She also noted a new non-blanching rash on the ankles. Her asthma was adult-onset and had been chronically difficult to control. Exam noted a new oxygen requirement and palpable purpura on all extremities. Labs showed leukocytosis with a 30% eosinophilia. Chest CT noted scattered ground-glass opacities. The next day, patient developed flash pulmonary edema and TTE revealed diffuse hypokinesis. Due to multi-organ involvement, both EGPA and hypereosinophilic syndrome were considered. IgE was significantly elevated but ANCA was negative. Skin biopsy after steroids was non-specific. Bone marrow biopsy had normal hematopoiesis. Cardiac MRI demonstrated subendocardial fibrosis in multiple coronary distributions consistent with vasculitis. Final diagnosis of EGPA was made and treatment with steroids and rituximab led to resolution of symptoms. Repeat TTE after discharge showed improved EF and normal ventricular function.

IMPACT: Failing to recognize EGPA early can lead to significant mortality however with prompt treatment the 5-year survival rate is over 90%. I plan to

monitor asthma patients with risk factors for vasculitis more closely and initiate evaluation for EGPA earlier should these patients develop systemic symptoms.
DISCUSSION: Both asthma and chronic sinusitis are common disease processes, whereas systemic vasculitides, such as EGPA, are extraordinarily rare. Recognizing risk factors for EGPA is important due to the risks of delaying treatment. Patients with EGPA often have adult-onset asthma which is difficult to control. Sinusitis is almost universally present and associated with nasal polyps. Peripheral eosinophilia can be an early clue, as this is rare in asthma alone. EGPA classically progresses through a prodromal allergic phase, an eosinophilic phase and a vasculitic phase. However, most patients do not follow this classic progression. EGPA is difficult to diagnose and although a biopsy is needed to confirm vasculitis, the final diagnosis remains clinical. Common lab abnormalities include an absolute eosinophilia and elevated IgE. RF is positive in 50% of cases, whereas ANCA is only present in 38%. ANCA-negative cases characteristically have more cardiac and lung manifestations. The ACR diagnostic criteria have a high sensitivity and specificity, however these can only be applied after a vasculitis is confirmed. The ACR criteria include asthma, paranasal sinusitis, peripheral eosinophilia, migrating pulmonary infiltrates, neuropathy and tissue eosinophilia; they are positive when 4 of the 6 standards are present.

MORE THAN MEETS THE EYE Annelys Roque; L. E. Goldman. University of California, San Francisco, San Francisco, CA. (Control ID #2706170)

LEARNING OBJECTIVE #1: Recognize the clinical manifestations of intraocular tuberculosis
LEARNING OBJECTIVE #2: Diagnose intraocular tuberculosis in a patient without pulmonary symptoms
CASE: A 64-year-old male with a PMH of bilateral cataracts presented to primary care clinic to establish care. The patient had been out of care for 2 years and had been evaluated but never treated for his cataracts. On presentation, his vision was 20/200 bilaterally. At that time, he was referred to ophthalmology. In ophthalmology clinic, he was found to have cataracts likely secondary to chronic bilateral anterior uveitis. The patient had labs drawn that were significant for a non-reactive RPR, negative PPD, and a normal ESR, lysozyme level, and ACE level. A chest x-ray showed an unchanged 5mm left costophrenic angle nodule that could represent a granuloma. The patient was born in Thailand, immigrated to the United States over 40 years ago, but frequently returned to visit. He had always lived on the West Coast and worked as a cook. He did not have a history of incarceration and was housed in an apartment. The patient was seen in primary care clinic for a follow-up two months after being seen by ophthalmology. He continued to endorse poor vision but denied cough, night sweats, hemoptysis, weight loss, and fatigue. Labs drawn were significant for a positive quantiferon gold and positive ANA with a 1:40 titer. The patient was referred to Tuberculosis Clinic. An AFB sputa and stain were positive for Mycobacterium tuberculosis. The patient was started on RIPE therapy shortly thereafter. In a follow-up appointment with ophthalmology two months after being started on therapy, the patient had no evidence of uveitis.
IMPACT: This patient's case changed my practice by broadening my differential of a patient presenting with chronically poor vision from an endemic TB area. Given the self-reported history of bilateral cataracts, I fell into the cognitive error of premature closure and attributed his poor vision to cataracts from advanced age.
DISCUSSION: The presentation of intraocular tuberculosis includes a wide spectrum of pathologies. Among these are: anterior granulomatous uveitis, choroiditis, retinal vasculitis, panuveitis, and chronic anterior uveitis. By the time patients seek treatment for uveitis, most do not show overt evidence of systemic TB disease although it develops from hematogenous spread from a primary focus. The lack of systemic symptoms and the difficulty of obtaining a microbiological diagnosis from ocular tissues/fluids makes establishing the diagnosis of intraocular tuberculosis very difficult. The accepted approach, and the one used in this case, first involves the exclusion of other etiologies of chronic granulomatous disease such as infectious or systemic inflammatory diseases. After exclusion of other etiologies, suggestive ocular findings and evidence of systemic tuberculosis is enough to establish the diagnosis. In this case, the patient had evidence of Mycobacterium tuberculosis in his lungs.

MORE THAN MEETS THE EYE: IDIOPATHIC CENTRAL RETINAL ARTERY OCCLUSION IN A YOUNG WOMAN Lan Jin. UCSF, San Francisco, CA. (Control ID #2700129)

LEARNING OBJECTIVE #1: Recognize the clinical manifestations of retinal artery occlusion
LEARNING OBJECTIVE #2: Generate an age appropriate differential for retinal artery occlusion
CASE: A 20 year-old healthy woman presented with acute left lower quadrant vision loss. She reported a similar episode 1 week prior after which her vision recovered, as well as a month-long history of left-sided temporal headaches associated with photosensitivity. Review of systems was positive for episodic paresthesias of bilateral forearms, hands, and feet. She denied constitutional symptoms, rash, joint pain, and drug use of any kind. Family history was remarkable for father with ocular migraine, and grandparents with rheumatoid arthritis and neurosarcoidosis. Exam revealed a left monocular lower quadrantanopsia, normal venous pulsations, no cherry red spot and a normal neurological exam. An extensive rheumatic and infectious workup was negative, including a hypercoaguability panel, antinuclear antibody, ESR, CRP, and hemoglobin evaluation. A brain MRI/MRA without contrast showed patent bilateral ophthalmic arteries. Face and neck MRI with contrast, transthoracic echocardiography with bubble study, electromyography, as well as nerve conduction studies were all unremarkable. Given the negative workup, the presumable etiology was thought to be vasospasm with migraine. She was started on low dose aspirin for secondary stroke prevention, and propranolol for migraine prophylaxis.
IMPACT: This case highlights the clinical manifestations of retinal artery occlusion, as well as the possible etiologies of retinal artery occlusion. Workup should be tailored to an age appropriate differential.
DISCUSSION: Overall, central and branch retinal artery occlusions (CRAO and BRAO) are rare with an incidence of approximately 1 to 10 in 100,000, with an affected mean age of 60–65 years. The etiology varies with age, with carotid artery atherosclerosis being most common overall, as high as 70%; however, for patients less than 40 years of age, cardiogenic embolism is much more likely. Therefore, workup for younger patients should be focused on evaluating for sources of cardiogenic embolism such as arrhythmias, murmurs, congenital heart disease, and substance abuse. For older patients, temporal arteritis should be ruled out. Vascular diseases such as fibromuscular dysplasia, radiation injury, or hematologic diseases including sickle cell anemia, hypercoagulable states, and hyperviscosity syndrome can affect all ages and should

be investigated if other causes are excluded. Rare causes of CRAO/BRAO include infections due to Bartonella, toxoplasmosis, and varicella; ocular surgery; fat or amniotic fluid embolism; and vasospasm with or without migraine, which is a diagnosis of exclusion. There have only been case studies describing CRAO associated with vasculitis.

MORPHEUS STROKE: AN ANATOMICAL VARIANT CAUSING BILATERAL THALAMIC INFARCTIONS

Philip Brandt. Baystate Medical Center, Broad Brook, CT. (Control ID #2705946)

LEARNING OBJECTIVE #1: Describe the clinical and radiological presentation of bilateral thalamic stroke from an occlusion of the artery of Percheron.
LEARNING OBJECTIVE #2: Identify differential diagnosis for bilateral thalamic stroke

CASE: A 62 year old male with a past medical history of paroxysmal atrial fibrillation, hypertension, and obstructive sleep apnea was found unresponsive in his bathroom by his wife. The patient's wife noticed that her husband managed to get up to use the bathroom but was then alerted to the sound of him snoring. She found him slumped over the toilet, unconscious and with facial asymmetry. In the ED he was found to be obtunded with a GCS of 7. Vital signs were within the normal limits and EKG was negative for arrhythmia. Physical examination was notable for a fixed lateral gaze as well as his altered mental status. CT of the brain did not show any evidence of hemorrhage and thrombolytic therapy was initiated. Patient rapidly regained consciousness with a GCS of 15/15 without focal neurological deficits. The patient was then transferred to the ICU and an MRI was performed which is seen in Figure 1. Ischemia involving the bilateral median thalami suggested an occlusion of common artery caused by an anatomical variant called the artery of Percheron.

IMPACT: Infarctions of the anatomical variant, artery of Percheron, are characterized by a triad of gaze palsy, memory impairment and a low GCS or comatose state. Early recognition and conventional medical management of this type of cerebrovascular accident can significantly reduce morbidity and mortality in patients with this anatomical variant. Other differentials can include "top of the basilar" syndrome, deep cerebral venous thrombosis, venous sinus thrombosis from occlusion of the internal cerebral veins, most notably the straight sinus

DISCUSSION: The thalamus is located between the cerebral cortex and midbrain. It is responsible for processing and relaying sensory information to other centers of the brain in addition to regulating activities like sleep and wakefulness. Usually the thalamus is supplied by paired arteries which are perforating divisions of the posterior cerebral artery. Occasionally an anatomical vascular variant exists where one unpaired artery supplies perforating branches to both medial thalami and midbrain. An insult that occludes or interrupts the blood supply to the artery of Percheron usually presents with 3 characteristic symptoms: gaze palsy, memory impairment, and coma. In our case our patient presented with an obtunded state and a gaze palsy was noted. In patients found to have a new disorder of consciousness with high clinical suspicion of a cerebrovascular accident we should consider an infarction of the bilateral thalami from occlusion of the artery of Percheron. Quick interventional or pharmacological therapies should be undertaken to reduce the immediate and long term morbidity that can be associated with the location of this disease.

MULTIFOCAL, SYNCHRONOUS, BILATERAL NECK MASSES

Paul Millner; Casey Zelus; Erica Cichowski. Creighton University Medical Center, Omaha, NE. (Control ID #2687390)

LEARNING OBJECTIVE #1: To illustrate a unique presentation of Warthin Tumor in the primary care setting
LEARNING OBJECTIVE #2: To identify the possible diagnoses associated with head and neck masses

CASE: A 65-year-old male presented to our primary care clinic after going without health care for twenty years. He presented with bilateral masses located near the mandible that had been slowly increasing in size for the past five years. He reported a 100 pack-year smoking history. Physical exam showed nontender, bilateral parotid masses and suspected lymphadenopathy including multiple chains from preauricular down to the supraclavicular regions. Computerized tomography showed multiple, bilateral heterogenous parotid and periparotid masses. On the right, a dominant mass measuring 4.5 × 3.1 cm with areas of necrosis was found along with multiple smaller nodules. Similar small soft tissue nodules were present in the left parotid and periparotid regions, the largest measuring 2.0 × 1.5 cm. Additionally, a small cluster of left supraclavicular lymph nodes were present concerning for possible metastatic lymphadenopathy. Malignancy was suspected, however, it was unclear whether these findings were due to synchronous, bilateral primary parotid tumors, one primary parotid tumor with contralateral metastasis, or metastasis from a primary tumor not of parotid origin. After ultrasound guided core needle biopsy, a right superficial parotidectomy with facial nerve dissection was performed. The final diagnosis was synchronous, bilateral, multifocal Warthin tumor.

IMPACT: Bilateral, synchronous, multifocal is a rare and unique presentation of Warthin tumor. The bilateral and multifocal nature, including the possible lymph node involvement noted on imaging were initially concerning for a malignant process. Primary care physicians must keep a wide differential diagnosis when evaluating head and neck masses in the outpatient setting.

DISCUSSION: Warthin's tumor, also called cystadenolymphoma, are benign lesions of the head and neck. It is the second most common neoplasm of the parotid gland, with only pleomorphic adenomas being more common. Warthin's tumor occur almost exclusively in the parotid glands and periparotid regions. Representing about 2–15% of all parotid neoplasms, Warthin's tumor classically presents in adult, male smokers as a slow growing unilateral mass, while simultaneous and bilateral findings are unusual. Previous studies have found bilateral tumors in 7–10% of cases and multifocal Warthin's tumors in 2% of cases. Extra-parotid involvement is exceedingly rare in the literature. Previously, it was thought to be a neoplastic condition. Analysis by Honda et al. have since shown polyclonal cellular populations, consistent with a benign, tumor-like condition. Although unusual, warthin tumor can occur simultaneously with lymphoma or pleomorphic adenoma which are other possible diagnoses in the evaluation of head and neck masses. Treatment is typically partial or total parotidectomy with sparing of the facial nerve.

MULTIPLE MYELOMA ASSOCIATED SYSTEMIC AL AMYLOIDOSIS WITH PREDOMINANT CARDIAC INVOLVEMENT

Aditya Kotecha; Joel Appel; Geetha Krishnamoorthy. Wayne State University/Detroit Medical Center, Detroit, MI. (Control ID #2702669)

LEARNING OBJECTIVE #1: Understand that rapidly progressive LVH with diastolic dysfunction along with biatrial enlargement and right heart failure can be due to cardiac amyloidosis

LEARNING OBJECTIVE #2: Recognize that multiple myeloma can cause concomitant AL amyloidosis

CASE: A 56-year-old male with a recent diagnosis of HFpEF presented with dyspnea on exertion. ECHO from five months ago showed normal LV size and wall thickness with a restrictive filling pattern, normal atria and RV function. A repeat ECHO from 2 months prior to admission showed increased LV wall thickness, normal cavity size, LA and RA dilatation, RV dilatation and failure. EKG showed RBBB with low voltage QRS complexes disproportionate to the LV thickness. This rapid onset of restrictive cardiomyopathy with biatrial dilatation and LV size/QRS voltage mismatch led us to suspect cardiac amyloidosis. Cardiac catheterization showed a dip and plateau LV tracing and concordance of RV and LV filling pressures ruling out constrictive pericarditis. Strain ECHO showed apical sparing with impaired basal strain, characteristic of cardiac amyloidosis. Further workup revealed elevated serum FLC (free light chains) with abnormal ratio of $\kappa:\lambda < 0.01$. Fat pad biopsy showed apple green birefringence with Congo red staining and tandem mass spectrometry analysis confirmed AL (lambda) type amyloidosis.There were normal levels of calcium, creatinine, hemoglobin, serum total protein and albumin and he had no proteinuria (urine protein 270 mg/24hours). Bone marrow (BM) biopsy showed 25% plasma cells with cytogenetics: 45, XY,t(11;14)(q13;q32) translocation. Serum protein electrophoresis and immunofixation showed lambda chains. PET-CT showed increased uptake in the left clavicle. Patient was diagnosed with active MM with AL amyloidosis and was referred to myeloma clinic for further management.

IMPACT: Rapid progression of LVH with HFpEF and absence of usual risk factors like hypertension should raise the suspicion for infiltrative diseases of the heart such as amyloidosis. Patients with untreated cardiac amyloidosis have a median survival of six months from the onset of heart failure.Therefore, early recognition and prompt referral for treatment is critical.

DISCUSSION: Management is dual: treatment of HFpEF and the plasma cell dyscrasia. The mainstay of management of HFpEF is diuretics; BB, ACEi, ARB and CCB should be avoided in cardiac amyloidosis since they may cause hypotension. Atrial fibrillation is difficult to manage since AV nodal blocking agents are not tolerated and digoxin may lead to toxicity from digoxin binding to the amyloid. Amiodarone or AV nodal ablation with pacemaker maybe needed for managing the atrial fibrillation. Variety of options exists for treatment of plasma cell dyscrasia which includes chemotherapy, stem cell and cardiac transplant. AL amyloidosis with > 10% BM plasma cells and cardiac involvement irrespective of CRAB (hypercalcemia, renal failure, anemia and lytic bone lesion) damage portends poor prognosis.

MYOCLONUS FROM GABAPENTIN TOXICITY IN THE SETTING OF ACUTE KIDNEY INJURY Crystal Zheng. Montefiore Medical Center, NEW YORK, NY. (Control ID #2706919)

LEARNING OBJECTIVE #1: Recognize myoclonus as an adverse effect of gabapentin

LEARNING OBJECTIVE #2: Consider medication toxicity in the differential diagnosis, especially when acute kidney injury is present

CASE: A 74 year old female presented with three days of worsening tremors of the hands, arms, head, and jaw. Her past medical history included diabetes with neuropathy, heart failure, and ventral hernia repair one month ago. Her medications were gabapentin 900 mg daily, furosemide, and lisinopril. On exam she exhibited a severe multifocal myoclonic tremor of the upper extremities, and her surgical wound was foul smelling with purulent discharge. Her laboratory studies were notable for white blood cell count of 14.6 k/uL, creatinine of 3.8 mg/dL and blood urea nitrogen of 28 mg/dL. Notably, her kidney function was normal when she was discharged after her surgery one month ago. The suspected cause of her tremors was gabapentin toxicity in the setting of acute kidney injury. During the hospitalization, gabapentin, furosemide, and lisinopril were discontinued, and she underwent incision and drainage of the abdominal wound. Her creatinine improved to 2.1 mg/dL on discharge and her tremors resolved with discontinuation of gabapentin.

IMPACT: This case highlights the importance of keeping medication toxicity in the differential, especially in the presence of acute kidney injury. Additionally, this case adds to the literature demonstrating myoclonus as an adverse effect of gabapentin.

DISCUSSION: Gabapentin is a medication frequently prescribed by general internists for a variety of indications including diabetic neuropathy and neuropathic pain. Clinicians are generally familiar with dizziness and drowsiness as adverse effects of gabapentin; myoclonus, though less common, has also been described. While the differential diagnosis of any presenting symptom should always include medication toxicity, this is especially true in the setting of acute kidney injury. Because gabapentin is exclusively excreted by the kidneys, its toxicity is more apparent with renal failure. In this case, the patient had remained on a stable dose of gabapentin for two years without side effects until its toxicity was unmasked by an acute insult to her renal function. Gabapentin should be used with caution in patients at risk for renal failure. The prevalence of chronic kidney disease is roughly 14% of the U.S. population. Considering that gabapentin is often used in patients with poorly controlled diabetes, the prevalence of renal failure among patients prescribed gabapentin is likely even higher. Patients with decreased renal function on gabapentin should be monitored closely for toxicity, and if present the medication should be dose-reduced or discontinued. Generalists and specialists alike will all take care of patients prescribed gabapentin. The widespread use of gabapentin and the prevalence of kidney disease underscore the need for clinicians to be aware of the side effect profile of this medication and its relationship with renal function.

MYXEDEMA COMA AND THE T3 CONUNDRUM Spencer Hodgins; Jasmine Paadam. Baystate Medical Center, Longmeadow, MA. (Control ID #2704195)

LEARNING OBJECTIVE #1: Recognize rare complications of myxedema coma

LEARNING OBJECTIVE #2: Learn how to manage a patient with myxedema coma

CASE: 32-year-old man with history of cervical gunshot wound resulting in quadriplegia, recurrent UTIs, stage IV decubitus ulcer, initially presented to emergency department with slurring of speech and vomiting. In the ED the patient was found to be bradycardic in 40's, afebrile and maintaining oxygen saturations. His labs showed hyponatremia with a sodium of 99, hyperkalemia with K of 5.7. TSH was also elevated at 79 with fT3 0.5 and fT4 0.26. CXR was clear, UA revealed >182WBC. Anti-TPO Ab was found to be 3,042 IU/mL and Antithryroglobulin Ab was elevated at 21,413 IU/mL. Renal was consulted for hyponatremia and he was started on 3% NS. He was admitted to ICU for further management. Na levels slowly improved with 3% saline. Endocrinology was consulted for hypothyroidism and concern for myxedema coma. He was started on IV levothyroxine and transferred to an ICU step-down

unit the same day. Further in the hospital stay he was noted to be hypotensive with BP in 70's and hypothermic and he was started on broad-spectrum antibiotics for empiric treatment of UTI. Bradycardia persisted and he began having frequent desaturations with worsening mental status and increased work of breathing in the setting of mucus plugging. Eventually the patient went into asystole secondary to hypoxia but was intubated and quickly resuscitated. The pulmonary and MICU team felt that the cause of his respiratory issues was most likely due to diaphragmatic weakness from myxedema coma. The patient failed to improve and liothryonine was started via NG. Within 24 hrs there was significant improvement in mental status and other symptoms and he was successfully extubated the following day. He was eventually discharged home following full recovery.

IMPACT: This case shows the significant complications which can occur during myxedema coma. It further strengthens the argument for the use of liothyronine when response is not significant to levothyroxine.

DISCUSSION: This case illustrates some of the complications of myxedema coma. He was initially severely hyponatremic, which is a more rare but significant complication of myxedema coma. One proposed mechanism is that severe hypothyroidism causes a reduction in GFR and CO leading to an increase in ADH production (Reynolds et al. 2004). He also experienced respiratory muscle weakness, which has been shown to occur in a linear fashion corresponding to Thyroid hormone levels and improve with treatment (Siafakas et al. 1992). When managing patients with myxedema coma the backbone of therapy is T4. T3 may also be used and may have a more rapid onset with significant clinical improvement in 24 hours (Matthews et al. 2006). This needs to be balanced against potential cardiac adverse effects (Yamamoto 1999). This case report illustrates the importance of considering the use of T3 when marked improvement is not achieved with levothyroxine.

MYXEDEMA COMA WITH LARGE PLEURAL EFFUSION

Preeyanka R. Sundar; Jonila Murati; Sylvia V. Alarcon; Gabriela A. Ciofoaia; Brian Phillps. Berkshire Medical Center, Pittsfield, MA. (Control ID #2671641)

LEARNING OBJECTIVE #1: Early recognition of myxedema coma signs and symptoms with atypical presentations

CASE: A 74 year old female with severe hypothyroidism presented with profound general weakness, mental status changes, anorexia, constipation and urinary frequency in the setting of poor compliance with thyroid hormone replacement therapy. On physical exam she was found to be somnolent, hypothermic, hypotensive, hypoxic, with a mildly enlarged thyroid gland, pretibial non pitting edema and delayed deep reflexes response. Labs revealed macrocytic anemia, leukopenia, thrombocytopenia, a remarkably high TSH 214 uIU/mL, free T4 0.14 ng/dl and free T3 < 50 pg/dl. Urinalysis revealed pyuria. Chest x-ray showed a large right sided pleural effusion. Pleural fluid was consistent with transudate. Blood and pleural fluid cultures were negative. She was initially treated with ceftriaxone for urinary infection and intravenous levothyroxine, liothyronine and hydrocortisone for thyroid replacement. Despite initiation of treatment her respiratory status continued to deteriorate leading to worsening hypoxia and hypercapnia requiring use of noninvasive ventilation and later intubation. After a few days of intensive care treatment with ventilatory support, central venous pressure monitoring, appropriate fluid management, steroid treatment and thyroid hormone replacement her overall status improved.

IMPACT: Myxoedema coma is a severe presentation of profound decompensated hypothyroidism with a 25-60% mortality rate despite treatment. It can be precipitated by hypothermia, systemic infections cerebrovascular accidents, cardiac disease, trauma, drugs (anaesthetics, sedative, narcotics, amiodarone and lithium), untreated hypothyroidism.

DISCUSSION: Myxoedema coma has an incidence rate of 0.22 per million per year. Presentation includes decreased mental status, hypothermia, dry skin, delayed tendon reflexes, macroglossia, non-pitting edema, goiter, hypoventilation, bradycardia, hypotension, pleural and pericardial effusions, bundle branch blocks, hypoglycemia, hyponatremia, and confirmed by elevated TSH and low free T4. There are cases in literature describing myxedema associated with minimal pleural effusions, but large pleural effusions are uncommon.The pathogenesis of pleural effusion is hypothesized to be related to increase in capillary permeability. Myxoedema coma is a true medical emergency requiring a multifaceted approach in critical care settings with ventilator support, adequate fluid management, steroid treatment and intravenous thyroid hormone replacement which is the mainstay in therapy. Standard IV thyroid supplementation includes a loading dose, followed by 1.6 mcg/kg daily, with liothyronine 10 mcg Q8hours and Hydrocortisone 100mg IV. Early recognition and therapy are essential due to high mortality rate despite of adequate thyroid replacement and it should be initiated even without laboratory confirmation if clinical suspicion remains high.

NATURAL PROGRESSION OF PLASMODIUM FALCIPARUM AND SIDE EFFECTS OF QUININE

Simi Sharma[1]; Shelby Lee[1]; Jennifer Schmidt[2]. [1]Saint Louis University School of Medicine, Saint Louis, MO; [2]Saint Louis University, Saint Louis, MO. (Control ID #2688998)

LEARNING OBJECTIVE #1: Recognize and discuss the life cycle and pathogenesis of Plasmodium falciparum.

LEARNING OBJECTIVE #2: Assess appropriate individual Plasmodium falciparum treatment and manage side effects of treatment (with adjustments as necessary).

CASE: We discuss a previously healthy 60-year-old Caucasian female who presented to an urgent care clinic with fever of 103°F, intermittent nausea, vomiting, diarrhea, fatigue, and myalgias following recent travel to Burkina Faso. After blood testing, patient presented to the emergency department with findings of: a protozoal load of 6.3%, elevated creatinine levels, elevated total bilirubin levels, thrombocytopenia, anemia, and confusion. Patient was admitted to the Medicine service and treated with doxycycline and quinidine sulfate. After two days of treatment, patient's QTc interval was noted to be 608ms (from 494ms) so quinidine sulfate was changed to quinine sulfate. After three days of therapy, patient reported decreased hearing and "underwater sensation." On exam, she was unable to hear finger rub bilaterally. Quinine sulfate was discontinued for ototoxicity and replaced with artemether-lumefantrine to complete therapy. The patient's hearing subjectively and objectively (normal finger rub test) improved following cessation of quinine sulfate.

IMPACT: This case demonstrates the importance of a broad differential diagnosis as well as awareness of toxicities for an uncommonly used medication. As clinicians, we must remain vigilant of the potential side effects and issues of these medications. It is critical to monitor for drug side effects to mitigate permanent effects and determine appropriate alternative courses of action as a pre-emptive, rather than reactionary, response.

DISCUSSION: Plasmodium falciparum is responsible for the most medically severe and rapidly fatal malaria, causing 50% of malarial infections. Infection

begins with an infected Anopheles mosquito bite, where sporozoites quickly invade hepatocytes and begin to differentiate and reproduce for the next two weeks. Merozoites burst from each hepatocyte and invade RBCs, continuing the reproductive cycle. Rupture and release of the merozoites cause anemia, hemolysis, fever, chills, and nausea; adherence of RBCs to endothelial cells (due to chemical nature of parasital trophozoites) lead to cerebral malaria by preventing adequate cerebral oxygenation. Artemisin-based combination therapies are recommended first-line therapy of uncomplicated malaria; however, treatment may also involve a tetracycline in addition to quinine therapy. Significant side effects of quinidine can include cinchonism, ototoxicity, granulomatous hepatitis, and torsades de pointes; significant side effects of quinine include immune thrombocytopenic purpura (ITP) and cinchonism. Treatment involves cessation of the offending agent and side effects are often reversible if medications are discontinued promptly.

NAVIGATING ANCHORING BIAS: AN UNUSUAL PRESENTATION OF VON WILLEBRAND'S DISEASE Suegene Lee; Jason S. Schneider. Emory University School of Medicine, Atlanta, GA. (Control ID #2706801)

LEARNING OBJECTIVE #1: Differentiate the diagnosis of inherited and acquired von Willebrand disease

CASE: The patient is a 66 year old male who was admitted with gastrointestinal bleeds resulting in hemoglobin as low as 2g/dL. He experienced epistaxis as a child and began having bright red blood per rectum at age 13. He denied any excessive bleeding with tooth extractions and underwent major surgery without any complications. A comprehensive work-up was performed, but no source of bleeding was found.After an elevated PTT, his VWF antigen level was 14, Factor VIII 10%, VWF ristocetin cofactor assay <20. A VWF multimer study showed decrease in intermediate, large molecular weight multimers and VWF propeptide was normal. Given these findings and his childhood history, he was diagnosed with inherited von Willebrand disease, likely type 2A, and began receiving infusions of antihemophilic factor/VWF complex. Meanwhile, after an abnormal SPEP, a bone marrow biopsy revealed monoclonal gammopathy of undetermined significance. Despite these infusions, his Factor VIII and ristocetin cofactor levels remained low. As he was not responding after 12 days and considering his biopsy results, acquired VWD was suspected. IVIG was infused and patient's factor VIII level increased to 205 and ristocetin cofactor level to 220. Following discharge, his exon 28 testing results returned confirming that patient was negative for VWD type 2A.

IMPACT: Given his experience of multiple bleeding episodes as a child, this patient was assumed to have inherited VWD. Clinicians oftentimes fixate on the first piece of information provided, leading to missing the diagnosis and appropriate treatment. In this case, due to his lack of response to the standard therapies for inherited VWD, we re-evaluated the patient with a fresh pair of eyes and arrived at IVIG, used for patients with acquired VWD, specifically in whom an immune mechanism is responsible.

DISCUSSION: Acquired VWD is suspected in patients with negative family history, late-onset of bleeding and a known associated underlying disease. Common pathologies include lymphoproliferative disorders, such as MGUS. In these patients, paraproteins bind to VWF, leading to low circulating levels of VWF. Patients with acquired VWF have low VWF antigen levels, just as those with inherited VWF, but have markedly lower levels of VWF activity (i.e. ristocetin cofactor assay). In inherited VWF, the ristocetin cofactor/antigen ratio is approximately 1, whereas a ratio of <0.6-0.7 implies inhibitory antibodies are present. The underlying disorder must be treated in patients with acquired VWD, as this may reverse the bleeding. If the underlying disease is lymphoproliferative or autoimmune, IVIG appears to be the most effective management and can correct VWF activity for 2–3 weeks.Acquired VWD, although uncommon, must be considered in an elderly patient with a new diagnosis of VWD. The associated disease should also be determined and if an immune mechanism is suspected, a trial of IVIG is warranted.

NERVOUS TIC: A CASE OF LYME DISEASE ASSOCIATED TRIGEMINAL NEURALGIA Matthew Basciotta; Jared Grochowsky. BIDMC, Brookline, MA. (Control ID #2705753)

LEARNING OBJECTIVE #1: Recognize clinical features of early and late disseminated Lyme disease

LEARNING OBJECTIVE #2: Diagnose and treat early disseminated Lyme disease

CASE: A 49 year old man presented with a submandibular enlarged non-tender lymph node and 1 day of sharp lightening like headache in the left temple. He noticed a left neck mass 1 week prior to presentation. He then had sharp, zinging pains that rapidly worsened. Each episode lasted 8 s at 10/10 intensity with associated conjunctival injection and watering. Denied travel, animal exposure, sick contacts. PMH/SH/FH: Childhood asthma. Single with five children. Drinks alcohol and smokes marijuana daily with tobacco. Father with throat cancer, Mother with DM. Medications: None Vitals: Afebrile and normotensive, obviously anxious and in pain. There was a soft 2 × 3 cm L submandibular mass without fluctuance. No dental abnormalities noted. Remainder of exam normal. Labs identified WBC 3.2 with normal differential. CT scan showed lymph nodes measuring up to 2.2 cm within the left sublingual, submandibular and supraclavicular regions without fluid collection. He was treated with carbamazepine for trigeminal neuralgia and his pain and lymphadenopathy rapidly improved. MRI did not identify focal trigeminal nerve entrapment. A range of infectious and auto-immune tests were sent and all were negative or pending at time of discharge. 1 week later he presented to his PCP for follow up. At that time, his Lyme serology had resulted with positive IgM and negative IgG consistent with early Lyme. Pain and lymphadenopathy were improved. He recalled being bitten by an insect on his head 1 month ago. He did not recall a rash and was treated with doxycycline for 21 days and continued carbamazepine for 3 months. His only current symptom is occasion forehead twinges.

IMPACT: While a majority of patients with localized Lyme disease present with erythema migrans, up to 20–30% do not. When not treated, progression to disseminated disease is common. 60% will have joint involvement, 15% neurologic involvement and 5% cardiac involvement. After this case I am more likely to consider Lyme in patients with symptoms consistent with disseminated disease, even without rash or tick bite.

DISCUSSION: This was a patient with trigeminal neuralgia secondary to early disseminated Lyme disease. He did well with near complete resolution of symptoms following a course of doxycycline and carbamazepine. Lyme disease is the most common tick borne illness in the US with 300,000 Americans diagnosed each year. Clinical manifestations can occur from days to months or years following exposure and involve multiple organ systems. This makes it both common but potentially easy to miss. Clinical features can be characterized into early localized, early disseminated and late disseminated disease. Stage and organ system involvement determines antibiotic choice and duration. Lyme disease is a common but complex illness that general medical practitioners should recognize and feel equipped to diagnose and treat.

NEUROSYPHILIS PRESENTING AS STROKE Kathryn Rice[1, 2]; Heather Abraham[1, 2]; Michael Pezzillo[2]. [1]WSU-DMC, Detroit, MI; [2]Wayne State University School of Medicine, Detroit, MI. (Control ID #2687519)

LEARNING OBJECTIVE #1: Recognize neurosyphilis as a strong risk factor for cerebral vascular incidents in adults with few or no other identifiable risk factors for stroke.

CASE: A 54 year-old African American man with no past medical history was brought to the emergency department due to altered mental status. In the ED, the patient was found to be nonverbal, with weakness of the right upper and lower extremity. Given these focal findings, stroke was suspected, and a CT scan performed, demonstrating old lacunar infarcts in the left internal capsule. A follow up MRI showed a large acute to subacute non-hemorrhagic infarct in the left cerebral hemisphere involving the left middle cerebral arterial territory. Given that the patient had limited identifiable risk factors for stroke, further workup was performed and he was found to be HIV positive. Treponemal testing with syphilis EIA was >70, with an RPR reactive to 1:64. A lumbar puncture was performed due to high suspicion for neurosyphilis and confirmed the diagnosis with CSF VDRL reactive at 1:4. Penicillin G 4 million units every four hours was started to treat neurosyphilis.

IMPACT: This case report will help clinicians to have a higher degree of suspicion for infectious etiologies, such as neurosyphilis, as the causative factor for stroke in an otherwise healthy individual.

DISCUSSION: Syphilis is transmitted through sexual intercourse, when a sexual partner has direct contact with an infectious lesion. The transmission rate after exposure to an infectious lesion is approximately 30 percent.[4] CNS infection with T. *pallidum* can lead to neurosyphilis. Many neurologic symptoms of neurosyphilis can be attributed to acute or subacute meningitis.[5] CNS infections with T. pallidum can cause arteritis of any size vessel, leading to possible infarction or thrombosis. HIV-infected patients develop neurosyphilis more frequently and in earlier stage than do HIV-negative persons. Additionally, the risk of neurosyphilis correlates with a low CD4 count.[6] REFERENCES 1. Newman L, Rowley J, Vander Hoorn S, et al. Global Estimates of the Prevalence and Incidence of Four Curable Sexually Transmitted Infections in 2012 Based on Systematic Review and Global Reporting. PLoS One 2015; 10:e0143304. 2. Patton ME, Su JR, Nelson R, et al. Primary and secondary syphilis–United States, 2005–2013. MMWR Morb Mortal Wkly Rep 2014; 63:402. 3. United Sates Center for Disease control and Prevnetion. Sexually Transmitted Disease Surveillance, 2015. http://www.cdc.gov/std/stats15/std-surveillance-2015-print.pdf (Accessed on November 22, 2016). 4. Hook EW 3rd, Marra CM. Acquired syphilis in adults. N Engl J Med 1992; 5. Ingot, M., Szymanek, A., Szymczak, A., Rymer, W., Pawlowski, T., Pacan, P., & Szepietowski, J. (2012, October 11). Three Episodes of Brain Stroke as a Manifestation of Neurosyphilis in an HIV-infected Man. Acta Derm Venereol, 216–256. 6. Int J STD AIDS. 2016 Aug 10. pii: 0956462416665029. [Epub ahead of print] Stroke in a young patient with neurosyphilis and HIV.

NON CONVULSIVE STATUS EPILEPTICUS: HIDING IN PLAIN SIGHT Michael Korsmo[2]; Ashley Vachon[1]; Amy H. Farkas[1]. [1]UPMC, Pittsburgh, PA; [2]University of Pittsburgh Medical Center, Pittsburgh, PA. (Control ID #2706684)

LEARNING OBJECTIVE #1: Recognize NCSE in altered mentation
LEARNING OBJECTIVE #2: Ackowledge cognitive biases

CASE: A 62-year-old male with history of alcohol dependence and seizure was transferred from another facility for altered mental status. A week earlier, he was found unconscious and brought to an outside hospital where CT brain, UDS, TSH, NH3, CMP, and CBC were normal. EEG showed diffuse slowing without epileptiform activity. MRI showed T2 hyperintensities in bilateral hippocampi interpreted as nonspecific. He had a witnessed seizure that was treated with lorazepam and levetiracetam. He continued to be altered and psychiatry prescribed risperidone for delirium. He was transferred to our facility for management of delirium. On admission, he was confused, not oriented, had marked memory impairment, and frequently confabulated. Due to his waxing and waning levels of consciousness and cognitive impairment, acute delirium and prolonged post ictal period following alcohol withdrawal seizures were the leading diagnoses. Two days later, the patient's mental status deteriorated further and EEG obtained showed left posterior non-convulsive status epilepticus.

IMPACT: Non Convulsive Status Epilepticus (NCSE) is varied in its presentation, typically without obvious signs and symptoms. The veiled nature of NCSE in conjunction with the milieu of social factors, medical comorbidities, and provider bias can make inclusion of this condition in the differential a challenge.

DISCUSSION: Subtle alterations in consciousness and cognition may be the only presenting sign of complex partial NCSE. Keys to making the diagnosis involve lowering the diagnostic threshold for obtaining an EEG when a patient with a history of seizure presents with alterations in consciousness. In this case, EEG was considered early on, but deferred as there had been no witnessed seizure activity since transfer and was previously done. Confirmatory and availability bias were likely part of the non-analytical mental processes. Confirmatory bias is defined as looking to confirm a diagnosis rather than reject. This patient's history of alcoholism and withdrawal lure a provider into confirming withdrawal or delirium rather than systematically rejecting them. Availability bias involves assessing probability of a diagnosis based on ease of retrieval from memory strongly influenced by recent events. In this case, a provider who commonly treats patients suffering from alcohol withdrawal will likely retrieve that diagnosis from memory first. Because of this, they are likely to unconsciously weigh the probability of simple alcohol withdrawal more strongly than usual. Unrecognized bias can lead to a common diagnostic error known as premature closure. Premature closure can stop further workup of altered mental status in favor of a diagnosis we are biased towards. There is yet an effective method of removing bias from the process of the differential diagnosis. The best we can do is be aware of them and work to recognize when they are affecting our judgement.

NON-ISCHEMIC CARDIOMYOPATHY PRESENTING AS CONGESTIVE HEPATOPATHY Logan J. Hostetter[1]; Rebecca Johnson-Paben[4]; Joseph A. Simonetti[2, 3]. [1]University of Colorado, Aurora, CO; [2]University of Colorado School of Medicine, Denver, CO; [3]Denver VA Medical Center, Denver, CO; [4]University of Colorado, Denver, CO. (Control ID #2698385)

LEARNING OBJECTIVE #1: Recognize hepatic congestion as a sign of cardiac dysfunction.

LEARNING OBJECTIVE #2: Recognize indications for cardiac defibrillator implantation in heart failure and outcomes specific to non-ischemic cardiomyopathy.

CASE: Three weeks prior to admission, a healthy 37-year-old male developed watery diarrhea, vomiting, and abdominal pain after attending a picnic.

He was diagnosed with viral gastroenteritis; returning 4 days later with worsening symptoms and dyspnea. Due to hyperbilirubinemia and leukocytosis on labs, a RUQ ultrasound was obtained revealing hepatomegaly. A HIDA scan was scheduled. One week later, he presented to the ED with orthopnea, DOE, and leg swelling. Vitals: afebrile, HR 120 and regular, RR 22, BP 114/83. He was diaphoretic, sitting upright, appearing short of breath. He had scleral icterus, an S3 heart sound, pulmonary rales, and 2+ pitting edema. Labs revealed Cr 1.4mg/dL, ALK phos 58U/L, AST 303U/L, ALT 289U/L, total bilirubin 4.1mg/dL, INR 1.4, and BNP 10,000pg/mL. A TTE showed four-chamber dilatation with a 10-15% EF. He developed non-sustained ventricular tachycardia (VT) and was transferred to another facility for advanced therapies and transplant evaluation given severe, inotrope-dependent heart failure. Evaluation to determine the etiology of his cardiomyopathy (CM) was unrevealing, including L/R heart catheterization with biopsy, and evaluation for infection, infiltrative diseases, and thyroid disorders. His final diagnosis was non-ischemic cardiomyopathy (NICM), likely due to a viral infection.

IMPACT: Cardiomyopathy symptoms result from reduced cardiac output and volume overload and include DOE, fatigue, reduced exercise tolerance, orthopnea, and PND. When LV dysfunction leads to congestive hepatopathy, patients may have abdominal pain (usually RUQ), hepatomegaly, jaundice and liver dysfunction. Avoiding anchoring bias when patients with cardiomyopathy present atypically is crucial for the early diagnosis and treatment.

DISCUSSION: NICM represents 15-40% of all heart failure in the US. Causes include viral, bacterial and parasitic infections, persistent tachycardia, immunologic and metabolic disorders, infiltrative diseases, toxins, and genetics. The etiology is never identified in 50% of patients. First-line treatment includes a beta-blocker, ACE-inhibitor, diuretics, and an aldosterone antagonist (if EF < 35%). Inotropic support, ventricular assist devices, cardiac resynchronization, and transplant are options for those with refractory LV dysfunction and resting symptoms. Prophylactic implantable cardiac defibrillator (ICD) placement is indicated for patients with ischemic or non-ischemic CM and EF <35%. However, a recent RCT found that ICD placement was not associated with reduced mortality among NICM patients receiving maximal medical therapy; many of whom had cardiac resynchronization therapy (Kober et al. *N Engl J Med* 2016; 375:1221–1230). Whether ICD placement may benefit younger patients with NICM remains unknown.

NOT ALL WHEEZING IS ASTHMA - A CASE OF SEVERE MITRAL STENOSIS. Gabriel S. Vidal[1]; Dr. Ali Yousif[1]; Dr. Sunil Mathew[1, 2]. [1]University of Oklahoma College of Medicine, Oklahoma City, OK; [2]Oklahoma City VA Medical Center, Oklahoma City, OK. (Control ID #2706838)

LEARNING OBJECTIVE #1: Recognize mitral stenosis (MS) as part of the differential diagnosis for wheezing.

LEARNING OBJECTIVE #2: Discuss the importance for prompt recognition of rheumatic mitral valve disease.

CASE: A 62 year-old man with a history of asthma, hypertension, hyperlipidemia, and diabetes presented to a rural emergency department (ED) with suspected asthma exacerbation. The patient was an avid golfer, but stopped playing six month prior due to significant dyspnea on exertion. Patient and family members contributed his symptoms to worsening asthma. In the ED he was treated with bronchodilators with symptomatic improvement and was discharged home. Patient collapsed while walking to his vehicle in the parking lot. After multiple rounds of ACLS, patient had return of spontaneous circulation. He was intubated on scene, initiated on hypothermia protocol, and transferred to our hospital for further care. On presentation, patient was intubated, had distended jugular veins, distant heart sounds, and bibasilar rales. Chest x-ray showed bilateral pulmonary edema. First degree AV Block seen on ECG otherwise no ischemic changes. Transthoracic Echocardiogram (TTE) showed reduced ejection fraction 45-50%, rheumatic mitral and aortic valve disease significant for severe mitral stenosis with severe mitral regurgitation and moderate aortic regurgitation. Prior TTE several years prior showed mild mitral valve stenosis. The patient was started on aggressive diuresis, weaned off mechanical ventilation, and extubated two days later. Pulmonary function tests showed mild obstructive lung disease. Coronary angiogram showed normal coronaries. Patient was referred for valve surgery and underwent successful mechanical mitral valve replacement.

IMPACT: This case emphasizes the importance of history taking and physical examination in determining etiology of wheezing.

DISCUSSION: Here we describe a case of symptomatic MS misdiagnosed as asthma exacerbation. Internists and emergency room physicians are often confronted with the task of identifying the etiology of wheezing in a patient. Commonly identified etiologies for wheezing include asthma or COPD, however, MS can manifest as wheezing and should be considered in the differential diagnosis of wheezing. The most common cause of MS is rheumatic heart disease. Dyspnea on exertion and decreased exercise tolerance are most common clinical manifestations. The pathophysiology of wheezing in mitral stenosis, is increased left ventricular filling pressure leading to pulmonary edema and cardiac wheezing. Obtaining thorough history especially childhood illnesses and physical examination is pivotal for rheumatic MS diagnosis. Echocardiography will help confirm diagnosis and assess disease severity. Rheumatic MS is a progressive disease, hence, prompt recognition is important because of initiation of prophylactic antibiotic and treatment of symptoms improves morbidity and mortality associated with this condition.

NOT ANOTHER ACS RULE OUT Ryan Nelson; David Spruill. Tulane University, New Orleans, LA. (Control ID #2705321)

LEARNING OBJECTIVE #1: Recognize Sarcoidosis as a possible diagnosis in patients with recurrent typical chest pain

LEARNING OBJECTIVE #2: Identify the classic MRI findings of Cardiac and Neurosarcoidosis

CASE: A 50-year-old African-American woman with diabetes, hypertension, and hyperlipidemia presented with progressively worsening chest pain, exacerbated by activity and relieved by rest. She also endorsed unintentional weight loss and dysphagia. On exam, she was dysarthric with left-sided Bell's palsy. Her troponin values were normal and an EKG showed T-wave inversions in leads I and aVL. On echocardiography, her ejection fraction was 45% with antero-lateral hypokinesis. She was treated for NSTEMI. An angiogram showed 95% stenosis of the right coronary artery. A modified barium swallow study showed weak swallowing with aspiration of thin liquids. An MRI of the brain demonstrated scattered T2/FLAIR hyper-intense foci in the subcortical white matter and focal meningeal thickening. ANA, dsDNA, ANCA, and Lyme antibodies were all negative. A chest CT showed hilar lymphadenopathy. Cardiac MRI demonstrated scattered foci of delayed enhancement in the mid-myocardium and sub-epicardium without infarction. An endobronchial biopsy of hilar lymph nodes showed two small epithelioid granulomas, consistent with

sarcoidosis. She was started on high-dose corticosteroids with rapid improvement. Her dysphagia, dysarthria and Bell's palsy resolved after several days of therapy. A repeat echocardiogram demonstrated recovered ejection fraction of 55% with improved wall motion in the septum and apex.

IMPACT: This case illustrates the widespread impact sarcodiosis can have on a patient. Sarcoidosis can affect multiple organ systems. In this case, both cardiac sarcoidosis and neurosarcoidosis is demonstrated.

DISCUSSION: Symptomatic myocardial involvement in sarcoidosis is relatively rare, affecting 5% of patients. Usually, cardiac sarcoidosis presents as conduction abnormalities with arrhythmia rather than acute coronary syndrome (ACS). Our patient had multiple risk factors for coronary artherosclerosis, including diabetes, hypertension and hyperlipidemia; however, sarcoidosis creates an inflammatory environment that can independently generate and accelerate coronary artherosclerosis. In this case, our patient's weight loss, dysphagia, and Bells' Palsy alerted us to an underlying rheumatologic, vasculitic, or infiltrative process. Sarcoidosis is associated with specific findings on both cardiac and brain MRI. Cardiac sarcoidosis is characterized by subepicardial and mid-myocardial nodules. Neurosarcoidosis typically manifests as granulomatous infiltrates within the dura mater. On MRI, these lesions appear as pachymeningitis, or patchy thickening of the dura mater. To our knowledge, this report is the third case of multi-organ Sarcoidosis presenting as ACS. This case also depicts the simultaneous presentation of neurologic, pharyngeal, pulmonary, and cardiac sarcoidosis.

NOT ANOTHER BILATERAL CELLULITIS Erin M. Noren; Edward Ha. University of California Los Angeles, Los Angeles, CA. (Control ID #2706986)

LEARNING OBJECTIVE #1: Recognize the clinical features of cryoglobulinemic vasculitis (CGV).

LEARNING OBJECTIVE #2: Recognize the importance of the United States Preventive Services Task Force (USPSTF) screening guidelines to prevent sequelae of chronic hepatitis C infection (HCV).

CASE: A 75 year-old woman with a history of protein S deficiency, stroke, and anemia presented with 5 days of fevers and a lower extremity rash. She first noticed swelling in her ankles, followed by daily fevers up to 103 F and development of a rash on both legs. She had constant pain in the distribution to her rash that worsened with standing. She had a similar rash 2 years prior that self-resolved. She also reported nausea and 6 pound weight loss. On presentation, she was febrile to 101 F and tachycardic at 105 bpm. Her exam showed a non-blanching erythematous maculopapular rash on both lower extremities that was tender to palpation. She had no scleral icterus, lymphadenopathy, or joint effusions. Laboratory tests showed elevated inflammatory markers, leukopenia, anemia, and mild transaminitis. She had been started on antibiotics for presumed cellulitis in the emergency room. Skin biopsy revealed medium-vessel vasculitis with no evidence of infection. The differential diagnosis was narrowed to include rheumatologic disease, cryoglobulinemia (CG) and lymphoma. Autoimmune studies were inconclusive. PET scan was negative for malignancy. HCV antibody was positive with a viral load of 1.6 million IU/L. Serum cryoglobulin test (Cryocrit) was positive, confirming the diagnosis of CGV. Treatment with prednisone 40 mg daily resolved the rash and fevers. She had no history of drug use or tattoos but later recalled receiving blood products after childbirth in the 1970s. She was seen by Hepatology and began direct-acting antiviral (DAA) treatment.

IMPACT: This case highlights the need for a centralized effort to implement HCV screening. Primary care physicians need to play a more active role in this capacity, as patients without obvious risk factors have the potential for infection, and the benefits of early detection, treatment and surveillance have far-reaching benefits.

DISCUSSION: CG is a frequent complication of HCV infection. An estimated 2.7-3.9 million people in the United States have chronic HCV, but many are undiagnosed. The prevalence of CG among HCV patients is approximately 50%, though less than one-third have symptoms. The risk for CG increases with the duration of HCV infection, with an annual incidence of 3%. Definitive therapy is to treat the HCV, and the majority of patients with sustained viral response have resolution of CG. This case reinforces the importance of the USPSTF screening guidelines for HCV. Despite the ease of testing, rates of screening remain undesirably low. In one 2014 study of a HCV screening program, physician adherence rates were as low as 36%, and there was wide variation between individuals. An improved focus on HCV screening in primary care is imperative to prevent serious sequelae of chronic infection.

NOT EVERY ORTHOPNEA MEANS HEART FAILURE Nabil Mesiha[2]; Noorain Mazhar[2]; Stephen Tieku[1]; Saba A. Hasan[1]; Daniel Goldsmith[1]. [1]Capital Health Regional Medical Center, Trenton, NJ; [2]Capital health Regional Medical Center, Trenton, NJ. (Control ID #2698382)

LEARNING OBJECTIVE #1: To demonstrate that positional PFT's can help establish the diagnosis of myopathy when there is significant worsening of volumes in the supine position.

CASE: Orthopnea is defined as dyspnea that occurs while lying down. The mechanism is redistribution of body fluids, which is tolerated in patients with normal cardiac function, but in those with heart failure, the heart is unable to accommodate the minimal extra fluid in the lung. Orthopnea is often associated with heart failure, but can be observed with other, less obvious diagnoses. A 61 year old woman presented with gradual onset of dyspnea, orthopnea, paroxysmal nocturnal dyspnea for 2 months. On physical exam she was slightly tachycardic, oxygen saturation was 96% on room air while sitting but she desaturated to 89% on supine position. Lung exam showed fine crackles bilaterally but there was no leg swelling. Initial diagnosis was heart failure, and she required non-invasive mechanical ventilation especially at night. Lab testing revealed mildly elevated LFTs, normal troponins. Chest X-ray revealed bibasilar subsegmental atelectasis versus infiltrate. Furosemide resulted in no significant improvement in symptoms. Echocardiogram was normal. BNP was not elevated. Review of the chest X-ray showed small lung volumes and on further questioning she reported mild dysphagia. Neurologic exam revealed mildly decreased proximal muscle strength in the upper and lower extremities. PFTs in the sitting and supine position showed that in the sitting position, the FVC was 1.12 liters (46% predicted) while in supine position FVC was 0.56 liters (24% predicted). Sitting FEV-1 was 0.97 liters (52% predicted) while supine FEV-1 was 0.42 (23% predicted) showing moderate restrictive ventilatory impairment worse in the supine position. ABG showed hypercapnia and hypoxemia. Additional lab testing showed elevated CK, ANA titer 1:160, elevated aldolase 25.2 U, negative acetylcholine receptor antibody test, and negative anti-MUSK antibodies. EMG showed acute myopathy. Muscle biopsy was consistent with mild, active myopathy. Prednisone resulted in significant improvement in her symptoms. Patient was discharged home with no ventilatory support.

IMPACT: To consider myopathy in patients with dyspnea and orthopnea, when heart failure is less likely the correct diagnosis. EMG and muscle biopsy should be considered to confirm the diagnosis.

DISCUSSION: Myopathy is a systemic disease that can affect all muscles of the body including chest wall and diaphragm, resulting in dyspnea and orthopnea especially during supine position. Arriving at the correct diagnosis starts with high clinical suspicion, supported with high level of CK, aldolase, and transaminases. EMG and muscle biopsy confirm the diagnosis. Positional PFT's can help establish the diagnosis of myopathy when there is significant worsening of volumes in the supine position, and should be considered in certain patients with dyspnea and orthopnea, when heart failure is less likely the correct diagnosis.

NOT GIST A STOMACH MASS: WHY DIAGNOSING GASTROINTESTINAL STROMAL TUMORS CAN BE CHALLENGING Ali Shami. Baystate Medical Center, Springfield, MA. (Control ID #2707173)

LEARNING OBJECTIVE #1: To distinguish the endoscopic diagnostic modalities for a gastrointestinal stromal tumor (GIST)

LEARNING OBJECTIVE #2: To review the anatomical origin of GISTs

CASE: A 64 year old female of Thai descent presented with nausea, vomiting and bloating for several days. She had recently felt loss of appetite but denied any weight loss. She also reported two years of dull, intermittent abdominal discomfort. On physical examination she was found to have a palpable tender mass in the left upper quadrant of her abdomen without other exam findings. She underwent computed tomography (CT) scan of the abdomen with contrast which revealed a large gastric mass with both intraluminal and extraluminal components measuring at least 18cm × 14.6cm × 12cm in size. The patient underwent an esophagogastroduodenoscopy (EGD) for biopsy of the mass. EGD showed a fungating 5cm × 4cm mass in the stomach body, suspicious for malignancy and several biopsies of the lesion were obtained. However histology results were negative, revealing only gastric mucosa. For further characterization of the mass, endoscopic ultrasound (EUS) was performed during which the mass appeared to protrude from the submucosal layers of the stomach wall with an overlying layer of normal appearing gastric mucosa. Needle aspiration biopsy of the mass was performed and results were consistent with a gastrointestinal stromal tumor (GIST). The patient is currently awaiting multidisciplinary management of the GIST with oncology and surgery involvement.

IMPACT: For histological diagnosis of large gastric masses, EGD may appear the most intuitive diagnostic option. However, for GISTs the diagnostic yield is low (20-30%) due to the fact that these malignant tumors are submucosal rather than arising from the gastric mucosal layer and therefore may not be accessed by biopsies obtained by EGD. This is an important consideration as GISTs are often found as sizeable masses in the stomach and small intestine.

DISCUSSION: GISTs represent only 1-3% of all gastrointestinal malignancies. However they are the most common mesenchymal tumors of the gastrointestinal tract, originating from the interstitial cells of Cajal (ICC) in the submucosal layers. They commonly manifest as large masses in the stomach or small intestine, which may be picked up on imaging in a patient presenting with nonspecific abdominal symptoms. EGD is often the first modality pursued for histological diagnosis of gastric masses; however, for GISTs the diagnostic yield with biopsy obtained by EGD is 20-30%. This is due to the fact that most GISTs originate from the submucosal layers and many grow extraluminally outside the gastric wall. Consequently, standard EGD biopsies often access only the topmost mucosal layer and therefore reveal normal findings on histology. Endoscopic ultrasound with fine needle aspiration (EUS-FNA) offers better access to submucosal layers and is a superior method for tissue diagnosis. This technique has proven between 80-100% accurate for GIST diagnosis in several studies.

NOT YOUR TYPICAL PANCREATITIS: A PSOAS PSEUDOCYST
Shelly Kakar[4]; Carl Manzo[4]; Sophie M. Hapak[3]; Jana Al Hashash[4]; Amar Kohli[2]; Edgar Raymund Ramirez[1]. [1]UPMC, Pittsburgh, PA; [2]UPMC, Mars, PA; [3]University of Pittsburgh, Pittsburgh, PA; [4]University of Pittsburgh Medical Center, Pittsburgh, PA. (Control ID #2705518)

LEARNING OBJECTIVE #1: Recognize an unusual presentation of a pancreatic pseudocyst.

LEARNING OBJECTIVE #2: Identify the management for a retroperitoneal fluid collection and the impact of advanced imaging.

CASE: A 54 year-old, previously healthy female, presented to the emergency department with a 2 week history of left flank pain radiating to her left leg. She described the pain as a constant ache that worsened with movement. Social history was pertinent for heavy alcohol and tobacco use. Physical exam revealed a drowsy, cachectic patient in acute pain. Patient was afebrile and hemodynamically stable. Left lower quadrant, left flank, and left thigh were tender to palpation. A positive psoas sign was elicited on the left side. Laboratory data was significant for sodium of 127mEq/L, potassium 3.2mEq/L, and calcium 7.5mg/dL. Albumin was 2.1g/dL. ALT and AST were normal. WBC count was 3.7k/mm^2, hemoglobin 10.6g/dL, and MCV 97.7fL. Amylase was 54U/L and lipase 94U/L. Contrast-enhanced CT scan of the abdomen and pelvis showed a large (8.6cm × 11.4cm) rim-enhancing fluid collection within the entire left psoas muscle, extending from the iliac fossa into the left upper quadrant displacing the kidney and the pancreatic tail anteriorly. This was suspicious for a psoas abscess. The patient also had punctate calcifications in the pancreas and mild dilation of the pancreatic duct suggestive of chronic pancreatitis. She was started on IV vancomycin and piperacillin/tazobactam for the presumed abscess. The collection was percutaneously drained and ~1L was aspirated. Fluid analysis revealed an amylase rich fluid (6,696U/L). Repeat CT 3 days later showed the collection had decreased in size. MRCP demonstrated a direct communication between the pancreatic duct and the fluid collection.

IMPACT: Retroperitoneal fluid collections are rare, it is important to differentiate the primary source as it can lead to poor prognosis if not managed correctly. A broad differential should remain with any presentation of retroperitoneal fluid collections.

DISCUSSION: Pseudocysts are a known complication of pancreatitis with the highest incidence occurring in patients with chronic alcohol related pancreatitis. Very rarely do pseudocysts form in the retroperitoneum and along the psoas muscle as seen in our case. Complications include infection, abscess formation, fistula formation, and rupture into the peritoneal cavity. In both acute and chronic pancreatitis, pseudocysts do not require intervention unless they are enlarging quickly or symptomatic. Case management includes simple drainage of the cyst verses laparoscopic excision. In our patient, CT demonstrated chronic pancreatitis changes and MRCP delineated a direct communication between the pancreatic duct and the fluid collection, suggesting what was originally thought to be a psoas abscess was actually a pancreatic pseudocyst. In our case, a MRCP was

necessary to further delineate the communication between the pancreas and collection which allowed us to accurately manage the patient

NOW YOU SEE ME, NOW YOU DON'T Eric S. Miller; Rachel Sandler. Hennepin County Medical Center, Minneapolis, MN. (Control ID #2698511)

LEARNING OBJECTIVE #1: Review the differential diagnosis for neutrophil-predominant cerebrospinal fluid (CSF)

LEARNING OBJECTIVE #2: Identify alternative diagnostic testing for bacterial meningitis

CASE: Ms. S is a twenty three-year-old woman with a history of migraines who presented to the hospital with left-sided headache associated with fever, chills, nausea, confusion and photophobia that began six hours prior. She did not report any recent travel, animal or insect bites, sexual partners, or sick contacts. On physical exam, she was febrile to 104°F and tachycardic. She appeared somnolent, but was arousable to voice. Neurologic exam was pertinent for nuchal rigidity and pain with neck flexion without focal neurologic findings. Initial labs were remarkable for serum WBC $21x10^3/mm^3$ with 94% neutrophils. CSF showed cloudy pink fluid with 2000 RBC/mL, 8600 WBC/mL with 93% neutrophils, protein 221 mg/dL, and glucose 45 mg/dL. The initial gram stain was negative. She was empirically started on broad-spectrum antibiotics for bacterial meningitis and admitted to the hospital. On day 3, CSF cultures returned negative. 16S ribosomal RNA testing and repeat routine CSF studies were obtained. Repeat routine CSF studies were unremarkable and the 16S ribosomal RNA was negative. Antibiotic therapy was stopped after 7 days.

IMPACT: Recognizing the differential diagnosis for neutrophil-predominant CSF and utilizing alternative diagnostic testing allows for further diagnostic clarification and judicious use of antibiotics in cases of suspected bacterial meningitis.

DISCUSSION: Bacterial meningitis is suspected when CSF reveals a neutrophilic WBC count greater than 1000/mL, low glucose, and high protein. Elevated protein and CSF WBC of greater than 100 cells/mL have been seen in over 90% of patients with acute community-acquired bacterial meningitis. Neutrophilic predominant CSF can also be seen with viruses, such as *West Nile* virus and *Herpes Simplex* virus and *Mycobacterium tuberculosis*. Immunodeficiency can alter commonly seen patterns and complicate diagnosis. While CSF culture is the gold standard for diagnosis of bacterial meningitis, culture-negative cases do occur. Most often such cases occur if studies are drawn after antibiotics have been administered. Blood cultures can be a useful adjunct in these cases. Rapid PCR testing for common meningitis pathogens is now possible and has been shown to have very high sensitivity, specificity, and positive and negative predictive value. Alternatively, 16S ribosomal RNA gene testing is available and if positive, indicates the presence of bacteria. CSF lactate concentration can also be used to distinguish bacterial from aseptic meningitis with greater than 90% sensitivity and specificity. In cases of meningitis where CSF results are either equivocal or culture-negative when suspecting bacterial meningitis, re-examining the different diagnosis and knowledge of alternative testing is key for accurate diagnosis and appropriate treatment.

NSAID RESISTANT PERICARDITIS: THE CASE FOR KEEPING YOUR PATIENT CLOSE Jerry N. Centeno; Chris Lee; Harshil Patel. New York Presbyterian Queens, Queens, NY. (Control ID #2706527)

LEARNING OBJECTIVE #1: Recognize the clinical presentation, rare complications, and diagnosis of systemic inflammatory disease.

LEARNING OBJECTIVE #2: Recognize the importance of monitoring clinical response and establishing close follow up in patients with serositis.

CASE: A 22 year old African American male with a history of Raynaud's phenomenon, presented with worsening chest discomfort and shortness of breath for one month. He described a sharp chest pain which increased while supine and decreased when upright. Upon further investigation, he reported being treated with NSAIDs at a previous hospitalization elsewhere for pericarditis, but with a gap in follow up prior to presentation. On physical exam, vital signs were heart rate 112bpm, blood pressure 101/60mmHg, and Respiratory rate 25. On auscultation there were distant heart sounds with bilateral crackles in the lower lung fields. Laboratory work up showed elevated creatinine (2.54mg/dl) and inflammatory markers (CRP 10.57mg/dl, ESR 83mm). Chest x-ray revealed bilateral vascular congestion with an enlarged cardiac silhouette. EKG showed sinus tachycardia with diffuse PR segment depressions. Echocardiogram revealed a large circumferential pericardial effusion with fibrin stranding, but no sign of tamponade physiology. Laboratory studies revealed decreased C3 < 38mg/dl, C4 < 9mg/dl, ANA titer 1:2560 with coarse speckled pattern, dsDNA titer 1:320, smith Ab >8, and ribonucleoprotein antibody >8. Pericardiocentesis drained 900cc of exudative fluid by Lights criteria and he was started on high dose methylprednisolone 40mg IV q12 hours to treat pericarditis secondary to active systemic lupus. Hospital course was uncomplicated and patient was discharged with outpatient follow up. He was started on a steroid taper and azathioprine was added for steroid sparing therapy. Patient remains asymptomatic while adhering with therapy and follow up appointments.

IMPACT: This case highlights the importance of monitoring medical management in order to prevent rare, but life threatning complications from systemic inflammatory disease.

DISCUSSION: Systemic lupus erythematosus is a disease which is highly prevalent among African American females and typically presents earlier than in Caucasians [2]. Pericarditis is a common manifestation of lupus, however, these patients are often asymptomatic, and it rarely causes hemodynamic instability or tamponade. Our patient presented with unstable vital signs due to a significant pericardial effusion secondary to lupus pericarditis resistant to NSAID therapy. Lab work and imaging studies raised suspicion of systemic disease which promptly led to a diagnosis, proper management, and close outpatient follow up. This case highlights the importance of aggressive follow-up to rule-out systemic etiologies in young patients with serositis, in order to prevent complications from systemic autoimmune disease.

OBSTRUCTED LARYNGEAL PROSTHESIS CAUSING TAKOTSUBO'S CARDIOMYOPATHY AND TORSADES DE POINTES Teresa Ratajczak[2]; Brian Cothern[2]; Ahmed El-Moghraby[2]; Rey F. Arcenas[1]. [1]Dayton VA, Dayton, OH; [2]Wright State University, Dayton, OH. (Control ID #2703556)

LEARNING OBJECTIVE #1: Recognize Takotsubo's cardiomyopathy in the differential diagnosis for a prolonged QT interval.

LEARNING OBJECTIVE #2: Understand the impact of Takotsubo's cardiomyopathy.

CASE: A 64-year-old male with history of Stage IV squamous carcinoma of the pharynx, status post laryngectomy and larytube implantation presented to the emergency department in respiratory distress. He was found to have an acutely obstructed larytube causing hypoxic respiratory failure and

subsequently underwent urgent surgical stabilization with larytube exchange. He was admitted for monitoring. Laboratory results were remarkable for a troponin of 0.457 ng/ml (reference < 0.045 ng/ml) without associated chest pain. Electrocardiogram (ECG) showed sinus rhythm, a known right bundle branch block and corrected QT (QTc) interval of 539ms (baseline 480ms). An electrolyte panel was within normal limits. Over the next several hours, the patient developed deeply inverted T waves in the anterior, lateral and inferior leads as well as accelerated lengthening of his QTc to 668ms on serial ECGs. Etiology of the QTc prolongation was unclear. Citalopram, which he had been taking daily for ten years was stopped. Short runs of TdP developed. Due to unstable hemodynamics, ECG changes and troponin elevation, he underwent an urgent cardiac catheterization which revealed nonobstructive coronary artery disease and apical ballooning. A diagnosis of Takotsubo CMP was made. A temporary pacemaker was placed and set at 100bpm to prevent further TdP. After a few days, QTc decreased to 570ms with gradual improvement of T wave changes and resolution of TdP. He was seen in clinic a month later and his ECG showed normalization of T waves and a return of QTc to baseline of 480ms (reference < 460 ms). It was proposed that the physical and emotional stress from of an obstructed larytube triggered the patient to develop Takotsubo CMP, prolonging his QTc and causing TdP.

IMPACT: Prolonged QT interval is a common finding in the hospital. Often it is caused by medications, however it can also be precipitated by Takotsubo cardiomyopathy (CMP). Although rare in this setting, some patients can develop torsades de pointes (TdP) ventricular tachycardia.

DISCUSSION: Takotsubo CMP is an important differential diagnosis of acute coronary syndrome due to the similar clinical presentation. Catecholamine surge due to physical or emotional stressors causes a temporary myocardial stunning, with a good prognosis. The mechanism of prolonged QTc is not known, and TdP is rarely seen with 0.5–3% reported in literature. Overdrive pacing is often required. A common cause of QTc prolongation is medication. Our patient had been taking citalopram for over ten years with only mild prolongation of baseline QTc, thus its contribution to the development of TdP is probably small in comparison to that of Takotsubo CMP.

OBSTRUCTIVE UROPATHY PRESENTING AS ALTERED MENTAL STATUS Vishal Shah[1]; joshua smith[2]; Chio Yokose[1]. [1]NYU, Long Island City, NY; [2]NYU Langone Medical Center, New York, NY. (Control ID #2704933)

LEARNING OBJECTIVE #1: Recognize that a bladder mass causing obstructive uropathy is an uncommon entity than can lead to Acute Kidney Injury

CASE: A 94 year-old male presented with altered mental status for one day. Patient's history is notable for diabetes mellitus for which he takes glimepiride. Exam was notable for disorientation and a distended bladder. His finger stick glucose was 59mg/dL and serum blood urea nitrogen and creatinine were elevated at 113mg/dL and 5.6mg/dL, respectively. Renal ultrasound revealed bilateral hydroureteronephrosis. Urinary catheterization was performed with 700ml of urine drained. He was started on subcutaneous octreotide for sulfonylurea overdose. The patient's mental status improved, however, his serum creatinine continued to rise over the next 24 hours. Further imaging with computed tomography revealed an abnormal soft tissue mass in the urinary bladder. He then underwent bilateral nephrostomy tube placement with rapid recovery of his renal function. The bladder mass was presumed to be bladder cancer, and the patient was discharged with plan for outpatient follow up.

IMPACT: In men, obstructive uropathy is not synonymous with prostatic enlargement. In addition to prostate pathology, pelvic masses, renal and ureteral stones can also cause obstruction. When a patient's renal function does not improve after initial bladder decompression, it is important to consider more proximal sources of obstruction.

DISCUSSION: In any patient presenting with acute kidney injury (AKI), it is important to consider obstructive causes, as timely intervention can lead to improvement of renal function. Elderly men and patients with a single functioning kidney or intra-abdominal malignancy are particularly vulnerable to obstructive nephropathy. In one study of etiologies of AKI, 10% were due to urinary tract obstruction. The incidence of obstructive nephropathy increases with age. In another study, obstruction was the cause of AKI in 7, 11, and 20% of those aged <65, 65–79, and >80 years-old, respectively. In men, the most common site for urinary tract obstruction is the prostate. However, obstruction may occur at any site from the renal papilla to the urethra. In cases of suspected obstructive uropathy, ultrasonography should be performed to evaluate for hydroureter and/or hydronephrosis, and if demonstrated, it would be advisable to scan the bladder. A non-distended bladder in the setting of hydroureter or hydronephrosis may indicate an obstructing ureteral stone or bladder mass. Our patient had two sites of obstruction: prostate and bladder. The prostatic obstruction was promptly relieved with insertion of a urinary catheter, but renal function did not improve as expected. This led us to further imaging which revealed an obstructing bladder mass. While prostatic enlargement is the most common cause of obstructive nephropathy in elderly men, other etiologies must remain on the differential, especially when renal function fails to improve after bladder decompression.

OCCLUSION OF RIGHT MIDDLE CEREBRAL ARTERY AS INITIAL PRESENTATION OF THROMBOTIC THROMBOCYTOPENIC PURPURA Andrea Tufano[1]; Ryan Sugarman[1]; Rebecca Nejat[2]; Johnson Liu[1]; Kyle Katona[1]. [1]Hofstra Northwell School of Medicine, Woodbury, NY; [2]Weill Cornell, New York, NY. (Control ID #2699239)

LEARNING OBJECTIVE #1: To recognize large cerebral artery occlusion (LCAO) as a rare presentation of thrombotic thrombocytopenic purpura (TTP).

LEARNING OBJECTIVE #2: To manage LCAO secondary to TTP with plasma exchange, and in select cases, to consider the use of thrombolytic therapy as well.

CASE: A 67-year-old right-handed female presented to the Emergency Department with a chief complaint of slurred speech. Physical exam revealed a partial right gaze palsy, left arm motor drift, dysarthria, and right-sided neglect, consistent with National Institute of Health Stroke Score of 7. Workup revealed elevated creatinine and severe thrombocytopenia, which precluded the use of tissue plasminogen activator (tPA). Noncontrast computed tomography (CT) of the head revealed no ischemia or hemorrhage, however CT angiography revealed an occlusion of the right middle cerebral artery. A peripheral smear was performed and schistocytes were identified. The diagnosis of TTP was later confirmed with ADAMTS13 assay. Therapeutic plasma exchange (TPE) and high dose corticosteroid therapy was initiated. The patient was discharged to rehabilitation with a diagnosis of TTP as the cause of stroke. One year later, the patient remains wheelchair bound with persistent right hemiparesis.

IMPACT: To our knowledge, this is the first reported case of LCAO as the initial presentation of TTP confirmed by ADAMTS13 assay.

DISCUSSION: TTP is an uncommon disease characterized by the classic pentad of thrombocytopenia, microangiopathic hemolytic anemia, acute kidney

injury, fever and neurologic symptoms. TTP results from inherited deficiency or acquired inhibition of the enzyme ADAMTS13. Reversible neurologic involvement is common in TTP, however, it is very rare to have permanent neurologic deficit secondary to LCAO. Prognosis is generally good when diagnosed early and treated with TPE. After extensive literature review, we could only identify nine cases in the literature that reported LCAO in the context of clinical TTP. In two of these cases the patient received thrombolytic therapy with tPA. In the first case, the patient had a normal platelet count at the time of tPA administration and was diagnosed with TTP later in the hospital course. This patient had residual arm weakness. In the second case, documented by Boattini, et al., administration of tPA and TPE was done in the setting of a platelet count of 27×10^9/L and the patient had full neurologic recovery. Our case illustrates that TTP can cause large vessel infarct, and plasma exchange should not be delayed for ADAMTS13 assay result. Thrombolytic therapy should only be considered in select cases where the benefit of treating large vessel stroke outweighs the risk of life threatening bleed in the setting of severe thrombocytopenia.

OCTREO-TRIED IN THE TREATMENT OF IDIOPATHIC CHRONIC INTESTINAL PSEUDO-OBSTRUCTION REEM E. AOUN[2]; Lydia Assioun[2]; Jennifer Schmidt[1]. [1]Saint Louis University, Saint Louis, MO; [2]Saint Louis University, St Louis, MO. (Control ID #2698377)

LEARNING OBJECTIVE #1: Octreotide could be useful in patients with idiopathic chronic intestinal pseudo-obstruction

CASE: A 67-year-old woman with history significant for Parkinson coming with nausea, vomiting, abdominal distention, and a 40-pound weight loss over 3 months is admitted for failure to thrive. During an outside hospital admission 4 weeks prior to presentation, CT scan, endoscopy, and exploratory laparotomy showed dilated bowels without mechanical obstruction. Repeat imaging during her current admission showed similar results. A colonoscopy with an intestinal biopsy was normal. Thus the workup was unrevealing of an underlying obstructive etiology. The patient was subsequently diagnosed with chronic intestinal pseudo-obstruction (CIPO). She was started on bethanecol, promethazine, and a trial of erythromycin without symptom improvement. She was unable to tolerate enteral feeds and was subsequently initiated on parenteral feeds for nutritional support. As traditional treatments had failed, the patient was started on octreotide nightly injections. The patient's symptoms improved; she was tolerating tube feeds at goal rate and was able to transition to oral intake. Her abdominal distention decreased and parenteral feeds were discontinued. The patient was discharged on a clear diet, tube feeds, and octreotide injections. On outpatient follow up 3 weeks post-discharge, the patient remained symptom free and was tolerating a general diet.

IMPACT: Chronic intestinal pseudo-obstruction is a rare disorder in which the patient exhibits symptoms and signs of intestinal obstruction in the absence of a mechanical block. Its treatment remains challenging with the limited literature available. We present a case of CIPO that failed treatment with prokinetics but resolved upon treatment with octreotide.

DISCUSSION: CIPO is a syndrome of small or large intestinal dysmotility characterized by bowel dilatation without evidence of physical obstruction. The literature on disease treatment is limited due to the rarity of the disease; thus treatment is typically based on clinical experience. Most intestinal prokinetics such as erythromycin or metoclopramide do not have proven benefit but are commonly used due to their theoretical role in improving gut motility. While caring for this patient, a literature search resulted in two small studies where octreotide had shown benefit on intestinal motility. Studies were limited however, to patients with scleroderma or to patients given a combination of octreotide and erythromycin. This case demonstrates the usefulness of octreotide in a patient with severe idiopathic CIPO after failing treatment with other prokinetics. In conclusion, octreotide could be a treatment option in dysmotility disorders when traditional treatments fail.

OH BABY! A CASE OF SEVERE HYPERNATREMIA AND EXTRAPONTINE MYLENOLOSIS SECONDARY TO GESTATIONAL DIABETES INSIPIDUS Serena M. Ogunwole. University of Texas Health Science Center San Antonio, San Antonio, TX. (Control ID #2703990)

LEARNING OBJECTIVE #1: Identify gestational diabetes insipidius as a cause of polyuria and severe hypernatremia.

LEARNING OBJECTIVE #2: Recognize an uncommon complication of overcorrection of hyponatremia.

CASE: An 18 year old G1P0 female (at 33 weeks gestation) with a history of obstructing nephrolithiasis presented to the ED with dysuria and abdominal pain. She was admitted for concern for urinary tract infection and recurrent obstructing nephrolithiasis. She was started on broad spectrum antibiotics and was made NPO at midnight for percutaneous nephrostomy tube placement. On hospital day 2 fetal heart sounds were noted to be absent and the patient was diagnosed with intrauterine fetal demise. Shortly after, the patient began to have changes in mental status. The Medicine consults team was called to evaluate the patient. Upon review of the flowsheet it was noted that the patient had 9L of urine output in the preceding day. A basic metabolic panel was drawn that revealed a serum sodium of 188 (a 40 point increase from admission). The patient was transferred to the Intensive Care Unit and Nephrology was consulted. She was started on a D5W drip and DDAVP. She had slow correction of her hypernatremia. MRI done on hospital day 4 showed pontine and extrapontine myelnolysis. The patient continued to recover motor and cognitive skills and was later sent to inpatient rehab.

IMPACT: GDI is a rare cause of polyuria and hypernatremia. Symptoms of GDI are benign and usually well tolerated when the sensation of thirst and access to water are not altered. Hospitalized patients often have a change in their access to free water for various reasons. Careful evaluation of intake and output can lead to immediate recognition of polyuria and prompt diagnostic and therapeutic interventions. It is important to recognize polyuria early, as the complication of acute severe hypernatremia may have devastating consequences.

DISCUSSION: GDI is estimated to occur in 2 to 6 cases per 100, 000 pregnancies. It can occur at any stage of gestation, but it generally occurs at the end of the second or during the third trimester of a first pregnancy and sometimes after delivery. The syncytiotrophoblast of the human placenta is known to play an important role in the production of vasopressinase which quickly degrades ADH and oxytoci. In gestational diabetes insipidus there is thought to be an increase in vasoppresinase activity. Administration of intranasal DDAVP is the treatment of choice in GDI. Unlike natural vasopressin, DDAVP, a synthetic analogue of vasopressin, resists degradation by vasopressinase.

OH SHIPP Juan C. Avila[2]; Kanapa Kornsawad[1]. [1]University of Texas Health Science Center, San Antonio, TX; [2]University of Texas Health Science Center at San Antonio, San Antonio, TX. (Control ID #2701738)

LEARNING OBJECTIVE #1: Recognize medications associated with and the clinical features of drug-induced lupus.

LEARNING OBJECTIVE #2: Develop a proper treatment plan for drug-induced lupus.

CASE: A 59-year-old woman presented with progressive dyspnea for four months. She was previously treated for pneumonia, but her symptoms continued to progress. On review of systems, she denied fevers, night sweats, weight loss, hemoptysis, and hematuria, but endorsed intermittent dry cough. Past medical history was significant for hypertension for five years treated with hydralazine and chronic kidney disease stage IV. She denied a prior smoking history. On physical exam, she had bibasilar crackles, no heart murmurs, rubs, or gallops, and no bilateral extremity edema. Serum laboratory studies were significant for a positive p-ANCA (titer of 1:640) and a positive histone antibody. Chest CT scan showed diffuse ground glass opacities. Bronchoscopy was noted to have significant erythematous and friable tissue with pulmonary hemorrhage. Bronchoalveolar lavage pathology revelead numerous hemosiderin-laden macrophages consistent with diffuse alveolar hemorrhage. Given these findings and long-standing use of hydralazine, the patient was diagnosed with hydralazine-induced vasculitis. Hydralazine was discontinued. In addition, she was started on high dose steroids with tapering. She wil be started on Rituximab infusions as an outpatient.

IMPACT: With the assistance of electronic medical records, it is convenient to obtain a medication history without having to inquire the patient directly. However, this can be problematic as one may overlook when a particular medication was started and, consequently, be unable to clinically correlate it with the presentation of the patient. With this in mind, I will be more diligent in my clinical practice by routinely taking a thorough medication history and being cognizant of medication side effects.

DISCUSSION: Specific drugs are known to induce an autoimmune response with the production of autoantibodies. Common drugs known to induce lupus include sulfasalazine, hydralazine, isoniazid, procainamide, and penicillamine (which are easily remembered by the mnemonic "SHIPP"). Drug-induced lupus is diagnosed when clinical features consistent with systemic lupus erythematosus are evident and autoimmune antibodies are present in the serum. This patient did not exhibit signs of myalgia, arthralgia, or rash, but rather pulmonary manifestations (i.e., diffuse alveolar hemorrhage). Anti-histone antibodies have been shown to be present in 95-percent of patients with hydralazine-induced lupus. Furthermore, p-ANCA antibodies have been shown to be markedly elevated in cases of hydralazine-induced vasculitis. In such cases, typical management involves complete withdrawal of hydralazine and administration of immunosuppressive therapy, as demonstrated with this patient.

ORBITAL APEX MASS (OAM) FROM GRANULOMATOSIS WITH POLYANGIITIS (GPA) AFTER INHALED PARTICLE EXPOSURE

Morgan Cronin; Sarah Schaeffer. University of California, San Francisco, San Francisco, CA. (Control ID #2701220)

LEARNING OBJECTIVE #1: Recognize the broad differential diagnosis for OAM, including GPA

LEARNING OBJECTIVE #2: Consider environmental exposures as risk factors for ANCA-associated vasculitides

CASE: A 65-year-old woman with a history of diabetes presented to our hospital with left eye vision loss, ophthalmoplegia, and MRI finding of left OAM. Six months prior, the patient's home roof collapsed and she was exposed to particulate matter during repair. She developed left sided headaches, eye pressure, intermittent diplopia, and bloody rhinorrhea that failed to improve with antibiotics. Out of concern for temporal arteritis, she was prescribed steroids which resolved her headaches. Temporal artery biopsy was negative, steroids were discontinued, and her headaches recurred. Five months after the collapse, she developed progressive left eye vision loss. An MRI confirmed a left OAM and she was admitted to our hospital for evaluation. Exam of the left eye showed ophthalmoparesis, minimally reactive pupil, and vision limited to light perception. Right eye exam was normal. Exam and testing of all other organ systems, including pulmonary and renal, were normal. Evaluation was performed for the broad differential causes of OAM, including neoplastic, infectious, and inflammatory conditions. Testing returned positive for elevated Anti-PR3 antibody and biopsy noted inflammatory features compatible with GPA. All other testing returned negative. The patient was diagnosed with GPA limited to the orbit and referred to rheumatology for further management.

IMPACT: This case highlighted the need to think beyond common presentations of GPA and to consider the role of environmental exposures as potential triggers for disease processes.

DISCUSSION: When evaluating a patient with OAM, internists must consider a broad differential of infectious, neoplastic, and inflammatory conditions. Orbital involvement has been reported in up to 50% of patients with GPA. Orbital disease may present as the first symptom of systemic GPA or as the only manifestation of limited GPA. As this case highlights, is it important to consider GPA in a patient with OAM, even in the absence of pulmonary or renal disease. The onset of disease symptoms after exposure to roofing debris is also notable. Many construction materials, including roofing, contain silica, a substance that has been associated with increased risk of GPA and other autoimmune diseases. Case control studies of roofing and construction workers have found positive association between silica exposure and risk of GPA. In this case, the patient experienced months of non-occupational exposure to similar materials. While knowledge of the pathophysiology is limited, it is important to note the connection. Recognizing the role of environmental exposure could lead to earlier consideration of GPA in patients like this with vision loss from orbital apex mass.

OROLINGUAL ANGIOEDEMA AFTER TISSUE PLASMINOGEN ACTIVATOR ADMINISTRATION: A CASE REPORT

Matthew Schilling; Kenneth Raney; Gregg Shalan. Methodist Hospital Dallas, Dallas, TX. (Control ID #2701870)

LEARNING OBJECTIVE #1: Recognize a potentially life-threatening side effect of tissue plasminogen activator therapy

CASE: An 88-year-old African American male with past medical history of chronic kidney disease stage IV, hypertension, atrial fibrillation, and gout presented to Methodist Dallas Medical Center emergency room on May 13, 2015 with acute onset right hemiparesis, numbness, right sided facial droop and slurred speech. Patients last known normal was 1.5 hours prior to arrival at ER. Code stroke was activated and teleneurology service was consulted. Stat CT scan was obtained, which showed no intracranial bleed. Teleneurologist and family agreed to administration of tPA. tPA was administered 1 hour after arrival to ER. Patient was admitted for observation in the neuro critical care ICU after administration of tPA. Patient was found to have moderate improvement in speech and minimal improvement in right sided weakness

immediately after administration. Patient was examined 6 hours after administration of tPA and was found to have right sided lower lip swelling. No tongue swelling or stridor was found on exam. Patient was started on methylprednisolone 40mg IV Q6h and was closely monitored. Orolingual angioedema resolved without further complications within the next 2 hours. Patient had overall improved strength in right lower extremity and speech but had significant residual right upper extremity weakness. Transesophageal echo was performed which showed vegetation on posterior mitral valve leaflet. Blood cultures were obtained to rule out endocarditis and resulted negative. Patient was sent to a rehab facility, and was subsequently started on xarelto for anticoagulation.

IMPACT: This case serves as a reminder of the need for increased awareness and caution in regards to post-tPA monitoring. Routine inspection of the lips and oral cavity is necessary during and after the administration of tPA in stroke patients.

DISCUSSION: Orolingual angioedema is a rare side effect of Tissue Plasminogen Activator (tPA) administration, with incidence per literature search to be between 1–5%. With increasing use of tPA for treatment of stroke, awareness needs to be raised regarding this potentially life threatening complication.

OROPHARYNGEAL DYSPHAGIA: RARE PRESENTING SYMPTOM OF STATIN-INDUCED HMG COA REDUCTASE NECROTIZING AUTOIMMUNE MYOPATHY Vatsal Y. Bhatt; Clifford Stermer; Vivien Hsu; Ranita Sharma. Rutgers Robert Wood Johnson Medical School, New Brunswick, NJ. (Control ID #2702031)

LEARNING OBJECTIVE #1: To recognize an atypical presenting symptom of Statin Induced Necrotizing Autoimmune Myopathy.

LEARNING OBJECTIVE #2: To distinguish a rare case of treatment refractory disease process.

CASE: A 79 year old male presented with four weeks of progressive dysphagia to solids and liquids, a 25lb weight loss and fatigue. He denied odynophagia, vomiting, dyspnea, fevers, skin changes, or arthralgias. No recent vaccinations were administered. Over time he reported pain with weakness in bilateral lower extremity proximal muscle groups. Increased effort was needed to rise from the sitting position. Once upright, he could ambulate. He denied tobacco or alcohol use. He had diabetes treated with metformin, hypertension controlled with medications and hyperlipidemia treated with daily atorvastatin 40 mg for the past 2 years. Age appropriate cancer screening was completed. On exam HR was 96, BP was 137/65 and RR was 18 without hypoxia. He was thin with notable temporal wasting and gargled speech. No neck masses were detected. Cardiopulmonary and abdominal exam were normal. Rashes were absent. Neurological exam revealed intact cranial nerves, no tremors, fasciculations or muscle wasting, no difficulty in raising arms above his head but visible difficulty rising from a chair with a subsequent normal gait and sensory testing. Labs included CPK of 8185, aldolase of 346 (normal < 8), AST/ALT of 176/395 (subsequently normalized), normal renal function, and a hemoglobin of 10. TSH and B12 levels were normal. HIV, T-SPOT, Hepatitis B/C were negative. Vitamin D levels were low. A barium swallow confirmed cricopharyngeal paralysis. MRI brain was normal. Atorvastatin was discontinued for a suspicion of statin induced myopathy but CPK levels remained elevated. Myopathy workup was pursued. Myositis panel antibodies including Jo-1, MI-2, SRP, U2-snRNP, U1-RNP, NXP-2, and TIF1 were all negative. Anti-HMGCR antibodies were markedly elevated at > 200 (normal < 20). Biopsy revealed muscle fiber necrosis, phagocytosis, macrophages with minimal inflammation. Despite steroids, IVIG and Rituximab, the patient's clinical condition deteriorated with inability to ambulate and continued need for PEG feeding.

IMPACT: This was a unique presentation of statin induced Necrotizing Autoimmune Myopathy that required a thorough investigation before reaching the diagnosis. Because patient presented with dysphagia as the primary symptom with no initial muscle weakness, myopathy was not initially high on our differential. However, this case highlights that in individuals with statin exposure and elevated CPK levels, oropharyngeal dysphagia should warrant a myopathy workup.

DISCUSSION: We highlight two variations to descriptions of statin-induced HMGCR NAM: oropharyngeal dysphagia replacing the classic presentation of proximal muscle weakness and progression of disease despite immunosuppression. It is imperative to exercise early recognition of statin induced NAM to allow for prompt immunosupressive therapy, leading to better clinical outcomes.

OUCH MY LEG! ATYPICAL PRESENTATION OF BURKITT LYMPHOMA WITH PERSISTENT LACTIC ACIDOSIS AND HYPOGLYCEMIA Sophie Korzan; Rooma Nankani; Michael Thompson; Shiromini Herath. University of Connecticut, Farmington, CT. (Control ID #2707380)

LEARNING OBJECTIVE #1: Recognize the rare association of Burkitt Lymphoma with lactic acidosis and hypoglycemia

LEARNING OBJECTIVE #2: Distinguish and be able to provide appropriate work-up and pain evaluation in difficult patient populations

CASE: 47 year old Hispanic male with a medical history of IV drug abuse with opiate dependence, HIV not adherent with ART, untreated Hepatitis C and Diabetes Mellitus presenting with worsening left lower extremity (LLE) pain of two years duration. He visited various Emergency Departments with no conclusive diagnosis only receiving various antibiotics for suspicion of infection and prescription pain medications. The pain was described as a crushing, burning sensation in his left buttock and thigh rated 10/10 on the severity pain scale, with associated swelling and general weakness. Other symptoms included fever, chills, night sweats, nausea, decreased oral intake, dizziness and confusion. No chest pain, shortness of breath, sensory or neurologic deficits. On exam he was ill-appearing, restless and combative. Examination of the LLE revealed a circumferential area of erythema on the thigh with diffuse edema, induration, tenderness to light palpation and limited range of motion. Laboratory studies revealed hypoglycemia and lactic acidosis. LLE doppler was negative for deep venous thrombosis. Computer Tomography (CT) and Magnetic Resonance Imaging (MRI) of the LLE showed a large medial compartment soft tissue mass. He was evaluated by surgery for compartment syndrome as well as necrotizing fasciitis and underwent an urgent fasciotomy. Throughout the hospital stay he had persistent hypoglycemia and lactic acidosis complicated by tachycardia and tumor lysis syndrome with worsening of symptoms into the

periscrotal area. CT guided biopsy of left thigh revealed a diffuse aggressive B-cell Non-Hodgkins lymphoma infiltrating skeletal muscle. Given the patient's underlying immunosuppression, the patient was deemed unsuitable for chemotherapy and was transitioned to inpatient hospice. Autopsy revealed extensive involvement of the heart, iliopsoas musculature, and brain by aggressive Burkitt Lymphoma.

IMPACT: This is a rare presentation of Burkitt Lymphoma with primary localization in the LLE musculature. Associated metabolic features of combined lactic acidosis and hypoglycemia have been reported in only three documented cases.

DISCUSSION: Combined lactic acidosis with hypoglycemia in the setting of malignancy can be explained by the Warburg effect whereby neoplastic cells undergo glycolysis and produce lactate even in aerobic conditions. This phenomenon can be disrupted by chemotherapy in certain lymphomas. It is also important to be aware that as physicians we may be biased towards difficult patients like the IV drug user who appears to be pain-seeking. To avoid delay in appropriate management of rare pathology, thorough diagnostic work up and attention should be provided regardless of socioeconomic background.

OVERLOOKED CAUSE OF DYSPNEA IN A PATIENT WITH GLAUCOMA Jean M. Lenz; Denise Dupras. Mayo Clinic, Rochester, MN. (Control ID #2706849)

LEARNING OBJECTIVE #1: Recognize topical ophthalmic beta blockers as a cause of chronotropic incompetence and bronchoconstriction.

CASE: BF was a 74-year-old woman with a history of RA, hypertension, remote smoking history, chest radiation for breast cancer 24 years ago, cataracts, and open angle glaucoma who presented initially with acute episodic shortness of breath, atypical chest discomfort, and dyspnea on exertion. She was doing well until several days after cataract surgery, when she began to notice wheezing and shortness of breath with minimal exertion. She was evaluated in the emergency department where vital signs were stable. Labs were notable for hemoglobin 14.2, WBC of 13.6, and a negative troponin. ECG was normal and CT angiogram of the chest showed only mild inflammatory changes consistent with bronchiolitis. She was discharged home. In follow up 2 weeks later, her symptoms were improving but still present. Exercise ECG was negative for ischemia, but maximum heart rate achieved was only 109 bpm. Pulmonary function testing showed an increase in residual volume and airway resistance with an FEV1/FVC ratio 82% of predicted and a positive bronchodilator response. Echocardiogram was within normal limits. A trial of albuterol improved her symptoms. Detailed evaluation of her medication list revealed that she had been prescribed high doses of timolol and latanoprost eye drops post operatively, corresponding to the time of her symptom onset. Additionally, she was taking timolol eye drops at the time of her exercise stress test, explaining her chronotropic incompetence. As the doses of her timolol drops were tapered, her shortness of breath and wheezing improved. The CT findings were thought to be related to her underlying connective tissue disorder, and her immunosuppressive medications were continued. Ultimately, the etiology of her shortness of breath was considered multifactorial, likely related to medication effect from the topical beta blocker and deconditioning.

IMPACT: This case illustrates the importance of a careful history and review of the medication list, including often overlooked topical medications. Eye drops can have systemic effects, as seen in this case.

DISCUSSION: Beta blockers are well known to cause bronchoconstriction and bradycardia. Bronchoconstriction has even been reported with topical ophthalmic administration of timolol. Dyspnea and PFT abnormalities have also been reported. In general, topical timolol therapy is contraindicated in patients with asthma or severe COPD. Cardiovascular effects of topical timolol have also been well described. Bradycardia, complete heart block, and precipitation of acute heart failure have all been reported with topical timolol use.

PAN-SINUSITIS: AN UNUSUAL PRESENTATION OF INFECTION IN MULTIPLE FACIAL CAVITIES Bernard Partiula; Vladimir Ornstein. Northwell Health Lenox Hill Hospital, Brooklyn, NY. (Control ID #2705045)

LEARNING OBJECTIVE #1: Recognize an unusual presentation of sinusitis.

LEARNING OBJECTIVE #2: Understand the potential lethal complications of severe bacterial sinusitis.

CASE: An 18 year old male presented with a throbbing headache for 1 week, associated with fevers to Tmax 102 F, neck stiffness and photophobia. He also admitted to a recent sore throat which had since improved and a mechanical fall onto the back of his head 3 weeks ago. He presented to another hospital prior, had a lumbar puncture (LP) performed which was negative, and was discharged with a diagnosis of muscle strain. On physical exam, he had marked photophobia, mild neck stiffness, negative Kernig's and Brudzinski's signs, and mild bilateral maxillary sinus/temporal bone tenderness. He was febrile on admission and had a leukocytosis to 30 K/uL. Suspecting meningitis, broad spectrum antibiotics were administered and another LP was performed, which was negative for any growth. His fever curve down-trended and antibiotics were stopped. A CT neck ruled out a fracture/abscess, given the recent fall he sustained. Another LP was performed and ruled out a possible autoimmune cause for his symptoms. An MRI brain, followed by a CT sinuses, then showed complete opacification of the left and right sphenoid sinuses and abnormal extensive enhancement along the lateral left cavernous sinus, along with bilateral ethmoid sinusitis and left mild mastoiditis, extending to the apex of the orbital bones. He was immediately started on Zosyn and otolaryngology took the patient for a functional endoscopic sinus surgery with drainage of massive amounts of pus. The patient was continued on IV antibiotics for several days and was discharged with all symptoms having resolved.

IMPACT: This case represents an unusual presentation of sinusitis and changes the way we should think about facial cavity infections. Initially this patient seemed to fit the bill for a diagnosis of meningitis but it's important to see that severe sinusitis can mimic and overlap with other diseases. Going forward, it would behoove health care providers to consider facial sinusitis as part of the differential in young patients presenting with fevers, headache, facial pain, and neck stiffness in the setting of a recent URI.

DISCUSSION: The majority of cases of acute rhinosinusitis is due to viral infection with superinfection with bacteria being a common complication. Our patient presented with fevers, neck stiffness, photophobia, and severe headache after experiencing a recent URI. He was initially suspected to have meningitis, however further workup showed extensive inflammation/infection in multiple facial sinuses. This case illustrates the extent of overlap between signs and symptoms of meningitis and facial sinus infection. It is imperative to have a high suspicion for this disease as the complications may be devastating and can include

periorbital/orbital cellulitis, subperiosteal abscess, meningitis, intracranial/epidural abscess, osteomyelitis of the sinus bones, and septic cavernous sinus thrombosis.

PANCREATITIS ASSOCIATED WITH A NEW HAART Amro Ilaiwy[2]; Nitya Ramreddy[1]; Ravi George[3]. [1]University of Miami Miller School of Medicine at Holy Cross Hospital, Fort Lauderdale, FL; [2]University of Miami Miller School of Medicine at Holy Cross Hopsital, Fort Lauderdale, FL; [3]Holy Cross Hospital, Fort Lauderdale, FL. (Control ID #2706784)

LEARNING OBJECTIVE #1: Acute pancreatitis is a condition characterized by systemic inflammation of the pancreas. Common etiologies in general population include alcohol abuse and choleodocolithiasis. The incidence of acute pancreatitis in HIV infected individuals is known to be higher than general population, and epidemiologic studies suggest it might be as high as 40%. Many HAARTs have been reported to cause pancreatitis. In this case report, we present a possible side effect of newly FDA proven medication, Genvoya

CASE: This patient is a 65 year old gentleman with past history significant for HIV infection on HAART (started on Genvoya 4 weeks ago) and non hodgkin lymphoma two decades ago presented with new onset abdominal pain over six hours. Pain was stabbing, 10/10 in severity, increased with movement and decreased while lying still. Patient was unable to provide detailed history during first encounter due to severe pain. Physical exam was performed after administering intravenous morphine, Patient was hypertensive 180/80 mmHg, despite a negative prior history of hypertension. Severe epigastric tenderness was appreciated, with active bowel sounds on abdominal exam. Pertinent lab workup on admission revealed elevated lipase 607 IU/l, mildly elevated LFTs with no leukocytosis. Patient was managed with IV fluids, NPO diet (Genvoya was held) and pain control. Gastroenterology were consulted. CT scan of the abdomen without contrast was done and did not reveal any acute findings. Both MRI abdomen and HIDA scan were done 8 days prior to admission and did not reveal any evidence of cholelithiasis. Patient denied any alcohol use, which was supported by ALT/AST ratio >1. Calcium and triglyceride levels were within normal limits. On the next day, Lipase levels increased to 1396 IU/l. Patient continued to improve clinically and liquid diet was advanced. Genvoya was not given. On third day of admission, lipase levels returned to normal, and patient was tolerating full diet with no issues. Patient was later discharged with appropriate follow-up with his primary and infectious disease physicians to consider adjusting HAART regimen.

IMPACT: Despite the well established association between many HIV medications and acute pancreatitis, no data has yet been published in regards of Genvoya use and incidence of acute pancreatitis.

DISCUSSION: Genvoya is a new HAART approved by FDA in November 2015 for eligible HIV infected individuals. It is composed of Elvitegravir (integrase strand transfer inhibitor), Cobicistat (CYP3A inhibitor), Emtricitabine (NRTI) and Tenofovir alafenamide, which is a novel phosphonoamidate prodrug of Tenofovir used for the first time in HAART. To our knowledge, this is the first documented case report that links inititation of Genvoya therapy to acute pancreatitis.Other possible etiologies of acute pancreatitis, including choledocholithiasis, alcohol use, hypercalcemia, and hypertriglyceridemia have been ruled out before making the diagnosis.

PARANEOPLASTIC MEMBRANOUS NEPHROPATHY IN A DIABETIC PATIENT Nathan C. Nowalk[1]; June Kampangkaew[1]; Glynda Raynaldo[2]. [1]Baylor College of Medicine, Houston, TX; [2]Michael E. DeBakey VA Medical Center, Houston, TX. (Control ID #2706137)

LEARNING OBJECTIVE #1: Recognize the existence of non-diabetic glomerular disease in the diabetic patient.

LEARNING OBJECTIVE #2: Acknowledge the association between membranous nephropathy and malignancy.

CASE: 63 year-old male with history of Diabetes Mellitus Type 2 (DMT2) presented with diffuse swelling and dyspnea on exertion for one month. Outpatient labs showed progression of Chronic Kidney Disease from Stage 2 to Stage 4 over the last 4 months. Paradoxically, the patient noted an unintentional weight loss preceding new swelling. The patient's DMT2 had been well-managed on oral hypoglycemic drugs and he displayed no evidence of retinopathy or neuropathy. Admission labs showed creatinine of 2.4 mg/dL, serum albumin of 1.1 g/dL, and proteinuria of 16g/dL. Following unrevealing serologic work-up for secondary causes of proteinuria, the patient underwent renal biopsy showing membranous nephropathy (MN). Admission chest x-ray revealed incidental 1.4 cm nodular opacity. While he underwent diuresis for anasarca, a CT-Thorax demonstrated 1.8 cm Right Middle Lobe nodule. A follow-up PET/CT again recognized the suspicious nodule, but lesion was absent FDG-avidity. Given high clinical suspicion for malignancy, the patient underwent biopsy confirming Stage 1A Lung Adenocarcinoma. Currently, the patient is scheduled for lobectomy.

IMPACT: As DMT2 is a common cause of proteinuria, his providers were reluctant to pursue renal biopsy. Ultimately, he underwent biopsy as he met characteristics of non-diabetic glomerular disease. The general hospitalist should continue to recognize non-diabetic glomerular disease in diabetics. An established association between MN and malignancy exists. Given this association and the reported weight loss before edema accumulation, an aggressive approach was taken for an incidental pulmonary nodule.

DISCUSSION: Nephrotic syndrome is defined by heavy proteinuria (>3.5 g/day), hypoalbuminemia (<3 g/dL), and peripheral edema. MN is the 2nd most common cause of primary nephrotic syndrome. Diagnosis is established by renal biopsy. Recognized characteristics that should prompt biopsy in a diabetic patient include: absence of other end-organ damage from DMT2 and faster progression to overt proteinuria in weeks-to-months, rather than years. Etiologies of MN can be divided into primary (idiopathic) or secondary causes. These causes include: Drugs (NSAIDs, Anti-TNF Therapy), Hepatitis B or C infection, Systemic Lupus and malignancy. In a review of 240 patients with MN, the prevalence of cancer was 10%. In this cohort, the diagnosis of cancer and MN was often made within 1 year of one another. In patients with cancer-associated MN, a strong relationship between cancer remission and reduction in proteinuria has been observed. Patients with MN warrant more aggressive evaluation of unexplained weight loss or anemia, particularly in the population greater than 65 years old.

PATIENT WITH ACUTE SHORTNESS OF BREATH, DRY COUGH, ARTHRALGIA AND FEVER Smita Y. Bakhai. SUNY at Buffalo, Buffalo, NY. (Control ID #2692645)

LEARNING OBJECTIVE #1: Recognize clinical features of antisynthetase syndrome

LEARNING OBJECTIVE #2: Diagnose interstitial lung disease (ILD) in patients with polymyositis (PM)

CASE: 54 year old nonsmoker male consulted primary care physician (PCP) for acute onset of dyspnea, fever, dry cough and arthralgia. PMH was significant for positive PPD. Physical examination revealed a sick male, dyspnea at rest, absence of rales and otherwise normal. Chest x-ray and CT chest were performed in the emergency room (ER) one day prior to visit showed bilateral pneumonia and patient was started on antibiotic. PCP suspected rheumatology disorder with lung involvement. Rheumatology work up was ordered including HIV. Creatine kinase (CK) was elevated at 1026. PCP consulted with a rheumatologist; clinical diagnosis of acute onset of ILD with simultaneous onset of inflammatory myopathy (PM) was suspected; Jo-1 antibody was ordered. Patient had multiple ER visits for worsening of dyspnea with respiratory failure, requiring 2 Liter of oxygen. Rheumatologist evaluated patient for worsening dyspnea, proximal muscle weakness, arthritis and Raynaud's syndrome. Diagnosis of anti-synthetase syndrome was confirmed based on inflammatory myopathy, acute interstitial pneumonitis and arthritis, with elevated CK level of 1537 and positive Jo-1 antibody at 540. Patient was started on high dose prednisone and INH after muscle biopsy. Pulmonary function tests (PFT) and lung biopsy were consistent with interstitial lung disease.CT chest at one month showed classic ILD. ILD was steroid responsive, resulting into clinical improvement in dyspnea, hypoxemia, and PFT. Patient's muscle weakness got worse while trying to taper prednisone. Cyclophosphamide was added, patient responded well to the treatment. CK level paralleled disease activity, peaked at 1657 at one month, trended down to 80 within one month of therapy. CT Chest performed at 5 months showed improvement. PM symptoms continued to worsen at one year, requiring repeat muscle biopsy which confirmed changes compatible with PM.

IMPACT: History and physical examination skills are very crucial to recognize any disease. Coordination of care and communication between PCP and specialists are cornerstone in prompt diagnosis and treatment of a life threatening condition. When patient's CK is lowered, but strength is not improved, muscle biopsy should be performed to exclude steroid induced myopathy. Awareness of anti-synthetase syndrome is important, because early diagnosis and management of ILD may prevent morbidity and mortality.

DISCUSSION: Antisynthetase syndrome is a rare autoimmune disease, characterized by anti-Jo1 antibody and presence of one or more components of the triad: inflammatory myopathy; dermatomyositis (DM), and PM, ILD and polyarthritis. With variable presentations of PM and ILD, it poses a major diagnostic challenge. High resolution CT chest and PFTs are sensitive tools to detect early ILD. Recognition is critical to prevent morbidity and mortality from ILD.

PEN CAP: FOREIGN BODY ASPIRATION FROM INTRANASAL DRUG ABUSE CAUSING EMPYEMA Crystal Singleton; Faris Galambo; Alexandra Strauss; Kellee Oller. University of South Florida, Tampa, FL. (Control ID #2700208)

LEARNING OBJECTIVE #1: Recognize foreign body aspiration as a potential cause of serious pulmonary disease

LEARNING OBJECTIVE #2: Assess intravenous drug users for risk factors of foreign body aspiration

CASE: A 38-year-old previously healthy male presented to the emergency department with sudden onset, right-sided back pain worse with movement. He also reported 1 month of progressive dyspnea, malaise, productive cough with purulent sputum, and 15-pound unintentional weight loss. He had a 15 pack-year smoking history, daily marijuana use, and current intravenous (IV) drug use. On initial physical exam, he was uncomfortable and had tachypnea with an oxygen saturation of 92% on room air. Breath sounds were decreased over the right lung field. Initial labs demonstrated respiratory alkalosis, mild leukocytosis, normocytic anemia, and a mild protein gap. Computed tomography (CT) of the chest demonstrated consolidation of the right lower lobe with a trace right pleural effusion. He was admitted to medicine and started on ceftriaxone and azithromycin for community-acquired pneumonia. When his symptoms did not improve, a thoracentesis was performed. The 800 ml of pleural fluid was found to be exudative by Light's criteria, and a chest tube was placed. He underwent right thoracotomy for a decortication on hospital day 7. Given his minimal post-operative improvement, a bronchoscopic alveolar lavage (BAL) was performed which identified a foreign body in the right lower lobe bronchus, which had the appearance of an endobronchial valve. He denied prior pulmonary interventions in the past but recalled accidentally "inhaling a pen" while snorting methamphetamine 3 years prior. Repeat bronchoscopy removed the foreign body, which was confirmed to be a pen tip. He was to receive 4 weeks of IV antibiotics, but he left the hospital AMA.

IMPACT: In patients unresponsive to treatment for community-acquired pneumonia, further investigation is required to identify the cause. CT of the chest or bronchoscopy can assist in identifying etiologies such as an empyema or endobronchial lesions. This case highlights a rare consequence of intranasal drug abuse - foreign body inhalation and the delay in which it can manifest.

DISCUSSION: Foreign body aspiration (FBA) is an uncommon diagnosis in the healthy adult patient. Documented risk factors include age over 75, alcohol or sedative use, and impaired mental status and swallow reflex. Presentations can range from acute cough and asphyxiation to severe long-term complications including persistent pneumonia and empyema. Patients with inhalation illicit drug use should be considered as a risk factor. Our case demonstrates the potential for serious long-term pulmonary complications in the adult patient with unrecognized FBA, and the value of a complete history in arriving at the diagnosis.

PERICARDIAL EFFUSION AS A RARE INITIAL PRESENTATION OF AN EXTRA-GONADAL MIXED GERM CELL TUMOR

Dhruv Mahtta; William Paul Skelton IV; Samantha Leigh Welniak; Long Dang. University of Florida, GAINESVILLE, FL. (Control ID #2702477)

LEARNING OBJECTIVE #1: Recognize the importance of a thorough work up of atypical chest pain after ruling out acute coronary syndrome (ACS)

CASE: A 26-year-old construction worker with no medical history presented to the emergency department with chest pain. After acute coronary syndrome was ruled out, his symptoms were attributed to musculoskeletal chest pain, likely costochondritis. On re-evaluation two months later, a transthoracic echocardiogram (TTE) was obtained for suspected post-infectious myocarditis which showed a large pericardial

effusion without tamponade physiology. Pericardiocentesis was performed with placement of a pericardial drain. On hospital day two, worsening respiratory distress prompted a CT angiogram of the chest to evaluate for pulmonary embolism; imaging revealed a large (10.5 cm) mediastinal mass compressing the right pulmonary artery. Pericardial fluid cytology was consistent with a malignant effusion. The patient underwent emergent radiation therapy for size reduction and CT guided biopsy. Pathology resulted as mixed malignant germ cell tumor with yolk sac, embryonal, and mature teratomatous components. Subsequent staging CT abdomen/pelvis and scrotal ultrasound were negative, confirming the diagnosis of an extra-gonadal mixed germ cell tumor (EGCT). The patient completed 4 cycles of chemotherapy with bleomycin, etoposide, and cisplatin, which he tolerated well.

IMPACT: After ruling out ACS, chest pain in a young patient without risk factors is challenging and often attributed to musculoskeletal etiologies; thorough workup to evaluate for other etiologies is imperative. Metastasis to anterior mediastinum has been well described as the presentation of EGCT. However, erosion into the pericardium with subsequent malignant pericardial effusion is a rare presentation and serious complication.

DISCUSSION: Musculoskeletal chest pain is a common etiology of chest pain, especially in young patients without risk factors. In addition to thorough cardiac workup to evaluate for life threatening etiologies of chest pain, imaging with TTE and CT scan are important in identifying pericardial pathology or mediastinal mass lesions, such as thymoma, lymphoma, teratoma, and germ cell tumor, the latter of which is most commonly found in males in the third decade, as in our case. Of primary mediastinal germ cell tumors, malignant nonseminomatous tumors are far less common than their seminomatous and benign teratomatous counterparts, and when present, rarely cause pericardial involvement. They often carry a distinctly worse prognosis, making early diagnosis imperative. In this patient, thorough workup with imaging and pericardial fluid analysis allowed for early diagnosis of a rare nonseminomatous EGCT with pericardial involvement. The patient promptly underwent appropriate therapy with curative intent and resolution of symptoms.

PERIPHERAL NEUROPATHY AS A COMPLICATION OF LIVEDOID VASCULOPATHY Augustin Joseph; Adam P. Sawatsky. Mayo Clinic, Rochester, MN. (Control ID #2678895)

LEARNING OBJECTIVE #1: Recognize manifestations of livedoid vasculopathy

LEARNING OBJECTIVE #2: Diagnose peripheral neuropathy as a complication of livedoid vasculopathy

CASE: A 67-year-old female presented with painful, petechial-like rashes on her lower extremities. After several months the lesions ulcerated, with increasing pain and paresthesias in her feet bilaterally. Her physical examination revealed atrophic, porcelain white macules with peripheral telangiectasias and circumferential erythematous patches. A punch biopsy showed occlusive vasculopathy. Work-up ruled out underlying rheumatologic and hypercoagulable conditions. She was diagnosed with of livedoid vasculopathy and started on warfarin. After one month her ulcers began healing. She continued to have significant pain and swelling in her feet and underwent a course of hyperbaric oxygen therapy. Two months after starting warfarin her wounds healed, her swelling resolved, and her pain improved. She developed a new burning band-like pain across the top of her foot and ankle that limited her walking. An EMG demonstrated a mild length-dependent axonal peripheral neuropathy, which was treated with gabapentin and lidocaine patches.

IMPACT: Livedoid vasculopathy is a rare condition that presents similar to vasculitis, but is caused by intravascular thrombosis and not vascular inflammation. This case highlights the importance of obtaining a biopsy to confirm appropriate diagnosis and management.

DISCUSSION: Livedoid vasculopathy is a thrombotic, noninflammatory skin condition that causes chronic recurrent painful lesions of the lower extremities, most commonly in young and middle-aged women. It is thought to be mediated by a dysfunction of coagulation or fibrinolysis. Livedoid vasculopathy can manifest as a primary disease or secondary to underlying hypercoagulability or rheumatologic condition. Patients present with small, erythematous, telangiectatic, purpuric areas, with scattered petechiae at the margins. Many patients experience pain, burning, or itching from their rash. Small superficial sharply punched-out ulcerations are common. Ulceration healing can require up to six months. Ankle edema and pain can precede the onset of clinical lesions. To confirm the diagnosis, a skin biopsy deep enough to include muscular vessels must show segmental hyalinizing vasculopathy and thrombus formation in blood vessels of the middle to deep dermis. Management includes wound care, analgesia, and avoidance of predisposing risk factors to thrombosis. Small observational studies suggest antiplatelet, anticoagulant, or fibrinolytic therapies may be effective in controlling the disease. Our patient responded to warfarin and hyperbaric oxygen, with wound healing and diminished pain. As a sequela of her primary livedoid vasculopathy, our patient developed peripheral neuropathy, a rare complication. Peripheral neuropathy is thought to be caused by ischemia from vascular thrombotic insults of the vasa nervorum.

PERIPHERAL NEUROPATHY ASSOCIATED WITH HEPATITIS C INFECTION Kristen S. Lee. Boston University School of Medicine, Boston, MA. (Control ID #2702074)

LEARNING OBJECTIVE #1: Recognize peripheral neuropathy as an extrahepatic manifestation of hepatitis C (HCV) infection.

LEARNING OBJECTIVE #2: Distinguish peripheral from central neuropathy based on history and physical exam in patients with neurological symptoms.

CASE: A 45-year-old woman with HCV genotype 1b with a viral load of 670,000 IU/mL was evaluated for numbness and tingling of her hands and feet after a fall. She denied trauma. On physical exam, she had decreased sensation to pinprick and light touch on bilateral upper and lower extremities up to her ankles with a positive Romberg. Computed tomography angiogram identified two intracranial aneurysms. She underwent stent placement and suffered no post-operative complications. There were no cerebellar or vertebral artery lesions on imaging studies. However, her paresthesias significantly worsened over one month causing difficulty with ambulation and inability to bathe and dress herself. She denied skin rash or joint pain. Physical exam showed proximal extension of her sensory deficit and absence of lower extremity reflexes. There was no palpable purpura or abnormal joint findings. Vitamin B12, hemoglobin A1c, and thyroid stimulating hormone levels were within normal limits, rapid plasma reagin test was non-reactive, and HIV was

negative. Cryoglobulin was positive with decreased level of complement C4 level. A twelve-week course of HCV treatment with ledipasvir-sofosbuvir was initiated. At three months after treatment completion, she achieved sustained virologic response (SVR) and her neurological symptoms resolved except for residual paresthesia of her right toes. She fully recovered the ability to perform all her activities of daily living.

IMPACT: Clinical data are not yet available for optimal treatment of HCV related peripheral neuropathy with direct-acting antiviral agents (DAA). However, given favorable side effect profiles and SVR rates, DAAs are an attractive option for this condition.

DISCUSSION: Peripheral neuropathy, both motor and sensory, is the most common neurologic complication of HCV infection. The pathophysiology of the neuropathy is not definitively known but proposed mechanisms include cryoglobulin deposition in the vasa nervorum and HCV-mediated vasculitis. This is evidenced by the prevalence of peripheral neuropathy among people with HCV infection and mixed cryoglobulinemia which is close to 90%. The optimal treatment for HCV-related peripheral neuropathy has not been established. For severe neuropathy, immune modulatory therapy should also be considered. This case demonstrated the importance of a good history and physical exam to prompt consideration of most likely diagnosis in a patient who presented with neurological symptoms. In this case, two intracranial aneurysms were incidental findings. Her clinicians recognized that her symptoms were more consistent with peripheral neuropathy and her symptoms largely resolved with DAA treatment.

PERNICIOUS ANEMIA CAN BE A BLAST: PERNICIOUS ANEMIA PRESENTING WITH PANCYTOPENIA AND LEUKOERYTHROBLASTIC CHANGES Audrey Sigmund; Matthew Sullivan; Jennifer Woyach. The Ohio State University, Columbus, OH. (Control ID #2704063)

LEARNING OBJECTIVE #1: Nutritional deficiencies should be considered early in the work-up of new pancytopenias in order to avoid unnecessary invasive testing and harmful treatment.

LEARNING OBJECTIVE #2: Pernicious anemia can present with features on blood smear that are often found in myelodysplastic disorders, hemolytic processes, and acute leukemia including pancytopenia, increased LDH, decreased haptoglobin, and blasts.

CASE: A 41-year-old African American female with a history of Crohn's disease and hypothyroidism presented with progressive fatigue, melena, and an episode of syncope. Labs were notable for hemoglobin of 3.1 with a MCV of 105.8, WBC of 2.14 with 41.5% neutrophils, and platelets of 24. Initial physical exam showed tachycardia and mild tachypnea with positive hemoccult test on rectal exam. Further work-up revealed TSH of 29.33, reticulocyte count of 3% with a reticulocyte index of 0.3, lactate dehydrogenase (LDH) of 3322 with haptoglobin of <30, vitamin B12 of 158 (ref range 180–914 ng/L) and folic acid of 3.63 (normal ≥ 4.0 mcg/L). Peripheral blood smear showed leukopenia with absolute neutropenia, rare circulating blasts, occasional elliptocytes, circulating nucleated red blood cells, and hypersegmented neutrophils. Gastroenterology was consulted and she underwent upper esophagogastroduodenoscopy (EGD) and colonoscopy to evaluate for a source of bleeding and to perform biopsies. EGD showed diffuse mild atrophic gastric mucosa but did not identify any endoscopic source of bleeding. Colonoscopy was notable only for thrombosed external hemorrhoids. Biopsies of the gastric mucosa were consistent with autoimmune metaplasia atrophic gastritis and serum intrinsic factor antibody was positive, which led to the diagnosis of pernicious anemia. She was started on daily parenteral vitamin B12 supplementation with improvement in her blood counts.

IMPACT: This presentation is a unique case because it demonstrates the diverse hematologic abnormalities that can be seen with pernicious anemia. While it classically presents with isolated anemia, it can, as in this case, also present with pancytopenia. This patient also presented with signs of hemolysis including increased LDH and decreased haptoglobin as well as leukoerythroblastic changes.

DISCUSSION: Pernicious anemia is a megaloblastic anemia that results from vitamin B12 deficiency due to lack of intrinsic factor. Diagnostic criteria include megaloblastic anemia, low serum vitamin B12, gastric body mucosal atrophy, and antibodies to intrinsic factor. Peripheral blood smear findings and laboratory work-up of the anemia are essential in evaluation. While it classically presents with megaloblastic anemia, pancytopenia, signs of hemolysis, and leukoerythroblastic changes can also be seen. These findings often can be mistaken for myelodysplastic disorders, hemolytic processes, and even acute leukemia. Thus, it is important to consider nutritional deficiencies early in the work-up of new pancytopenias in order to avoid unnecessary invasive testing and harmful treatment.

PERSONALIZED PHARMACOTHERAPY IN A PATIENT WITH CYTOCHROME P450 2D6 POLYMORPHISM Sheeba Paul[1]; Celia Lu[2]; Lauren Block[1]. [1]St. Johns University, Queens, NY; [2]Northwell Health, Lake Success, NY. (Control ID #2702736)

LEARNING OBJECTIVE #1: Pharmacogenomic testing should be considered for patients on multiple psychiatric medications due to the complexity of each individual's metabolism of these drugs

LEARNING OBJECTIVE #2: Poor metabolizers of CYP2D6 may be at increased risk for serotonin syndrome as well as other adverse events related to polypharmacy

CASE: A 47 year old woman with a history of depression, migraine headaches, urticaria, and an eating disorder presented to her primary care physician with palpitations, night sweats, and hot flashes as well as occasional tremors for 2 weeks. Her medications at the time included vortioxetine 5 milligrams three times daily, duloxetine 30 milligrams three times daily, and sertraline 125 milligrams daily, which are substrates of the cytochrome P450 2D6 enzyme. Laboratory testing including blood count, thyroid function, and metabolic panel were normal. No infectious etiology was found and the patient reported adequate fluids intake. An electrocardiogram showed sinus tachycardia at 110 beats per minute, which had increased from 60 three months prior. The patient noted palpitations the following afternoon, took her own heart rate, and found it to be 190. She was hospitalized for further management of her sinus tachycardia and found to meet clinical (Hunter) criteria for serotonin syndrome. Results of her genetic testing indicated that patient is a poor metabolizer of cytochrome P450 2D6, increasing her risk of serotonin syndrome on her current medications. Withdrawal of her serotonergic medications resulted in complete resolution of her symptoms.

IMPACT: Due to the great deal of psychiatric medications metabolized by cytochrome P450 2D6 and the widespread availability of tests for genetic polymorphisms, pharmacogenomic testing should be considered in patients taking multiple medications that are substrates of the enzyme and in patients considering escalating psychotherapy with multiple serotonergic agents.

DISCUSSION: The CYP2D6 enzyme metabolizes about 25% of current medications, including opioids, antidepressants, antiarrhythmics, and antiemetics. There is large variation in enzyme activity within the population, and 5–10% of Caucasian patients are poor metabolizers. This patient's CYP 2D6 polymorphism predisposed her to abnormal metabolism, increasing her likelihood of developing serotonin syndrome. The new discovery of the patient's genetic makeup and history of serotonin syndrome posed a great challenge in providing appropriate medications to treat her multiple chronic conditions. Although pharmacogenomic testing for CYP2D6 polymorphism is now widely available and covered by most insurances, cost-effectiveness data has not supported routine use in patients with depression or schizophrenia. More studies are needed to determine the clinical impact of CYP2D6 polymorphism in patients with psychiatric polypharmacy, as well as the cost-effectiveness of pharmacogenomic testing in this subset of patients.

PLASMODIUM VIVAX MALARIA IN A PATIENT WITH LONG QT SYNDROME Srikanth Tammali[1]; Sai Prasad Gadapa[2]. [1]Kakatiya Medical College, Hyderabad, India; [2]Presence Saint Francis Hospital, Evanston, IL. (Control ID #2707466)

LEARNING OBJECTIVE #1: 1) Only medication licensed for elimination of hypnozoites of Plasmodium Vivax and Plasmodium Ovale is Primaquine.

LEARNING OBJECTIVE #2: 2) Treatment becomes challenging in a patient with Plasmodium Vivax infection, history of Long QT syndrome, and significant family history of sudden cardiac death.

CASE: We report a case of 45 yo female with past history of hypertension on metoprolol 50 mg twice daily presenting with high grade continuous fever more in the evening associated with night sweats, nausea, headache, malaise, myalgias and dizziness since past 1 week. She moved to USA from Pakistan 10 months ago. Review of systems was negative except above. She has strong family history of sudden cardiac death, her sister died at the age of 30, her son died at the age of 16, her other son received AICD 6 years ago. On examination her BP was 142/60 mm of Hg, HR 97/min, RR 20/min, Oral Temperature 102 F, Spo2 97% on room air. General and systemic examination was unremarkable. Significant findings on investigations include thrombocytopenia 87 k/mm cu; normal leukocyte count with 14% bandemia, procalcitonin was 45 ng/mL, and CRP 6 mg/dL. EKG showed 507 msec on admission. She was admitted and started on broad-spectrum antibiotics. She developed transient episode of palpitations and low blood pressure, cardiac monitor showed Torsades de pointes for 8 s. During her hospitalization her blood cultures were negative, received AICD and was eventually discharged after her symptoms improved. She was admitted again after one month with similar complaints. This time Malaria preparation was sent which showed 10% malaria parasitemia. she was treated with Atovaquone and Proguanil 1000/400 mg daily for 3 days. Her blood sample was sent to CDC for identification of species. She was found to be infected with Plasmodium Vivax species. She has no G6PD deficiency. She received Primaquine 45 mg weekly for 8 weeks with close follow up with cardiologist. She successfully finished her treatment without complications.

IMPACT: This is the rare case report of Malaria and Long QT syndrome. Our options of treating this patient were very limited as most of the drugs used to treat malaria has an adverse effect of QT prolongation. Termination of Plasmodium Vivax hypnozoites with primaquin was challenging.

DISCUSSION: Primaquine 45 mg weekly for 8 weeks is used in patients with borderline G6PD deficiency, we used the same regime in this patient.

PLASTIC BRONCHITIS (PB) COMPLICATED WITH PNEUMOMEDIASTINUM AND PNEUMOPERICARDIUM IN A YOUNG FEMALE: A RARE COMPLICATION OF STATUS ASTHMATICUS Kushal A. Shah; Maliha Naseer; Sarwan Kumar. Wayne State University, Rochester, MI. (Control ID #2707622)

LEARNING OBJECTIVE #1: Plastic Bronchitis is a rare condition with heterogeneous presentation associated with formation of extensive endobronchial casts.

CASE: A 23 years-old female with history of asthma presented with complains of worsening shortness of breath accompanied with productive cough, chest tightness, sinus congestion and wheeze which started a week ago. The patient denied history of fever, chills, chest pain, palpitations, exposure to sick contacts and travel history. Vitals showed RR of 35, HR in 120-130s with an SO2 of 88%. Examination revealed crepitations on palpation of the neck area and chest. Auscultation was significant for scattered rhonchi and wheezing bilaterally and diminished heart sounds. X-ray and CT Chest showed extensive pneumomediastinum and pneumopericardium, subcutaneous emphysema and ground glass opacities in the bilateral lower lobes. Labs showed anion gap metabolic acidosis with lactate level of 3.7 (0.5-2.2), and WBC: 14700. The patient was admitted to the ICU and started on prednisone, albuterol and IV levofloxacin. Subsequently the patient developed acute respiratory failure and became hemodynamically unstable. Bedside ECHO was done to rule out cardiac tamponade. Left sided chest tube was placed because of presence of pneumothorax and patient was taken to OR for left anterior thoracotomy with pericardial window and mediastinotomy. Later bronchoscopy revealed several mucus plugs tracking the airway in the L upper and lower lobe and R upper lobe. Chest X-ray post bronchoscopy showed left lung re-expansion. She had improved respiratory function, decreased ventilator requirement. Bronchial wash sample tested negative for aspergillus antibody, cystic fibrosis screening and gene mutation, serology for histoplasmosis, blastomycosis and coccidiomycosis. IgE level was in normal limits. Cytology was negative for malignant cells but revealed dense mucoid material with abundant mixed neutrophils, eosinophils and reactive respiratory epithelial cells. Gram stain showed respiratory flora. The patient was extubated and discharged home on steroids and inhaler.

IMPACT: We present an otherwise healthy, 23 years-old female diagnosed with Plastic bronchitis complicated with pneumopericardium and pneumomediastinum.

DISCUSSION: It has been hypothesized that asthma, ABPA, mucoid impaction and plastic bronchitis are based on a common allergic response involving the bronchial mucosa. PB often present as an acute life-threatening emergency if mechanical obstruction of major airways occurs. In plastic bronchitis casts are differentiated into type I, inflammatory casts, or type II, acellular casts. The type I inflammatory casts are often associated with bronchial disease and often have an acute presentation. Our patient presented with a Type I Plastic bronchitis complicated with pneumopericardium and pneumomediastinum. This case shows diagnostic evaluation and the need for suspicion by the physician to consider Plastic bronchitis (PB) as a differential diagnosis in respiratory distress.

PLOT TWIST: A STORY OF HEMODIALYSIS INITIATION Ihsan Yassine. UTHSCSA, San Antonio, TX. (Control ID #2706369)

LEARNING OBJECTIVE #1: Recognize the importance of maintaining a wide differential diagnosis when a patient is not progressing appropriately
CASE: Patient is a 57 year old man with PMH of diabetes, hypertension, chronic kidney disease stage V (baseline Cr ~ 3.5) who presented with 1 day history of acute onset nausea, vomiting, fatigue and dizziness. On admission, patient was noted to have BP of 214/163; exam otherwise unremarkable, without signs of volume overload. Labs were significant for Cr 6.0, BUN 52 with normal electrolytes. He was diagnosed with acute renal insufficiency, secondary to hypertensive emergency. His BP improved with nicardipine drip. Although patient continued to make sufficient urine output, his Cr/BUN peaked at 7.4/71. Nephrology determined this was progression of CKD in setting of medication noncompliance. Physical therapy noted significant imbalance with ambulation. Three days after admission, patient was initiated on hemodialysis due to persistent uremic symptoms. His symptoms and objective findings by PT did not improve. His son became concerned that his father was limited in activity due to dizziness and imbalance and did not feel he was safe to return home. With the patient not progressing as expected with dialysis initiation, a CT head was ordered 10 days after admission to assess for other causes. It revealed a recent left cerebellar infarct in the posterior inferior cerebellar artery distribution. A neurological exam revealed ataxic gait, impaired finger-to-nose, poor rapid alternating movements, and difficulty with heel-to-shin movements. Neurology determined patient's presenting symptoms were in fact due to the large cerebellar stroke, specifically with vermis involvement. Etiology of stroke was thought to be atherosclerosis. Patient was optimized on aspirin and statin. Scopolamine patch was started for vertigo. He was eventually discharged to rehabilitation with focus on vestibular rehabilitation.
IMPACT: This case highlights the importance of keeping a wide differential diagnosis when evaluating a patient, particularly when symptoms are non-specific. It is also important to continuously re-evaluate a patient throughout the hospitalization, especially if they are not progressing as expected. The case also shows the importance of looking beyond the labs and numbers and performing a thorough exam, particularly neurological in this case. Lastly, the patient's family's opinion is an important factor in assessing the patient.
DISCUSSION: Uremia due to renal failure is a common indication for the initiation of dialysis and can be seen at BUN level > 50 mmol/L but is usually seen at higher levels. Symptoms of uremia, such as nausea, vomiting, fatigue, pruritus, tremors, anorexia and altered mental status, are non-specific. Because they can be present in other illnesses, uremia must be a diagnosis of exclusion. A thorough history and physical exam should look for other causes of presentation, such as a cerebellar infarct, as in this case.

PLUGGING THE FILTER: THROMBOSED INFERIOR VENA CAVA FILTER CAUSING ACUTE RENAL FAILURE Warda Zaman; Sandrine Lebrun; Melissa P. Hershman; Gary Orin. Lenox Hill Hospital, New York, NY. (Control ID #2679342)

LEARNING OBJECTIVE #1: Diagnose renal failure from thrombosis
CASE: Current guidelines recommend retrievable inferior vena cava filters when both the risk of recurrent pulmonary embolism and the risk of bleeding with anticoagulation are high. The substantial burden of filter thrombosis warrants their removal once it is safe to resume anticoagulation therapy. We present a unique case of extensive filter thrombosis resulting in acute renal failure. An 86 year-old obese African American female presented with acute lower back pain, bilateral lower extremity swelling, and decreased urine output over two days. Her medical history included hypertension, hyperlipidemia, diastolic congestive heart failure, untreated deep vein thrombosis one year prior and remote bilateral PE complicated by diverticular lower gastrointestinal bleeding, requiring placement of an infrarenal IVC filter. Physical examination was notable for bilateral asymmetric pitting lower extremity edema up to the thighs. Abnormal laboratory results included: Sodium 133 mmol/L, BUN 33 mg/dL, and Creatinine 1.84 mg/dL. Urinalysis showed hematuria without red cell casts, trace proteinuria, fractional urea excretion below 35%, and urine osmolarity below 350 mosmol/kg. Renal ultrasound was unremarkable. Despite fluid resuscitation, the patient remained oliguric with progressive renal failure with creatinine peaking at 8.20 mg/dL. A noncontrast abdominal CT revealed extensive edematous changes in the proximal upper thighs bilaterally extending to the lower pelvis, suspicious for DVT involving the IVC and iliac veins. Doppler ultrasound confirmed venous thrombosis both proximal and distal to the IVC filter. After initiating intravenous heparin, intraoperative venogram showed thrombosis proximal to the IVC filter to the level of right ovarian vein and at the origin of right renal vein and left renal vein. Tissue plasminogen activator injection into both renal veins with subsequent Angiojet mechanical thrombectomy successfully restored patency. The patient was discharged on coumadin therapy, and required hemodialysis therapy for one month with return of renal function her baseline.
IMPACT: Current literature estimates filter thrombosis varies from 2.7 to 28%, typically lowest with Greenfield filter. To date, there is no data estimating the incidence of renal failure secondary to bilateral renal vein thrombosis in permanent IVC filters, though limited case reports involving both suprarenal and infrarenal filters noted a similar constellation of lower extremity edema, back pain, proteinuria and hematuria.
DISCUSSION: Though iliocaval thrombosis extending to renal veins is a rare complication of IVC filters, our case demonstrates the need for providers to maintain a high index of suspicion when diagnosing this unique cause of renal failure for which outcomes can range from reversible to fatal. As shown, CT imaging and doppler ultrasound may both adequately achieve diagnosis, with combination anticoagulation and thrombectomy proving effective therapy.

PNEUMOCEPHALUS SEEING MOUNT FUJI ON FILM Woody Chang[1]; Sinthana Umakanthan[2]; Fred Rubin[3]. [1]University of Pittsburgh Medical Center, Prebysterian-Montefiore, Pittsburgh, PA; [2]University of Pittsburgh Medical Center- Shadyside, Pittsburgh, PA; [3]UPMC Shadyside– Senior Care, Pittsburgh, PA. (Control ID #2707440)

LEARNING OBJECTIVE #1: To review the etiology of pneumocephalus
LEARNING OBJECTIVE #2: To definte treatment options for pneumocephalus
CASE: A 79-year-old female with mild dementia with biochemical workup being unremarkable presented to her primary care physician with worsening memory problems following a mild head trauma noted about 7 months prior to the visit. Her primary care physician ordered a brain MRI which showed a left

sided subdural hemorrhage with subfalcine herniation and rightward midline shift. She was transferred to the neurology unit where she then underwent a surgical evacuation of the hematoma with craniotomy, which was complicated by pneumocephalus, as noted on head CT with the "Mount Fuji sign," with a lowered level of consciousness. She was transferred to the ICU to be observed, though no intervention was undertaken. Serial head CTs showing improvement and gradual return to her baseline mental status over the next three days. She was discharged with outpatient follow up with neurosurgery.

IMPACT: Pneumocephalus, or the presence of intracranial gas, is a common postsurgical complication of neurosurgical procedures such as craniotomies. The gold standard of diagnosis is a head CT for the detection of air, with the "Mount Fuji sign" being a common finding for air that has compressed the frontal lobes. The majority of pneumocephalus cases are treated conservatively by preventing the increase of intracranial pressure, resulting in reabsorption of air within weeks of diagnosis. Severe cases require emergent relieving of intracranial pressure.

DISCUSSION: This case illustrates pneumocephalus, a complication of neurosurgical procedures as a result of intracranial air. The mechanism thought to involve either the introduction of air through cerebralspinal fluid leakage causing a ball valve effect, or fluid drainage causing a negative intracranial pressure with subsequent pressure equilibration by air replacement. The diagnostic gold standard to detect air intracranially is a head CT. The "Mount Fuji sign" that was seen on CT in this case indicates a more severe case of pneumocephalus, likely reflecting the amount of blood that was drained. Using conservative treatment of avoiding increased intracranial pressure, providing pain control, and using osmotic diuretics, 85% of pneumocephalus cases result in reabsorption of the air such as in this case. However, had there been any acute changes in consciousness or signs of intracranial hypertension, it would have necessitated surgical decompression.

PORT-A-CATH ASSOCIATED CEREBRAL GAS EMBOLISM Monica Thim[1]; Linda Shehu[2]; Abigail Orenstein[2]. [1]Baystate Medical Center, Broad Brook, CT; [2]Baystate Medical Center, Springfield, MA. (Control ID #2707015)

LEARNING OBJECTIVE #1: Assess a unique and rare case of cerebral gas embolism (CGE) as a port-a-cath complication

CASE: 29 year-old male with a history of CVID, pulmonary telangiectasia with shunting s/p lung transplant, and ITP s/p total splenectomy presented with focal neurologic deficits, seizure, and encephalopathy. Recently, he had been admitted for streptococcus viridans bacteremia for which he was discharged home on penicillin G via port-a-cath. On presentation, he was found unresponsive with chest wall trauma with seizure like activity. On ED arrival, he was intubated for airway protection with admission to the medical ICU. Laboratory data showed leukocytosis with left shift, acute kidney injury, lactic acidosis, CPK 1112, and myoglobinuria. CT Head showed no acute abnormalities. For possible meningoencephalitis, emergent LP was completed; and, he was given IV dexamethasone and broad-spectrum antibiotics. However, CSF fluid studies and culture were negative. MRI Brain on hospital day two showed ischemic changes of the left MCA and PCA territories. Repeat review of CT Head/Brain on presentation did reveal two foci of air in the left frontal lobe, concerning for CGE. TTE with bubble study confirmed the presence of PFO. EEG, completed for seizure concerns, was unrevealing after which Neurology recommended depakote for myoclonus. At discharge, all neurologic deficits had nearly resolved.

IMPACT: CGE is an iatrogenic, complication often associated with the insertion, removal, or manipulation of central venous catheters in the ICU. The increased outpatient use of long-term central venous devices, such as subcutaneous ports, can increase the risk of CGE, due to manipulation by inexperienced individuals. Increased recognition of CGE as a potential complication of these devices will be important to avoid high mortality.

DISCUSSION: Most reported cases of CGE have been associated with nontunneled central venous catheters and procedures such as laparoscopic or cardiothoracic surgeries. We present a rare case of CGE associated with port-a-cath use. Most common complications of their use are infection, thrombosis, mechanical failure, migration, port separation with extravasation, and hematoma. However, CGE is also a possible complication that should be considered as well. A high level of suspicion must be maintained to detect CGE, due to mimicry of ischemic stroke and high mortality of 1/5. Early detection is important as there has been some literature on the use of hyperbaric oxygen therapy for favorable outcomes. Patients with PFOs as our patient may be at higher risk of CGE with central venous devices. Thus, this may be an important consideration prior their use. Due to the increased outpatient use of subcutaneous ports, CGE should be recognized as a possible long-term complication. Judicious use, increased training, and monitoring of these devices should be considered for the prevention of CGE due to high mortality.

POSITIVELY CHARGED: RECURRENT HYPERCALCEMIA AS A COMPLICATION OF AIDS AND DISSEMINATED MAC INFECTION

Cesar Taborda; Schuyler D. Livingston. Emory University School of Medicine, Decatur, GA. (Control ID #2701182)

LEARNING OBJECTIVE #1: Distinguish the causes of hypercalcemia by contrasting key differences in the clinical and laboratory evaluation.

LEARNING OBJECTIVE #2: Outline the pathophysiology of hypercalcemia in the setting of granulomatous diseases such as mycobacterial infections.

CASE: A 40 year old male with a history of HIV/AIDS and disseminated mycobacterium avium complex (dMAC) presented to clinic with two weeks of fatigue, fevers, anorexia, and weight loss. Combined antiretroviral therapy (cART) had been initiated approximately three weeks prior, two weeks before the diagnosis of dMAC. Physical exam revealed a cachectic male with fever and tachycardia. On initial presentation, the patient was found to have moderate hypercalcemia (corrected serum calcium, 12.4 mg/dL). Further laboratory evaluation revealed suppressed parathyroid hormone (PTH), undetectable PTH-related peptide, and increased levels of 1,25 dihydroxyvitamin D (128 pg/mL). The clinical and laboratory data were consistent with hypercalcemia due to dMAC. Given the recent initiation of cART, the development of hypercalcemia was likely due to paradoxical worsening of dMAC due to immune reconstitution inflammatory syndrome (IRIS). He required inpatient care including hydration, intravenous pamidronate, and initiation of high dose steroids. Three months later, the patient again developed symptomatic hypercalcemia (corrected calcium, 13.1 mg/dL), shortly after tapering to low doses of prednisone. Approximately one year after his initial presentation, despite consistent therapy for dMAC and HIV, he developed recurrent hypercalcemia (corrected calcium, 14.5 mg/dL), again with highly elevated calcitriol levels.

IMPACT: Hypercalcemia has long been recognized as a potential serious complication of granulomatous disease. This is well-described in the setting of sarcoidosis and tuberculosis. Only rare case reports have documented hypercalcemia with elevated calcitriol levels in the context of AIDS and

dMAC. Among these rare cases, only one occurred in the setting of immune reconstitution.

DISCUSSION: Hypercalcemia is a common electrolyte abnormality in both primary care and hospital settings. Primary hyperparathyroidism, the most common etiology, is mild and gradual in onset, and typically asymptomatic. Hypercalcemia of malignancy tends to be more acute, with higher levels of serum calcium (>13 mg/dL), often leading to severe symptoms and complications. Elevated, or inappropriately normal, levels of PTH are consistent with primary hyperparathyroidism and familial hypocalciuric hypercalcemia. Low levels of PTH are highly concerning for malignancy, such as squamous cell carcinoma or lytic bone lesions. In some cases, measurement of vitamin D metabolites may be necessary to secure the diagnosis. High levels of $1,25(OH)_2D_3$ suggest granulomatous disease, in which macrophages convert $25(OH)D_3$ to its active form via the enzyme 1 α-hydroxylase.

POST COLONOSCOPY BLEEDING IT'S NOT ALL EXTERNAL

Clifton Davis[1]; Timothy E. Sommerville[1]; Michael Smith[2]. [1]Wright State University, Dayton, OH; [2]Wright State University, Fairborn, OH. (Control ID #2706303)

LEARNING OBJECTIVE #1: Recognize that splenic injury resulting in hemoperitoneum is a known but rare complication of colonoscopy.

CASE: A 60 year old female with past medical history of major depression, osteoarthritis, hyperlipidemia, and remote breast cancer treated with mastectomy presented for routine screening colonoscopy. The patient was admitted from the endoscopy suite after vomiting and aspiration concerns during the procedure. Per the colonoscopy report there was a normal distal colon but the exam was limited and abruptly terminated due to concern for aspiration. The patient was stable, requiring 2-3L of oxygen but resting comfortably in observation. The next morning, the patient was saturating well on room air. Less than 48 hours post-procedure, patient developed pleuritic chest pain and left upper quadrant pain. A computerized tomography angiogram was negative for pulmonary embolism, but revealed a 2.7 × 4.8 cm perisplenic hematoma. A CT abdomen and pelvis was performed showing a grade 3 splenic hematoma and hemoperitoneum. Pain worsened with the development of an acute abdomen on exam and vitals deteriorated to a blood pressure of 92/60, heart rate of 107, and oxygen saturation of 94% on room air. The patient was taken for an exploratory laparotomy. A splenectomy was done after finding a grade 4 splenic injury and an estimated blood loss of 500 mL. The patient received two units of packed red blood cells, one unit of fresh frozen plasma, and a quad pack of platelets while in the operating room. The patient's clinical status improved following the splenectomy, and eventually discharged home in stable and improved clinical condition after a nine day hospital stay.

IMPACT: With the frequency of colonoscopy in practice it is important to have an appreciation for splenic injury and other post procedural complications so that timely recognition can decrease delays in proper management.

DISCUSSION: Colonoscopies are a vital tool to the medical community and are utilized by internists, surgeons, and specialists alike. With the implementation of colorectal cancer screening practices, the number of colonoscopies performed each year will likely continue to grow. Predictably, the number of complications due to colonoscopy will also rise each year. The most notable serious complications of colonoscopy include perforation and hemorrhage which are reported at a rate of 0.1-0.3 and 0.1-0.6% respectively. Studies have shown that the incidence of splenic injury may be as low as 0.001%, with a third of patients being asymptomatic until a full 24 hours following the procedure. The delay in presentation not only delays the diagnosis, but also hinders timely management, including a surgical evaluation.

POSTERIOR REVERSIBLE ENCEPHALOPATHY SYNDROME ASSOCIATED WITH METHADONE OVERDOSE

Polina Trachuk; Paul Magda; Gary Bernardini. New York-Presbyterian/Queens, Flushing, NY. (Control ID #2698378)

LEARNING OBJECTIVE #1: Recognize that high-dose methadone may be the cause of the endothelial dysfunction seen in PRES

LEARNING OBJECTIVE #2: Recognize that methadone is not detectable on routine urine opioid screening as it is a synthetic opioid

CASE: A 55 year-old woman with a history of depression presented with acute onset of unresponsiveness, hypotension, acute renal insufficiency, fever and leukocytosis. A CT head and lumbar puncture were both negative for any significant findings. A video EEG showed no epileptiform activity. She was treated with IV fluids, IV antibiotics and pressors, subsequently showing clinical improvement. Initial urine drug toxicology screen was negative. However, on further questioning, the patient admitted to a suicide attempt by taking an overdose of methadone (30 pills). A methadone urine drug level performed 6 days after admission was markedly elevated at 560 (normal < 100ng/mL). On the same day, the patient began complaining of headache then had generalized tonic-clonic seizure. Upon awakening from the seizure, she complained of transient bilateral visual loss. A complete neurological exam was significant for only left proximal arm weakness. Initial MRI of the brain revealed bilateral subcortical fronto-parieto-occipital and watershed region FLAIR hyperintensities. MRA of the head and neck were normal. Follow-up laboratory testing showed normal creatinine, electrolytes, ANA and RF. Blood pressures had remained normal or only mildly elevated for the 5 days leading up to patient's seizure. Follow-up MRI FLAIR images 7 days later showed improvement in signal abnormalities. Follow-up neurological examination showed only the persistent predominantly proximal left arm weakness. Given the clinical scenario and the suggestive radiological features, she was diagnosed with PRES.

IMPACT: PRES is usually associated with malignant hypertension, blood pressure fluctuations, eclampsia, renal failure, autoimmune conditions or immunosuppressant medication use, none of which were found in our patient. This suggests the possibility that high-dose methadone may have been the precipitating factor that resulted in endothelial dysfunction. Our patient also highlights the interesting fact that methadone, as a synthetic opioid, is not detectable on routine urine opioid screening.

DISCUSSION: PRES is a clinical-radiological syndrome related to acute disruption of brain auto-regulation and endothelial dysfunction, leading to cerebral hyperperfusion and vasogenic edema. It typically presents with some combination of encephalopathy, headache, seizures, visual disturbances. Bilateral sub-cortical MRI abnormalities are common and can be associated with small watershed region ischemic or hemorrhagic strokes. Previously unreported, this is a rare case of PRES likely secondary to methadone overdose. If suspected, healthcare providers should keep in mind that methadone does not show up on routine urine toxicology.

PRIMARY EFFUSION LYMPHOMA: A MASS-LESS DISEASE WITH MASSIVE EFFECTS

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LEARNING OBJECTIVE #1: Recognize primary effusion lymphoma as a rare HIV-related disease

LEARNING OBJECTIVE #2: Distinguish primary effusion lymphoma from other types of lymphoma

CASE: A 44 year-old man with HIV on antiretroviral therapy (ART) with CD4 359 presented with a three month history of progressive bilateral lower extremity swelling, increasing abdominal girth, and dyspnea. He reported a 20-pound unintentional weight loss over the last year, associated with fatigue, drenching night sweats for three months and denied fever, headaches, abdominal pain, or changes in bowel habits. Physical examination revealed tachycardia and a pale cachectic man with cervical and axillary lymphadenopathy. He had a distended tense abdomen with palpable spleen and fluid wave, 2+ pitting lower extremity edema, and scrotal edema. Initial laboratory evaluation was significant for normocytic anemia 6.5g/dL, thrombocytopenia 126k/uL, and hypoalbuminemia 1.6g/dL. Further testing showed positive EBV and HHV-8 antibodies. CT-scan showed axillary, mediastinal and retroperitoneal lymphadenopathy, moderate right-sided pleural effusion, small bowel mass, splenomegaly, and ascites. Multiple lymph node biopsies were non-diagnostic. Thoracentesis was performed for worsening dyspnea and showed atypical cells positive for HHV-8, BOB-1, CD30, CD45 and negative for CD20 and PAX5, consistent with primary effusion lymphoma (PEL). Ascitic fluid cytology was also consistent with PEL. The patient was diagnosed with HIV and HHV-8-associated PEL. Given his poor performance status, ECOG 4, treatment with bortezomib and valganciclovir was started. Despite initiation of chemotherapy, the patient continued to deteriorate and comfort measures were eventually pursued.

IMPACT: HIV infection results in impaired cellular immunity leading to an increased incidence of a wide range of malignancies. Hospitalists should consider HIV-associated malignancies in the differential of HIV+ patients with nonspecific complaints. This case exhibits an additional rare differential diagnosis that should be considered in HIV+ patients who present with effusions of unknown etiology.

DISCUSSION: PEL is a rare and aggressive subtype of HIV-associated non-Hodgkin lymphoma (NHL) that only accounts for 1-4% of NHL cases. PEL manifests as malignant effusions without extracavitary involvement. Symptoms are related to fluid accumulation, such as dyspnea from pleural or pericardial effusions, and abdominal distension from ascites. PEL is associated with EBV+, however it is distinguished from all other lymphomas by its HHV-8 positivity. Due to its rarity, there is no therapeutic standard of care for PEL. Current options are based on case reports or in vitro data for which currently PEL remains a diagnosis with extremely poor prognosis. Aggressive chemotherapy with EPOCH or CHOP in combination with ART in patients has shown the most success with a median overall survival of 6-months. However, as in our case, therapy selection is limited by patient's performance status and side effect tolerance.

PRIMARY HYPERPARATHYROIDISM AND EWING'S SARCOMA IN AN ELDERLY MALE, A RARE COMBINATION. Maria D. Garcia-Jimenez[1]; Ali Hadi[2]; Monica Gupta[1]. [1]NYU School of Medicine, New York, NY; [2]New York University School of Medicine, New York, NY. (Control ID #2670791)

LEARNING OBJECTIVE #1: Recognize the co-existence of primary hyperparathyroidism and Ewing's sarcoma in patients with asymptomatic hypercalcemia.

LEARNING OBJECTIVE #2: Recognize that though rare, Ewing's sarcoma and primary hyperparathyroidism can be seen in an elderly male.

CASE: A 60 year-old man was diagnosed with Ewing's sarcoma of the left scapula after biopsy of a lytic lesion seen on computed tomography of the left shoulder. At time of diagnosis he had metastatic disease, a calcium of 11.6 mg/dL, parathyroid hormone (PTH) of 177.8 pg/mL, and parathyroid hormone related peptide (PTHrP) of <0.74 pmol/L (normal <2). Renal function, 25-vitamin D, and phosphate were normal. He received zoledronic acid and began chemotherapy. At a routine oncology appointment a year later laboratory studies showed calcium of 14 mg/dL. Though he was asymptomatic, this dangerously high level prompted his admission for treatment and monitoring. Vital signs, thyroid, neck, and lymph node exam were normal. A 10x10 cm fixed, non-tender mass extended down his left trapezius muscle and pain limited abduction of his left shoulder. Admission labs were notable for calcium of 14 mg/dL, PTH 376.6 pg/mL, PTHrP <0.74 pmol/L, 25-Vitamin D 18.4 ng/mL, and phosphate 1.8 mg/dL. Laboratory studies were consistent with primary hyperparathyroidism. He received intravenous (IV) fluids, IV furosemide, and pamidronic acid. His calcium improved to 11.2 mg/dL at discharge.

IMPACT: This case changed our thinking regarding the well-taught approach of medicine through Occam's razor, with a gaze toward the simplest, single explanation for pathology. It emphasized the need for thoughtful re-evaluation of common findings at points of transition of care. Additionally it highlighted a need for vigilance in patients with hypercalcemia, as they can remain asymptomatic at high levels.

DISCUSSION: Malignancy and primary hyperparathyroidism (PHPT) are the leading causes of hypercalcemia. In this patient malignancy was the initial hypothesized etiology of hypercalcemia. Paraneoplastic phenomena were considered, but PTHrP was undetectable and the osteosarcoma was not stained for release of PTH secretion given labs consistent with primary hyperthyroidism. The patient was left with diagnoses of both PHPT and Ewing's sarcoma, an unusual combination in an elderly male. PHPT is most common in females 50–60 years old, and not typical in elderly males. The incidence of Ewing's sarcoma is 4–5 cases per million, with the highest occurrence in men ages 10–20. There are four reported cases of concomitant PHPT and osteosarcoma; all females ages 34–69. These reports postulated elevated PTH led to development of osteosarcoma. However, lack of temporal association between diagnoses made this difficult to establish. The combination of PHPT and Ewing's sarcoma occurring simultaneously in an elderly male is rare. Recognizing the possibility of two concomitant diagnoses is crucial to ascertaining curative therapy of hypercalcemia, even when asymptomatic, as well as for further monitoring.

PRIMARY LIVER NEUROENDOCRINE TUMORS DO EXIST Anup Shah; Lily L. Yung; Kevin Andujar; Krystle Hernandez; Praneet Korrapati; Angela Chiang; Erica Grabscheid. Mount Sinai Beth Israel, Icahn School of Medicine, New York, NY. (Control ID #2688947)

LEARNING OBJECTIVE #1: Recognize the rapid progression of liver NET's.

LEARNING OBJECTIVE #2: The most frequent signs/symptoms of primary liver NET's are pain, jaundice, abdominal distention and a palpable mass as many NET's are endocrinologically silent.

CASE: A 51 yo male with a PMH of HIV CD4 494 on HAART and CABG one month prior presented with right sided abdominal pain and weight loss for 3 weeks. The patient appeared jaundiced with tender hepatomegaly. Blood work revealed elevated LFT's: Total Bili 10.4 mg/dL (nl 0.1-1.2), Direct Bili 7.3 mg/dL (x < 0.9), ALP 1318 U/L (38–126), AST 220 U/L (x < 36) and ALT 151 U/L (x < 46). Abdominal CT showed replacement of the majority of the liver parenchyma with innumerable rim enhancing hepatic lesions; the pancreas/ducts were unremarkable. To note, one month earlier the patient had normal LFT's. Chest CT prior to CABG revealed small vague hypodensities in the liver not pursued then due to the emergent nature of cardiac surgery and lack of abdominal symptoms. Although the pt was afebrile (VSS) and without leukocytosis, empiric antibiotics were started to cover potential liver abscesses. Blood and ascites fluid cultures, hepatitis, tuberculosis, entamoeba and echinococcus tests returned negative. AFP tumor marker was negative. CT chest revealed only a post-CABG hematoma. Serum chromogranin A was high at 3148 ng/mL (x < 95), but the urine 5-HIAA and octreotide scan were normal. Liver biopsy confirmed: small cell neuroendocrine tumors (NET's). The patient developed multi-organ failure, rendering him a poor candidate for chemo. Pt expired on LOS day 29. Autopsy revealed small cell NET's associated with intrahepatic lesions.

IMPACT: This case presents a very rare presentation of small cell NET of primary liver origin and highlights the rapid progression of which NET's can present. Octreotide scans and Urine 5-HIAA studies may fail to localize and diagnose NET's. Due to diagnostic challenges, small cell NET's in the GI tract are usually found at a late stage, characterized by extensive metastasis.

DISCUSSION: Neuroendocrine tumors have a low annual incidence of 2–5 cases per 100,000 people in the US. Although commonly arising from the lung and GI tract (e.g. pancreas), the liver as a primary source of small cell NET's is tremendously rare, with less than 20 cases described worldwide. Prevalence is higher among females; mean age of diagnosis is near 70 years. Frequently endocrinologically silent, the most frequent signs/symptoms are based on mass effects such as pain, jaundice, abdominal distention and a palpable mass. Chromogranin A levels are usually elevated in 80% of patients and can relate to illness burden. Octreotide scans often fail to localize tumors, as poorly differentiated NET's rarely express somatostatin receptors. Urine 5-HIAA testing has a low sensitivity in NET's without carcinoid features. Treatment involves radiotherapy/chemotherapy and may, if the tumor is localized, involve resection. Survival is poor - from 6 to 18 months in treated, or weeks in untreated patients.

PROGRESSIVE CUTANEOUS DISEASE FOLLOWING A DIAGNOSIS OF RHEUMATOID ARTHRITIS: UNCOVERING DISSEMINATED MYCOBACTERIUM MARINUM Cristina Garcia; Erika Abel; Kellee Oller; Charurut Somboonwit; Jose Montero. University of South Florida Morsani College of Medicine, Tampa, FL. (Control ID #2707450)

LEARNING OBJECTIVE #1: Identify risk factors for *Mycobacterium marinum*

LEARNING OBJECTIVE #2: Recognize cutaneous manifestations of disseminated *M. marinum*

CASE: 50 year-old man with a history of treated Hepatitis C initially presented with a progressive rash, digital swelling, and joint pain. He was diagnosed an inflammatory polyarthritis and was started on prednisone and eventually etanercept. Labs obtained at that time included a mildly positive rheumatoid factor, negative cyclic citrullinated peptide antibody, and an elevated C-reactive protein. Despite therapies, he experienced progression of synovitis and developed small, suppurative, nontender nodules of several joints as well as ulceration of his digits. Five months after his initial symptoms he presented to our facility. Upon interview he reported being an avid fisherman, with a trip the Bahamas prior to the start of his symptoms. He was febrile and mildly hypertensive. Erythematous rash was present on all extremities with multiple suppurative nodules and ulcerations on his forearms and fluid filled blisters on his feet. Tips of his digits had deep ulcerations. Remainder of the physical exam was unremarkable. Laboratory findings were significant for the following: WBC 12.4 K/UL, albumin 2.0 g/dL, ALT 73 IU/L, C-reactive protein 3.9 mg/dL, and ESR 18 mm/hr. Skin biopsy was performed, acid-fast blood cultures were obtained and incubated at 30°C specifically to evaluate for *M. marinum*. Skin biopsy demonstrated filamentous branching rods. Acid-fast smears were positive. He was started on intravenous minocycline with oral rifabutin and ethambutol. *M. marinum* was cultured from both his skin biopsy and his acid-fast blood cultures. Following sensitivity testing he was discharged home on a prolonged course of clarithromycin, rifabutin, and ethambutol. Steroids were tapered and his skin lesions completely resolved 5 months later.

IMPACT: Clinical features of *M. marinum* should be suspected when patients with known aquatic exposure. The diagnosis can escape recognition when presenting atypically or without reported exposure history.

DISCUSSION: Diagnosis is often delayed; the average time from symptom onset to diagnosis has been reported to be 17 months. Diagnostic dilemma may be made more challenging by the difficulty in growing *M. marinum* at standard blood culture temperatures. In this case, growth was achieved by decreasing the incubation temperature to 30°C. Immunosuppressed patients typically present with disseminated and progressive disease. Treatment of disseminated disease is not clearly defined, and is often based on multiple antibiotics until sensitivity testing is completed. As medication resistance and relapse is common, therapy may need to be prolonged and averages 11.4 months. Evidence based guidance for empiric treatment of *M. marinum* bacteremia is scarce. *Mycobacterium marinum* should be consider in the differential of skin and joint pathology to prevent delays in diagnosis that could lead to severe disseminated infection.

PROGRESSIVE DYSPHAGIA, COUGH, AND RECURRENT ASPIRATION IN A PATIENT WITH ZENKER'S DIVERTICULUM Brittany Glassberg; Mackenzie Naert; Matthew Spindler; Joseph Truglio. Icahn School of Medicine at Mount Sinai, New York, NY. (Control ID #2706278)

LEARNING OBJECTIVE #1: Recognize presenting symptoms of Zenker's Diverticulum.

LEARNING OBJECTIVE #2: Identify potential pulmonary complications of Zenker's Diverticulum in complex patients.

CASE: IB is a 31-year-old woman with Juvenile Idiopathic Arthritis (JIA), prior pulmonary embolism and Zenker's Diverticulum who presented with progressive DOE, cough, and intermittent fever of 2 week's duration. The patient takes albuterol as needed for SOB, prednisone (5 mg) once daily, nystatin (15g) as needed, esomeprazole (1000 units) once daily for gastroesophageal reflux, and Rituximab in sodium chloride 375mg/m2 by

intravenous route for JIA every three months. The initial differential diagnosis included aspiration pneumonia from Zenker's diverticulum, *Pneumocystis jirovecii* due to chronic immunosuppression, and interstitial lung disease (ILD) related to Rituximab. On exam she was afebrile, had a heart rate of 104 and an oxygen saturation of 100% on room air. A d-dimer was 2.10 ug/ml (patient's baseline 3–5 ug/ml) with a WBC count of 17.2. A CT scan showed patchy ground-glass densities in the right upper, middle, and lower lobes of the lung, consistent with atypical pneumonia vs ILD. She was initially treated with azithromycin for pneumonia, with improvement in symptoms. A follow-up CT documented near resolution of the initial opacities post-antibiotics, but the presence of smaller, new ground-glass opacities. She subsequently developed intermittent cough with chest pain, along with progressive dysphagia and positional choking. A videoesophagram demonstrated that the pharyngeal outpouching had grown from 2cm to 5cm since 2011. She was referred to ENT for surgical correction.

IMPACT: A Zenker's diverticulum often results in dysphagia with resultant weight loss. It also causes aspirations presenting as pneumonitis and pneumonia (Ferreira, et al., 2007). While a rare and often asymptomatic condition, in patients with recurrent aspiration or dysphagia, a Zenker's diverticulum should be considered. In patients with a known Zenker's diverticulum, progressive symptoms may indicate growth in size.

DISCUSSION: A Zenker's diverticulum is a pseudodiverticulum of the mucosa of pharynx above the crichopharyngeal muscle. It usually presents in patients over 40 years old and can manifest as dysphagia, aspiration and weight loss. Management focuses on speech and swallow therapy, with endoscopic or surgical correction for refractory cases. Our patient is complex, with multiple potential causes of cough and dyspnea. Her JIA created an inflammatory state placing her at risk for recurrent PE. Rituximab is recognized as potential cause of ILD (Alexeeva, et al., 2011). Chronic immunosuppression placed her at risk for atypical pneumonias. Finally, her Zenker's diverticulum may have grown, resulting in aspiration pneumonia, as was ultimately diagnosed. This highlights the need for a high index of suspicion for a new Zenker's or progression of a previously asymptomatic Zenker's in patients with dysphagia, cough and aspiration.

PROGRESSIVE METABOLIC ACIDOSIS OR MEASUREMENT ERROR: A CHALLENGING CASE OF DKA Max M. Brock; Steven C. Borkan; Shu-ling Fan. Boston University Medical Center, Boston, MA. (Control ID #2706644)

LEARNING OBJECTIVE #1: Distinguish and assess measurement error for discordant lab values.

LEARNING OBJECTIVE #2: Recognize causes for a falsely low serum bicarbonate measurement.

CASE: A 54-year-old man with newly diagnosed diabetes mellitus presented to his primary care clinic. Routine serum venous blood testing revealed a blood glucose 446 mg/dl, carbon dioxide of 27 mmol/L, and an anion gap of 27 mmol/L. UA revealed 3+ urine ketones prompting the clinical diagnosis of mild DKA In the ED, a VBG showed acidemia with pH of 7.28, PCO_2 of 39.4 mmol/L and a carbon dioxide of 17.7 mmol/L supporting the clinical suspicion of DKA. On the Medical floor, basal and bolus insulin was started. Despite no untoward symptoms, his morning labs, revealed a serum venous carbon dioxide of 7.0 mmol/L and an anion gap of 21 mmol/L. Repeat serum venous testing 3 hours later showed a carbon dioxide of 5.0 mmol/L and an increasing anion gap of 24 mmol/L. This data prompted urgent transfer to the MICU. In the MICU, both IV insulin and isotonic bicarbonate infusions were initiated. However, a VBG before the insulin infusion revealed a pH 7.30, PCO_2 35 mm Hg and carbon dioxide 15 mmol/L, a much less profound academia. Repeat VBGs consistently showed a carbon dioxide level that was 8–10 mmol/L higher than the carbon dioxide levels in serum venous blood. A profound hypertriglyceridemia of 2,179 mg/dl was detected. During treatment with an insulin drip, his triglycerides level fell to <1000 mg/dl, at which time his bicarbonate discrepancy disappeared. He transitioned to basal/bolus insulin and fenofibrate.

IMPACT: Bicarbonate is not widely known to be falsely measured or affected by interfering substances. There are scant, if any, similar case reports. This vignette will add "pseudo-hypobicarbonatemia" as possibility to providers, as well as serve as warning to others to avoid unnecessary ICU transfers/ treatment.

DISCUSSION: In our case, the term "pseudo-hypobicarbonatemia" is apt. Serum sodium measurements are known to be affected by interfering substances and is commonly referred to as "pseudo-hyponatremia." This was first described with serum sodium measurements performed by flame photometry, requiring a dilution step. Since our chemistry lab utilizes a photometric method to measure carbon dioxide, a dilution step is not required. Our patient with DKA exhibited a consistent, 8–10 mmol/L discrepancy between the measured serum carbon dioxide and the blood gas carbon dioxide calculated by the Henderson-Hasselbach equation. When there is a discrepancy between these two lab values, it is common to accept the measured value from the venous chemistry, rather than the calculated blood gas estimate. This practice prompted an unnecessary MICU transfer and isotonic bicarbonate drip. Interestingly, as the triglyceride level fell to < 1000 mg/dl, the discrepancy between the serum and venous blood gas carbon dioxide disappeared, implicating the triglyceride or a substance that tracks in parallel with triglycerides as the interfering substance.

PROGRESSIVE SUPRANUCLEAR PALSY Veronica Johnson[1]; Irene Grundy[2]. [1]Tulane University, New Orleans, LA; [2]Veterans Affairs/Tulane University SOM, New Orleans, LA. (Control ID #2705196)

LEARNING OBJECTIVE #1: Recognize the clinical presentation of progressive supranuclear palsy (PSP)

LEARNING OBJECTIVE #2: Identify therapies available to treat PSP

CASE: A 57 year-old man presented with altered mental status following an un-witnessed fall. He denied any loss of consciousness, syncope, headache, vision changes, or weakness. The family reported a six-month history of recurrent falls, memory loss, and slurred speech. He was afebrile on presentation. Cardiopulmonary exam was normal. His neurologic exam was significant for wide-based unsteady gait, bradyphrenia and slowed saccadic movement in horizontal plane with vertical gaze palsy. Mini-mental state examination (MMSE) was 24. TSH, folate and vitamin B12 were all within normal limits. MRI of the brain was performed and showed atrophy of the midbrain. He was diagnosed with "probable" progressive supranuclear palsy (PSP). He was started on a trial of carbidopa-levodopa, which was titrated up to maximum dose to aid in improvement in gait. He was eventually discharged to skilled nursing facility for further rehabilitation.

IMPACT: With an aging population, internists are diagnosing and managing dementia with increasing frequency. Recognition of the cause of dementia can

allow for appropriate treatment and a chance to slow the progression of dementia if possible.

DISCUSSION: PSP is a rare, neurodegenerative syndrome of mild dementia, supranuclear gaze palsy, progressive axial rigidity, and pseudobulbar palsy. The NINDS (National Institute of Neurological Disorders and Stroke) diagnosis criteria for “probable” PSP describes a gradual progressive disorder with an age of onset over 40 years, falls within the first year, vertical supranuclear gaze palsy or slowing of vertical saccades. “Definite” PSP is diagnosed pathologically with the presence of tau-positive neurofibrillary tangles on postmortem brain biopsy. Patients often require multiple clinical presentations to diagnose definitively. MRI is obtained in all patients to rule out alternative etiologies such as tumors, cerebrovascular accident, and hydrocephalus. Common radiographic findings consist of signal increase and atrophy of the midbrain (ie the Hummingbird Sign), thinning or smudging of the substantia nigra, atrophy of the putamen, atrophy and signal increase of globus pallidus and atrophy of the red nucleus. Our patient has PSP-Richard Syndrome (PSP-RS) characterized by dementia with impaired balance, movement slowness, subtle personality changes, bulbar symptoms, and impaired oculomotion. Close to 50% of patients with PSP have this form. PSP-Parkinsonism is the second most common form. It presents with asymmetric limb bradykinesia as opposed to symmetric limb involvement in Parkinson’s disease. The management of PSP is mainly supportive. Most patients are given a trial of carbidopa-levodopa. Patients are referred for multidisciplinary care to support the progression of the disease. The average time from symptom onset to death is usually 7 years.

PROLONGED QTC AND CARDIAC ARREST: QUESTIONS TO HONE FOR METHADONE Himani Divatia[2]; Terry Horton[1]. [1]Christiana Care Health Services, Wilmington, DE; [2]Christiana Care Health System, Newark, DE. (Control ID #2693232)

LEARNING OBJECTIVE #1: Assess patient factors in choosing methadone versus buprenorphine in the setting of opioid dependence

LEARNING OBJECTIVE #2: Transition patients from methadone to buprenorphine when continuing methadone is not feasible

CASE: C.L. was a 30 y/o F with a history of anorexia nervosa and heroin use disorder on methadone treatment who presented with syncopal episode. On EMS arrival, she was in ventricular fibrillation and was resuscitated within 10 min. Upon admission to the ICU, her potassium was found to be 2.0 and EKG revealed a QTc of 688. After correction of potassium to 4.0, a repeat EKG demonstrated a QTc of 414 and she was transferred to a medicine floor on her usual daily dose of 75 mg of methadone to avoid opioid withdrawal. Due to the elevated risk of recurrent QT prolongation in the setting of multiple comorbidities, a decision was made to transition her from methadone, however current standards of care preclude direct induction to buprenorphine for doses of Methadone greater than 40mg due to the risk of precipitated withdrawal. Her methadone was cut down to 30 mg and then discontinued 48 hours thereafter. With the guidance of an Addiction Medicine Specialist, the team utilized a ‘morphine bridge.’ She was initially transitioned to 60 mg of oral morphine over 4 days. On the fourth day, all opioids were stopped and she was monitored for opiate withdrawal using the Clinical Opiate Withdrawal Scale, with successful induction to 16 mg of daily buprenorphine within 24 hours of opioid cessation. Three days after discontinuation of methadone, the patient’s corrected QT level was 388. Upon discharge, she continued on daily buprenorphine at her drug treatment program.

IMPACT: This case demonstrates the need for thorough history taking, medication reconciliation, and enhanced evidence-based guidelines for the Internist in managing complex opoid dependence patients with multiple comorbidities.

DISCUSSION: For 50 years, Methadone, a mu-receptor opioid agonist, has been one of the most effective options for the management of opioid use disorders. Though generally safe under usual supervised administration, studies show a significant risk of QT prolongation and fatal arrhythmias when used with other QT prolonging agents or electrolyte abnormalities. Buprenorphine, a partial mu-receptor agonist is likewise an effective treatment of opioid withdrawal with less risk of QT prolongation. The case highlights the challenge of continuing mu agonist therapy when QTc prolongation occurs and the need to consider a patient’s many risk factors when choosing care. Though opioid addiction and fatal overdose is an epidemic, the literature does not provide guidance for bridging from one therapy to the other. We describe one method for transitioning from high dose methadone to buprenorphine utilizing a ‘morphine bridge’ in the inpatient setting. As a result, the patient was able to continue on long term agonist therapy preventing her risk of a fatal overdose while reducing her risk of a recurrent fatal arrhythmia.

PROLONGED USE OF INHALED PROSTAGLANDIN IN UNILATERAL ADULT RESPIRATORY DISTRESS SYNDROME AND SEVERE REFRACTORY HYPOXEMIA Olga Tarasova; Roozbeh M. Ghavami; Syeda Bokhari; Manish Gugnani. Capital Health Regional Medical Center, Trenton, NJ. (Control ID #2702122)

LEARNING OBJECTIVE #1: Recognize an atypical presentation of adult respiratory distress syndrome (ARDS)

LEARNING OBJECTIVE #2: Management of refractory hypoxemia in severe ARDS

CASE: We describe a case of patient who presented to our ICU with unilateral ARDS and required 10 days of epoprostenol. A 49-year- old Caucasian male with active IV heroin use presented to the hospital with shortness of breath, cough and hypoxia that resulted in respiratory failure. The patient was intubated and admitted to ICU where antibiotics were started. Vital signs on admission were - BP104/68 HR 122, RR 37, and SpO2 76% on ambient air. Laboratory data was significant for elevated D-dimer, hemoglobin of 7.5 g/dL, WBC 9,300/L and unremarkable chemistry panel. Chest x-ray showed a patchy increased density within the left lung and a right perihilar infiltrate. Due to the elevated D-dimer and the refractory hypoxemia that was out of proportion to the chest X-ray findings, IV heparin was initiated as empiric treatment for pulmonary embolus despite negative lower extremity duplex for acute DVT. CTA chest could not be performed due to elevated creatinine and unstable clinical condition. Echocardiogram was not able to visualize the right ventricle due to poor acoustic windows. The patient remained hemodynamically unstable despite pressors and tPa was given. The following day, the patient continued to deteriorate and chest X-ray showed complete left lung opacification. Different modes of ventilation were tried including APRV without success. He remained hypoxemic with a PaO2/FiO2 ratio of 50 and trans-esophageal echocardiogram suggested no evidence of pulmonary hypertension. At this point, aerosolized epoprostenol was initiated and there was improvement of PaO2/FiO2 ratio to 112 within the first hour, and to 145 within 2 hours. Oxygenation progressively improved, however we were not able to wean off epoprostenol for 10 days due to hypoxia on weaning trials. During the

hospital stay, the patient required thorocostomy and eventually Video-assisted thoracoscopic surgery for a complicated right-sided pleural effusion. The patient was successfully extubated on Day 26 and transferred out of ICU and eventually discharged to a rehabilitation center.

IMPACT: There are not many reports showing use of prostaglandins for more than 24 hours. We present a case of prolonged use of inhaled prostaglandin in a patient with ARDS and severe refractory hypoxemia when extracorporeal membrane oxygenation (ECMO) was not readily available.

DISCUSSION: Adult respiratory distress syndrome (ARDS) presents as a rapidly progressive disease occurring in critically ill patients characterized by severe hypoxemia, systemic inflammatory response, and high hospital mortality. Inhaled vasodilators selectively dilate vessels that perfuse well-ventilated lung zones. This results in improved oxygenation due to improved ventilation/ perfusion matching. There are few reports on unilateral ARDS and prolonged use of inhaled prostaglandins available in current medical literature.

PROTEIN-LOSING ENTEROPATHY AND NECROTIZING PNEUMONIA: A RARE PRESENTATION OF DISSEMINATED TUBERCULOSIS Monica Maalouf; Rajkishen Narayanan. New York University, New York City, NY. (Control ID #2705917)

LEARNING OBJECTIVE #1: Recognize sepsis with multi-organ system involvement as a presentation of TB in an immunocompetent patient.

LEARNING OBJECTIVE #2: Recognize colitis and enteritis as manifestations of extrapulmonary TB.

CASE: A 55 year old woman with no past medical history presented with four days of disabling, lower extremity edema and one month of watery diarrhea. She also endorsed three months of chronic cough with intermittent sputum production and progressive dyspnea. Review of systems was notable for a ten pound weight loss over this period and night sweats. She immigrated from Peru 25 years ago and denied any travel outside of the US since. She works as a nanny in Manhattan. On admission, her vital signs revealed a temperature of 102°F, a heart rate of 125bpm,and a blood pressure of 91/ 46mmHg. Her oxygen saturation was 90%.Physical exam was notable for tachycardia, diffuse crackles in bilateral lungs, diffuse tenderness to palpation of the abdomen, and profound anasarca. Admission laboratory testing showed a white blood cell count of 11g/dL, a hemoglobin of 10g/dL and a venous lactate of 3.8. Her total protein count was 4.0g/dL with an albumin of 1.5g/dL. Chest CT scan revealed extensive, bilateral, infiltrates consistent with a multifocal necrotizing pneumonia as well as evidence of past granulomatous disease. Abdominal CT scan showed distended, edematous small bowel loops with air fluid levels as well as colonic wall thickening. She was initially treated with broad spectrum antibiotics and aggressive fluid resuscitation. Her infectious work up revealed negative routine blood cultures, negative urine cultures and a negative HIV test. Sputum smears for acid fast bacilli were positive on day two. Stool smears were also positive for acid fast bacilli. PCR confirmed the diagnosis of disseminated mycobacterium tuberculosis (mTB). She was promptly started on isoniazid, rifampin, pyrazinamide, and ethambutol along with methylprednisolone given her disease burden. She underwent CSF testing which was negative for mTB. She was hospitalized at Bellevue for twelve weeks and was discharged home once her sputum smears were negative for mTB.

IMPACT: This case highlights the variable and often severe manifestations of mTB. It reiterates the importance of always keeping TB on the differential, especially in patients from endemic regions, and reminds me to have a low threshold for placing patients on respiratory isolation while a diagnostic workup is underway.

DISCUSSION: Patients who present with constitutional symptoms and pathology in multiple organ systems can pose a diagnostic dilemma. MTB is not an uncommon bacterial disease that can have varied extrapulmonary manifestations, even in the immunocompetent patient. A high index of suspicion is required to make the diagnosis. Enteritis causing protein wasting is a rare sequelae of abdominal mTB. Early diagnosis and initiation of anti-tuberculous therapy is essential, as severe cases may require surgical intervention and are associated with high morbidity and mortality.

PSEUDO LEMIERRE'S Gray Jodon[2]; Chi Zheng[1]; Timothy Miller[3]. [1]Denver Health, Denver, CO; [2]University of Colorado, Denver, CO; [3]University of Colorado School of Medicine, Loveland, CO. (Control ID #2706757)

LEARNING OBJECTIVE #1: Diagnose malignancy in spontaneous internal jugular vein thrombosis

CASE: A 59 year old man with no significant past medical history presented with 3–5 days of left-sided neck pain and swelling. Physical exam was notable for enlargement of the left side of his neck that was tender to palpation from the anterior neck to the inferior margin of the mandible. He had no fever, dental carries, pharyngeal erythema, cervical nor supraclavicular lymphadenopathy. Laboratory analysis was notable for a white blood cell count of 9,400/μL. A neck CT showed left internal jugular vein thrombosis with surrounding inflammation suggestive of septic thrombophlebitis, also known as Lemierre's syndrome. The patient was admitted to the hospital and started on IV antibiotics. Due to his lack of typical signs of infection, there was concern for spontaneous and, particularly malignancy-associated, thrombosis. He was also found to have a non-occlusive thrombosis in his opposite subclavian vein and an elevated CA 19–9. The patient was discharged on anticoagulation and IV antibiotics. Despite this, he returned to the hospital 2 weeks later with a pulmonary embolism. Due to concern for occult malignancy, the patient was referred to oncology and a PET-CT revealed multiple hypermetabolic lymph nodes without pancreatic involvement. A cervical lymph node excision ultimately revealed metastatic germ cell malignancy.

IMPACT: Our decision for anticoagulation in this patient as part of treatment for suspected Lemierre's was controversial; as was our decision to pursue further hypercoagulability work-up. However, due to his atypical presentation of a rare disease, our concern for malignancy associated hypercoagulability led us to start anticoagulation and ultimately to the definitive diagnosis and treatment. Atypical presentations of rare diseases should prompt a search for more common disease processes.

DISCUSSION: Spontaneous internal jugular vein thrombosis (IJVT) is rare, occurring in less than 1 in 25,000 individuals annually. It is most commonly associated with central venous access devices (CVADs), but can also be caused by deep neck infections, IV drug abuse, trauma, or hypercoagulability due to malignancy. Lemierre's syndrome is rare, with the incidence estimated to be 1 per 1,000,000, and is most commonly caused by a peritonsillar or tonsillar infection with anaerobic bacteria. 83% of cases present with fever and sore throat, and 78% have leukocytosis. On the other hand, malignancy in general has a much higher incidence than Lemierre's syndrome, with testicular cancer alone having an incidence of 4.84 per 100,000. Malignancy increases the risk

of VTE, with a 400% increase in risk of DVT or PE. In isolated spontaneous IJVT, up to 10.8% of cases will be diagnosed with a malignancy within one year. In cases of IJVT without evidence of CVADs, IV drug use, trauma or infection, screening for malignancy should be considered to provide an accurate diagnosis and timely treatment.

PSEUDOSEPTIC ARTHRITIS AS THE INITIAL PRESENTATION OF RHEUMATOID ARTHRITIS Hye Gi Shim; Darlene LeFrancois. Montefiore Medical Center, Bronx, NY. (Control ID #2706686)

LEARNING OBJECTIVE #1: Recognize an atypical presentation of early rheumatoid arthritis (RA)

CASE: A 78-year-old woman with well-controlled hypertension presented with severe pain and swelling in the right shoulder for 3 days. Arthrocentesis showed 20 ml of purulent fluid, a white blood cell count of 210,000 cells/uL with 95% neutrophils, and absent crystals; gram stain was negative. For presumed septic arthritis, she underwent irrigation and debridement and was started on Vancomycin. Four sets of synovial fluid culture and blood culture showed no growth after 5 days. She was discharged home with a plan to continue Vancomycin for 4 weeks. She returned to the hospital 3 days later, with new onset of pain and swelling in the left ankle and bilateral finger joints for 1 day. Physical exam at this time showed erythema, warmth, and tenderness of the left ankle; the right 2nd, 3rd, and 4th metacarpophalangeal (MCP) and 4th proximal interphalangeal (PIP) joints; left 2nd, 3rd, and 4th MCP and 3rd PIP joints. Rheumatoid factor was negative but cyclic citrullinated peptide antibody (CCP Ab) was greater than 500 U/ml. Nuclear antibody screen, anti-streptolysin O antibody, Parvovirus serologies, viral hepatitis serologies, and Lyme titers were negative. The patient fulfilled the 2010 ACR/EULAR criteria for RA. She was started on prednisone with resolution of her joint inflammation in 2–3 days.

IMPACT: Pseudoseptic arthritis as the initial presentation of rheumatoid arthritis–which typically presents with indolent polyarthritis rather than an acute monoarthritis–is uncommon but increasingly recognized.

DISCUSSION: Pseudoseptic arthritis is an entity describing an acute inflammatory monoarthritis with purulent but sterile synovial fluid. It is a diagnosis of exclusion. In a retrospective study of patients with presumed septic arthritis and negative microbiological results, 14% subsequently developed a variety of rheumatic diseases. Mean time to diagnosis of rheumatic disease was 6 months, suggesting that such patients require close follow-up to exclude rheumatic disease. It is appropriate to start antibiotics until clinical and microbiological evaluation is complete. The decision whether to continue antibiotics if culture results are negative should be individualized, given the low combined sensitivity (81% in a retrospective series) of synovial fluid and blood cultures. In this patient, the subsequent development of a symmetric small joint polyarthritis, with a highly specific (96 percent) CCP Ab level, and the rapid improvement with steroid administration, supported the diagnosis of rheumatoid arthritis as the cause of this pseudoseptic arthritis.

PSORIASIS FLARE WITH ADALIMUMAB USE FOR PSORIATIC ARTHRITIS TREATMENT Anandita Arora[1]; Alaa Elkhider[1]; Mohamed Mohamed[2]; Ahmed Kadhim[1]; Marie-Claire Maroun[2]. [1]Detroit Medical Center, Farmington Hills, MI; [2]Detroit Medical Center, Detroit, MI. (Control ID #2702459)

LEARNING OBJECTIVE #1: Recognize worsening of cutaneous psoriasis after TNF inhibitor therapy and consider alternate therapies

CASE: A 55 year old woman with psoriasis and diabetes was seen in clinic for psoriatic arthritis. She was being treated for psoriasis with topical therapy and methotrexate by dermatology. Her last psoriatic arthritis flare up was 2 months ago with pain in multiple joints. Her Methotrexate was decreased from 20mg to 15mg weekly and Adalimumab was added 8 weeks ago. She reported worsening skin rash in palms and soles since she started Adalimumab. Due to concern for anti TNF induced worsening psoriasis, we discontinued her Adalimumab and placed her back on Methotrexate 20mg. After 2 months she reported marked improvement in her joint pain and skin rash. Methotrexate was continued at 20mg and Ustekinumab 45mg IV every 4 weeks was added as an alternative biologic agent for the palmoplantar psoriasis related to TNF use.

IMPACT: Using alternative therapies to TNF inhibitors early on in the treatment for Psoriatic arthritis can prevent paradoxical side effects.

DISCUSSION: A paradoxical adverse effect being increasingly reported is new onset or worsening psoriasis with TNF inhibitors like Adalimumab. This may occur any time after initiation of TNF antagonist therapy and the skin lesions usually resolved with TNF discontinuation. Retrospective studies noted psoriasis occurring during anti-TNF therapy to be mostly de novo psoriasis and less an aggravation of a pre-existing psoriasis. Although this side effect has been reported as a 'class-effect' of TNF-alpha antagonists, one study suggested that the deterioration of psoriasis is an adverse reaction seen mainly with drugs used specifically for the treatment of psoriasis and not with any anti-TNF agent. This might indicate a poor understanding of the pathogenesis of psoriasis itself or of the mechanism of action of the drugs used for treatment. One study recommended the combined use of topical therapy with high-strength corticosteroids and vitamin D analogs for patients with de novo psoriasis. If this does not control the episode and it is necessary to continue the anti-TNF agent (because it adequately controls the patient's underlying non-dermatologic disease without serious side effects), then partial control of the skin lesions with topical therapy may be acceptable with addition of photo or systemic therapies. If it is not essential to continue the anti-TNF drug, then it is best to substitute the implicated agent with a drug that does not act by inhibiting TNF. In patients with a change in the morphology of the psoriasis, the most widely used initial option is to continue using the same drug at the same dose and to prescribe additional topical therapy. If this does not control the episode, it is recommended to substitute the first agent by another drug, preferably one with a different mechanism of action, as in cases of new onset psoriasis.

PULMONARY ARTERY INTIMA SARCOMA MASQUERADING AS PULMONARY EMBOLISM shahistha hameed; Dipen Khanapara. montefiore medical center, Bronx, NY. (Control ID #2707639)

LEARNING OBJECTIVE #1: Recognize symptoms and imaging of pulmonary arterial intimal sarcomas mimic pulmonary thromboembolism

CASE: A 43 year old man with hypertension presented with 1 month worsening dyspnea, dry cough, and left-sided pleuritic chest pain. He also had 20-pound weight loss. He presented with hypoxia, tachycardia, and a grade 3 systolic murmur with clear lungs. Chest X ray revealed right upper lobe consolidation. Given the clinical picture and elevated d-dimer, pulmonary embolism was considered. CT chest revealed a 7x5 cm right mediastinal mass with invasion into the pulmonary artery, SVC, and right mainstem bronchus,

and a large pulmonary embolism within the right and left main pulmonary arteries. Anticoagulation was not started due to the invasion of the mass into the pulmonary artery and risk of bleeding. He was transferred to ICU and intubated for clinical worsening, followed shortly by cardiac arrest and death despite resuscitation. At autopsy, the mass was diagnosed as pulmonary artery intima sarcoma, which was occluding the pulmonary artery bifurcation and invading the right bronchus, SVC, and pericardium.

IMPACT: Pulmonary artery intima sarcoma (PAIS) is rare and very difficult to diagnose. PAIS should be considered in differential diagnosis of a patient presenting with chest pain, dyspnea, and filling defect within the pulmonary arteries. Distinguishing PAIS from thromboembolic events is imperative in order to hasten the initialization of surgical resection and chemotherapy.

DISCUSSION: PAIS was first described at autopsy in 1923 and since then approximately 200 cases have been reported. The usual features are endoluminal growth, vessel obstruction, seeding of distal emboli; rarely retrograde extension to right ventricle occurs. Diagnosis is often delayed due to long asymptomatic course. There is female predominance with mean age of 48 years. Symptoms of pulmonary hypertension and right heart failure can occur. Diagnostic imaging of choice is contrast-enhanced chest CT, as it can reveal some features of sarcoma, such as mild contrast enhancement and extravascular spread. However, definitive diagnosis is made postoperatively or at autopsy. It is frequently misdiagnosed as thromboembolism, which can lead to inappropriate anticoagulation or thrombolysis. Surgical resection of the tumor decreases symptoms and prolongs survival. The role of chemotherapy and radiotherapy remain undefined. Prognosis is poor with median survival of 12–18 months after surgery. In conclusion, pulmonary artery intima sarcoma is a rare lethal tumor which requires a high degree of suspicion for diagnosis, even with advanced imaging technology

PULMONARY CEMENT EMBOLISM Calvin Ngai; Arun Manmadhan; Nathan Teich; joshua smith. NYU Langone Medical Center, New York, NY. (Control ID #2704197)

LEARNING OBJECTIVE #1: Assess the need for anticoagulation in patients with pulmonary cement embolism

LEARNING OBJECTIVE #2: Manage the complications of cement embolism caused by kyphoplasty

CASE: A 79 year-old woman with recent T12/L1 compression fractures presented with left leg pain for 2 weeks. Five months prior to presentation, she underwent an uncomplicated kyphoplasty for T12/L1 compression fractures. Two weeks prior to presentation the patient began to experience left leg pain with ambulation without associated sensory loss or urinary/fecal incontinence. A computed tomography (CT) scan of the thoracic and lumbosacral spines showed prior T12 and L1 kyphoplasty with extravasation of cement into the surrounding vasculature and bilateral pulmonary arteries. A CT angiogram showed central cement pulmonary emboli extending from the pulmonary artery bifurcation into the left main pulmonary artery. A transthoracic echocardiogram did not reveal evidence of right heart strain. As the patient was asymptomatic and clinically stable with normal cardiac function post-procedurally for 5 months, initiation of anticoagulation was deferred.

IMPACT: This case emphasizes considering pulmonary cement embolism in the risk and benefit profile of kyphoplasties for intractable pain due to fractures secondary to metastases or osteoporosis.

DISCUSSION: Percutaneous kyphoplasty (PKP) is a minimally invasive procedure where polymethylmethacrylate (PMMA) is injected into damaged vertebral bodies for pain relief. Pulmonary cement embolism (PCE) is a known complication of PKP with a reported incidence of 3.5 to 23%. Currently, there are no published guidelines to guide the management of PCE. One proposed schema, based on expert opinion, is to risk-stratify patients with PCE by symptoms. Patients with symptomatic PCE typically present peri-procedurally with chest pain, dyspnea, tachycardia and/or cough. In patients with central, symptomatic PCE, some authors suggest surgical removal as pharmacologic intervention may be insufficient. In patients with symptomatic, peripheral PCE, CHEST guidelines on thrombotic pulmonary emboli recommend initial intravenous heparin followed by at least 3 months of oral anticoagulation. It is important to note, however, that there is no data to suggest that PMMA is itself thrombogenic either *in vitro* or *in vivo*. Given numerous case reports of recovery from symptomatic PCE with anticoagulation, many clinicians hypothesize that anticoagulation prevents thrombus formation while the cement is endothelialized. PCEs in asymptomatic individuals are typically discovered incidentally. The true incidence of PCE may be much higher than what is reported as many patients are asymptomatic. In asymptomatic individuals, it may be reasonable to avoid further intervention and instead monitor longitudinally. In one study of 11 asymptomatic patients with PCE identified post-procedurally, none developed symptoms during 1-year follow-up. Given the paucity of prospective data to direct management of PCEs, further research is warranted.

PULMONIC VALVE VEGETATION IN A DIALYSIS-DEPENDENT MALE WITH MORAXELLA OSLOENSIS BACTEREMIA Emily E. Jones[2]; Christopher Ghiathi[3]; Yana Thaker[3]; Nancy Simon[1]. [1]UWMC, Seattle, WA; [2]University of Washington, Burlington, WA; [3]University of Washington, Seattle, WA. (Control ID #2671037)

LEARNING OBJECTIVE #1: Recognize and evaluate atypical organisms causing endocarditis.

CASE: A 23-year-old male with ESRD status-post failed living-donor renal transplant due to medication nonadherence presented to an outside hospital with a week of dyspnea, productive cough, and ankle swelling after a missed dialysis appointment. The transplanted kidney was removed in 2011, and he had been off all immunosuppressant medications since that time. At presentation, he was hyperkalemic, febrile, and profoundly fluid overloaded, with subsequent blood cultures growing *Moraxella osloensis*. Physical exam revealed a 2/6 blowing murmur at apex and axilla likely transmitted from AV fistula without sequelae of infective endocarditis, and imaging revealed a left lobar consolidation. He was transferred for urgent hemodialysis and his dyspnea and cough improved on ceftriaxone and azithromycin. On hospital day one, a TTE obtained for evaluation of cardiac function showed a 6mm × 3mm mobile mass on the pulmonic valve without associated regurgitation or septal defects; this was not present on echocardiogram two months prior. The patient had no history of IVDU but had a dental extraction 1 month prior; he was broadened to cefepime for improved coverage of gram-negative rods. Additional infectious evaluation, including in-house blood cultures, was negative. AVF duplex US of left upper extremity revealed a non-occlusive, non-infectious basilic vein thrombosis. The patient met one major (valvular vegetation) and two minor (fever, bacteremia with atypical organism) Duke's Criteria. Given the possibility of infective endocarditis and concurrent basilic

vein thrombosis, he was initiated on a 4 week course of ceftazidime 1g on hemodialysis days and discharged home with infectious disease follow up.

IMPACT: This case illustrates a novel presentation for *Moraxella osloensis*, an organism that has been associated with endocarditis in only three patients, all of whom were immunocompromised. This is the first published case of *Moraxella osloensis* endocarditis in an immunocompetent patient, and also the first involving the pulmonic valve.

DISCUSSION: *M. osloensis* is a gram-negative coccobacillus known to cause peritonitis, pneumonia, meningitis, and infective endocarditis. The majority of cases of *osloensis* infection have occurred in immunosuppressed patients. Though somewhat immunocompromised due to ESRD, our patient was not on any immunosuppressant therapy and no longer had a transplanted organ. The presence of the vegetation on the pulmonic valve in a structurally sound heart adds to the novelty of presentation. Because M. *osloensis* is an infrequently encountered organism with established association with endocarditis, bacteremia with this pathogen warrants evaluation with TTE.

PURPLE SPOTS AND POLKA DOTS! A RARE CASE OF ADULT ONSET HENOCH-SCHONLEIN PURPURA (HSP)

Kyle Gobeil; Shakil Shaikh. Baystate Medical Center, Suffield, CT. (Control ID #2706517)

LEARNING OBJECTIVE #1: Highlight the association between age and rapid renal impairment in the adult HSP population

LEARNING OBJECTIVE #2: Identify an approach to treatment in adults with HSP

CASE: A 47 year-old-male with coronary artery disease presented with 5 days of abdominal pain. CT abdomen was notable for perforated sigmoid diverticulum, for which he was appropriately treated with antibiotics. Hospital course was complicated by renal deterioration and a new onset palpable purpuric rash. Serum creatinine was found to increase to 5.1, up from normal baseline. Initial workup included hepatitis and rheumatoid panels with urine analysis, which was significant for hematuria and proteinuria. Skin biopsy was revealing for necrotizing vasculitis. Kidney biopsy was ultimately preformed, which showed IgA dominant necrotizing and focal crescentic glomerulonephritis. HSP was suspected given dermatologic findings and rapid progressive renal disease with renal biopsy confirming this diagnosis. Our patient was initially treated with high dose steroid therapy. Once HSP was confirmed, patient was started on cyclophosphamide and plasmapheresis was initiated. Fortunately, plasmapheresis and immunotherapy prevented the progression to dialysis. By discharge, creatinine had improved, however, renal function was persistently impaired.

IMPACT: While primarily a pediatric illness, I developed an understanding that HSP can affect the adult population, often with severe consequences. Given the right clinical scenario, it is important to identify HSP and initiate early treatment to prevent progression of renal compromise.

DISCUSSION: HSP, a systemic vasculitis, is as a common vasculitic reaction primarily affecting the pediatric population with 90% of cases occurring between the ages of 3–15 years. Within the pediatric population, HSP is generally self-limited, however, adults have a higher prevalence of hematuria and renal impairment. In general, clinical manifestations are similar among both demographics, although, a higher incidence of renal involvement and eventual progression to end stage renal disease is seen in adults. In an adult French cohort, 11% of patients reached end-stage renal failure and 13% progressed to severe renal failure. Initial treatment typically includes high dose glucocorticoid therapy. Various immunosuppressive therapies have been trialed with no good data supporting a positive correlation between their use and renal outcomes. Plasmapheresis has been shown to independently improve renal function in those with severe renal dysfunction. Therefore, it is vital to promptly identify patients at risk of developing renal dysfunction and recognize the utility of high dose steroids with plasmapheresis. Our case highlights the importance physical examination in identifying the purpuric lesions of HSP in the setting of renal dysfunction. Once diagnosis is confirmed, plasmapheresis has proved beneficial, while selection of immunotherapy should be made on an individual basis as data supporting their utility is limited.

PURPURA FULMINANS FROM STREPTOCOCCUS PNEUMONIAE IN AN ASPLENIC PATIENT

Steven L. Register. Carolinas Medical Center, Ch, NC. (Control ID #2707627)

LEARNING OBJECTIVE #1: Recognize the clinical presentation of purpura fulminans

LEARNING OBJECTIVE #2: Raise awareness of vaccination in alspenic patients

CASE: Patient was a 50 year old male with a history of COPD and prior splenectomy following traumatic splenic rupture who presented with fever, altered mental status, and somnolence. He was subsequently intubated and transferred to the ICU, at which time his wife was able to report that since splenectomy he had experienced two episodes of pneumococcal meningitis in the past few years. Following the second bout of meningitis he had undergone proper vaccination with both Prevnar 13 and Pneumovax one year prior to his presentation. On exam, he was noted to have a temperature of 103.7, heart rate of 126, and BP of 109/63. He was initially noted to have retiform purpura diffusely spread over his body with a dark, dusky appearance of the nose, ears, eyelids, bilateral hands and feet, and tip of the penis. These areas eventually became pulseless and developed necrosis. His labs were remarkable for a WBC of 47,000, platelets of 34,000, PT of 16.1, INR of 1.5, PTT of 58.7, and fibrinogen of 185. Schistocytes were noted on peripheral blood smear. Two sets of blood cultures were positive for pneumococcus. The diagnosis of purpura fulminans from Pneumococcus was made. Despite being on appropriate antibiotics and maximal supportive care, the patient developed multisystem organ dysfunction and was eventually transitioned to a comfort care approach and passed away shortly after.

IMPACT: This case helped to raise awareness of an uncommon, yet devastating disease. This case also points out that, though not as commonly recognized, organisms other than Neisseria meningitidis can be associated with purpura fulminans. We are also reminded of the importance of routine vaccination in susceptible patients.

DISCUSSION: Pupura fulminans is an acute, potentially fatal thrombotic disorder that is commonly associated with DIC and presents as widespread retiform purpura that can rapidly lead to skin necrosis. It may progress rapidly to multi-organ failure due to thrombotic occlusion of small and medium-sized blood vessels. Although this disease can occur in congenital or acquired protein C and S deficiencies, it is typically recognized with sepsis, oftentimes from Meningococcus. While providing blood products to help treat coagulopathy and surgical intervention to remove dead tissue can be employed, initial therapy is focused on aggressive supportive measures and removing the offending cause. This case is interesting in the fact that our patient developed invasive pneumococcal disease despite being properly vaccinated and having

no other immunodeficiencies. It also raises the question of the prevelance of nontypable strains of Pneumococcus, which our patient may very well have had.

PYODERMA GANGRENOSUM MIMICKING NECROTIZING FASCIITIS: A CASE OF ANCHORING BIAS

Jefferson Berryman[1, 3]; Rachael Hilton[1, 3]; Katrina Handoyo[1, 2]. [1]Presbyterian/St. Luke's Medical Center, Denver, CO; [2]University of Colorado, Denver, CO; [3]Colorado Health Foundation, Denver, CO. (Control ID #2702871)

LEARNING OBJECTIVE #1: Diagnose pyoderma gangrenosum in patients with necrotizing soft tissue wounds

LEARNING OBJECTIVE #2: Recognize the importance of anchoring bias in clinical decision making

CASE: A 28-year-old female presented to the ED with abdominal wound complications seven days after undergoing a cesarean section. Upon admission she had a low grade fever and her scar was erythematous and tender with surrounding purple discoloration. Within several hours the discoloration had extended well outside of the originally marked boundaries and a diagnosis of necrotizing fasciitis (NF) was promptly made. The patient was started on broad spectrum antibiotics, hyperbaric oxygen, and underwent multiple aggressive debridements of the wound in the ensuing weeks. Initial pathology showed "sheets of necrosis consistent with NF," and wound cultures were initially positive but persistently negative thereafter. Despite treatment her condition worsened, and her wound grew to encompass her entire abdomen, extending to the peritoneum. Additional questioning of the patient revealed a family history of pyoderma gangrenosum (PG) in her grandmother with a remarkably similar presentation. Dermatopathologists were asked to re-evaluate surgical specimens and determined that the case was more consistent with PG given the clinical history and lack of microscopic bacteria. The patient's condition quickly improved with high dose steroids and a gradual recession of her wound was observed. She is now undergoing permanent skin grafting before discharge.

IMPACT: Post cesarean section PG, though rare, has occasionally been described in the literature (Banga *et al.*). However, the condition is extremely uncommon in the absence of other pathergy and when no underlying condition is present. Additionally, the clinical presentation of our patient mimicked NF more closely than many previously described occurrences, with specialists in numerous different fields initially agreeing with the diagnosis.

DISCUSSION: PG is a rare and often recurring chronic neutrophilic dermatosis which typically occurs in the lower extremities of patients with inflammatory and hematologic disorders. The disease lacks specific clinical and histologic findings and diagnosis often requires a high index of suspicion. This case demonstrates the difficulty in diagnosing PG and differentiating it from NF. In medicine we frequently "anchor" to more typical or common diagnoses, often to the exclusion of other possibilities. Although this can provide efficiency, it can also result in significant error. Before the correct diagnosis was made in our patient, she suffered from an AKI, upper-extremity DVT, profound anasarca, and extensive surgical interventions, all of which were potentially avoidable. Additionally, this case is an important reminder of the role of a medicine physician in orchestrating patient care amongst different specialists, as well as the value of thoroughly investigating a complete patient and family history to aid in correct diagnosis.

QUIT BREAKING MY HEART; 5-FLUOROURACIL ASSOCIATED CARDIOMYOPATHY

Sabina Zawadzka; Upendra P. Hegde. University of Connecticut, Farmington, CT. (Control ID #2706108)

LEARNING OBJECTIVE #1: Recognize the clinical features of 5-fluorouracil associated cardiomyopathy

LEARNING OBJECTIVE #2: Execute appropriate work-up and management of 5-fluorouracil associated cardiomyopathy in the inpatient setting

CASE: A 47 year-old male with recurrent squamous cell carcinoma of the left tongue presented for induction chemotherapy. He was a lifetime non-smoker with occasional alcohol use, with no personal or family history of cardiac disease. Treatment was started with paclitaxel, cisplatin and 5-fluorouracil (TPF). One day after receiving 1 dose of 5-fluorouracil (5-FU), he developed severe sudden onset, crushing, substernal chest pain associated with dypsnea and a syncopal episode. 5-FU was immediately discontinued. An EKG showed diffuse ST elevation. Cardiac enzymes were negative. The patient underwent an urgent cardiac catheterization demonstrating normal coronary anatomy and no evidence of coronary artery disease. An initial echocardiogram showed an ejection fraction (EF) of 55–65% with no wall motion abnormalities. The following day there was moderately reduced left ventricular systolic function, an EF of 35% with moderate diffuse hypokinesis. Clinically and based on echocardiogram studies, the patient was diagnosed with 5-FU-associated cardiomyopathy, specifically myopericarditis. He was conservatively treated for myocardial inflammation in the absence of ischemia. Repeat echocardiogram 3 days later showed an improved ejection fraction of 45% with persistent diffuse hypokinesis. Five days after the initial event, echocardiogram showed continued systolic improvement with an EF of 50%. A repeat EKG showed resolution of the ST elevations. The patient's subsequent chemotherapy cycles were modified from the TPF regimen without further cardiac symptoms. He was followed by an outpatient cardiologist and monitored with routine echocardiograms, with his EF returning back to baseline and hypokinesis resolved.

IMPACT: This case is notable for the degree of severity of toxicity, especially with regard to left ventricular systolic dysfunction after a short exposure to 5-FU. Rapidly worsening systolic dysfunction after 5-FU exposure with resolution after stopping the drug is a typical feature in the setting of 5-FU cardiomyopathy. 5-FU cardiotoxicity is now the second most common cause of chemotherapy induced cardiotoxicity, with incidence ranging from 1.2 to 18%. A majority of cases occur in patients with no cardiac history and it is difficult to predict which individual will be adversely affect by the drug. Physicians should be vigilant in monitoring for cardiac symptoms after initiating 5-FU.

DISCUSSION: The patient's first dose of 5-FU was complicated by myopericarditis. While cardiotoxicity has been reported with 5-FU use, myopericarditis is a relatively uncommon complication. Treatment of 5-FU cardiotoxicity consists of stopping the drug and replacing it with another chemotherapy agent. Repeated exposure to 5-FU carries a recurrence rate of 82-100%.

RAISE YOUR INDEX OF SUSPICION FOR SYPHILIS

Zachary Quinn[2]; Deepa Bhatnagar[1]. [1]Tulane University, New Orleans, LA; [2]Tulane University Health Sciences Center, New Orleans, LA. (Control ID #2703628)

LEARNING OBJECTIVE #1: Identify infectious causes of psychiatric symptoms

LEARNING OBJECTIVE #2: Review diagnosis of neurosyphilis in HIV co-infection

CASE: A 31 year-old man with a history of HIV (CD4 count of 7) and schizoaffective disorder presented from home after a reported seizure. Three weeks prior, he was evaluated with multiple painless ulcers including a clean-based, penile ulcer. He was diagnosed with secondary syphilis. He received one dose of IM penicillin G. His wife reported a change in cognition and personality with decreased sleep. He had discontinued his carbamazepine recently. On exam, he displayed disorganization, bizarre thought processes, distractibility, pressured speech, and bizarre automatisms. MRI with contrast was performed which was negative for any masses or abnormalities in enhancement. Two separate EEGs were consistent with normal sleep wake cycles. A lumbar puncture demonstrated a protein level of 41 mg/dl, glucose 41 mg/dl, WBC count of 3, RBC count of 0. VDRL titers were non-reactive, but FTA-ABS antibodies were present. Further workup for medical delirium included normal electrolytes, liver function tests, and a normal serum ammonia level. Blood, urine, and CSF cultures were negative. He was transferred to inpatient psychiatry for treatment of uncontrolled schizoaffective disorder. After receiving psychiatric treatment for ten days, a repeat lumbar puncture was performed. Both FTA-ABS and VDRL titers were positive. A diagnosis of neurosyphilis was confirmed. Due to a penicillin allergy, he successfully underwent desensitization with ceftriaxone. He subsequently received 2 weeks of IV therapy. His mental status significantly improved to his cognitive baseline.

IMPACT: Acute change in mental status is a complaint for which a definitive diagnosis can often be elusive for internists. When symptoms persist without discovery of an underlying cause, physicians consider undiagnosed medical condition or new onset of primary psychiatric disorder.

DISCUSSION: Neurosyphilis can present with a variety of symptoms, which include auditory or ocular hallucinations. Acute psychosis is a documented phenomenon and is uncommon. There is no gold standard for diagnosis, but a positive blood treponemal serology and a reactive CSF VDRL typically justify a diagnosis. The sensitivity of CSF VDRL is poor, averaging near 50% positive in confirmed cases of neurosyphilis. CSF FTA-ABS is a highly sensitive marker for neurosyphilis; but false positives occur often, especially in setting of serum cross contamination. CSF pleocytosis or elevated protein levels can assist the diagnosis in absence of a reactive VDRL titer; however these findings alone can be seen in HIV without syphilis co-infection. There are no current guidelines for when to repeat a lumbar puncture in setting of inconclusive CSF analysis. This case demonstrates that when clinical suspicion is high and laboratory data does not initially support the diagnosis, repeating a lumbar puncture is a valid approach in the diagnosis of neurosyphilis.

RAPID-ONSET DIABETES: AN OMINOUS SIGN? Sara Jane Cromer. New York Presbyterian Hospital - Columbia University Medical Center, New York, NY. (Control ID #2672682)

LEARNING OBJECTIVE #1: Recognize rapid-onset diabetes as a possible early sign of pancreatic cancer

LEARNING OBJECTIVE #2: Consider pancreatic imaging for older adult patients with new-onset of diabetes

CASE: A 58 year-old woman with history of polysubstance use (tobacco and intranasal cocaine), peptic ulcer disease, hypertension, and recent diagnosis of diabetes presented to the emergency department (ED) with one week of non-bloody, non-bilious vomiting and right upper quadrant (RUQ) cramping abdominal pain improved with drinking water. She had subsequently developed constipation and a heavy, cramping sensation in her legs bilaterally. Review of systems revealed polyuria, polydipsia, blurred vision, and a 10-pound weight loss in the past week. Exam was significant for dry mucous membranes and epigastric tenderness without rebound or guarding. Initial labs revealed creatinine 2.77 mg/dL (baseline 1.8–2.2 mg/dL), glucose 686 mg/dL, anion gap 10, and urinalysis with 3+ glucose and no ketones. Hemoglobin A1c on admission was 13.3%, increased from 7.7% one month prior to admission. Liver function tests were normal except for lipase 374 u/L (normal range 3–43 u/L). She was treated for hyperosmolar non-ketotic syndrome with fluid resuscitation and insulin. Abdominal ultrasound, MRI, and subsequent endoscopic ultrasound revealed a cystic mass in the pancreatic head invading the superior mesenteric vein with associated mild dilation of the main pancreatic and common bile ducts. CA 19–9 was elevated at 119 u/mL (normal range 0–37 u/mL). One week later, she returned to the ED for worsening severe RUQ pain and new-onset pruritis, as well as yellowing of her eyes and darkening of her urine. Exam confirmed scleral icterus, and labs revealed total bilirubin 7.2 mg/dL, direct bilirubin 3.8 mg/dL, AST 195 u/L, ALT 379 u/L, and alkaline phosphatase 467 u/L. Repeat ultrasound revealed an interval increase in the size of the pancreatic mass and the degree of ductal dilatation. Endoscopic retrograde cholangiopancreatograophy (ERCP) was performed with sphincterotomy and stent placement to relieve ductal obstruction. Biopsy at that time confirmed well- to moderately-differentiated pancreatic adenocarcinoma.

IMPACT: Rapid-onset diabetes in adults over age 50 should prompt consideration of an inciting cause.

DISCUSSION: Early diagnosis of pancreatic cancer is critical as localized disease can sometimes be cured surgically; however, the disease often remains asymptomatic until an advanced stage. Multiple studies now reveal that as many as 40-80% of patients with pancreatic cancer have hyperglycemia which precedes symptoms and diagnosis of pancreatic cancer. Further, patients aged >50 with new-onset diabetes have up to an 8-fold higher risk of pancreatic cancer than age-matched controls. While widespread screening for pancreatic cancer is not recommended due to the low incidence of the disease, more research is needed to determine the cost-benefit of screening adult patients with new-onset hyperglycemia or diabetes.

RAPIDLY PROGRESSIVE BULLAE IN A CRITICALLY ILL PATIENT David T. Broome[1]; Ceena Neena Jacob[2]; Ellen Wurm[1]; Alok Vij[1]; Cassandra Calabrese[1, 1]; Carlos Isada[1]. [1]Cleveland Clinic Foundation, Cleveland, OH; [2]Government Medical College, Kottayam, India. (Control ID #2679683)

LEARNING OBJECTIVE #1: Diagnose Bullous Pyoderma Gangrenosum

LEARNING OBJECTIVE #2: Recognize cognitive bias while diagnosing rare conditions

CASE: A 63-year-old woman presented to an outside hospital with toxic megacolon with unclear etiology, refractory to multiple antibiotics (vancomycin, piperacillin/tazobactam, and metronidazole) that resulted in colectomy with end ileostomy placement. On postoperative day five, she was transferred for papules at the surgical incision site that rapidly expanded and coalesced

with a surrounding red-purple violaceous border and superimposed bullae. The Nikoslky sign was positive, and Asboe Hansen sign was negative. These lesions appeared on her abdomen around the surgical incision, her right thigh where the foley was anchored, and her right neck where she had an interjugular catheter. Given that the patient had recent trials of antibiotics with the development of a rash, the patient had a presumptive diagnosis of stevens-johnson syndrome prior to being transferred. When she presented to our hospital, the differential diagnosis was broad, including stevens-johnson syndrome, sweet's syndrome, infections, malignancies, and vasculitides.The patient had localized blisters at sites of trauma, not in dependent areas, which were consistent with pathergy. Skin biopsy displayed a sub-epidermal split, hemorrhage, and a dense neutrophil-rich infiltrate extending full thickness through the dermis. Upon extensive chart review, it was found that she had been diagnosed with ulcerative colitis previously and had been non-adherent to therapy. In the setting of pathology-confirmed ulcerative colitis with toxic megacolon, paired with pathergy and the biopsy findings, pyoderma gangrenosum became the clear diagnosis. A final diagnosis of bullous pyoderma gangrenosum secondary to an ulcerative colitis flare was made and the patient was started on IV methylprednisolone with adjuvant intravenous immunoglobulin and rapid improvement was noted within days.

IMPACT: It is common to encounter type 1 cognitive errors in treating critically ill patients with acute skin manifestations. This patient had denied a previous history of ulcerative colitis, leading the outside hospital to conclude that this patient had stevens-johnson syndrome and led to diagnostic momentum. When reanalyzing this case, a type 2 analytical thinking approach was employed and eventually led to the correct diagnosis of bullous pyoderma gangrenosum.

DISCUSSION: Bullous pyoderma gangrenosum is a rare manifestation of inflammatory bowel disease that may manifest in the critically ill patient. It is important to distinguish this diagnosis utilizing type 2 analytical thinking, discern it in the light of opposing diagnostic momentum, and treat it appropriately. Surgical debridement is contraindicated in bullous pyoderma gangrenosum, and if used may cause significant morbidity and mortality. When treated with steroids and biologic agents, rapid improvement is noted within days, and significant morbidity and mortality may be avoided.

RARE CASE OF NEUTROPENIC DIVERTICULITIS Meghana Vellanki[1]; Sajiv Sethi[1]; Sowmya Nanjappa[2]; John N. Greene[2]. [1]University of South Florida, Tampa, FL; [2]Moffitt, Tampa, FL. (Control ID #2707404)

LEARNING OBJECTIVE #1: The aim of our case is to describe occurrence of diverticulitis in patients with prolonged neutropenia to help guide future diagnosis and treatment.

LEARNING OBJECTIVE #2: Recognize that having a higher index of suspicion for neutropenic diverticulitis may lead to earlier intervention and improved outcomes.

CASE: Patient was a 52-year-old female with history of AML and recurrent diverticulitis who presented with gradually worsening left lower quadrant abdominal pain. She was hospitalized three times within the past two months, twice for diverticulitis. On admission, patient was noted to be pancytopenic with ANC 150. CT of the abdomen and pelvis showed persistent extensive wall thickening with pericolonic inflammation involving the descending and sigmoid colon reflecting diverticulitis. Patient was discharged with IV antibiotics. Unfortunately, patient remained neutropenic with ANC 40 and was readmitted for recurrent diverticulitis with small focal abscesses that were too high risk to be drained. She eventually deteriorated after developing neutropenic fever and sigmoid colonic abscess and passed away 21 days after admission.

IMPACT: Importantly, one should have a higher index of suspicion for neutropenic diverticulitis in patients with a prior history of diverticulitis as familiarity with severe outcomes of neutropenic diverticulitis including abscess formation and perforation indicates a need for identifying and aggressively managing their controllable risk factors.

DISCUSSION: The course of diverticular disease in patients who are immunosuppressed may significantly differ from those with competent immune systems. Mortality for immunosuppressed patients with prior history of diverticulosis is higher with mortality rates of 25% for all patients with diverticulitis who were treated either conservatively or surgically, significantly higher than for the general population at 1-5% [2]. For example patient was not a surgical candidate but had multiple admissions for diverticulitis and patients with complicated diverticulitis may benefit from early resection, which could have been an early consideration in a patient with refractory diverticulitis [3]. Diagnosis of neutropenic diverticulitis requires a history specifying gastrointestinal symptoms in the setting of neutropenia. Often, patients will have a past history of diverticulosis and CT is an extremely useful tool in diagnosis. Treatment involves conservative therapy with antibiotics or even drainage or surgery. As patients who are immunosuppressed have higher complication rates, elective sigmoid resection is currently a Grade 1C recommendation for immunosuppressed patients after one episode of acute left sided colonic diverticulitis, but studies have not been done isolated to neutropenic patients [5]. This disease pattern necessitates provider familiarity for diagnosis with clinical history and CT, conservative versus aggressive therapeutic options, the role of surgical drainage, and patient outcomes in the setting of prolonged neutropenia.

RARE CASE OF OLANZAPINE INDUCED HYPOGLYCEMIA, BRADYCARDIA, AND HYPOTHERMIA Waleed Al-Darzi[2]; Mehnaz Rahman[3]; Sonya Sandhu[1]; Joyce Philip[2]; Vinay Shah[2]. [1]Wayne State School of Medicine, Detroit, MI; [2]Henry Ford Hospital, Detroit, MI; [3]Louisiana State University Health Sciences Center, New Orleans, LA. (Control ID #2687621)

LEARNING OBJECTIVE #1: Recognizing that Olanzapine can induce hypoglycemia. Although Olanzapine is known to cause hyperglycemia and new onset diabetes, there are few case reports of Olanzapine induced hypoglycemia.

CASE: 65 year old female with history of schizophrenia, hypertension and hyperlipidemia presented for dizziness. She has had multiple ER evaluations for similar complaints with a largely negative evaluation including normal orthostatic vitals and lack of events on implanted loop monitor. During this presentation she was noted to be in sinus bradycardia, hypothermic at 35.3 C and hypoglycemic at 49 mg/dl. Initial symptoms subsided with supplemental glucose, device interrogation of her loop recorder demonstrated sinus bradycardia with multiple PAC's and sinus pauses. Intracranial imaging with CT and MRI did not reveal acute pathology and EEG was negative for epileptiform activity. She had repeat neuroglycopenic episodes with altered mentation during her hospitalization with blood glucose levels repeatedly in the 50's mg/dl despite appropriate dietary intake. Endocrinology was consulted with

extensive evaluation yielding negative results for potential etiologies including hypothyroidism, adrenal insufficiency, insulinoma, sulfonylurea toxicity. Abdominal CT did not show evidence of adrenal or pancreatic mass. On review of her medications, Olanzapine was identified as the iatrogenic cause of her symptoms. After discontinuation of the drug, patient had gradual improvement remaining normothermic and with normal blood glucose levels throughout the rest of her inpatient visit.

IMPACT: Olanzapine can cause glucose dysregulation whether hypoglycemia or hyperglycemia. Hypoglycemia can produce bradycardia and hypothermia.

DISCUSSION: Olanzapine is a commonly used atypical antipsychotic medication. It has well documented side effects of dyslipidemia and hyperglycemia, often resulting in new onset diabetes in patients. However, there are very rare reported cases of hypoglycemia with this medication. The mechanism for glucose dysregulation in general is poorly understood. Hypoglycemia is proposed to be a result of insulin hypersecretion due to systemic increases in insulin resistance. In patients with prior risk factors for hypoglycemia, previous episodes of unexplained syncope, obesity or pre-existing diabetes, prescribing physician to re-evaluate the role of Olanzapine over another agent with similar efficacy in treatment as an antipsychotic.

RARE DOUBLE BACTEREMIA WITH STREPTOCOCCUS PNEUMONIAE AND CAPNOCYTOPHAGA SPUTIGENA

Reiko Sakama[1]; Mizuki Uchiyama[1]; Yuichi Takahashi[1]; Taiju Miyagami[1]; Hiromizu Takahashi[2]; Yuki Uehara[1]; Toshio Naito[1]. [1]Juntendo University, Tokyo, Japan; [2]Juntendo university, Tokyo, Japan. (Control ID #2701779)

LEARNING OBJECTIVE #1: An immunocompromised patient with double bacteremia can have a lethal clinical course.

CASE: A 75-year-old man with a history of type 2 diabetes mellitus and alcoholic hepatitis was admitted to our hospital due to a high fever and dyspnea. Two months prior to admission, he had been diagnosed with T3 stage esophageal cancer after evaluation for dysphagia. Three days before admission, he became feverish and developed dyspnea that brought him to our emergency room. On admission, he was alert and oriented. His temperature was 38°C, blood pressure 152/85 mmHg, heart rate 109/min, respiratory rate 26/min, and percutaneous arterial oxygen saturation was 90% with 6 L/min of oxygen by mask. Heart sounds were normal. Coarse crackles were heard over the right lung. Chest X-ray and CT scan showed bilateral pleural effusions and consolidation. He was admitted for severe pneumonia with immediate initiation of meropenem, but he became unconscious with severe hypoxemia in a few hours. Mechanical ventilation was started. Two sets of blood cultures on admission yielded *Streptococcus pneumoniae* and *Capnocytophaga sputigena* after 11 hours and 65 hours of incubation, respectively. Based on antimicrobial susceptibility testing, meropenem was switched to ceftriaxone. The high fever persisted with no evidence of abscess formation and deep vein thrombosis on whole body enhanced CT. No vegetations were found on transthoracic echocardiography. He recovered temporarily and was extubated. He again became unconscious and hypoxemic a week later, and noninvasive positive pressure ventilation was started. Multiple hemorrhagic infarct lesions on head MRI and acute myocardial infarction of the left inferior wall were found. He was re-intubated, but he died the following day.

IMPACT: This is the first report of double bacteremia with *Streptococcus pneumoniae* and *Capnocytophaga sputigena*. Bacteremia with these two pathogens in an immunocompromised patient could cause rapid deterioration, multiple embolic phenomena, and a fatal outcome even with adequate treatment.

DISCUSSION: We experienced a treatment challenge in an immunocompromised patient who was undergoing evaluation for esophageal cancer and had untreated type 2 diabetes mellitus. This patient showed rapid deterioration of consciousness and dyspnea within a few hours. The patient was started on antimicrobials quickly, but multiple emboli, possibly septic, occurred, along with endovascular damage and coagulopathy. Invasive streptococcal infection is known for its high mortality rate in patients with comorbidities and age older than 65 years. *Capnocytophaga* species are generally known as invasive pathogens in immunosuppressed patients, though *Capnocytophaga sputigena* is part of human oral flora, and the clinical course of infection has not been well described. Bacteremia with these two pathogens could show a lethal clinical course. Thus, further studies of bacteremia with multiple pathogens are needed.

RARE PANCREATIC MASSES

Stephen Catalya; Sunil Tulpule; Sabrina Arshed; Qiang Nai. Raritan Bay Medical Center, Rahway, NJ. (Control ID #2701729)

LEARNING OBJECTIVE #1: Recognize atypical presentations of tuberculosis.

CASE: Here is an 86 year old male who presented with abdominal pain, nausea, vomiting, and malaise for 5 days. His past history was significant for taking cyclosporine (known to reactivate tuberculosis) for a skin rash and immigrating from the Philippines in infancy. A computerized tomography scan of his abdomen done during the course of his stay showed a 2.2cm × 3.8cm cystic mass in the tail of the pancreas. Initially the mass was thought to be malignant; however a biopsy done as an outpatient showed no malignant cells. Ascitic fluid sampled was negative for acid fast bacilli. However, further testing, including polymerase chain reaction, revealed the presence of tuberculosis protein. This led to the diagnosis of pancreatic tuberculosis. He was started on rifampin, isoniazid, pyrazinamide, and ethambutol. However, due to worsening renal failure and failure to thrive from poor PO intake, his condition continued to deteriorate as an outpatient. A pleural effusion developed leading to respiratory failure. Given the poor prognosis, care was withdrawn two weeks after readmission (without the effusion being sampled) and the patient then died.

IMPACT: He was born in a country endemic with tuberculosis but moved to the US at a young age and then developed symptoms decades after his last known exposure. The lesion was also located in a location rarely documented in the literature, the tail. Given its scarcity, pancreatic tuberculosis does not appear in most differential diagnosis of a pancreatic mass. Usually, the first thought is malignancy when seeing a mass. Adding to the confusion is the fact that most tuberculous lesions appear as a mass on imaging, causing a dangerous delay in diagnosis. Evaluation of such masses, especially if fluid is present in the area along with suspected tuberculosis, should include polymerase chain reaction testing as the assay is highly specific and can give a true positive result when other results including acid fast bacilli smears are negative. Acid fast bacilli smears are only positive in 20-40% of cases.

DISCUSSION: As a clinical entity pancreatic tuberculosis is very rare and the presentation here is atypical compared to published cases. Even in countries endemic with tuberculosis, isolated pancreatic tuberculosis accounts for less than 5% of total cases. A review of case reports shows a dearth of cases in the US, and one study found that cases are usually young adults who are recent immigrants from countries endemic with tuberculosis. Furthermore, published reports show that the pancreatic masses found to be tuberculous are located in

the head, not in the tail of the pancreas. This case does not fit the typical profile outlined in that study and other published case reports raising the absolute need to be aware of both from epidemiological and clinical standpoints. What appears to have been overlooked is that this patient was taking cyclosporine, predisposing him to tuberculous infection.

RARE TRANSUDATIVE CHYLOTHORAX IN THE SETTING OF CIRRHOSIS Jonathan Dewald[1]; Benjamin Verzi[1]; Anil Singh[2]; Trey La Charité[1]. [1]Univerity of Tennessee Medical Center Knoxville, Knoxville, TN; [2]University of Tennesee, Knoxville, TN. (Control ID #2704855)

LEARNING OBJECTIVE #1: Chylothorax is typically an exudative process secondary to trauma or malignancy. We present a case of a transudative chylothorax in a female patient with cirrhosis. This case will help recognize pleural effusions with underlying cirrhosis, and assess for chylothorax which requires different management than a typical transudative pleural effusion.

CASE: A 62-year-old female with history of cirrhosis secondary to nonalcoholic steatohepatitis (NASH) with ascites (SAAG 2.5–2.9 g/dL) and diabetes mellitus type 2 presented with 3 days of worsening dyspnea on exertion and right sided pleuritic chest pain. Initial chest radiograph noted a moderate right-sided pleural effusion. Patient underwent thoracentesis with alleviation of dyspnea. Pleural fluid was milky white with slight pink tinge. Pleural fluid studies indicated a lymphocyte predominant transudative effusion based on Light's Criteria with a triglyceride level of 431 mg/dL and cholesterol level of 39, diagnostic for chylothorax. Cytology was negative for malignant cells. AFB and fungal cultures were negative. There was no history of thoracic surgery or trauma and lymphocintigraphy was performed with no evidence of chylous leak. CT scan of the thorax and abdomen was negative for lymphadenopathy or masses. In view of liver cirrhosis, this transudative chylothorax was attributed most likely to liver cirrhosis. Diuretic therapy, along with low fat, medium-chain triglyceride diet was initiated. Patient remained asymptomatic over the next 24 hours and discharged home.

IMPACT: Transudative chylothorax is rarely associated with liver cirrhosis and should be considered in differential diagnosis as this can change the workup as well as treatment plan.

DISCUSSION: Chylothorax is a rare cause of pleural effusion most commonly caused by trauma or neoplastic interruption of the thoracic duct. Transudative chylothoraces is exceptionally rare with few cases reported thus far in the literature associated with liver cirrhosis. Management involves reduction of portal hypertension with medical management and thoracentesis for symptomatic relief. Octreotide has been used in case series with variable responses, and is not considered standard of care at this time. Transjugular intrahepatic portosystemic shunt (TIPS) is reserved for refractory cases. Tube thoracostomy drainage is contraindicated as this may lead to significant loss of nutrients and results in immune suppression.

RECENT ADVANCES IN THE TREATMENT OF CHRONIC TOPHACEOUS GOUT.

Niyati M. Gupta[1, 2]; Sreelakshmi Panginikkod[3]; Harsh Rawal[4]; Sahil Gehlot[2]; Malav P. Parikh[1]. [1]Cleveland Clinic Foundation, Cleveland, OH; [2]Grant Medical College and Sir J.J. Group of Hospitals, Mumbai, OH; [3]Presence Saint Francis Hospital, Evanston, IL; [4]University of Illinois at Urbana Champaign, Champaign, OH. (Control ID #2694673)

LEARNING OBJECTIVE #1: Recognize the role of Pegloticase and Anakinra in treatment of chronic tophaceous gout

CASE: A 55-year-old male with a history of chronic tophaceous gout (CTG) presented to the hospital with debilitating pain related to polyarticular gout flare. He has been previously treated with allopurinol, for which he developed resistance and had adverse reaction to Febuxostat. The patient noted no improvement on colchicine and low dose prednisone. Due to severe CTG affecting the activities of daily living and articular loss of motion, patient was deemed eligible for a trial drug, "Pegloticase". Initial infusions of Pegloticase were well tolerated, however he developed severe flare after fourth infusion requiring hospitalization. He reported 10/10 pain in bilateral knees, hands, elbows and shoulders. On examination, tophi were present at bilateral wrists, elbows and knees along with joint swelling, tenderness and erythema. He was afebrile with a WBC count of 8.4k/uL and serum uric acid levels of <0.2mg/dL. The patient was thought to have acute gout flare related to Pegloticase infusion. He was treated with 2 doses of Anakinra 100mg QD, showing marked symptomatic improvement within few hours. The swelling, pain and erythema of the joints improved significantly and he was able to ambulate around the room.

IMPACT: How did this case change my practice? Pegloticase is a recently approved agent for the treatment of chronic tophaceous gout. In the initial phase of treatment, it can cause gouty flare related to uric acid mobilization. Anakinra can be an effective agent for management of gout attack in these situations. It is also a good alternative for treating gouty arthritis in patients for whom conventional therapies are ineffective or contraindicated.

DISCUSSION: Gout is an inflammatory arthritis characterized by self-limiting but excruciatingly painful acute attacks. Hyperuricemia is the most important risk factor for developing gout. Colchicine, nonsteroidal anti-inflammatory drugs (NSAIDS) and corticosteroids are standard approaches for terminating the acute gouty attack. Xanthine oxidase inhibitors or uricosuric drugs are effective as a chronic suppressive therapy. However, additional therapy is required in patients with resistant CTG. Pegloticase is a recombinant, uricase enzyme, which metabolizes uric acid into soluble allantoin for the excretion by kidney. This results in lytic decrease of serum uric acid, leading to dissolution of tophi. It is intended for use in resistant CTG. It has been reported that about 77% of patients treated with Pegloticase experience gout flares in the initial three months related to urate mobilization. Monosodium urate (MSU) crystals induce tissue inflammation and gout flare via induction of IL-1. This led to investigation weather IL-1 blockade could inhibit inflammation provoked by MSU. Anakinra is one such IL-1 inhibitor and has shown rapid relief of inflammatory gout symptoms in patients where conventional therapies are ineffective or contraindicated.

RECOGNIZING OSTEOARTHRITIS WITH CHRONIC CALCIUM PYROPHOSPHATE DIHYDRATE CRYSTAL DEPOSITION (CPPD) AS A DIFFERENTIAL AND ASSOCIATED THERAPIES IN ELDERLY PATIENT WITH KNEE PAIN Priya Vijayvargiya[2]; Adam P. Sawatsky[1]. [1]Mayo Clinic, Rochester, MN; [2]Mayo clinic, Rochester, MN. (Control ID #2707608)

LEARNING OBJECTIVE #1: Include osteoarthritis with CPPD in the differential for knee pain

LEARNING OBJECTIVE #2: Consider alternative therapies in this patient population that is commonly treated similarly to osteoarthritis.

CASE: The patient is a 77-year-old female with a past medical history significant for chronic low back pain, peripheral neuropathy, and chronic left knee pain, presumed to be osteoarthritis and treated with meloxicam. Given the risks of long-term meloxicam use in elderly patients, she discontinued the medication and underwent a course of acetaminophen, quadriceps strengthening exercises and topical diclofenac sodium gel. She presented 1 month later with acute worsening of her chronic left knee pain, with no fevers, chills or night sweats. At that encounter, she had difficulty with ambulation and the physical exam of her left knee demonstrated a joint effusion, but no erythema, restriction of movement, or joint laxity. Left knee radiograph demonstrated degenerative arthritis with moderate medial compartment narrowing, genu varus alignment, chondrocalcinosis, and a moderate-sized joint effusion. Knee aspiration revealed a cell count of 276 with microscopy findings of intracellular CPPD crystals. Based on this evaluation, we made the diagnosis of OA with CPPD. She received intra-articular steroids with complete resolution of her knee pain. Within a month, her pain started to resume and started ibuprofen with stable pain control for 1 year. She then developed an acute flair of left knee pain and effusion, currently being treated with colchicine.

IMPACT: OA and CPPD have similar physical exam findings: joint enlargement, effusion, crepitus and restricted movement. CPPD diagnosis is based on imaging studies or joint aspiration. With an accurate diagnosis, alternative treatment options can be made available, impacting disease progression and patient quality of life.

DISCUSSION: CPPD is diagnosed later in life, the average age of diagnosis being 72 years with no significant gender difference.(1) Approximately 50% of patients with CPPD have evidence of OA. OA with CPPD commonly affects the knees, followed by wrists. Presentation either follows intermittent flairs or proceeding with the natural progression of OA. (2, 3) Non-invasive diagnostic tests include: radiographs, ultrasound (US), and dual energy CT scan. Knee radiographs have been reported to only recognize 40% of clinically relevant chondrocalcinosis. Recent studies report US has > 80% sensitivity of detecting chondrocalcinosis as compared to radiography alone. Dual energy CT scan is predominantly utilized in research studies. The diagnosis of OA with CPPD helps with treatment when the patient has recurrent episodes of flairs not resolved with steroid injections or conservative therapy. In these patients, we recommend US followed by radiography, depending on availability.(4) Treatment for OA with CPPD flairs includes NSAIDs, intra-articular steroids, colchicine and systemic steroids, and require small dose of NSAIDs for maintenance therapy. (2,3)

RECURRENT PERICARDIAL EFFUSION IN THE SETTING OF UNCONTROLLED HYPOTHYROIDISM Ekta Kakkar; Nalini Ram. Baylor College of Medicine, Houston, TX. (Control ID #2706280)

LEARNING OBJECTIVE #1: It is important to treat uncontrolled hypothyroidism to prevent many cardiac complications including pericardial effusions, heart failure, and reduced contractility.

CASE: A 43-year-old female presented to the emergency room with a history of progressive dyspnea on exertion for 3 months. Bedside echo confirmed the presence of a large pericardial effusion with RV collapse consistent with tamponade. Transthoracic echo showed preserved ejection fraction. The patient had been diagnosed with autoimmune hypothyroidism during her pregnancy about 9 years prior to presentation and was found to have a large pericardial effusion on imaging by CT scan. At that time she complained of shortness of breath, weight gain, and fatigue. She had declined pericardiocentesis and was subsequently lost to follow up. She was on levothyroxine till 4 years ago and had stopped it due to weight loss and itching. At current presentation, she endorsed diffuse hair loss, menorrhagia, cold intolerance, intermittent constipation, weight gain, and fatigue. Physical exam was notable for delayed relaxation phase of deep tendon reflexes, distant heart sounds, JVD, and a displaced PMI. She did not however have evidence of hemodynamic instability. Her TSH was elevated to 53 uIU/mL (normal 0.36–3.74 uIU/mL), free T4 was 0.16 ng/dL (0.76–1.46 ng/dL), and total T3 was <10 ng/dL (normal 60–181 ng/dL). Her thyroid peroxidase antibody was positive. Emergent pericardiocentesis was performed and 1600cc of pericardial fluid was removed and sent for analysis. She was started on levothyroxine. Cytology, cultures, and cell count of the pericardial fluid were negative for infection or malignancy. Repeat transthoracic echo showed resolution of the effusion. Importance of compliance with levothyroxine was emphasized, and the patient was discharged with significant improvement in her symptoms.

IMPACT: Pericardial effusion is a rare complication of hypothyroidism with an incidence of 3–6%. Tamponade in a patient with a large effusion due to uncontrolled hypothyroidism is even rarer. It is important to have a high suspicion of hypothyroidism in patients with pericardial effusions with unclear etiology. Thyroid replacement hormone is sufficient for resolution of such pericardial effusions except in the setting of tamponade when emergent pericardiocentesis must be performed.

DISCUSSION: Hypothyroid patients have increased systemic capillary permeability which can lead to the development of a pericardial effusion. In previous case reports, the pericardial fluid in patients with uncontrolled hypothyroidism has also been shown to have an elevated cholesterol level due to the role of thyroid hormone in lipid metabolism; however, this is not the case in our patient. Studies have shown that reduced serum T3 levels are a strong predictor of cardiovascular mortality. The heart relies on hepatic conversion of T4 to active T3. Cardiac contractility and cardiac output are dependent on T3. Thus, it is important to treat hypothyroidism.

RECURRENT PNEUMOCYSTIS PNEUMONIA CAN DEVELOP IN A HUMAN T-CELL LYMPHOTROPIC VIRUS TYPE-1(HTLV-1) CARRIER Motoshi Fujiwara[2, 1]; Yoshinori Tokushima[1]; Naoko E. Furukawa[1]; Masaki Tago[1]; Yoshiaki Nakahara[2]; Shu-ichi Yamashita[1]. [1]Saga University Hospital, Saga, Japan; [2]Yuai-kai foundation and Oda Hospital, Kashima, Japan. (Control ID #2700007)

LEARNING OBJECTIVE #1: To know the causes of recurrent opportunistic infections such as Pneumocystis pneumonia.

CASE: A 49-year-old Japanese woman without significant medical history admitted with shortness of breath. She had cough and dyspnea with gradual exacerbation for three weeks. The physical examination revealed slight fine crackles in her both lungs without systemic lymphadenopathy. Chest CT showed bilateral diffuse ground-glass opacity. Laboratory findings were as follows; white blood cell count was 10.000/μl without abnormal lymphocyte, β-D glucan was over 300pg/ml, KL-6 was 1780U/ml, HIV antibody was negative and HTLV-1 antibody titers were elevated of 1:256. Systemic administration of glucocorticoid and trimethoprim- sulfamethoxazole were effective for her symptoms. Therefore, we diagnosed Pneumocystis pneumonia

occurred in a HTLV-1 carrier. She got a follow-up observation and experienced dry cough 10 months later again. Chest radiography revealed ground glass opacity. Once normalized β-D glucan after first admission rose to over 300pg/ml again. Broncho alveolar lavage (BAL) and transbronchial lung biopsy (TBLB) were performed which revealed the presence of pneumocystis cysts with Grocott methenamine silver staining. The patient improved with the same treatments as before.

IMPACT: What does this case add to the literature? HTLV-1 without developing lymphoma or leukemia could lead to subclinical immunodeficiency state that could cause opportunistic infections such as Pneumocystis pneumonia.

DISCUSSION: Representative endemic regions of HTLV-1 are southwestern part of Japan, sub-Saharan Africa, South America, the Caribbean area, several parts in Middle East and Australo-Melanesia. Among them, southwestern part of Japan is one of the most highly endemic regions, and the number of Japanese HTLV-1 carriers was estimated to be at least 1.08 million in 2011. Although infection with HTLV-1 causes adult T-cell leukemia/lymphoma (ATLL), which has four subtypes, acute, lymphomatous, chronic, and smoldering, most patients remain asymptomatic career. Naturally, ATLL tends to cause immune-deficient state. However, even asymptomatic career could be complained with opportunistic infections, such as strongyloidiasis. Although Pneumocystis pneumonia(PCP) is reported to be a rare complication of HTLV-1 career, our patient shows the importance of asymptomatic careers as one of the causes of PCP, and furthermore, the necessity of examination of the presence of HTLV-1 infection in the patient with PCP without causes of immunodeficiency.

RECURRENT PRIMARY HYPERPARATHYROIDISM IN MULTIPLE ENDOCRINE NEOPLASIA TYPE 1 Hyon Kim; beatrice wong; Xiangbing Wang. Rutgers Robert Wood Johnson Medical School, New Brunswick, NJ. (Control ID #2707092)

LEARNING OBJECTIVE #1: Manage Multiple Endocrine Neoplasia Type 1 (MEN1) complicated by recurrent primary hyperparathyroidism (PHPT)

CASE: A 34-year-old woman originally presented with persistent headaches, blurry vision, galactorrhea and amenorrhea. Magnetic resonance imaging (MRI) of her brain showed a large pituitary mass with compression of the optic chiasm. Laboratory studies confirmed a prolactinoma with an elevated prolactin level of 3767 ng/mL. She was treated with partial hypophysectomy, bromocriptine, cabergoline, and external beam radiation. She was also found to be hypercalcemic (10.6-11 mg/dL) with lab studies consistent with PHPT: intact parathyroid hormone (iPTH) 93 pg/mL (normal 15–75 pg/mL) and urine calcium 384 mg/24h. Thyroid ultrasound and Sestamibi scan revealed parathyroid adenomas that were resected surgically. Post-operatively, her calcium (up to 11.4 mg/dL) and iPTH levels (up to 142 pg/mL) remained consistently elevated. Repeat thyroid ultrasound identified another 1.8 × 0.6 × 1.8 cm parathyroid adenoma leading to a second parathyroidectomy. Despite these interventions, hypercalcemia recurred again. A third parathyroidectomy was performed with implant of the last parathyroid gland into her forearm. Subsequently, she developed severe hypocalcemia and resultant hyperparathyroidism that has been difficult to manage with calcium and vitamin D supplementation. Genetic testing for MEN1 confirmed a heterozygous mutation of exon 10 codon 468. She also had a synaptophysin and chromogranin A positive pancreatic islet cell tumor removed with a spleen-saving distal pancreatectomy.

IMPACT: The optimal management of patients with MEN1 is an evolving conversation limited by the lack of randomized trials due to its rare prevalence. This case highlights some of the challenges in managing these patients and the importance of coordination of care across multiple specialties.

DISCUSSION: MEN1 is a rare autosomal dominant disorder associated with an increased risk of premature death usually from related complications. This patient had recurrent PHPT disease that was difficult to manage despite three separate parathyroidectomies. The optimal surgical management of PHPT in MEN1 patients is controversial. A conservative surgical approach has been advocated to reduce the risk of permanent hypoparathyroidism and hypocalcemia, in particular with sporadic PHPT. However, multiple parathyroidectomies are associated with poor prognosis in MEN1. There is growing literature supporting initial 3.5-gland subtotal parathyroidectomy or total parathyroidectomy with autotransplantation due to particularly high rates of recurrent PHPT in MEN1. This case lends support to more aggressive initial surgical management of PHPT in MEN1.

RECURRENT RHEUMATOID PLEURAL EFFUSIONS COMPLICATED BY MYCOBACTERIUM HECKESHORNENSE INFECTION
Daniel J. Howell[2]; Benjamin T. Galen[1]. [1]Albert Einstein College of Medicine, Bronx, NY; [2]Montefiore Medical Center, Bronx, NY. (Control ID #2706070)

LEARNING OBJECTIVE #1: Recognize the challenges and complications of treating rheumatoid pleural effusions

LEARNING OBJECTIVE #2: Diagnose and treat nontuberculous mycobacterial pulmonary infection

CASE: A 41 year old man with a history of rheumatoid arthritis (RA) presented with dyspnea and tachycardia. During the ten months prior to admission he had developed recurrent pleural effusions, which did not improve with adalimumab. Over the course of several hospital admissions, multiple thoracenteses were performed, which resulted in hydropneumothorax on the right and loculated pleural effusion on the left. A pleural fluid specimen eventually grew *Mycobacterium heckeshornense*. He began long-term rifampin, azithromycin, and ethambutol for nontuberculous mycobacterial (NTM) infection and was discharged to a rehabilitation facility. On this admission, he was markedly cachectic and dyspneic. Lung examination revealed dullness to percussion and reduced air entry at both bases. Serum albumin was 2.9 g/dL (3.7–5g/dL) and Rheumatoid Factor (RF) was elevated to 957 IU/ml (0–22IU/ml). Antibodies to CCP and Ro were positive. A chest tube was placed and pleural fluid analysis showed 560,000 RBCs, Protein 6.1 g/dL, LDH 2456 U/l, Cholesterol 67 mg/dl, pH 8.0 and glucose 2 mg/dl, Despite intrapleural fibrinolytic therapy, repeat chest CT showed persistent left-sided loculated pleural effusion and lung entrapment. He was discharged for rehabilitation and continued anti-NTM therapy

IMPACT: This case highlights the challenge of treating symptomatic pleural disease in RA especially in the setting of NTM infection.

DISCUSSION: Fewer than 5% of patients with RA develop rheumatoid pleural effusions (RPE), but risk factors include male sex and a high RF titer. Typical RPE are small and asymptomatic but they can be severe. RPE may be present in the absence of synovitis. The pleural fluid is typically exudative and straw colored, but can be bloody. Pleural fluid protein is usually high (>4g/dL), glucose levels low (<60mg/dl), ph < 7.20, with elevated LDH (>700 IU/L) and high cholesterol (>65 mg/dL). Treatment options include disease modifying anti-rheumatic drugs (DMARDs), systemic or intrapleural steroids, biologic

agents, or surgical drainage. Complications of RPE include infection, lung entrapment, fibrothorax, and persistent pneumothorax. Patients treated with anti-TNF medications like adalimumab are also susceptible to NTM infections. *Mycobacterium heckeshornense* was first identified in 2000. Spondylodiscitis due to *Mycobacterium heckeshornense* has been reported in a patient with RA on etanercept, but pleural infection due to this species has not previously been reported. There are no specific guidelines on the treatment of Mycobacterium heckeshornense infection and drug choices are based on case reports and susceptibility testing. NTM infection therefore presented a barrier to the medical management of RPE.

RECURRENT STROKE DUE TO VASCULAR STEAL FROM EATING LUNCH Andrew Kelly; Bryden Considine. University of Connecticut, Hartford, CT. (Control ID #2706901)

LEARNING OBJECTIVE #1: Outline a rare occurence and management strategies for a patient with vascular steal causing a clinical picture consistent with recurrent ischemic stroke.

CASE: An 82 year-old male with history of coronary artery disease status post bypass, prior stroke 30 years prior, hypertension and heart failure presented to the hospital due to multiple episodes of dysarthria with left upper and lower extremity weakness. The patient had an endoscopy and a colonoscopy a week prior to admission and went home, developing slurred speech one day later. His family thought it was due to the prior day's anesthesia however when it happened on consecutive days he was brought to the hospital. A head CT was negative for acute findings. A CT angiogram revealed bilateral vertebral artery stenosis (no flow in right vertebral artery with atherosclerotic disease and possible narrowing at craniovertebral junction in the left vertebral artery). A cochlear implant precluded obtaining any magnetic resonance imaging. While in hospital the patient developed recurrent epsiodes of left arm and leg weakness with dysarthria always around noon. A stroke activation was called four days out of seven, all around lunch time. Each time, a head CT was obtained without any evidence of changes. His systolic BPs at those times were all in the 140–145 mmHg range, much lower than 170–180 mmHg where his blood pressure ran normally. His symptoms would resolve over an hour when given boluses of 1 liter of normal saline. It was believed that the patient had recurrent episodes of vascular steal from blood shunting and redistributing to the gastrointestinal tract after his lunch, his biggest meal of the day.

IMPACT: This case provides a rare opportunity to individualize blood pressure management and develop management strategies for a patient with severe vascular disease developing stroke-like symptoms due to vascular redistribution of blood and relative hypotension.

DISCUSSION: Vascular steal is a well-known phenomena and occurs commonly in arterial systems that have known stenosis. It has been documented in subclavian steal syndrome where symptoms of upper extremity ischemia occur due to subclavian stenosis. Similarity, vascular access steal can occur when blood flow distal to an AV fistula in a dialysis patient becomes compromised and can cause limb pallor. This case outlines a unique occurrence where a patient with extensive vascular disease and stenosed vertebral arteries developed recurrent steal from a relative change in distribution of blood flow to the gastrointestinal tract after his main meal of the day. At first the symptoms resolved with fluid boluses to increase blood pressure. It was hoped that eventually the body would be able to adapt to this and be able to preferentially increase blood flow to the brain, but a management strategy the patient had to rely on was smaller more frequent meals throughout the day instead of one main meal at lunch and also positional changes when symptoms developed including lying down.

RECURRENT SYNCOPE IN A 23-YEAR-OLD: NOT THE USUAL SUSPECT Natasha Adlakha; Ala Eltom M.D.; Chad Kliger; Robert Glatter. Lenox Hill Hospital, New York, NY. (Control ID #2702922)

LEARNING OBJECTIVE #1: Diagnose a unique presentation of an atrial septal defect (ASD)

LEARNING OBJECTIVE #2: Recognize cardiac and vasovagal syncope can co-exist

CASE: A 23-year-old female with no medical history presented after witnessed loss of consciousness of 1 min while sitting down during eyebrow waxing. She experienced multiple syncopal episodes triggered by pain, stress, or blood, starting as early as seven years old, and occurring monthly for the last six months. She reported excessive fatigue, dyspnea with one flight of stairs, and recalled syncope more than once while climbing stairs without premonitory symptoms. She had fixed splitting of S2 on exam. Electrocardiogram showed normal sinus rhythm, right axis deviation and an incomplete right bundle branch block. Transthoracic and transesophageal echocardiograms showed elevated right ventricular (RV) end-diastolic pressure, right atrium and ventricular dilation, a large 2.6cm ostium secundum ASD with significant left to right shunt, Qp:Qs 4:1, and mild pulmonary hypertension. The structural heart disease team performed percutaneous closure of the defect and she has been asymptomatic since intervention.

IMPACT: We present a unique diagnosis of ASD with recurrent syncope. ASDs often present with fatigue, dyspnea, right heart failure but rarely syncope. There are only three case reports that associate ASD with syncope. Two are written in native language of Japanese and German. The third is from 1958 and associates syncope in a 22-year-old with undiagnosed ASD secondary to latent heart block. This case raises physician awareness of syncope as an uncommon and rarely documented symptom for ASD presentation.

DISCUSSION: Atrial septal defect (ASD) is one of the most common congenital heart disease anomalies in adults. Very small ASDs (<5mm diameter) are clinically insignificant and >10mm are symptomatic in the third decade of life. Symptoms on diagnosis include dyspnea, fatigue, dysrhythmias, or right heart failure. This patient presents with both vasovagal and cardiac syncope. The mechanism of vasovagal syncope is triggering a sympathetic response from stress, dehydration, or vasodilation from warm environment. This leads to hyperdynamic contractions and activates a paradoxical vagal response of vasodilation and relative bradycardia with a transient decreased cardiac output, perfusion to the brain and subsequent loss of consciousness. A significant ASD shunt results in right sided overload, ventricular enlargement, and septal shift towards the left ventricle (LV) during diastole. This impairs LV filling, causing reduced LV stroke volume, cardiac output and increased left to right shunting. Our patient had a sizeable, hemodynamically significant shunt and was subject to reduced stroke volume and cardiac output. During vasovagal episodes, cardiac output was reduced further with extreme sensitivity to hemodynamic changes and lower threshold for syncope. The significant shunt also resulted in poor exercise tolerance and sudden loss of consciousness on exertion.

REFRAMING REFRACTORY ANOREXIA NERVOSA AS A CHRONIC ILLNESS: A PALLIATIVE APPROACH Mina F. Tanaka. Massachusetts General Hospital, Boston, MA. (Control ID #2705607)

LEARNING OBJECTIVE #1: Explain the morbidity & mortality associated with eating disorders (ED).

LEARNING OBJECTIVE #2: Recognize role of palliative care in broad range of life threatening illnesses and identify patients who would benefit from palliative care referral.

CASE: 50F w/h/o anorexia nervosa (AN) since age 14 w/multiple involuntary admissions on the ED unit was admitted to general medicine unit w/electrolyte disarray, bradycardia, hypotension, and failure to thrive. ROS: 20lb wt loss in last few months. PMH: AN, depression. SH: lives alone but brother is court-appointed guardian. Meds, FMH, allergies: non-contributory. Of note, during previous admission for FTT, she had two PEA arrests, hypoxemic respiratory failure s/p trach and decannulation, and malnutrition requiring PEG. Exam notable for emaciated appearance. Labs K 2.6, CO2 33; SBPs 60s, HRs 40s–50s, BMI 13. Her metabolic disarray, hypotension, and bradycardia responded well to aggressive repletion and fluid resuscitation. She declined transfer to an inpatient ED unit, though this was thought to be necessary to achieve wt gain goal. Ethics committee, psychiatry, and palliative care conceptualized her illness as "end stage AN" due to continued self-restrictive eating w/severe complications despite repeated treatments. After multiple family meetings, patient was transitioned to DNR/DNI and discharged with bridge to hospice with focus on palliative options. This was seen as an ethical choice by all parties, including the patient, given the low likelihood of full meaningful recovery. Eight months later, she is followed closely by her PCP and psychiatrist and has avoided further hospitalizations.

IMPACT: This case illustrated that as those in the front lines, general practitioners must be able to recognize patients appropriate for prompt referral to palliative care specialists no matter the underlying condition.

DISCUSSION: Although AN is relatively rare, those afflicted with the disorder are faced with a wide range of complications, from GI to cardiac dysfunctions. Patients who suffer from ED have 2x higher all-cause mortality compared to the general population. Less than 50% of those who survive recover from their disorder. Despite the dismal prognosis, there has been little focus on palliative care and hospice as viable options for patients with chronic ED. Center for Advance Palliative Care proposes set of criteria that can help clinicians identify patients who would benefit from general palliative assessment, with primary criteria (probable death w/in 12 months, frequent admissions for same condition, admission for difficult-to-control symptoms, complex care requirement, decline in function/feeding/weight) and secondary criteria (admission from long-term care facility, older cognitively impaired patient with hip fracture, metastatic/locally advanced incurable cancer, chronic home O2 use, out-of-hospital cardiac arrest, current/past hospice program enrollee, limited social support, no history of completing an advance care planning document).

RENAL INVOLVEMENT IN ANAPLASMOSIS

Sylvia V. Alarcon; Jonila Murati; Gabriela A. Ciofoaia; Preeyanka R. Sundar. Berkshire Medical Center, Pittsfield, MA. (Control ID #2707072)

LEARNING OBJECTIVE #1: Patients with anaplasmosis can developed a broad range of renal manifestations.

LEARNING OBJECTIVE #2: Early recognition and treatment of anaplasmosis is essential in preventing severe renal complications.

CASE: Case 1. A 62 year-old man presented with fever, chills, fatigue, shortness of breath, cough, anorexia, abdominal bloating and diarrhea. Labs revealed thrombocytopenia, elevated venous lactate, elevated liver enzymes, mild elevated creatinine kinase and acute kidney injury. Urine microscopy showed granular casts consistent with acute tubular necrosis. Renal ultrasound showed no abnormalities. Peripheral blood smear showed inclusion bodies suggestive of anaplasmosis, which was confirmed by DNA PCR. During hospital course his renal function declined rapidly, but improved with aggressive hydration and doxycycline. Case 2. A 69 year-old male presented with fever, sweating, headache, increased urinary frequency annd diarrhea. Labs showed thrombocytopenia, elevated liver enzymes, elevated LDH, elevated venous lactate and acute kidney injury. Peripheral blood smear suggested anaplasmosis, later confirmed by DNA PCR. Microscopic urianalysis was suggestive of acute tubular necrosis. There was no sonographic evidence of hydronephrosis, and the remaining tests indicated there were no other sources of infection. His renal function continued to rapidly deteriorate; he became oliguric, developed worsening azotemia, metabolic acidosis, and fluid overload requiring hemodyalisis. His renal function recovered following a month of hemodialysis and anaplasmosis treatement.

IMPACT: Anaplasmosis can present with renal involvement from mild azotemia to renal failure therefore prompt diagnosis and treatment is necessary to prevent serious complications.

DISCUSSION: Anaplasmosis is a tick-borne disease caused by obligate intracellular bacteria of the genera Anaplasma, in the Northeast and upper Midwest United States. Typically the clinical manifistations of anaplasmosis vary from asymptomatic to nonspecific symptoms such as fever, confusion, general weakness and gastrointestinal symptoms; however, it can cause severe complications such as renal dysfunction. Common laboratory findings are thrombocytopenia, leukopenia and elevated liver enzymes. Severe complications develop in 3% of patients with anasplasmosis; of those complications 20% are attributed to renal dysfunction. Renal involvement can occur in various degrees. Most of the cases are mild azotemia; however renal failure has rarely been reported. The pathophysiology of renal dysfunction is unknown but cytokine activation, sepsis, intravascular volume depletion, acidosis, renal vasoconstriction and nephrotoxins may contribute to acute kidney injury. The range in severity of complications can be explained by genetic differences in the A phagocytophilum strains. The recommended treatment for anaplasmosis is doxycycline 100mg twice daily for 10 days. Prompt recognition and treatment of disease is necessary to prevent serious complications such as renal failure.

REVERSIBLE METHAMPHETAMINE-ASSOCIATED CARDIOMYOPATHY (MAC) Brigitte N. Sallee[2]; Muhammad R. Nazir[1]; Larissa Verda[1]. [1]Weiss Memorial Hospital, Chicago, IL; [2]Weiss Hospital, Chicago, IL. (Control ID #2688954)

LEARNING OBJECTIVE #1: Recognizing MAC as an increasing cause of new onset cardiomyopathy.

CASE: A 54 year old man with a history of HIV on highly active antiretroviral therapy with no prior personal or familial cardiac history presented with

progressively worsening dyspnea on exertion and dry cough for a few days. Physical exam findings were consistent with classic acute heart failure: diffuse lung crackles, tachycardia, and S3 gallop. EKG revealed sinus tachycardia with nonspecific changes, and a chest x-ray demonstrated mild cardiomegaly and redistribution of the pulmonary vasculature in addition to perihilar haziness. Systolic dysfunction was suspected and confirmed by echocardiogram which revealed a low ejection fraction of 15-20% with diffuse hypokinesis. Laboratory findings were remarkable for a mild creatinine elevation and mild troponin elevation. Urine toxicology analysis was positive for methamphetamine, a finding consistent with the patient's social history of regular intravenous crystal methamphetamine use. He underwent a cardiac catheterization which revealed mild non-obstructive coronary artery disease. Standard heart failure management including a diuretic, β-blocker, angiotensin-converting enzyme inhibitor, and spironolactone was initiated. The patient improved symptomatically and was discharged home after extensive counselling on drug use and compliance with medications. The patient subsequently ceased using methamphetamine. Twenty-two months later, he again underwent a cardiac workup where he was found to have an ejection fraction of 55% with normal wall motion despite being non-compliant with his medical therapy for one month prior. Considering the patient's history and fast improvement, the most likely cause of his systolic heart failure was determined to be his use of methamphetamine.

IMPACT: Due to the increasing incidence of methamphetamine use in the general population this should be considered as an important risk factor for new onset cardiomyopathy.

DISCUSSION: The mechanisms of methamphetamine induced cardiomyopathy are poorly understood. Suggested etiologies include catecholamine excess, coronary vasospasm and ischemia, changes in myocardial metabolism, increases in reactive oxygen species, mitochondrial injury, and direct toxic effects. Case reports have previously indicated similarities in clinical presentations between MAC and Takotsubo cardiomyopathy. Withdrawal of adrenergic stress with drug abstinence and β-blocking agents (though precautions are suggested in active users) may result in resolution of left ventricular systolic dysfunction in MAC, as similar results have been noted in patients with stress-induced cardiomyopathies and pheochromocytomas. The potential for early reversibility of MAC, therefore, has significant medical and social implications.

REVERSING OPIATES IN A FLASH: INTRANASAL NALOXONE-INDUCED PULMONARY EDEMA Clark A. Veet; Nicholas Vu; Amar Kohli. UPMC, Pittsburgh, PA. (Control ID #2675561)

LEARNING OBJECTIVE #1: List indications and side effects of naloxone

LEARNING OBJECTIVE #2: Differentiate diagnostic criteria of cardiogenic and non-cardiogenic pulmonary edema on chest radiography

CASE: A 27 year old man with chronic neck pain and polysubstance abuse is found unresponsive with shallow breathing at a party. At the scene, paramedics administered 3 sprays of intranasal naloxone (6 mg) with improvement in mental status and respirations. In transit, he was hypertensive and hypoxemic requiring intubation. Exam revealed course bilateral crackles. Chest radiograph showed diffuse bilateral infiltrates. Cardiac ultrasound showed normal heart function without wall motion or valvular abnormalities. Labs showed leukocytosis to 14,200 and mixed respiratory failure with ABG of 7.33/58/37/29. Drug screen was positive for oxycodone. Treatment with IV furosemide yielded rapid improvement and subsequent extubation. A diagnosis of naloxone-induced pulmonary edema was made.

IMPACT: Naloxone use is increasing in the setting of a national opiate epidemic. Often first responders administer naloxone, however Internists should be aware of the potential downstream effects. This vignette is novel and expands the current understanding of adverse reactions, as it is one of the first accounts of intranasal naloxone causing pulmonary edema.

DISCUSSION: Naloxone is an opiate antagonist used to reverse the effects of opiates by competitively binding mu receptors in the central nervous system. The agent provides value in healthcare settings where rapid reversal of opiates is desired after anesthesia or overdose. Naloxone is available in IV, IM, SC, and intranasal formulations. Indications include opiate overdose, reversal of respiratory depression with therapeutic opiate use, and opioid-induced pruritus. Side effects include CNS disturbances such as seizure and hallucination, cardiac syndromes including arrhythmia and cardiac arrest, and pulmonary syndromes including pulmonary edema. Many of these side effects are dose dependent. After naloxone administration, the patient's chest radiograph showed extensive airspace consolidations involving all lobes of both lungs without cardiomegaly. On day 2, a repeat radiograph showed resolution of pulmonary edema. Pulmonary edema, either cardiogenic or non-cardiogenic, can be identified on chest film by diffuse infiltrates that demonstrate a bilateral alveolar filling pattern. The distinction between the two types can be made based on the presence of cardiomegaly, apical vascular redistribution, or Kerley "B" lines suggesting interstitial edema, which are typically features of cardiogenic edema. Previously published cases have identified rapid catecholamine surge resulting in acute neurogenic pulmonary edema following naloxone administration. Treatment includes respiratory support, diuresis, and pulmonary vascular vasodilation. This case serves as a reminder for physicians to use naloxone in the smallest possible dose and to monitor closely for side effects.

RHABDOMYOLYSIS FOLLOWING EXERCISE COMBINED WITH A SPORTS SUPPLEMENT CONTAINING MULTIPLE PHARMACEUTICAL STIMULANTS Chin Ho Fung; Pieter Cohen. Cambridge Health Alliance, Cambridge, MA. (Control ID #2705681)

LEARNING OBJECTIVE #1: Recognize sports supplements as a source of hidden pharmaceutical stimulants

LEARNING OBJECTIVE #2: Assess safety information of supplements through the FDA's MedWatch alerts

CASE: A 23-year-old male with past medical history of epilepsy and anabolic steroid use presented with vertigo and bilateral leg soreness after a 60-min weightlifting workout. Prescription medication included divalproex 500mg twice daily. Patient also routinely used 3 sports supplements–Black Mamba Hyperrush, Mega-size BCAA, and SARM YK-11. He denied anabolic steroids use for the past two years. He denied smoking, alcohol, or recreational drug use. Physical exam revealed a well-appearing muscular young male, afebrile, heart rate 102/minute, blood pressure 148/82 mmHg. Neurological exam was normal. Moderate tenderness noted on bilateral thighs with intact distal pulses. Serum labs were significant for creatinine kinase 11,241 IU/L (normal 39–308 IU/L), creatinine 0.9 mg/dL, thyroid stimulating hormone 1.97 uIU/mL, and normal electrolyte levels. Urine drug screen was negative for amphetamines, cocaine metabolites, opiates, barbituates, benzodiazepines, cannabinoids, and ethanol. Patient was diagnosed with rhabdomyolysis and treated

with intravenous fluid. Patient's unused supplements were sent for analysis (NSF International, Ann Arbor, MI) using liquid chromatography-mass spectrometry. Black Mamba Hyperrush contained various pharmaceutical stimulants including oxilofrine, 1,3-dimethylamylamine (DMAA), along with trace amounts of beta-methylphenylethylamine (BMPEA), amphetamine, and multiple other stimulants. No banned substances were identified in Mega-size BCAA or SARM YK-11. We reported these results to the FDA's MedWatch program.

IMPACT: Over half of US adults use dietary supplements, which do not require pre-market approval by the FDA. Such products may contain undisclosed pharmaceutical agents and thus may inflict harm to a significant population.

DISCUSSION: We present a case of rhabdomyolysis after consumption of a sports supplement containing multiple stimulants. A search of the FDA's list of tainted supplements revealed previous reports of Black Mamba Hyperrush adulterated with banned ingredients sibutramine and phenolphthalein. While we did not detect sibutramine and phenolphthalein in our samples of Black Mamba Hyperrush, significant dosages of undisclosed synthetic stimulants were instead identified, which might have contributed to patient's rhabdomyolysis. We suspect that the standard urine drug screen used in this case lacked the sensitivity to detect these compounds. Physicians should be aware that sports supplements may contain pharmacologically active agents and that the FDA has identified more than 750 brands of adulterated supplements. Physicians should refer to the FDA website for more information and report all potential related adverse events to the MedWatch program. We strongly advise our patients to avoid sports supplements as they may contain pharmaceutical drugs linked with serious adverse outcomes.

RHABDOMYOLYSIS IN A PATIENT WITH LEGIONELLA PNEUMONIA Vijay Bhat; Aviva Cohn; Gargi Patel; Laura R. Willett. Rutgers Robert Wood Johnson Medical School, North Brunswick, NJ. (Control ID #2706080)

LEARNING OBJECTIVE #1: Recognize rhabdomyolysis as a complication of legionella pneumonia

CASE: A 63 year old male with a history of hypertension and treated Hepatitis C, presented with a 1 week history of malaise and worsening generalized weakness leading to a mechanical fall at home. On admission, physical exam was significant for new onset atrial fibrillation with heart rates in the 130s, high fevers, and hypoxia requiring 3 liters of supplemental oxygen. He was lethargic, tachypneic, with bibasilar rales on lung exam. There was marked weakness in the lower extremities. Initial workup revealed leukocytosis of 20, hyponatremia with serum sodium of 127, elevated creatinine of 1.4, and urinalysis with 3+ blood and 4 red blood cells. Imaging including chest radiograph revealed multifocal infiltrates. A CT angiogram of the chest showed no evidence of pulmonary embolism. The patient's clinical picture and imaging raised concerns for atypical pneumonia and therefore, urine legionella antigen was sent for testing, which resulted in a positive test. In addition, given the patient's acute kidney injury (AKI), muscle weakness, and evidence of blood with few red blood cells on urinalysis, a creatinine phosphokinase (CPK) level was checked, and was markedly elevated at 48,765. The patient was treated with aggressive intravenous hydration for rhabdomyolysis, and a 14 day course of Levofloxacin for legionella pneumonia. Fever curve improved and the patient had gradual resolution of weakness, dyspnea, and AKI with treatment.

IMPACT: Critically ill patients often present with multi-organ involvement. In this case, the patient's cardiac, pulmonary, renal, and musculoskeletal systems were affected; the multi-organ dysfunction could have easily been attributed entirely to sepsis. It is, however, important to consider and test for rhabdomyolysis as a possible etiology of musculoskeletal and renal injury in patients who present with sepsis, particularly in cases of legionella infection.

DISCUSSION: A current literature review demonstrates that legionella is a known but rare cause of rhabdomyolysis. The biochemistry is unclear, however theories include a possible bacterial invasion of muscle fibers. Particularly in these patients, severe cases of rhabdomyolysis can lead to metabolic derangements and renal failure. This case highlights the importance of recognizing the association between legionella infection and rhabdomyolysis, as prompt treatment including aggressive intravenous fluid administration, trending CPK levels, and frequent electrolyte monitoring can lead to good outcomes in this population.

RING ENHANCING LESION IN AN AIDS PATIENT WITH NEGATIVE TOXOPLASMA ANTIBODIES Alejandro Lemor[3]; Farid Gholitabar[2]; Joseph Sassine[4]; Georgina Osorio[1]. [1]Mount Sinai, New York, NY; [2]Mount Sinai St Luke's and West, New York, NY; [3]Mount Sinai St Lukes and Mount Sinai West Hospital, New York, NY; [4]Mount Sinai St. Luke's & Mount Sinai West, New York, NY. (Control ID #2687532)

LEARNING OBJECTIVE #1: Demonstrate the limitations of Toxoplasma serologies in diagnosing CNS toxoplasmosis in AIDS patients

CASE: A 35-year-old man with history of HIV/AIDS was brought to the ER for a witnessed generalized tonic-clonic seizure. On exam he was drowsy but no focal signs, reactive pupils, no neck rigidity, normal reflexes, rest of systems within normal limits. His lab work showed anemia (hemoglobin 9.2), normal white blood cells (7.3K/uL) and normal platelets (400 K), elevated ESR (>150) and CRP (1.8). CT head showed an area of lucency in the left frontal lobe; and MRI showed two ring-enhancing lesions in the left frontal lobe (21 and 6 mm in diameter). He was started on empiric toxoplasmosis treatment with trimethoprim-sulfamethoxazole, as pyrimethamine was not readily available. His CD4 was 239 (11%) cells/mL, viral load 16,686 copies/mL and both Toxoplasma IgM and IgG antibodies were negative. Blood cultures, rapid plasma reagin (RPR), cryptococcal antigen, and quantiferon TB gold were negative. On hospital day 3, thallium scan was negative for primary CNS lymphoma. Brain biopsy showed extensive necrosis and chronic inflammatory infiltrate with predominantly CD68+ macrophages. On H&E possible toxoplasma tachyzoites were seen and toxoplasma immunostains confirmed the diagnosis of cerebral toxoplasmosis. He will complete 6 weeks of trimethoprim-sulfamethoxazole and an MRI brain is planned to assess for improvement.

IMPACT: In most cases Toxoplasma serology will be positive in HIV/AIDS patients with CNS toxoplasmosis; however, immunocompromised patients may have low antibody production. Therefore, when clinical suspicion is high, a negative serology for toxoplasmosis should not preclude empiric treatment.

DISCUSSION: In AIDS patients, neurologic signs and symptoms warrant imaging with CT or MRI. The differential diagnosis of intracranial mass includes *Toxoplasma gondii*, *Mycobacterium tuberculosis*, *Cryptococcus neoformans*, *Treponema pallidum*, as well as CNS lymphoma. A reliable diagnostic approach involves obtaining a CD4 count, chest X-ray, serum Toxoplasma IgG level, CSF india ink smear, cryptococcal antigen, cytology,

PCR for *M. tuberculosis*, bacterial, AFB, fungal cultures and serum and CSF syphilis serologies; coupled with characteristics of the lesion(s) and other imaging (PET or Th-SPECT) for suspected CNS lymphoma. In a study of 268 HIV patients with *T. gondii* infection, the antibody level was not biased by anti-retroviral treatment or prophylaxis for *T. gondii*. There were fluctuations in levels based on the degree of infection. A negative serology in a patient with toxoplasmosis is explained by primary infection, reactivation of latent disease in a patient who cannot generate antibodies, or false negative result. This shows the limitation of serological testing in determining the stage and predicting of reactivation of toxoplasma in HIV/AIDS patients.

RISING TSH IN A CASE OF GRAVES Melissa Rusli[1]; Adam Law[2]. [1]New York Presbyterian-Weill Cornell Medical College, New York, NY; [2]Cayuga Medical Center, Ithaca, NY. (Control ID #2705808)

LEARNING OBJECTIVE #1: Recognize lab errors when test results do not fit the clinical picture/story.

LEARNING OBJECTIVE #2: Review types of immunoassay interferences due to endogenous antibodies and initial investigations to pursue.

CASE: 75 yo woman PMH Crohn's disease presented to endocrine clinic with "shakiness", palpitations, insomnia, 30 lbs weight loss, and hoarseness. On exam, HR 108 bpm, thin, warm skin, and 30g thyroid goiter with right hemithyroid nodules. TSH was initially <0.03 U/ml (nl 0.34–5.6 U/ml), FT4 3.82 ng/dl (nl 0.61–1.12 ng/dl), TT3 2.03 ng/dL (nl 0.87–1.78 ng/dL), Thyroid-Stimulating-Immunoglobulin (TSI) 3.0 (nl <1.5), consistent with diagnosis of Grave's disease thyrotoxicosis. She was started on methimazole and achieved clinical and laboratory euthyroidism by the third month of treatment. She remained clinically euthyroid, however at the ninth month of treatment her TSH was elevated disproportionately to her clinical exam and other thyroid hormone levels: euthyroid, TSH 11.95 U/ml, FT4 1.14 ng/dl, TT3 2.42 ng/dL. The following month, TSH further rose to 26.09 U/ml. Serial dilutions were performed and revealed nonlinearity of TSH levels, suggesting immunoassay interference. Sendout studies were sent to the Mayo Clinic to further work-up the etiology of immunoassay interference. She remained clinically euthyroid despite rising TSH, and her hyperthyroidism management is based off of her clinical presentation and FT4 levels.

IMPACT: This case is a reminder to keep a high level of skepticism when blood results do not match the clinical story. With certain diseases, such as thyroid dysfunction, it is easy to fall into the habit of treating a single lab value. However, as clinicians, we must remember to treat the patient in front of us using additional clinical tools and clues to investigate our skepticism.

DISCUSSION: Immunoassays are quick and accurate tests to measure the concentrations of many common proteins. They rely on the binding of antibodies in analyte to epitopes of target compounds. Immunoassays are subject to several types of interferences, such as the presence of endogenous antibodies: heterophile antibodies, anti-animal antibodies, autoantibodies, or therapeutic antibodies. A serial dilution test is a common initial study to request if interference is suspected. If the test result is accurate without interference, it is expected that the concentration would decrease respectively to the corresponding dilution. If the concentration does not, it is considered nonlinear and interference is suspected. To further identify the etiology of the interfering endogenous antibody, the following tests can be requested: repeat assay using a different analyte, use of heterophile antibody blocker tubes, test for human anti-mouse antibody (HAMA), removal of interfering antibodies by polyethylene glycol precipitation.

RIVAROXABAN DRUG HYPERSENSITIVITY PRESENTING AS PALPABLE PURPURA Michael Del Rosario; Keyan Matinpour; Richard Loftus. Eisenhower Medical Center, Rancho Mirage, CA. (Control ID #2702119)

LEARNING OBJECTIVE #1: Assess an adverse drug reaction using the Naranjo nomogram

LEARNING OBJECTIVE #2: Diagnose rivaroxaban drug hypersensitivity reaction presenting as palpable purpura

CASE: A 60-year-old male presented with a rash of two days. 15 days prior to presentation, the patient was placed on rivaroxaban for left lower leg deep venous thrombosis and pulmonary embolism provoked from driving across the country. He had a similar event in 2005 treated with warfarin. His past medical history included HIV with a CD4 count of 541 and undetectable viral load. The patient had no known allergies. His medications include atorvastatin and tenofovir/emtricitabine. Rivaroxaban was the most recent medication started on his list. He denied using any vitamin/mineral supplements. Family history was noncontributory. He denied smoking, drinking, and recreational drug use. Review of systems was unremarkable. On physical exam, the patient had bilateral hand and foot palpable purpura (Figure 1). The rash was scattered consisting of dark purple-red lesions with the largest under 3mm in size. The rest of the physical examination was unremarkable. The patient was advised to stop rivaroxaban and was started on warfarin 5mg daily with INR goal of 2.0–3.0. The patient was bridged with enoxaparin injections twice daily for the first 5 days of warfarin administration. Labs including CK, ESR, CRP, CBC, CMP, TSH were all within normal limits. He was referred to a dermatologist with subsequent biopsy showing evidence of a bullous hypersensitivity reaction. The patient's rash completely dissipated within 1 week. Rivaroxaban was added to this patient's allergy list and the patient completed his warfarin therapy to completion without adverse events.

IMPACT: To our knowledge, this is the first reported episode of rivaroxaban drug hypersensitivity reaction presenting as palpable purpura. This case also highlights that healthcare providers need to be aware of potential drug adverse effects beyond bleeding with the newer anticoagulants and to be vigilant in making changes to their patients' anticoagulant regimen when necessary.

DISCUSSION: The Naranjo nomogram (Figure 2) is used to classify the probability that an adverse event is related to drug therapy. Based on the answers to the questionnaire, the patient's score was 6, making this a probable adverse drug reaction to rivaroxaban use. Ackroyd et al. demonstrated that purpura as an immunological response is likely due to a formation of a drug-platelet compound which stimulates antibodies. These antibodies, in turn, lyse the platelets and form the vascular lesion. To manage this case, we switched from factor Xa inhibitors to warfarin with enoxaparin bridging until anticoagulation. In conclusion, this is the first reported case of rivaroxaban drug hypersensitivity reaction presenting as palpable purpura. Physicians should be aware of this potential drug reaction, and at most be able to think outside the scope of bleeding as a complication of the newer anticoagulation therapies.

SARCOIDOSIS: CHALLENGING OUR DIAGNOSTIC THOUGHT PROCESS

Benjamin C. Hofeld[1]; Tonia Qaisar[1]; Sarah Nickoloff[1, 2]. [1]Medical College of Wisconsin, Milwaukee, WI; [2]Zablocki VA Medical Center, Milwaukee, WI. (Control ID #2699674)

LEARNING OBJECTIVE #1: Review the importance of maintaining a broad differential diagnosis for an unknown disease.

LEARNING OBJECTIVE #2: Recognize the variety of demographics, symptoms, and lab abnormalities in sarcoidosis.

CASE: A 61-year-old Caucasian male presented to his primary care physician for a routine check-up. He complained of generalized fatigue, body and joint aches, and new dyspnea with exertion for the last 2–3 months. Over the last 1.5 years he had a 20-pound unintentional weight loss. He had no other complaints. Relevant medical history included alcohol abuse (10 beers daily) and rheumatoid arthritis. Family history was non-contributory. Medications included cholecalciferol and as needed calcium carbonate. Physical exam was unremarkable. Initial labs showed new normocytic anemia (hemoglobin 9.2 g/dL), corrected calcium of 11.6 mg/dL, and acute renal failure with serum creatinine 4.29 mg/dL. Urinalysis revealed non-nephrotic range proteinuria and no casts. Given the laboratory findings, initial concern was for multiple myeloma; however, further workup revealed normal serum and urine protein electrophoresis, minimally elevated kappa-lambda ratio, and normal bone scan. Renal biopsy showed evidence of calcium induced renal injury, but was otherwise unremarkable. Chest CT was suggestive of vasculitis but bronchoscopy revealed foci of non-caseating granulomas, diagnostic of sarcoidosis. He was subsequently started on high dose corticosteroids, with improvement in his lab parameters and symptoms.

IMPACT: Preliminary workup was focused primarily on multiple myeloma, given the constellation of laboratory and clinical findings. The patient's vitamin D and calcium use broadened the differential to include supplement overdose, and differential was later expanded to include malignancy, vasculitis, and granulomatous disease. Expanding the differential following negative lab/ imaging results was more challenging to our medical reasoning than starting with a broad differential and reconsidering it daily.

DISCUSSION: Reassessment of the differential was critical, especially given this epidemiologically rare presentation. Demographic epidemiological studies show a 3-fold higher annual incidence of sarcoidosis in African Americans vs Caucasians. By organ system, the literature reports calcium dysregulation and renal involvement occurring in only 4-7 and 1% of all-comers, respectively. By these data this patient was an epidemiologic outlier for sarcoidosis, but had typical demographics and classic signs of multiple myeloma. Thus, in diseases that are both systemic and multi-demographic, epidemiology must be integrated with all other clinical information. This case highlights the importance of maintaining a broad differential, even in the presence of a "classical presentation" of an initially suspected disease.

SCREENING FOR HIV IMMEDIATELY AFTER DIAGNOSING MILIARY TB Prasanna Marathe[1]; Vinod Sehgal[1]; Jeffrey L. Jackson[2, 1]. [1]Medical College of Wisconsin, Milwaukee, WI; [2]Zablocki VAMC, Milwaukee, WI. (Control ID #2700715)

LEARNING OBJECTIVE #1: Investigate HIV and HIV associated disease status in patients presenting with miliary TB

CASE: A 55- year- old Caucasian male with a past medical history of hepatitis C, abdominal aortic aneurysm, and sensorineural deafness presented to his primary care physician for 3 months of weight loss, productive cough, and night sweats and follow up of a perianal abscess. He was born and raised in the US and was homeless 15 years ago, but denied IV drug use, international travel, history of HIV, or infectious contacts. An abdominal CT to evaluate the perianal abscess revealed multiple necrotic celiac and para-aortic lymph nodes. A PPD test was positive and follow up chest X-ray demonstrated moderate reticular interstitial prominence. Chest CT showed peribronchial airspace opacities and scattered pulmonary nodules with mediastinal, hilar, supraclavicular and abdominal lymphadenopathy. A subsequent left supraclavicular lymph node biopsy revealed necrotizing granulomas with acid fast bacilli (AFB). Immediately afterwards, he was admitted to the hospital. Physical exam revealed palpable left supraclavicular lymph nodes. Labs revealed hyponatremia. 2 of 3 sputum cultures for AFB were positive and PCR revealed M. tuberculosis. Treatment for miliary TB was initiated with rifampin, isoniazid, pyrazinamide, and ethambutol. Despite negative history of HIV, HIV screening and confirmatory tests were positive, which triggered an exploration for HIV-associated infections. Additional labs revealed a CD4 count of 54 and elevated toxoplasma IgG. Pneumocystis pneumonia prophylaxis with azithromycin was initiated. Public health officials were alerted and patient was discharged in stable condition with an appropriate follow up plan to continue directly observed treatment for TB and to begin antiretroviral therapy.

IMPACT: More often, HIV status is already known prior to diagnosis of miliary TB. This case highlights the importance of evaluating HIV status early in a patient initially admitted for miliary TB. This also emphasizes the role of internal medicine physicians in identifying and responding to undiagnosed HIV.

DISCUSSION: Individuals with HIV are 20–30 times more likely to develop TB. Miliary TB makes up as few as 3.7% of all TB cases in the US but affects 10% of HIV infected persons. Thus, an investigation to identify underlying HIV infection in patients with miliary TB is warranted given the increased morbidity and mortality (25-30%) associated with an HIV-miliary TB coinfection. Given the association between HIV and miliary TB and patient's history of homelessness and hepatitis C, we had a reasonably high index of suspicion for HIV. Alarmingly, the patient had not been screened for HIV before. HIV test results prompted an investigation of HIV associated infections and influenced TB therapy as rifampicin was replaced with rifabutin as the latter has fewer drug-drug interactions. Early ART therapy has been shown to improve outcomes and was initiated after anti-TB therapy per WHO guidelines.

SECONDARY PLASMA CELL LEUKEMIA Jonila Murati; Sylvia V. Alarcon; Gabriela A. Ciofoaia. Berkshire Medical Center, Pittsfield, MA. (Control ID #2706418)

LEARNING OBJECTIVE #1: Multiple myeloma transforming to acute plasma cell leukemia.

LEARNING OBJECTIVE #2: Patient receiving chemotherapy are at high risk for opportunistic infections.

CASE: A 57 year-old female was diagnosed with an IgG kappa multiple myeloma with high grade histology and 80% plasma cell infiltration of bone

marrow. She was found to have multiple lytic bone lesions, renal insufficiency and hypercalcemia. She was started on bortezomib and dexamethasone, but not given lenalidomide in the setting of renal insufficiency. After completing five cycles of therapy, her follow up labs revealed a white count of 50.6k/μl, hemoglobin of 11.9g/dl and a platelet count of 72k/μl. Peripheral blood evaluation demonstrated 70% morphologic blasts with plasmablastic morphology. Flow cytometry revealed the cells to be CD 138 positive, CD 117 negative, TdT negative, CD 45 negative, CD 56 positive (dim), with a kappa light chain restriction. FISH analysis showed monosomy 13. She was treated with cyclophosphamide, etoposide, cisplatin and bortezomib with an initial favorable hematological response. She then relapsed prior to transplantation.The treatment regimen was changed to lenalidomide, carfilzomib and dexamethasone with prophylactic acyclovir and atovaquone. A month later she developed fever, lethargy, then went into cardiopulmonary arrest. Following resuscitation she was found to have pancytopenia, H1N1 pneumonia.She went into septic shock with multiorgan failure and became vegetative, unresponsive and died shortly afterwards.An autopsy examination revealed disseminated candidiasis with multifocal involvement of spleen, lungs and kidneys without evidence of residual plasma cell leukemia.

IMPACT: MM is a hemotologic disorder with a relative favorable prognoses but secondoray malignancies such as PCL can occur and leading to a poor prognosis. Opportunistic infections in patient on anticancer therapies can be fatal.

DISCUSSION: Plasma cell leukemia (PCL) is a rare and aggressive hematological malignancy defined by 20% circulating plasma cells in peripheral blood. It can originate de novo (primary PCL) or as a secondary transformation of multiple myeloma (secondary PCL).Secondary PCL accounts for 40% of all plasma cell leukemias, and 2-4% of multiple myeloma patients. The diagnosis is determined by the presence of 20% circulating monoclonal plasma cells. Osteolytic lesions are more common in secondary PCL. The presence of anemia and thrombocytopenia are a consequence of extensive involvement of the bone marrow by plasma cells (myelophthisic anemia) and usually indicate progression of disease. The prognosis of PCL is poor with a median survival of 7–11 months with primary PCL and 2–7 months with secondary PCL. Therapy includes proteoseome inhibitors, immunomodulatory drugs and bone marrow transplant. Patient receiving anticancer therapies have a higher risk of opportunistic infections like candidiasis. Empiric antifungal therapies in neutropenic patients who do not respond to broad spectrum antibiotics should be considered.

SECONDARY SCLEROSING CHOLANGITIS: A SEQUELA OF PANCREATITIS Lauren Liebling; Jonathan Robbins; Julien Chirouze. Oregon Health & Science University, Portland, OR. (Control ID #2705305)

LEARNING OBJECTIVE #1: Compare primary (PSC) to secondary (SSC) sclerosing cholangitis

LEARNING OBJECTIVE #2: Discuss the treatment and outcomes for patients with SSC

CASE: A 40 year-old man with a history of DM2, HNPCC, and pancreatitis presented with jaundice and RUQ pain. ERCP revealed a mass compressing the common bile duct which was subsequently stented. Biliary brushings and FNA were negative for malignancy. Labs: TBili 23.3 (4–8.7 mg/dL), Alk Phos 223 (52–128 U/L), WBC 24.3 (3.5–10.8 K/mm^3). He started Zosyn for cholangitis and was transferred for further workup. MRCP was used to evaluate the mass, presumably a pseudocyst secondary to pancreatitis. A cyst-gastrostomy drained the mass of bilious fluid. Follow-up MRCP revealed intrahepatic bile duct strictures. Workup for autoimmune and viral hepatitis and PSC was negative. SSC was the presumed diagnosis. Despite multiple ERCPs, stents, cyst-gastrostomy, necrosectomy, and PTC, the patient's intrahepatic bile ducts remained strictured and his labs worsened. Care was directed towards optimizing the patient's health for possible future liver transplant.

IMPACT: This case highlights the need to streamline a workup. It is unknown if the pseudocyst, cholangitis, or serial procedures contributed to the development of SCC. All procedures have a financial and physical cost to be considered when recommending interventions as part of a workup or treatment.

DISCUSSION: Few diseases cause intrahepatic bile duct stricturing. PSC presents with intermittent bile duct dilation and structuring giving a beaded appearance.[1] Up to 90% of PSC patients have UC.[1] PSC patients have cholestatic liver enzymes, positive P-ANCA, and sometimes increased IgG4, anti-smooth muscle Ab, anticardiolipin, or RF.[1] This patient had bile duct stricturing without the classic beaded appearance. He also lacked UC or positive auto-antibodies. SSC is diagnosed based on bile duct structuring without other features of PSC, plus an identifiable source of biliary pathology such as cholangitis, cholangiocarcinoma, pancreatitis, or surgical trauma.[1] SSC is rare (incidence significantly less than PSC, 1/100,000[3]). There is a lack of robust data on patient outcomes. Due to lack of medical treatment liver transplant is required for survival. In a retrospective study of 31 patients, those with SSC had a shorter survival without transplant compared to those with PSC (72 vs 89 months).[2] This may imply that SCC progresses more quickly than PSC, requires closer monitoring, and that patients with SSC may need liver transplant sooner in their clinical course.

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SEROTONIN SYNDROME TRIGGERED BY BUPRENORPHINE COMBINED WITH ACUTE ALCOHOL INTOXICATION Margaret Omatsone; Lintu Ramachandran; Pye Oo; Anne Omatsone. Raritan Bay Medical Center, SAYREVILLE, NJ. (Control ID #2687630)

LEARNING OBJECTIVE #1: Recognize serotonin syndrome in patients on buprenorphine.

LEARNING OBJECTIVE #2: Distinguish the effects of alcohol on opoid dependent patients on buprenorphine maintenance therapy.

CASE: A 32 year old Caucasian female with a history of opoid dependence and diabetes was brought to the emergency department by EMS in a state of confusion and agitation. Her boyfriend who accompanied her reported that she drank half a bottle of vodka three hours prior to symptom onset and she was on prescribed suboxone 4mg which she takes regularly twice a day. At presentation, she was agitated, restless and uncooperative and was put on leather restraints. On examination, her vital signs were heart rate 131, blood pressure 154/77, respiration rate 30, oxygen saturation of 97% on room air and temperature 97.8. She appeared in distress, flushed and diaphoretic. Neurologic

exam revealed a Glasgow coma scale of 9, motor strength was 5/5 but there was hyperreflexia 3+ symmetrical in upper and lower extremities and ankle clonus present in the lower extremities. Chest was clear on auscultation and abdomen was unremarkable. Her agitation and restlessness persisted after use of benzodiazepine. She was subsequently intubated to protect the airway and admitted to intensive care. Urine toxicology was negative and serum alcohol was elevated, all other laboratory tests were normal and atypical alcohol levels were negative. She was then commenced on cyproheptadine on suspicion of possible serotonin syndrome. Her symptoms resolved and she was safely extubated after 12hours. She requested to be discharged home the next day.

IMPACT: Buprenorphine related deaths has been reported in patients on maintenance therapy, occurring when taken with other substances, especially benzodiazepines and alcohol, causing over sedation and respiratory depression. Buprenorphine may lead to moderate signs of serotonin syndrome as reported in a buprenorphine clinic where 43% of patients, mostly females, had signs of serotonin syndrome. The combination with alcohol led to a life-threatening presentation of serotonin syndrome in our patient.

DISCUSSION: Buprenorphine was FDA approved for the treatment of opioid dependence in 2002. It acts as a partial agonist at the μ-receptors in the CNS. Alcohol has been shown to interact with serotonergic synaptic transmission. Increased serotonin metabolites have been measured after a single drinking session suggesting increased serotonin release in the nervous system. We propose that the combination of the alcohol induced serotonin increase and buprenorphine therapy led to the serotonin syndrome in this patient. Her symptoms only improved after the administration of the cyproheptadine, a serotonin receptor antagonist. Physicians must be aware of such life-threatening situations that may occur when such patients are exposed to commonly abused substance like alcohol.

SEVERE DIFFUSE AXONAL POLYNEUROPATHY AND WEST NILE VIRUS INFECTION KAUL,MALVIKA MD, BUNYAN, ANN MD, LEE,KENNETH MD, SULLIVAN,LAUREN DO DEPARTMENT OF INTERNAL MEDICINE,MACNEAL HOSPITAL, BERWYN, IL

Malvika Kaul. MacNeal Hospital, Berwyn, IL. (Control ID #2694755)

LEARNING OBJECTIVE #1: West Nile (WN) is a mosquito-borne RNA Flavivirus causing meningitis,encephalitis, and very rarely diffuse axonal polyneuropathy(DAP) leading to acute flaccid paralysis. DAP is a rare presentation of WN neuroinvasive disease. Our case reports a patient with WN encephalopathy complicated with very severe and rapidly deteriorating DAP.

CASE: A 54-year old previously healthy man presented with fever, unresponsiveness, and acute respiratory failure. He was seen in the emergency department on the same day with viral prodromal symptoms for 5 days without neurological symptoms except for lightheadedness. Within 12 hours, he was readmitted with worsening symptoms requiring intubation. On day 2 of admission, he developed limb flaccidity in all extremities with diffuse areflexia on exam. Imaging of the brain was negative for any intracranial abnormalities. A lumbar puncture was obtained which showed elevated protein (98.6mg/dl), high normal glucose (71mg/dl), WBC (41 cells/UL), lymphocytes (73%), neutrophils (4%), and mononcytes (22%), indicating a viral etiology, and a viral panel was sent. WN IgM was positive in the serum and cerebrospinal fluid. An electroencephalogram was performed to evaluate his deteriorating mental status showing diffuse encephalopathy. The patient's course was complicated by sepsis secondary to pneumonia. His sepsis and encephalitis were treated with antibiotics and Acyclovir from the day of admission and de-escalated accordingly. Overtime,his mental status improved but no improvement in his limb movements. An electromyography (EMG) was performed which showed severe diffuse polyneuropathy with predominantly axonal features. Sensory nerve action potentials (SNAPs) were absent in the bilateral sural and ulnar nerves, and compound muscle action potentials (CMAPs) amplitudes were significantly decreased and in some cases absent in the bilateral peroneal, tibial,and ulnar nerves with some mild slowing. These findings primarily indicated axonal loss instead of demyelination with the latter being more common with WN virus. Due to his prolonged recovery, the patient was transferred to a long-term assisted care facility with physical therapy.

IMPACT: The prognosis of WN-associated DAP is unclear and only one controlled study has been completed for evaluation of specific therapies using Interferon and IV Immunoglobulin. Uncontrolled studies or case reports suggesting treatment efficacy should be cautiously interpreted,since clinical course and outcomes with WN virus neuroinvasive disease are highly variable.

DISCUSSION: Acute flaccid paralysis in WN infection is usually associated with poliomyelitis-like syndrome involving anterior horn cells. Whereas acute DAP, which is the absence or reduction of SNAPs and CMAPs on EMG occurring rapidly as in our case is an uncommon and severe presentation. As there is no specific treatment or vaccine currently approved in humans,standard treatment includes supportive care.

SEVERE HYPOALBUMINEMIA IN A PATIENT WITH HEREDITARY ACERULOPLASMINEMIA: NOT ALL THAT SWELLS IS HEART FAILURE OR CIRRHOSIS

Dhruv Mahtta; Kristopher P. Kline; Harry Powers; Hussam Hawamdeh. University of Florida, Gainesville, FL. (Control ID #2704044)

LEARNING OBJECTIVE #1: Recognize the importance of a thorough work up of peripheral edema, including consideration for uncommon etiologies

LEARNING OBJECTIVE #2: Recognize the clinical and biochemical features of patient presenting with protein losing enteropathy

CASE: A 64-year-old female with medical history significant for hereditary aceruloplasminemia, hypothyroidism, and peptic ulcer disease status-post Roux-en-Y gastric bypass 15 years prior presented with 2-week onset of worsening bilateral lower extremity edema. On hospital presentation, labs revealed a low total protein (4.7g/dl) and albumin (1.5g/dl), with otherwise normal liver function tests and coagulation tests. Regarding her history of hereditary aceruloplasminemia, she had received iron chelation therapy in past and stopped 4 years prior when ferritin levels remained normal. She since had a liver MRI and biopsy 2 years prior showing evidence of marked steatosis but no iron deposition or evidence of fibrosis. The patient was initially managed with diuresis. Repeat hepatic imaging including ultrasound and fibroscan along with preserved synthetic function and normal ferritin pointed against progression to fibrosis of the patient's hereditary aceruloplasminemia. NTproBNP was normal and transthoracic echocardiogram showed normal left ventricular systolic function with mild diastolic dysfunction. Normal urinalysis and protein-to-creatinine ratio (0.31mg/g) ruled out nephrotic syndrome. Given patient's severe hypoalbuminemia, albumin levels were trended for the past 5 years which showed a sudden decrease only over the past 6 months. Fecal alpha 1

anti-trypsin (A1AT) level was sent which returned grossly elevated, thereby confirming the diagnosis of protein losing enteropathy.

IMPACT: It is imperative to conduct a thorough evaluation of peripheral edema: including ruling out heart failure, nephrosis, cirrhosis, and malnutrition. Protein losing enteropathy is a less common cause of hypoalbuminemia usually caused by mucosal damage, increased interstitial pressure or lymphatic obstruction. However, the concept of bypass enteropathy, which consists of small intestinal bacterial overgrowth (SIBO) of the Y-limb, is an extremely rare cause in patients with gastric bypass.

DISCUSSION: Protein losing enteropathy is an uncommon cause of severe hypoalbuminemia characterized by excessive loss of serum protein via gastrointestinal tract leading to generalized edema. Reduction in all serum proteins is seen and diagnosis can be confirmed by an elevated fecal A1AT level. As part of bypass enteropathy in patients with gastric bypass, only two prior cases have been reported where SIBO of Y limb lead to hypoalbuminemia which was responsive to antibiotic therapy. This rare etiology of protein losing enteropathy was felt to be the reason of our patient's clinical presentation. This can be difficult to diagnose as in our patient, which had subjectively trivial symptoms of occasional diarrhea and abdominal pains, failing to even mention them until further questioning.

SEVERE HYPOKALEMIA, HYPERTENSION AND DIABETES INSIPIDUS IN THE POSTPARTUM PERIOD: A MOTLEY MEDLEY OR A SINGLE DIAGNOSIS? Gofran Tarabulsi[2]; Niharika Mehta[1]. [1]Brown University, Providence, RI; [2]Women and Infants hospital, Brown Alpert Medical School, Providence, RI. (Control ID #2700045)

LEARNING OBJECTIVE #1: Recognize that Primary Hyperaldosteronism can be masked during pregnancy and can be unmasked in the postpartum period.

LEARNING OBJECTIVE #2: Recognize severe hypokalemia manifestations.

CASE: A 22 year old African American presented 5 days postpartum with acute onset of severe abdominal pain, lower limb edema and generalized weakness. Her pregnancy and recent delivery had been uneventful. She was noted to be bradycardic and hypertensive (160/90 mmHg). Labs showed a critically low potassium at 1.9 mmol/L. Normal levels of Sodium (141 mmol/L), Creatinine (0.52mg/dl) Glucose (82 mg/dl) and bicarbonate (22 mmol/L) were noted. LFT showed elevated AST and ALT (148 IU/L and 137 U/L respectively) and elevated Ammonia (60 mcmol/L). Large volume diuresis in excess of 4 L was observed within the first few hours of admission despite no administration of IV fluids. Urine studies showed elevated urine protein: creatinine ratio at 1.0 and elevated urine potassium creatinine ratio (16%) suggesting renal potassium wasting. Plasma renin activity (PRA) < 0.6 ng/ml/hr and plasma aldosterone concentration (PAC) <0.4 ng/dl were suppressed. During hospitalization, the patient exhibited several manifestations of severe hypokalemia including sinus bradycardia, muscle weakness, rhabdomyolysis (CK level: 2,890 Intnl Units) and nephrogenic DI. After aggressive potassium replacement, magnesium infusion for seizure prevention and hydration to replace ongoing fluid loss, the patient was discharged home in stable condition with oral potassium and Nifedipine.

IMPACT: In Patients with preeclampsia and severe HTN, consider checking potassium levels as they may present with secondary hyperaldosteronism due to aquired Apparent Mineralocorticoid Excess (AME)

DISCUSSION: In this patient who presented postpartum with hypertension and proteinuria, preeclampsia was considered the primary diagnosis. However presence of severe hypokalemia led us to investigate for Primary hyperaldosteronism. The finding of a low PAC level did not support this. The syndrome of Apparent Mineralocorticoid Excess (AME) is a genetic disorder with similar presentation to primary hyperaldosteronism but with low levels of PRA and PAC. It results from a deficiency in the 11-beta-hydroxysteroid dehydrogenase enzyme (11HBSD2). The lack of this enzyme causes sodium retention, hypertension and hypokalemia, suppressing PRA, aldosterone levels. In patients with preeclampsia, there is reduced placental expression of 11HBSD2 which has a key role in protecting the fetus from circulating maternal glucocorticoids. We present this case of acquired AME resulting from preeclampsia.

SEVERE MALARIA: HOW TO PREDICT MORTALITY? Olena Slinchenkova[1]; Christina Coyle[2]. [1]Montefiore Medical center, Brooklyn, NY; [2]Albert Einstein College of Medicine, Bronx, NY. (Control ID #2706930)

LEARNING OBJECTIVE #1: recognize poor prognostication factors for patients with malaria

LEARNING OBJECTIVE #2: review definition of severe malaria

CASE: A 64-year-old man who arrived from Ghana on day of admission presented with fever and cough. He had intermittent fever associated with chills, cough, dyspnea, and severe malaise for 10 days. T = 102.9 F, HR 109bpm, BP 93/50mmHg, RR 18/min, Saturation 93%. He had rhonchi on chest exam. Hemoglobin 14 g/dL, platelets 25 k/uL, creatinine 1.5mg/dL, BUN 31mg/dL, bicarbonate was 19 mg/dl, total bilirubin 3mg/dL and lactate was elevated. Preliminary malaria smear was positive for parasites. Chest x-ray normal. No antimalarials were started on admission in the evening, but the next am the patient developed pulmonary edema and was in respiratory distress. The malaria smear revealed P. falciparum with 5% parasitemia which was corrected to 20% later. IV Quinine and doxycycline were begun and patient was soon changed to artesunate, but despite this the patient coded and expired.

IMPACT: Patients with *P. falciparum* may deteriorate rapidly; early recognition and aggressive treatment is warranted. A low bicarbonate, increased lactate, pulmonary edema and end organ damage (AKI) should suggest severe disease and prompt IV treatment while awaiting parasitemia. Hospitalists should be aware about management of malaria since we are frontline for management of these cases.

DISCUSSION: Malaria is a life-threatening disease, but if treated early and appropriately patients should do well. Approximately 1,500-2,000 cases of malaria are reported every year in the United States and the majority are immigrants going home to visit friends and family. Quantification of parasitemia, which is critical for guiding management, might be delayed. Therefore, recognition of severe disease is critical as these patients should be treated with parenteral antimalarial therapy. Severe malaria is defined as one or more of the following: encephalopathy, prostration, seizures, acidosis, hypoglycemia, severe malarial anemia, serum creatinine >3 mg/dL or BUN >20 mmol/L, bilirubin >2.9 mg/dL with a parasitemia of 2%, radiographically confirmed pulmonary edema or saturation <92% with RR >30/min, significant bleeding, hypotension, parasitemia >10%. This patient was hypotensive, saturation 93 and Creatinine of 1.5 mg/dL a high lactate and a parasitemia of 5% (corrected was 20%) should have prompted a monitored setting and IV therapy. It is critical to be aware about poor prognosticators in malaria. Early treatment in this patient may have saved his life and this case underscores that death due

to severe malaria can occur within hours of presentation and prompt assessment and initiation of antimalarial therapy is essential. Artesunate is Artemisinin Derivative. In the USA, Artesunate is not approved by the Food and Drug Administration but is available for use under an investigational protocol by enrollment with the Center for Disease Control and Prevention.

SEVERE NON-INSULIN MEDIATED HYPOGLYCEMIA AS A PRESENTING FEATURE OF BURKITT'S LYMPHOMA Alina Brener[1]; Irene Nunuk[1]; Joshua Kannankeril[1]; Laura Michaelis[2]; Gilbert Fareau[3]; Amit Taneja[3]. [1]MCW, Milwaukee, WI; [2]Medical College of Wisconsin, Milwaukee, WI; [3]MCW, Wauwatosa, WI. (Control ID #2700336)

LEARNING OBJECTIVE #1: Recognize rare presentation of lymphoma

LEARNING OBJECTIVE #2: Distinguish types of lactic acidosis

CASE: A 45-year-old male was admitted to an outside hospital for pancreatitis. Despite optimal treatment of the pancreatitis, patient had severe and persistent hypoglycemia (blood glucose in the 30's mg/dl) requiring continuous dextrose infusion. Transferred to tertiary hospital for extensive evaluation of hypoglycemia demonstrated appropriately low insulin and C peptide levels, normal adrenal glucocorticoid status, and intact kidney/liver function. Labs were notable for an elevated lactate level of 19.9 mmol/L (0.5–2.0 mmol/L). Evaluation for hypoxic/ischemic and infectious causes of lactic acidosis was unrevealing, while hypoglycemia persisted. Usual offending drugs that can cause hypoglycemia and elevated lactate were excluded. The patient's review of systems was positive for subjective fevers, night sweats, and a 13 pound weight loss that reportedly developed one month prior to hospital admission. He was also mildly bicytopenic. Further questioning revealed a pattern of high-risk sexual behavior and testing confirmed a new diagnosis of HIV infection. A bone marrow biopsy was performed which confirmed Burkitt's lymphoma. HAART therapy was initiated emergently, along with systemic chemotherapy (R-DA-EPOCH). Both the hypoglycemia and lactic acidosis completely resolved shortly after initiation of chemotherapy. Unfortunately, his hospital course was complicated by CNS involvement with lymphoma, acute renal injury and disseminated candidemia leading to multi-organ failure. Focus of care was transitioned to comfort care, and he expired in hospice.

IMPACT: This case illustrates the importance of detailed history taking and wide differential, allowing for sound decision making and lowering the risk of cognitive bias development.

DISCUSSION: The Warburg effect is a phenomenon in which cancer cells rely on energy production through high rates of glycolysis followed by production of lactate in the cytoplasm, rather than the usual aerobic metabolism of pyruvate via Krebs cycle and eventual mitochondrial oxidative phosphorylation. Profound consumption of glucose by tumor cells leading to hypoglycemia and lactic acidosis occurs in Warburg effect. In general, type A lactic acidosis is more common and is caused by tissue hypoxia from a variety of reasons. Type B lactic acidosis is less common and is seen with liver disease, thiamine deficiency, hematologic malignancies and certain drugs. In our case, persistent lactic acidosis without evidence of ischemia suggested Type B acidosis; and specifically, the combination of hypoglycemia and lactic acidosis pointed towards the Warburg effect. HIV-infected individuals have a 10-fold increased risk of non-Hodgkin lymphoma compared to general population; with Burkitt's lymphoma being one of the most common subtypes.

SEVERE RESPIRATORY DISTRESS NEARLY CONCEALED TYPICAL FINDINGS OF GRAVE'S DISEASE Urara Nakagawa[1]; Toshiaki Wakai[1]; Masaji Saijo[2]; yasushi tanabe[1]; Dongkyung Seo[1]. [1]Sapporo Tokushu-kai Hospital, Sapporo-shi, Japan; [2]Sapporo Tokushukai Hospital, Sapporo, Japan. (Control ID #2703008)

LEARNING OBJECTIVE #1: Typical findings of a certain disease tend to be overlooked especially in emergent situations.

LEARNING OBJECTIVE #2: Complete history and physical examinations are basic, simplest, yet essential procedures to prevent it, which should be repeatedly performed until proven otherwise.

CASE: A 45-year-old female with a history of mild intermittent asthma and smoking habit presented with dyspnea. She developed dyspnea 2 hours prior to admission accompanied by 1 week of mild upper respiratory symptoms. She had discontinued her follow-up with her primary care physician 3 months prior to admission, despite inhaled corticosteroid being recommended. She smoked 10 cigarettes a day. On arrival at the emergency department, she was respiratory distressed and lethargic. Her vital signs were significant for respiratory rate of 36/min, O2 saturation of 99% (on 15L/min of O2 with non-rebreather mask) and heart rate of 142 bpm with regular rhythm. Lungs sound revealed significant wheezing bilaterally on both expiration and inhalation with stridor. She was intubated immediately, and methylprednisolone and ceftriaxone for severe asthma exacerbation were initiated. Her respiratory status was improved, followed by successful extubation on hospital day 3. However, she was found to have sustained tachycardia despite absent shortness of breath, and repeated complete history and physical examinations revealed recent unintended weight loss and exophthalmos, which implied Graves' disease. Thyroid function tests on hospital day 4 revealed decreased TSH and significantly increased FT3 and FT4. Graves' disease was confirmed by elevated TSH receptor antibody. Methimazole was initiated, followed by normalization of thyroid function with improved tachycardia.

IMPACT: Weight loss, exophthalmos and tachycardia are classical findings of Graves' disease, which were overlooked in the initial encounter. Tachycardia was noted on arrival, however it was explained by alternative possible causes, which included shortness of breath or usage of beta stimulant inhaler. Alternatively explainable findings may prematurely close other differential diagnoses.

DISCUSSION: Although only 13% of patients with Graves' ophthalmopathy are diagnosed on physical examination, lid retraction (+LR: positive likelihood ratio = 33.2) and lid lag (+LR = 18.6) are the significant diagnostic findings. Presence of tachycardia slightly increases the probability of hyperthyroidism. (+LR of Pulse > 90 beats/min = 4.5) Furthermore, Wayne Diagnostic Index for Hyperthyroidism consists of history and physical findings. Complete history and physical examinations should not be omitted regardless of emergent situations, and are crucial for early and accurate diagnosis of hyperthyroidism.

SEVERE SYMPTOMATIC HYPOCALCEMIA IN A PATIENT WITH HYPERTRIGLYCERIDEMIA-INDUCED ACUTE PANCREATITIS Eva Clay[2]; Krysta Johnson-Martinez[1]. [1]Atlanta VA Medical Center, Decatur, GA; [2]Emory University, Atlanta, GA. (Control ID #2703305)

LEARNING OBJECTIVE #1: Recognize and treat severe symptomatic hypocalcemia in acute pancreatitis

LEARNING OBJECTIVE #2: Treat hypertriglyceridemia in acute pancreatitis

CASE: A 52 year old man presented with 1 day of emesis and severe epigastric pain radiating to the back. He had a history of alcohol abuse, gout, and hypertriglyceridemia. Physical exam revealed temperature 36.6, HR 78, BP 137/91, RR 20. Abdomen was mildly distended and tender to palpation in the epigastrium and both lower quadrants. Labs revealed WBC 12.7, AST 160, ALT 154, Ca 7.5, Na 128, K 3.7, albumin 3.7, phosphorus 3.5, lipase 577, triglyceride 820. This patient's serum triglyceride level had been as high as 2300 in the past. Apache II score was 6. On day 2 of hospitalization, serum calcium level dropped to 4.2 (ionized 0.62 mmol/L), and patient had hand cramps, muscle weakness, positive Chvostek sign, and newly prolonged QT interval. He was treated with IV calcium gluconate and started on cardiac monitoring. He was also treated with insulin and Gemfibrozil to decrease triglyceride levels. Labs improved, but the patient had a prolonged hospital course with multiple complications.

IMPACT: This case highlights one of the well known complications of acute pancreatitis. Caring for this patient shed light on the importance of monitoring for lab evidence and physical exam signs of hypocalcemia, even if these findings are not initially noted at time of presentation. It also brought attention to targeted treatment options both for hypocalcemia and for hypertriglyceridemia in the setting of acute pancreatitis, though no large clinical trials have been done to evaluate these.

DISCUSSION: Internists often take care of patients with acute pancreatitis. One of the well known predictors of poor outcomes in pancreatitis is hypocalcemia. Severe hypocalcemia can cause increased neuromuscular excitability, seizures, and cardiac dysrhythmias (Desai et al.). Hypocalcemia in pancreatitis rarely requires specific treatment beyond supportive measures with IV fluids and bowel rest. In some cases, however, hypocalcemia is so severe that patients are at risk for deadly complications. In such cases, treatment with IV calcium gluconate is recommended along with cardiac monitoring (Cooper et al.). In this patient's case, the presumed cause of pancreatitis was hypertriglyceridemia. Conservative treatment with IV fluids and bowel rest are usually sufficient for the treatment of hypertriglyceridemic pancreatitis, though isolated case studies recommend treatment with plasmapheresis, heparin, and insulin (Valdivieslo et al.). References: 1. Desai, TK, RW Carlson, MA Geheb. Prevalence and clinical implications of hypocalcemia in acutely ill patients in a medical intensive care setting. Am J Med. 1988;84(2):209–14. 2. Cooper, MS, NJ Gittoes. Diganosis and management of hypocalcemia. BMJ. 2008;336(7656):1298–302. 3. Valdivieslo, P, A Ramirez-Bueno, N Ewald. Current knowledge of hypertriglyceridemic pancreatitis. Eur J Intern Med. 2014;25(8):689–94.

SEVERE VITAMIN B12 DEFICIENCY MASQUERADING AS A MORE DEVASTATING DIAGNOSIS Wilson Z. Mar[2]; Elizabeth S. John[1]; Sheetal Patel[1]; kristen wong[2]. [1]Rutgers Robert Wood Johnson, Montville, NJ; [2]Rutgers Robert Wood Johnson Medical School, Elmhurst, NY. (Control ID #2707619)

LEARNING OBJECTIVE #1: severe B12 deficiency can present with a hemolytic picture, and megaloblasts are often times mistaken for blasts.

CASE: We present a case of a 48 year old male withno significant past medical history who came into the emergency department with 2 weeks of scleral icterus, fatigue, and loss of balance, a 10 pound weight loss over the last month despite a regular diet, and a hemoglobin of 6.1 on admission. His vitals were within normal limits, and his physical exam was positive for sublingual jaundice, scleral icterus, and jaundice. Labs included WBC 3, Hb 6.1, platelets 94, MCV 106.5, AST 196, ALT 70, Total bilirubin 1.9, Direct bilirubin 0.2, LDH 7214, D-dimer 2971, fibrinogen 214, and fibrin split products >20. Haptoglobin was severely decreased at <8.1. The automated differential of the peripheral smear initially showed 3% blasts without any schistocytes. Upon hematology's reviews of the slide, they said the "blasts" were more likely hypersegmented neutrophils. Vitamin B12 levels were initially extremely low at <30pg/mL. Folate, homocysteine and methylmalanic acid levels were elevated at >20, 229.6, and 19.92, respectively. Iron studies showed an elevated ferritin but normal iron levels, at 698 and 97, respectively. Intrinsic factor and parietal cell antibodies were positive as well, consistent with pernicious anemia. Vitamin B12 subcutaneous injections were initiated for 7 days, followed by once weekly for 4 weeks, and then monthly injections long term. Over the first two days of treatment, the pancytopenia improved, the LDH improved from 7214 to 5604, fibrinogen and fibrin split products decreased, and the haptoglobin increased. The patient's constitutional symptoms ameliorated as well.

IMPACT: In this case, the patient's constitutional symptoms, the labs that looked largely inflammatory and hemolytic, and the misleading automated differential of the peripheral smear initially bought the patient a more devastating diagnosis than severe Vitamin B12 deficiency. A hemolytic anemia picture such as TTP was considered with the significantly elevated LDH, the elevated fibrinogen, the low haptoglobin, and subjective neurological finding of balance loss. The initial peripheral smear interpretation in the setting of the significantly elevated LDH and constitutional symptoms was concerning for leukemia as well.

DISCUSSION: It is important to recognize that severe B12 deficiency can present with a hemolytic picture, and megaloblasts are often times mistaken for blasts. Another unique aspect of this case was the finding of both pancytopenia and hemolysis in the same patient, which is extremely rare as per the literature. In megaloblastic anemia with severely elevated LDH, it is crucial to consider Vitamin B12 deficiency so as to avoid a large workup including bone marrow biopsies and plasmapheresis.

SHE'S NOT CRAZY: A CASE OF ANTI-NMDA RECEPTOR ENCEPHALITIS Hani Rashid[1]; Phuong T. Nguyen[2]; Raymond Munoz[1]. [1]Methodist Dallas Medical Center, Dallas, TX; [2]Medical City of Fort Worth, Fort Worth, TX. (Control ID #2700754)

LEARNING OBJECTIVE #1: Identify the signs and symptoms of anti-NMDA receptor encephalitis.

CASE: A 36-year-old female with no clear past medical history other than possible mood disorder presented after three days of decreased level of consciousness. Associated symptoms included body aches, fever, chills, nausea, vomiting, and headaches. The patient had been suffering from flu-like symptoms two weeks prior to presentation and was treated with antibiotics. The patient became progressively confused with accompanying visual hallucinations, memory deficits, and episodes of exuberance alternating with episodes of agitation. The patient's mother reported a family history of bipolar disorder, though the patient had never exhibited such symptoms in the past. Upon presentation, the patient's vital signs were stable other than elevated blood pressure. She appeared agitated with a labile mood. She did not have nuchal rigidity or meningeal signs. CBC, CMP, urine toxicology, and urinalysis were unremarkable. Lumbar puncture was performed. The CSF was clear and colorless with the following values: WBC 92/μL (99% lymphocytes and 0%

neutrophils), RBC 0/μL, glucose 49 mg/dL, and protein 61 mg/dL. The patient's CSF was negative for West Nile virus, herpes simplex virus, and enterovirus by PCRs, and cryptococcal antigen. However, the fluid was positive for NMDA receptor IgG. She was diagnosed with anti-NMDAR (N-methyl-D-aspartate receptor) encephalitis and was treated with IV methylprednisolone and plasmapheresis resulting in improvement of her mental status and functional capacity prior to discharge to a rehabilitation facility.

IMPACT: This case highlights the importance of identifying when psychiatric symptoms are manifestations of an organic disease process, rather than diagnoses in themselves. Patients that present with psychiatric symptoms are sometimes transitioned to the care of mental health professionals without thorough evaluation of underlying and potentially reversible causes. While infectious etiologies must be excluded in the encephalopathic patient, non-infectious encephalitis must also be considered.

DISCUSSION: Anti-NMDA receptor encephalitis is a potentially fatal but treatable form of non-infectious encephalitis. It is caused by autoantibodies targeted against the NR1 subunit on the NMDA receptors in the brain. Patients can present with viral-like symptoms, followed by psychiatric manifestations and finally neurologic decline. The affected patient population is typically composed of young females. Anti-NMDA receptor encephalitis is commonly associated with teratomas and therefore may also be considered a paraneoplastic syndrome. Diagnosis is made by identification of NMDA receptor antibodies in serum or CSF. Prompt initiation of immunotherapy (steroids and IVIG or plasma exchange) and tumor removal (if applicable) are the cornerstone of therapy. Patients require close monitoring and coordination between multiple specialties for favorable outcomes and prevention of long-term neurological sequelae.

SHEEP IN WOLF'S CLOTHING: THE GREAT MASQUERADER

Maxine Tang; Michael Layoun; Daniel Kahn. UCLA, Los Angeles, CA. (Control ID #2698783)

LEARNING OBJECTIVE #1: Recognize signs of Tuberculous Peritonitis

LEARNING OBJECTIVE #2: Outline the differential diagnosis of an elevated CA-125

CASE: The clinical presentation of tuberculous peritonitis is often nonspecific on initial presentation and may be mistaken for peritoneal carcinomatosis. While the diagnosis is under-recognized in non-endemic regions, early recognition can prevent significant morbidity. An 81-year-old Filipino female presented with a several month history of abdominal distension, early satiety, and night sweats. Computed tomography demonstrated abdominal ascites and a borderline gastro-hepatic lymph node. CA-125 was elevated at 889 U/mL. Paracentesis revealed lymphocytosis with negative cytology. A PET-CT showed diffuse omental nodularity concerning for carcinomatosis and multiple FDG-avid lymph nodes concerning for metastases. The patient underwent exploratory-laparotomy with total abdominal hysterectomy and bilateral salpingo-oophorectomy given the high concern for ovarian malignancy. During the operation, turbid ascites, widespread studding, and adhesions were observed. Pathology revealed necrotizing granulomatous inflammation with no evidence of malignancy. Acid fast staining of the omentum, ovaries, and cul-de-sac were positive for acid-fast bacilli. QuantiFERON TB Gold test was indeterminate. Rifabutin, isoniazid, ethambutol, and levofloxacin therapy was initiated per public health recommendations for empiric treatment of tuberculous (TB) peritonitis. At a follow-up appointment several weeks later, abdominal pain had resolved and CA-125 was down-trending to normal. Ascitic fluid culture eventually confirmed Mycobacterium Tuberculosis.

IMPACT: TB is still the great masquerader. Even in a high resource setting, TB can evade diagnosis. While CA-125 is traditionally used as a tumor marker, it is important to recognize the range of etiologies leading to elevated CA-125. This case reinforces that despite advanced diagnostics, an invasive procedure is frequently required to differentiate TB from malignancy.

DISCUSSION: This case illustrates how tuberculous peritonitis can closely mimic peritoneal carcinomatosis and often eludes diagnosis until surgical intervention has occurred. Tuberculous peritonitis has a similar presentation to intra-abdominal malignancies (such as ovarian cancer) with findings including new-onset ascites, pelvic masses, and elevated CA-125. Some findings that are more specific to TB are night sweats, fever, and abdominal pain. AFB staining is often negative; diagnosis frequently requires laparoscopy and peritoneal biopsy. CA-125 is associated with ovarian cancer as well as non-gynecologic malignancies, peritonitis, endometriosis, hepatitis, and pancreatitis. CA-125 is generally elevated in tuberculous peritonitis and may serve as a non-specific marker for response to TB treatment. Early recognition of TB is paramount as it is one of the few diffuse peritoneal processes that can be effectively cured.

SICKLY SWEET: CHALLENGES IN DIAGNOSING DYSGLYCEMIA IN A PATIENT WITH SICKLE CELL TRAIT (SCT)

Odeth Barrett-Campbell[1, 2]; Andrew A. Chang[1, 2]. [1]Health + Hospitals Kings County, New York, NY; [2]SUNY Downstate, Brooklyn, NY. (Control ID #2704677)

LEARNING OBJECTIVE #1: To recognize the challenges with use of HbA1c in dysglycemic patients with hemoglobinopathies and alternatives to A1c testing in these patients.

CASE: We present a 49 year old woman with SCT who presented for routine care. Review of systems was unremarkable. Family history revealed Diabetes Mellitus- mother and sister. She had normal vital signs and BMI of 25kg/m^2. Examination findings were normal. Laboratory studies including lipid panel, basic metabolic panel and complete blood count were normal save for HbA1c which read: variant hemoglobin, A1C = 25.5%. Oral glucose tolerance test (OGTT) revealed Impaired Glucose Tolerance (IGT). Diet and lifestyle changes were advised. Three months later, she remained asymptomatic and her weight was unchanged. Glycated Fructosamine was 290 umol/l (205–285). The continuation of diet and lifestyle changes and addition to low-dose Metformin, were discussed but she refused pharmacologic intervention at this time and opted for further monitoring.

IMPACT: In reviewing the case one may consider ruling out a hemoglobinopathy in dysglycemic patients when wide variations are seen in A1c values. The HbA1C trend can be used to identify patients at risk of Diabetes Mellitus but it is important to recognize the limitations in patients with hemoglobin variants due to increase in red cell turnover. The use of serum fructosamine in this case would not be appropriate for screening but for monitoring in a patient with Diabetes Mellitus.

DISCUSSION: Dysglycemia refers to a disorder in the metabolism and regulation of blood glucose and may be applied to pre-diabetic and diabetic individuals. Patients with IGT may be identified as pre-diabetics. Recognition of this intermediary group is important given the association with dyslipidemia, hypertension and obesity, all of which is used to identify metabolic syndrome.

Individuals with hemoglobin variants, such as SCT, may have falsely low or high levels of A1c due to increase in red cell turnover. Fasting glucose and OGTT are the most appropriate alternatives for screening in patients with hemoglobin variants. Glycated fructosamine and glycated albumin (GA) would be useful for monitoring in diabetic patients with hemoglobinopathies as values are not affected by disorders of hemoglobin metabolism or RBC survival. Both reflect short term control (2–3 weeks) and are affected by disorders of albumin metabolism. 1, 5-Anhydroglucitol is a newer test used as a measure of short term glycemic control but based on literature review it not extensively studied in hemoglobinopathies. Despite ongoing efforts to improve and standardize the measurements of HbA1C that would best apply to patients with hemoglobin variants it is still advisable not to use HbA1C in diabetics or prediabetics with sickle cell disease.

SILICONE INJECTIONS: RAISING MORE THAN JUST GLUTES.

Orlando Zepeda; Jennifer Weintraub; Lauren Peccoralo. Icahn School of Medicine at Mount Sinai, New York, NY. (Control ID #2703845)

LEARNING OBJECTIVE #1: Recognize silicone-mediated granulomatous disease as a potential cause etiology of hypercalcemia.

LEARNING OBJECTIVE #2: Manage silicone-mediated granulomatous disease.

CASE: A 37 year-old woman with no past medical history presented with 5 months of progressive fatigue, and recent onset nausea and vomiting. The patient was well appearing, afebrile, and normotensive. Benign abdomen without flank tenderness on exam though was notable for firm, non-tender, non-mobile indurations overlying her buttocks. Initial labs were notable for a creatinine of 3.77 and corrected calcium of 12. Renal ultrasound demonstrated severe bilateral hydronephrosis and hydroureter. CT abdomen-pelvis confirmed multiple bilateral distal ureteral stones, largest 1.7cm, in addition to multiple nodules within the soft tissue superficial to the gluteal muscles. The patient was started on intravenous hydration and calcitonin with placement of bilateral ureteral stents. Testing including SPEP/UPEP, intact parathyroid hormone and age-appropriate cancer screening were unremarkable. 25-OH vitamin D was low at 22.1 and 1,25-OH vitamin D was 78.6, the high end of the normal range. On further history, she reported having silicone gluteal injections 7 years prior in Colombia. Given the history and findings on imaging, her hypercalcemia was thought to be due to granulomatous reaction to silicone. Prednisone was started and plastic surgery was consulted for removal of gluteal granulomas. Her calcium and renal function improved over her hospitalization.

IMPACT: Silicone is gaining popularity for body augmentation as it is inexpensive and presumed non-immunogenic. However, there are increasing complications from use of unknown grades of silicone by unlicensed providers. While there are currently less than a dozen case reports of hypercalcemia related to silicone gluteal injections, silicone mediated granulomatous reactions should remain high on the differential for hypercalcemia in appropriate patients.

DISCUSSION: Hypercalcemia is a common finding with similar signs and symptoms regardless of etiology. Primary hyperparathyroidism and malignancy are responsible for up to 90% of cases. Often overlooked, granulomatous reactions, such as sarcoidosis and tuberculosis, can cause hypercalcemia due to hyperproduction of 1,25-OH vitamin D via activation of a mononuclear cell pathway independent of PTH. Clues to the diagnosis include an inappropriately elevated 1,25-OH vitamin D level and low 25-OH vitamin D suggestive of excessive conversion. In addition to fluids, hypercalcemia due to granulomatous reactions can be treated with steroids. In cases of silicone mediated granulomatous disease, removal of the insulting agent is key. While most often due to primary hyperparathyroidism or malignancy, this case highlights the importance of maintaining a broad differential for hypercalcemia and conducting a thorough history and physical to identify other potential causes.

SIRS BUT NO SEPSIS? SHORT BOWEL SYNDROME PRESENTING AS SIRS

Taylor Schmidt; Ami DeWaters; Oanh K. Nguyen. UT Southwestern Medical Center, Dallas, TX. (Control ID #2705786)

LEARNING OBJECTIVE #1: Recognize volume depletion in short bowel syndrome as an etiology of SIRS.

LEARNING OBJECTIVE #2: Recognize the need for medical therapy in the management of short bowel syndrome.

CASE: A 69 year old woman with an ostomy presented to the emergency department for nausea, vomiting, and unintentional weight loss of 100 lbs over 4 months. She had 2 episodes of non-bloody emesis the day of presentation, and her family reported she had general malaise. Review of systems was negative for fevers, abdominal pain, urinary symptoms, and increased ostomy output. She had a temperature of 36.4 C, pulse of 120 beats/minute, respiratory rate of 27, and blood pressure of 149/80 mmHg. On exam, she was cachectic, had dry mucous membranes, and a non-tender abdomen with a healthy, pink ostomy. Her sodium was 131 mmol/L, potassium 3.0 mmol/L, bicarbonate 11 mmol/L, creatinine 2.79 mg/dL, and lactate 5.6 mg/dL. White blood cell count (WBC) was 13,830 cells/ microliter. Urinalysis showed 5 WBCs/hpf. Computed tomography scan of her abdomen showed no etiology of infection. She was started on empiric antibiotics for presumed sepsis of urinary origin, given 3 liters of normal saline (NS), and admitted to the general medicine ward. Blood, urine, and stool cultures were negative. She had 4 liters/day of ostomy output. Outside records revealed she had a bowel resection with end-jejunostomy 4 months prior for obstruction. Thus, antibiotics were stopped and medical therapy for short bowel syndrome modified to include antimotility agents, stool bulking agents, and cholestyramine. Her stomal output eventually decreased to 1.7 L/ day, NS was stopped and she was discharged home.

IMPACT: This case changed our thinking by broadening our differential for SIRS, which now includes volume depletion related to short bowel syndrome. Our practice has changed to include medical therapy, as well as dietary changes, in treating short bowel syndrome.

DISCUSSION: SIRS criteria have been commonly used to identify potentially septic patients. While systemic infections commonly cause SIRS, other non-infectious etiologies can also cause it. Patients with short bowel syndrome, particularly those who have had ileal and colonic resections like our patient, are prone to fluid and electrolyte loss. This volume depletion can lead to SIRS, as in our case. Any differential of SIRS must include such non-infectious etiologies in order to avoid a delay in diagnosis. Dietary changes and medications can help prevent serious complications, like SIRS, of short bowel syndrome. Patients should avoid hypertonic foods to prevent osmotic loss of fluids into the bowel. A proton pump inhibitor can decrease gastric acid secretion. If stomal output continues to exceeds intake, antimotility drugs and bulk-forming laxatives can decrease intestinal motility and slow fluid loss. Overall, providers

must know the complications and treatment of short bowel syndrome to facilitate diagnosis and lead to appropriate management.

SKIN DARKENING AS AN ENLIGHTENING CLUE: AN 18 year OLD MALE WITH AUTOIMMUNE POLYGLANDULAR SYNDROME TYPE 2 Navya Nambudiri; Donald C. Eagerton. Grand Strand Medical Center, Myrtle Beach, SC. (Control ID #2706641)

LEARNING OBJECTIVE #1: Recognize the clinical manifestations of primary adrenal insufficiency.

LEARNING OBJECTIVE #2: Recognize the components of autoimmune polyglandular syndrome type II.

CASE: An 18 year old male with type 1 diabetes (since age 18 months), hypothyroidism (since age 4 years), and psoriasis presented with weight loss, several weeks of extreme fatigue, weight loss, and diffuse hyperpigmentation. He had recently been out in the sun; his mother reported the findings as tanned skin. His diabetes and hypothyroidism had been difficult to control in the past, including episodes of diabetic ketoacidosis. His medications were a continuous insulin pump and levothyroxine. There was no family history of autoimmune disease. On examination, he had low-normal blood pressure while supine. The patient was examined supine, as he lacked energy to sit up due to extreme fatigue. There was no thyromegaly. Neurological exam was within normal limits. His extremities showed diffuse hyperpigmentation and psoriatic plaques. Labs revealed hyponatremia (serum Na 129), hyperkalemia (serum K 5.6) and elevated TSH (30). A cortisol stimulation test showed baseline cortisol was 0.2 with markedly elevated plasma ACTH (1215). The +30 and +60 min cortisol levels were markedly low (0.2), reflecting failed response to stimulation. He was diagnosed with primary adrenal insufficiency and started on hydrocortisone with prompt improvement. With the triad of type 1 diabetes, hypothyroidism, and primary adrenal insufficiency, he was diagnosed with autoimmune polyglandular syndrome type II.

IMPACT: While initially tempting to attribute extreme fatigue to worsening hypothyroidism, a key learning point in such patients is including primary adrenal insufficiency in the differential diagnosis. His hyperpigmentation particularly helped broaden our thinking.

DISCUSSION: Several autoimmune polyglandular syndromes involving multiple endocrine organs exist. Autoimmune polyglanduar syndrome type II is most common, affecting the thyroid, pancreas, and adrenal gland. Other organ involvement may cause primary gonadal failure or primary hypopituitarism. Primary adrenal insufficiency most often arises from autoimmune destruction; other causes include infection, infarction, and adrenal metastases. Primary adrenal insufficiency may induce diffuse hyperpigmentation due ACTH upregulation and associated melanocyte stimulating hormone production. Other findings include weight loss, fatigue, hypotension, and gastrointestinal upset. Frequent, severe hypoglycemia is often seen. Lab findings can include low cortisol, high ACTH, high CRH, hyponatremia and hyperkalemia. Treating primary adrenal insufficiency includes stabilization of vital signs and electrolytes along with corticosteroid replacement. Physicians should have a high index of suspicion in individuals with underlying endocrinopathies presenting with diffuse skin darkening as an enlightening manifestation of primary adrenal insufficiency.

SLAM DUNK - PRESUMED BACTRIM INDUCED NEPHROPATHY Nina Fredericks; Aravdeep Jhand; Jeffrey Macaraeg; Gene Perschwitz; Vishisht Mehta; Venkata Andukuri. Creighton University, Omaha, NE. (Control ID #2705290)

LEARNING OBJECTIVE #1: Recognize the clinical features of Granulomatosis with Polyangiitis (GPA)

LEARNING OBJECTIVE #2: Identify hepatic involvement in GPA

CASE: A 62 y.o. obese caucasian female presented with 7 days of progressive generalized weakness, imbalance, and decreased urine output. She was thought to have nephropathy with acute kidney injury secondary to recent Bactrim use for possible cellulitis of a right pretibial ulcer. Review of systems was positive for chronic rhino-sinusitis and productive cough with occasional blood streaked sputum. Physical examination revealed a 4mm apthous ulcer under the tongue, decreased breath sounds in the base of the lungs bilaterally, 2+ pitting edema and a 2cm ulcerative lesion with surrounding petechiae on the right pretibial region. Laboratory results at admission included hemoglobin of 9.1 g/dL, white blood cell count of 23.1×10^3/uL, BUN of 65.7 mg/dL, serum creatinine of 4.75 mg/dL and ESR of > 140 mm/hr. Urinalysis revealed hematuria without casts and Fractional excretion of Urea (FeUrea) was 45% - consistent with intrinsic renal damage. Liver function tests were: AST 45 u/l ($N = 10$–40 u/l), ALT 17 ($N = 12$–78 u/l), Alkaline Phosphatase 339 (33–138 u/l), Total Bilirubin 1 mg/dl and Albumin 1.5 gm/dl. A CXR revealed diffuse bilateral interstitial infiltrates and empiric antibiotic therapy was initiated. Given multisystem involvement, rheumatologic work up was done. Serum ANA and hepatitis panel were negative, serum complement levels and abdominal US were normal. C-ANCA (>1:320) and PR-3 were positive, raising suspicion for Granulomatosis with Polyangiitis. Patient refused renal biopsy to confirm the diagnosis of GPA and therapy with IV pulse steroids and Rituximab was initiated. The patient's status declined on day 7 with worsening dyspnea, hemoptysis, and LFT's. A Chest CT showed bilateral ground glass opacification. Due to radiographic and clinical features, diffuse alveolar hemorrhage was suspected and therapeutic plasma exchange was initiated. Patient showed clinical improvement after three treatments and transitioned to oral steroids.

IMPACT: Gastrointestinal manifestations of vasculitis are relatively uncommon - particularly those affecting liver function. In this patient, the apparent decline in hepatic function, in the absence of hypotension, abnormality on liver ultrasound, or known hepatotoxic insult suggest hepatic involvement in the setting of GPA.

DISCUSSION: GPA is a small vessel vasculitis with pathognomic necrotizing granulomas. This case highlights various organ system involvement in GPA including pulmonary, renal, cutaneous, and upper respiratory tract. Hepatic involvement in GPA was previously thought to be rare. However, Willeke et al. recently reported LFT abnormalities may be seen in up to 50% of patients with ANCA associated vasculitis and, in the absence of other hepatic diseases, could be attributed to underlying vasculitis. It is key for clinicians to be aware of such derangements in the LFT's since they may indicate underlying active disease.

SLIDES OF RELIEF: KIKUCHI, NOT CANCER Adam Tepler[1, 2]; Danit Arad[2]. [1]Albert Einstein College of Medicine, BRONX, NY; [2]Montefiore Medical Center, Bronx, NY. (Control ID #2700595)

LEARNING OBJECTIVE #1: Outline the differential diagnosis of cervical lymphadenopathy with constitutional symptoms.

LEARNING OBJECTIVE #2: Recognize clinical features of Kikuchi disease.

CASE: A 30 year-old woman presented with 2 weeks of progressive, painful right neck swelling, fever, and throat and ear pain. She had no medical conditions and no significant surgical history. She reported no cough, dental pain, joint pain, easy bruising or bleeding, history of tuberculosis, history of autoimmune disease, sick contacts, cat exposure, history of HIV or any other STD and was sexually active only with her husband. Vitals were significant for fevers to 101.3F. She had a 3x4cm right submandibular lymph node with erythema, warmth, and tenderness. She appeared well, with clear oropharynx, no erythema, no exudates, good dentition, normal otoscope exam, no cardiac murmur, normal lung exam, no rash, and no other lymphadenopathy. Work-up for infection and autoimmune processes yielded negative results. Sonogram and computed tomography confirmed an enlarged lymph node without fluid collection. Fine needle aspiration contained no malignant cells. Pathology of an excisional biopsy reported necrotizing histiocytic lymphadenitis consistent with Kikuchi disease. The patient was discharged home and symptoms resolved within 12 weeks of admission.

IMPACT: This case highlights the importance of considering Kikuchi Disease, a self-limited, benign disease, in the presentation of cervical lymphadenopathy with constitutional symptoms, especially in women 30 or younger. Early biopsy is indicated to distinguish from lymphoma, which can present similarly.

DISCUSSION: Lymphadenopathy is often encountered as a manifestation of both grave and harmless conditions. Constitutional symptoms including fever or weight loss can indicate more serious disease. The differential diagnosis of painful cervical lymphadenopathy and fever is quite extensive, including cat scratch disease, infectious mononucleosis, toxoplasmosis, tuberculosis, and many other infections. Tests should be ordered accordingly. Autoimmune disease such as systemic lupus erythematous, and neoplastic diseases such as lymphoma may also cause a similar presentation, but are more difficult to rule out. Kikuchi disease is a rare cause of cervical lymphadenopathy with constitutional symptoms, described as histiocytic necrotizing lymphadenitis, usually affecting women under the age of 30. Constitutional symptoms vary and include fever, experienced by 35% of patients, as well as fatigue, joint pain, rash, weight loss, decreased appetite, sweating, and myalgia. Hepatomegaly, splenomegaly, other sites of lymphadenopathy, xerophthalmia, and aphthous ulcers may also be present. Lab values are largely non-specific, but can rule out other entities. In one review, leukopenia and elevated erythrocyte sedimentation rate were measured in 18 and 16% of patients, respectively. Histopathological analysis establishes diagnosis.

SMALL INTESTINAL METASTASIS OF UNDIFFERENTIATED CARCINOMA PRESENTING AS MELENA Kyle Glienke; Aiza Ashraf; Steven Palmer. St. Vincent Health, Indianapolis, IN. (Control ID #2707396)

LEARNING OBJECTIVE #1: Diagnose metastatic carcinoma as an unusual, yet serious cause of melena

CASE: A 54-year-old man presented to the emergency department due to neck and upper thoracic back pain. On review of systems, the patient also reported a three-month history of progressive dyspnea and melena. He had a 70 pack/year cigarette smoking history and had not seen a physician in many years. A chest x-ray revealed a left upper lobe nodular density and a CBC showed a hemoglobin of 2.8 g/dL, a CT scan of the chest, abdomen, and pelvis revealed a left medial pleural-based chest mass, hilar adenopathy, and additional masses in the liver, right adrenal gland, and the left 6th rib, concerning for metastatic disease. Several units of PRBCs were transfused, and the patient underwent an EGD to evaluate for causes of melena. Two one centimeter nodules and a larger mass-like structure were identified in the distal duodenum, with stigmata of recent bleeding. Biopsies were taken and hemostasis achieved. The patient's dyspnea improved with transfusion. An MRI of the brain and spinal cord showed 3 approximately 1.5cm diameter cerebral lesions as well as suspected metastatic disease at multiple vertebrae. Pathology of the duodenal masses revealed a poorly-differentiated carcinoma, which was confirmed on additional sampling of the left upper lung mass. Further staining was not able to confidently identify a source of origin, thus a diagnosis of carcinoma of unknown primary was established. After multiple discussions with medical and radiation oncology, the patient opted for palliative care alone and was discharged home without radiation or chemotherapy.

IMPACT: This case serves as an illustration that metastatic disease can have multiple presentations, often with relatively non-specific symptoms. Carcinoma of unknown primary accounts for 3-5% of all malignancies[1]. Diagnosis requires an exhaustive search for the primary source in a systematic manner with physical examination, imaging, and pathologic studies[2]. If not attributable to a likely source, these malignancies fall into an "unfavorable" category, which can make treatment decisions difficult for both patients and providers[3].

DISCUSSION: Metastatic disease can present with relatively non-specific signs and symptoms, and thus a high-degree of suspicion for serious causes of sometimes mundane patient presentations must be maintained. An exhaustive search both clinically and pathologically is required to diagnose and manage carcinoma of unknown primary. 1.Massard C, et al. Carcinomas of an unknown primary origin - diagnosis and treatment. *Nat. Rev. Clin. Oncol*. 2011;8:701–710. 2. Pavlidis N and Fizazi K. Carcinoma of unknown primary. *Critical Reviews in Oncology/Hematology*. 2009;69:271–278. 3. Amela EY, et al. Management of "unfavorable" carcinoma of unknown primary site: Synthesis of recent literature. *Critical Reviews in Oncology/Hematology*. 2012;84:213–223.

SMEAR CAMPAIGN: FALSE ATTRIBUTION OF PANCYTOPENIA TO TICK BITE Soraya Azzawi; Dr. Jessica T. Lee; Michael J. Peluso; Dr. Haiyan Ramirez Batlle; Aaron G. Richterman; Maria Yialamas. Brigham and Women's Hospital, Boston, MA. (Control ID #2704251)

LEARNING OBJECTIVE #1: Evaluate pancytopenia in the setting of Lyme disease

LEARNING OBJECTIVE #2: Manage Lyme disease in the neutropenic patient

CASE: AC is a 51-year-old woman with a past medical history of fibromyalgia who presented with a rash and pancytopenia following a tick bite she sustained while visiting Martha's Vineyard in the summer. AC endorsed months of malaise, easy bruising, and occasional night sweats. The day after she found a tick attached to her right arm, AC noticed a tender, erythematous, targetoid rash on her left calf. Subsequently, she experienced drenching night sweats and chills. AC presented to a local hospital; laboratory investigations revealed a white blood cell count of 0.7×10^3 cells/uL, hemoglobin of 9.6 gm/L and platelet count of 85×10^6 cells/uL, with a differential of 3% neutrophils, 89%

lymphocytes, 7% monocytes and 1% eosinophils. On admission day two, her leukopenia persisted (WBC 0.5 x10^3 cells/uL, absolute neutrophil count 10 cells/uL); this was attributed to tick-borne illness and she was transferred to our institution. Tick-borne disease panel returned with positive IgM for Lyme Disease and was negative for Babesia, Ehrlichia/Anaplasma, and Rickettsia. Peripheral smear demonstrated poikilocytosis, occasional tear-drop cells, thrombocytopenia, lymphocytosis (atypical appearance), no neutrophils, and possible blasts. Peripheral flow cytometry showed 7% myeloblasts. Bone marrow biopsy demonstrated 60% blasts. Ultimately, she was diagnosed with acute myelogenous leukemia. AC was treated with a 14-day course of doxycycline while receiving induction chemotherapy with a 7 + 3 regimen of cytarabine and daunorubicin.

IMPACT: Pancytopenia—while possible—is a rare manifestation of Lyme disease and should prompt evaluation for alternate processes, including co-infection with Ehrlichia/Anaplasma, which is associated with cytopenias, or hematologic malignancy. Peripheral blood smear is essential in this context as part of the diagnostic work up, and in this case suggested the possibility of malignancy.

DISCUSSION: To date, literature exploring how altered immunity shapes the course of Lyme infection is scant. One study by Furst et al. investigated potential differences in clinical characteristics and serological profile between patients with acquired immune deficiency and immunocompetent controls. Prevalence of IgG and IgM antibodies were similar between patient groups. Ultimately, the study concluded that immunosuppression did not significantly alter the manifestation or outcome of early Lyme disease, suggesting that similar antibiotic regimens can be used for both groups. Both the ideal antibiotic dose and duration have yet to be standardized across the field, likely due to a dearth of randomized trials. Using data from similarly indolent diseases like tuberculosis, some experts recommend prolonged courses. AC received a standard course; she had no advanced Lyme disease symptoms as she progressed through her treatment for her AML, including an allogenic bone marrow transplant.

SOLVING ONE PROBLEM TO CREATE ANOTHER: FROM WEIGHT LOSS TO WORSE Elizabeth P. Griffiths. UCSF, San Francisco, CA. (Control ID #2703289)

LEARNING OBJECTIVE #1: Review the differential diagnosis and work up of unintentional weight loss, with specific focus on the geriatric population

LEARNING OBJECTIVE #2: Distinguish frontotemporal dementia (FTD) from acute mania

CASE: A 74 year old man with a history of depression and chronic back pain presented with a four month history of 20 pound unintentional weight loss. Review of systems was negative except for one year of nausea, resulting in decreased food intake. He noted that his depression had worsened two months prior. His medications included Oxycontin, Ativan, Ritalin, and Wellbutrin. He was a highly functioning professional, lived with his wife, and drank 2 glasses of wine per night. His exam was unremarkable except for confirmation of weight loss. His initial work up including chemistries, CBC, TSH, ESR, PSA, FOBT, CXR, UA, and HIV was unrevealing. His Ritalin was stopped, and he quit drinking alcohol. He was referred for EGD and colonoscopy, which showed mild gastritis. He began to gain weight, coinciding with lifting of his depression. Two months later, his son reported significant personality changes in his father, including overspending, public urination, and threatening his wife, resulting in loss of employment and divorce. He had been seen by an outside psychiatrist and diagnosed with frontotemporal dementia (FTD). A referral was made to neurology clinic, where he was instead diagnosed with acute mania. He has subsequently improved on mood stabilizers.

IMPACT: As an internist, I tend to focus more on the importance of ruling out malignancy in cases of unintentional weight loss. This case reminded me that, especially in the geriatric population, psychiatric disease is more common. It should be addressed equally seriously and urgently, including probing regarding past episodes of mania in anyone with depression.

DISCUSSION: Unintentional weight loss is common in the geriatric population, with as many as 20% of adults over 65 meeting diagnostic criteria. Depression is the most common cause, followed by malignancy and dysphagia. Initial work up should include thorough history and physical, basic labs, CXR, and age appropriate cancer screening. Special attention should be paid to medication review, alcohol and substance use, diet, swallowing problems, dementia, depression, and social situation. While depression is a very common cause of weight loss, this patient's subsequent personality change is much less common. The primary diagnoses considered were FTD and acute mania. While his behavioral disinhibition and loss of empathy were consistent with FTD, he was instead diagnosed with acute mania based on the following features: abrupt onset, remote history of another manic episode, lack of FT atrophy, preservation of cognitive function, paranoid features, increased productiveness, insight into the inappropriateness of his behaviors, recent lifting of depression, grandiosity, and flight of ideas. Distinguishing between these causes is essential given the reversibility of mania with appropriate treatment.

SPINAL MASS DUE TO MYELOID HYPEREOSINOPHILC SYNDROME Kashiti Long. Emory University, Atlanta, GA. (Control ID #2706174)

LEARNING OBJECTIVE #1: Recognize the clinical manifestations of hypereosinophilic syndrome (HES).

LEARNING OBJECTIVE #2: Review the pathogenic variants of HES including the myeloid variant and how pathogenic variant guides treatment for HES.

CASE: 39 year old male presents with bilateral lower extremity weakness and difficulty walking. One month prior to admission, the patient developed numbness, hyerreflexia and loss of proprioception in bilateral lower extremities. He was found to have a circumferential epidural mass with lumbosacral central spinal stenosis.He underwent multilevel sacral laminectomy S1 to S3 with subtotal excision of the mass. Pathology of the mass showed inflammatory tissue and gram-positive cocci. He was treated with daptomycin for 10 days. Following this he developed bilateral lower extremity weakness, pain and progressive difficulty walking. MRI revealed T5 to T11 circumferential, epidural lesion. Patient underwent a biopsy of the epidural mass. Pathology of the mass and bone marrow biopsy revealed inflammatory tissue, fibrosis and eosinophilic infiltrate. Genetic analysis revealed evidence for CHIC2 deletion on chromosome 4 consistent with the clinical possibility of this being FLP1L1-PDGFR alfa fusion gene. The combination of eosinophilic infiltrates and detection of the FLP1L1-PDGFR alfa fusion gene suggested the diagnosis of a myeloid version of Hypereosinophilic syndrome (HES). He was treated with imatinib.

IMPACT: Our case is a rare case of hypereosinophilic syndromes manifesting as CNS mass. Albeit rare, recognizing HES is key as identification of disease variant guides treatment.

DISCUSSION: Hypereosinophilic syndromes (HES) is an uncommon, heterogeneous group of disorders characterized by persistent eosinophilia with evidence of eosinophil-induced organ damage. It occurs most frequently in young to middle-aged males. Varied clinical manifestations can occur with involvement of skin, heart, lungs, and nervous system in more than 50% of cases. The most common type of CNS involvement is cerebrovascular disease. It is thought that there are variants of HES based on the pathogenesis of the hypereosinophilia. A myeloid variant is thought to be arise from a chromosomal deletion on 4q12 leading to creation of the FIP1L1-PDGFRA fusion gene (F/P gene) in a myeloid cell line. This fusion gene encodes an aberrant tyrosine kinase that leads to unregulated growth of the cell. Presence of hypereosinophilia and end-organ damage with the exclusion of alternate causes of hypereosinophilia suggests the diagnosis of HES. Further cytogenetic testing to identify the variant is warranted. Therapeutic management depends on the severity of manifestations and pathogenic variants. For patients with the the F/P fusion gene, tyrosine kinase inhibitors are first line therapy. For patients without the F/P fusion gene, steroid therapy and mepolizumab, an anti-IL-5 antibody is indicated.

SPLENIC SEQUESTRATION CRISIS IN A PATIENT WITH SICKLE CELL-BETA THALASSEMIA TRAIT AND CONCOMITANT G6PD DEFICIENCY Agnes McAuliffe; Ayushi Chahuan. University of Connecticut, Manchester, CT. (Control ID #2706454)

LEARNING OBJECTIVE #1: Recognize splenic sequestration crisis in patients with a Sickle cell variant disorder

LEARNING OBJECTIVE #2: Identify timing of splenectomy in an acute splenic sequestration crisis

CASE: A 28 year old Kuwaiti male with self reported sickle cell disorder (HbSS) and G6PD deficiency was admitted with an acute pain crisis. Due to patient's complaint of abdominal pain, a CT abdomen was ordered which showed mild splenomegaly. Due to splenomegaly, sickle cell trait in father and beta thalassemia trait in mother, a variant disorder was suspected. Hemoglobin (Hb) electrophoresis was sent for confirmation. He was started on intravenous (IV) hydration, Dilaudid drip and folic acid. He declined hydroxyurea due to concern for azoospermia. His pain progressively worsened over the next three days, with development of severe left upper quadrant abdominal pain. Labs showed Hb and hematocrit (H/H) 5.8/18.1 and platelet count 58, decreased from a baseline H/H of 9/30 and normal platelet count. A repeat CT abdomen showed massive splenomegaly, increased from previous with extensive splenic infarcts. This was consistent with an acute splenic sequestration crisis. Hb electrophoresis revealed HbA 2%, HbA2 3.6%, HbS 76.2 and HbF 18.2%, consistent with a Sickle cell-Beta plus thalassemia syndrome. G6PD level was 0.2. His clinical status continued to worsen with persistent pain. Labs showed intravascular hemolysis with LDH 1000, haptoglobin <6, indirect hyperbilirubinemia and reticulocytosis. Multiple red cell transfusions were required. Surgical team was consulted for possible splenectomy. However there was concern for worsening hemolysis due to a surgical intervention and surgery was deferred. He was supported with conservative medical measures. Three weeks following initial presentation, after improvement in hemolytic indices, patient underwent open splenectomy.

IMPACT: We discuss the management of acute splenic sequestration crisis in a patients with sickle cell variant syndrome with concomitant G6PD deficiency, highlighting role and timing of splenectomy

DISCUSSION: Patients with sickle cell variant usually do not undergo autosplenectomy and are prone to adulthood splenic crises with a more severe course. Available data appears to favor splenectomy after the first splenic sequestration crisis; however no consensus exists on delayed versus early surgery. Our case was further confounded by the concomitant G6PD deficiency, which increased the risk of severe hemolysis and surgical risk. In HbSS patients, splenectomy does not affect morbidity or mortality. Surgeries, when performed, are based on expert consensus rather than evidence. This, however, might not be applicable to patients with sickle cell variants. Our experience suggests that cases with another concomitant hemolytic disorder might benefit from a delayed splenectomy while allowing for medical optimization with aggressive hydration, analgesia and transfusional support. It might be permissible to perform early splenectomy in solitary sickle cell variant syndromes.

SPONGIFORM CARDIOMYOPATHY: AN UNUSUAL MANIFESTATION OF SCLERODERMA Steven Song; Joselle Cook. SUNY Downstate Medical Center, Brooklyn, NY. (Control ID #2700532)

LEARNING OBJECTIVE #1: Recognize the emerging association between left ventricular non-compaction and autoimmune conditions such as scleroderma, leading to earlier diagnosis and appropriate treatment.

CASE: A 37-year-old woman presented with complaints of dyspnea on exertion and palpitations over one month. She had a 7-year history of scleroderma, on treatment with azathioprine and prednisone, and systolic heart failure, diagnosed 7 months earlier at an outside hospital. On admission, ECG demonstrated atrial flutter with a rapid ventricular rate of 154 bpm. The patient was started on a diltiazem drip for rate control. TEE established a LVEF of 30-35 and no thrombi. She underwent synchronized cardioversion with return to sinus rhythm. Post-procedure, the patient went into cardiac arrest; resuscitation was started with return of spontaneous circulation. She was intubated and started on vasopressors. Within 48 hours, vasopressors were weaned off and she was extubated. TTE revealed a LVEF of 5-10%. Cardiac catheterization demonstrated no occlusive coronary artery disease. Cardiac MRI revealed prominent LV trabeculations, with a ratio of non-compacted to compacted myocardium of 3:1, suggestive of left ventricular non-compaction (LVNC). The patient refused radiofrequency ablation and underwent cardiac transplant evaluation.

IMPACT: Cardiac involvement is an overlooked cause of morbidity and mortality in patients with systemic sclerosis. Conduction defects and myocardial fibrosis are more frequently reported cardiac manifestations. LVNC has been described in myopathic disorders and is gaining recognition in association with autoimmune conditions. This case aims to foster awareness of the association between LVNC and scleroderma. Early recognition, cardiac imaging, and management can improve outcome and patient care.

DISCUSSION: Left ventricular non-compaction (LVNC) is a rare genetic cardiomyopathy characterized by prominent abnormal trabeculations and deep recessions of the myocardium that communicate with the left ventricular cavity; attributed to an arrest of compaction during embryogenesis. Mitochondrial, musculoskeletal, and glycogen storage disorders are known associations. The prevalence is estimated between 0.01% to 0.27% of the general population. LVNC is diagnosed on echocardiogram with a ratio of non-compacted to compacted myocardium greater than 2; contrast ventriculography and MRI provide superior imaging. Cardiac involvement in scleroderma and the

presence of LVNC causing insidious heart failure may be overlooked in the assessment of these patients, possibly masked by dyspnea from pulmonary fibrosis. Early immunosuppressive therapy may halt the progression of devastating myocardial disease. If so, this population could benefit from early cardiac imaging and institution of treatment to prevent or delay onset of fulminant cardiac failure.

SPONTANEOUS BLEEDING: A DIAGNOSTIC NIGHTMARE AND RARE PRESENTATION OF LIGHT CHAIN AMYLOIDOSIS Anokhi Shah[1]; Anly Tsang[2]; Kimberly Woodward[2]; Jennifer Primeggia[2]. [1]George Washington University, Washington, DC; [2]Inova Fairfax Hospital, Falls Church, VA. (Control ID #2670924)

LEARNING OBJECTIVE #1: Recognize bleeding diathesis as a presentation of light chain amyloidosis and prevent delayed diagnosis.

CASE: A 69-year-old female with one month of weight loss and fatigue, presented to the hospital for severe flank pain. She had multiple hematomas, a retroperitoneal bleed, and acute kidney injury. She had no significant past medical history and denied trauma or abuse. A mid-abdominal mass, ascites, and elevated cancer antigen 125 raised concern for ovarian malignancy as the cause of her presentation, but the mass was later deemed to be a hematoma. She was readmitted one month later for declining renal function. Studies were significant for: serum and urine protein electrophoresis with elevated M spike, skeletal bone survey with focal lucencies, alkaline phosphatase of 1423, 91% hepatic, and mildly elevated liver transaminases. Plasma cell dyscrasia was suspected but liver and renal biopsies were deferred due to bleeding risk. Exploration of her bleeding diathesis with mixing studies suggested an inherent factor deficiency. Factor X activity was low at 22%. Bone marrow biopsy was eventually performed and confirmed amyloidosis. She was discharged with oncology follow-up but was readmitted with multi-organ failure and expired.

IMPACT: When evaluating adults with abnormal bleeding, light chain (AL) amyloidosis should be considered, as there may only be subtle clues to specific organ involvement even with advanced disease. These signs may be overlooked or confounded with other etiologies, as with this case. Even in suspected cases, the diagnosis is delayed by clinicians who refrain from biopsy of involved organs in those at risk of bleeding. Biopsy in less invasive, surrogate sites should be pursued for definitive diagnosis.

DISCUSSION: Amyloidosis is a broad label for the deposition of fibrils into extracellular tissue, and can affect single or multiple organ systems. AL amyloidosis is difficult to diagnose due to its variety of presentations, many of which can be nonspecific. Our patient's multi-organ abnormalities were attributed to other causes and were only suggestive but not definitive of amyloidosis. Concerns for bleeding delayed organ-specific biopsy. Bleeding is a known manifestation but rare (<5%) presenting sign of the disease. It can result from: vascular fragility from deposition of fibrils into vessels, platelet abnormalities, coagulopathy from hepatic dysfunction, or acquired clotting factor deficiency from fibrils binding to clotting factors. This patient had decreased factor X activity, the most common factor deficiency in AL amyloidosis, which occurs in up to 14% of patients. While surrogate site biopsy has lower sensitivity, fat pad and/or bone marrow biopsy has close to 90% sensitivity in AL amyloidosis, and should be done if tissue from involved organ cannot be obtained. Consideration of amyloid on initial presentation with abnormal bleeding and early biopsy of a surrogate site would have led to prompt diagnosis.

SPURIOUS HYPOKALEMIA AND HYPOPHOSPHATEMIA IN A CASE OF ACUTE MYELOID LEUKEMIA WITH HYPERLEUKOCYTOSIS. Tanureet Arora; Mukul Singal; Sowjanya Vuyyala. Rochester General Hospital, Rochester, NY. (Control ID #2706899)

LEARNING OBJECTIVE #1: Recognize electrolyte abnormalities associated with hyperleukocytosis in AML

LEARNING OBJECTIVE #2: Identify that directly analyzed blood sample or sample transported on ice can help prevent false electrolyte abnormalities in hyperleukocytosis.

CASE: We report a 56 year old woman admitted with nausea and vomiting followed by altered mental status. Her laboratory results were consistent with newly diagnosed AML with hyperleukocytosis. Her leukocyte count was 513,000/μL with 95% myeloid blasts and monocytic differentiation. Her serum uric acid was 24.7mg/dL, lactate dehydrogenase 4309 U/L and serum creatinine 3.2mg/dL. Interestingly, serum potassium was 3.3 mEq/L and phosphorus was 0.2 mg/dL. The repeat analysis of the blood specimen delivered on ice showed serum potassium level of 4.1 mEq/L and serum phosphorous level of 2.0mg/dL. Computed tomography of head was negative for intracranial hemorrhage. Her course was complicated by persistent blast crisis and spontaneous tumor lysis syndrome. Despite leukopheresis and hydroxyurea, her blast crisis persisted. She passed away after developing end organ failure with worsening metabolic acidosis.

IMPACT: Factitious electrolyte abnormalities in patients with AML having hyperleukocytosis should be recognized by physicians to avoid unnecessary diagnosis and treatment. Hypokalemia and Hypophosphatemia can occur due to transcellular shift of potassium and phosphorous respectively into the leukemic cells. It should not be confused with true hypokalemia which is more common in acute monocytic leukemia due to lysozymuria.

DISCUSSION: Hyperleukocytosis is defined as a total leukocyte count greater than 100,000/μL. Hyperleukocytosis is present in 10 to 20 percent of patients with newly diagnosed AML. In such patient, pseudohyperkalemia or exaggerated hyperkalemia is well known due to traumatic cell lysis during pneumatic tube transportation. On the other hand as in our case, falsely low levels potassium and phosphorous can occur in patients with white cell counts >100,000/μL which is mostly related to transcellular shift of the potassium and phosphorous respectively in leukemic cells. However, it should not be confused with true hypokalemia and hypophosphatemia which is known to be related to lysozymuria. It is the increased concentration of urinary lysozyme which is produced by primitive leukemic cells causing proximal tubular dysfunction and excretion of urinary potassium and phosphorus. As in our case factitious electrolyte abnormalities were avoided by sending the blood samples on ice or by testing them immediately after phlebotomy.

STANDING UP TO ORTHODEOXIA - THE CASE OF A POSITION-MEDIATED SHUNT Jafar Al-Mondhiry; Valerie Gausman; Verity Schaye. NYU School of Medicine, New York, NY. (Control ID #2673982)

LEARNING OBJECTIVE #1: Recognize the inciting factors of orthodeoxia with a patent foramen ovale.

CASE: An 82 year-old presented with acute onset hypoxia upon extubation after a laparoscopic gastrectomy. She had positional episodes of desaturation to

79% when sitting up, with other vitals signs normal and no dyspnea. Her oxygen saturation was 91% on 2L nasal cannula when supine. Her lungs were clear to auscultation bilaterally. PaO2 was 45 mmHg on room air and increased to only 74 mmHg with 100% O2. Initial transthoracic echocardiogram with bubble study demonstrated a patent foramen ovale (PFO) with normal right atrial and pulmonary artery pressures and function. She had a stable 4.1 cm ascending thoracic aortic aneurysm and multiple, stable hepatic cysts. She was diagnosed with Platypnea-Orthodeoxia Syndrome (POS) due to PFO and underwent successful percutaneous transfemoral closure of the defect. Upon discharge, she was saturating 97% on room air, regardless of position.

IMPACT: While PFOs can be seen in up to 29% of the general population, orthodeoxia is much more rare, with less than 200 cases described in the literature. With the elderly population increasing, the incidence of aortic aneurysms and other cardiovascular conditions distorting previously silent PFOs may increase as well, so it is important to maintain a high index of suspicion and perform the gold standard diagnostic test early: echocardiography with bubble study.

DISCUSSION: Orthodeoxia, or the arterial deoxygenation that accompanies the positional change from supine to erect, requires two conditions to coexist: an anatomical component (interatrial communication such as a patent foramen ovale [PFO] or atrial septal defect [ASD]) and a functional component that redirects shunted blood flow through the atrial septum. These functional defects can either preferentially direct blood flow through the anatomical defect or cause a transient increase in right atrial pressure, reversing the left-right gradient. The former can be caused by conditions that direct the jet of deoxygenated blood through the interatrial communication by repositioning the atrial septum, such as an ascending aortic aneurysm, intracardiac lipoma, hepatic cyst distorting the right atrium, or aortic valve replacement. Conditions which transiently increase right sided pressures include pulmonary embolism, pulmonary hypertension, pericardial effusion, pneumonectomy, chronic obstructive pulmonary disease and constrictive pericarditis. Measured right sided pressures are typically normal in POS. The pathophysiology in our patient is likely due to her thoracic aortic aneurysm, elongating in the erect position and stretching the interatrial septum and PFO. While a possibility, it is unlikely her hepatic cysts contributed to her presentation as they were small and there has only been one case report of a large liver cyst causing this presentation.

STERCORAL COLITIS - WHEN CONSTIPATION BECOMES DEADLY

Edmond Fomunung. UT Southwestern Medical School, Dallas, TX. (Control ID #2687906)

LEARNING OBJECTIVE #1: Recognize the implications of stercoral colitis

LEARNING OBJECTIVE #2: Evaluating the role of imaging in the evaluation of severe constipation

CASE: A 63-year-old woman presented with abdominal pain. She described the pain as constant, cramping in character and severe. She reported no bowel movement in 1 week. On exam, she was febrile and her abdomen was noted to be tender with a palpable mass in the left lower quadrant. Labs were significant for an elevated white blood cell count of 15.37. A CT abdomen/pelvis showed large amount of stool in the distal colon, in addition to mild diffuse wall thickening of the distal colon with pericolonic fat stranding consistent with stercoral colitis.

IMPACT: Constipation is a common complaint in the general population. There are myriad causes, including systemic, neurologic, psychiatric and structural etiologies. In the patient presenting with constipation, abdominal pain and the systemic inflammatory response syndrome, a CT scan should be strongly considered to exclude stercoral colitis, a localized ischemia of the colon caused by increased intraluminal pressure. If not treated promptly, focal ulceration can occur leading to peritonitis, sepsis and death.

DISCUSSION: Constipation is the most common digestive complaint in the general population. The evaluation of constipation should always begin with a very careful history, including review of any comorbid diseases and current medications. A physical examination is helpful in the evaluation for hemorrhoids, fissures or disorders of anal sphincter. Laboratory evaluation including a complete blood count, calcium, glucose and thyroid stimulating hormones can be helpful in the evaluation for contributory systemic disorders. Plain radiography can be used to ascertain stool burden, and for reassessment after interventional maneuvers. CT scans are not routinely recommended in the evaluation of constipation, but should be considered in patients presenting with constipation severe enough to lead to hospitalization and especially when accompanied by the systemic inflammatory response syndrome, as in our patient, as it could be indicative of more severe pathology like stercoral colitis. Stercoral colitis is an inflammatory colitis related to increased intraluminal pressure from impacted fecal material in the colon. If left untreated, it can lead to ulceration, the loss of bowel integrity from the pressure effects of insipissated feces. Because of associated diseases in the populations at risk, especially the elderly, perforation and hemorrhage are the principal complications and result in a mortality exceeding 50%. Stercoral perforation is a rare phenomenon with fewer than 90 cases reported in the literature to date, and is often a consequence of chronic constipation. Early recognition and aggressive treatment to relieve the fecal impaction is the cornerstone in the management of this potentially lethal complication of constipation.

STEROIDS AND RITONAVIR: A CASE OF DRUG-INDUCED CUSHING'S SYNDROME

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LEARNING OBJECTIVE #1: Recognize the significant drug interaction between glucocorticoid injections and ritonavir in HIV patients.

LEARNING OBJECTIVE #2: Distinguish between glucocorticoids based on their risk of interaction with ritonavir.

CASE: A 54-year-old male with a 23-year history of HIV, calcium pyrophosphate disease (CPPD) and COPD presented with 11 lbs weight gain, facial swelling, and new onset dyspnea. His HIV was well controlled on darunavir, etravirine, raltegravir and ritonavir (RTV) with a CD4 count of 448 and undetectable viral load. Prior to the presenting symptoms, he received bilateral knee injections of 120mg of intra-articular (IA) triamcinolone (TMC) for CPPD knee pain. His exam showed facial plethora, moon facies, hoarseness, lateral eyebrow loss and mild bilateral hand tremor. He had an enlarged pannus but did not display abdominal striae. His cortisol level was < 0.8 μg/dL and he was diagnosed with iatrogenic Cushing's syndrome. All corticosteroids were withheld and his symptoms resolved over the next five months. He was placed on anakinra and colchicine for his CPPD.

IMPACT: This case adds to the growing evidence in the literature that an interaction between ritonavir and IA glucocorticoid injections can cause Cushing's syndrome. The two drugs should not be used concurrently.

DISCUSSION: RTV strongly inhibits the cytochrome P450 CYP3A4 enzyme, which metabolizes glucocorticoid medications. Taken concurrently, RTV can prolong the half-life of glucocorticoid medications resulting in iatrogenic Cushing's syndrome. There are 16 other known cases reported in the literature describing ICS in HIV patients on ritonavir after receiving TMC injections. Most cases, including ours, took weeks to months for symptoms to fully resolve. However, not all glucocorticoids share the same level of risk of interacting with CYP3A4 inhibitors such as RTV. For instance, most topical glucocorticoids as well as inhaled/nasal beclomethasone have little to no interaction with ritonavir. On the other hand, inhaled/nasal fluticasone has one of the strongest interactions, making it important to avoid in this patient population. Other steroids such as budensonide, dexamethasone, prednisone and mometasome have intermediate interaction with ritonavir/CYP34A inhibitors and combination use should be monitored closely for any signs of Cushing's syndrome. This case illustrates the clinical implications of the strong interaction between RTV and glucocorticoid injections, and the importance of differentiating between glucocorticoids that have a higher interaction risk from those that do not. This is particularly important when patients on ritonavir present with comorbidities requiring glucocorticoid treatment.

STICKING TO A SUSPICION - A CASE OF HYPERVISCOSITY SYNDROME Meytal Shtayer; Michelle Tong; Patricia Dharapak. Mount Sinai Beth Israel, New York, NY. (Control ID #2706275)

LEARNING OBJECTIVE #1: Diagnose hyperviscosity syndrome

LEARNING OBJECTIVE #2: Recognize hyperviscosity as a possible presenting syndrome in patients with a monoclonal gammopathy

CASE: A 50 year old woman with hypertension and sciatica presented with a 2 month history of intermittent abdominal, leg and back pain, and a 14-lb weight loss. Her initial exam was unremarkable. Laboratory data was significant for elevated serum calcium to 11mg/dL and total protein to 11.4g/dL, a newly elevated Cr of 1.15mg/dL and new anemia with Hgb 7.2g/dL. CT imaging of the abdomen and pelvis and skeletal X rays showed multiple lytic lesions of the vertebral, iliac and femur bones. Additional lab work showed ESR >140, normal PTH, abnormal gamma globulin spikes on SPEP and UPEP, and markedly elevated free lambda M protein on UIFE and SIFE, with a serum IgM at 8950mg/dL. Bone marrow biopsy revealed almost complete replacement with lymphoid cells, plasmacytoid lymphocytes and plasma cells suggestive of a lymphoplasmacytic lymphoma, presumed Waldenstrom's macroglobulinemia (WM). Given the patient's marked serum IgM burden, somatic complaints, and new intermittent headache, hyperviscosity syndrome (HVS) was suspected. Pending the results of the serum viscosity, a fundoscopic exam was performed and showed cotton wool hemorrhages. The patient underwent urgent plasmapheresis, and her symptoms subsided. Days later, her serum viscosity finally resulted at 4.2CP (normal 1.4-1.8CP) and decreased to 1.6CP with continued plasmapheresis. Ultimately, FISH analysis of the bone marrow showed absence of the MYD88 mutation and t(11;14) with over 90% of cells positive for t(14;16), suggestive of an aggressive IgM myeloma rather than WM. Despite early initiation of chemotherapy, the patient had recurrent HVS, progressive pancytopenia and died within the year.

IMPACT: Our case highlights the potential pitfall of relying on lab values alone for diagnosing hyperviscosity syndrome. Therefore, it is important to keep a high index of suspicion in patients with a monoclonal gammopathy, especially when the disease burden is high and provide prompt treatment with plasmapheresis.

DISCUSSION: We describe a rare case of multiple myeloma with IgM paraprotein complicated by HVS. IgM myeloma comprises <1% of all multiple myeloma cases and is typically distinguished from WM by the presence of lytic bone lesions and specific cytogenetic abnormalities. Our case also highlights the importance of early recognition and treatment of HVS, which can be the presenting or complicating manifestation of several hematologic disorders. Symptoms are usually uncommon at serum viscosity levels below 4CP and can include skin and mucosal bleeding, blurred vision, headache, ataxia, and neuropathy. Severe HVS may cause confusion, stroke and coma. HVS is a medical emergency and requires immediate plasmapheresis to prevent further complications. However, serum viscosity is not uncommonly a 'send out' test and results can take days. A prompt fundoscopic exam may be life saving.

STILL HAVING FEVERS? AN UNCOMMON CAUSE OF FEVER OR UNKNOWN ORIGIN Alejandra Londono Jimenez[1]; Rishika Chugh[1]; Shereen Mahmood[1]; Lewis A. Eisen[2]. [1]Montefiore Medical Center/Albert Einstein College of Medicine, Bronx, NY; [2]Montefiore Medical Center, Bronx, NY. (Control ID #2706521)

LEARNING OBJECTIVE #1: Recognize the clinical features of Still's disease

LEARNING OBJECTIVE #2: Identify potential life-threatening complications of Still's disease

CASE: A 29 year-old woman from Guatemala presented with three days of fever and chest pain. She also noted sore throat, arthralgias, and shortness of breath. She was febrile to 105°F with tachycardia and had a pink evanescent macular rash on both her knees and the base of her neck. Splenomegaly was noted. Laboratory abnormalities included leukocytosis, anemia, ALT of 1467 and AST of 2965 U/L. There were bilateral pleural effusions on chest x-ray. After three weeks, the patient continued to have double-quotidian fevers despite treatment with multiple antibiotics. Extensive infectious work up was negative. Further testing revealed a ferritin of 66000 ng/mL. Adult Still's disease was diagnosed based on the Yamaguchi major criteria of fever, arthralgias, maculopapular rash, granulocytosis, and the minor criteria of sore throat, abnormal liver tests, and splenomegaly. Treatment with intravenous methylprednisolone 1 gram per day was started with rapid resolution of fever and improvement in transaminases and respiratory status.

IMPACT: This case brings to light an uncommon cause for fever of unknown origin and emphasizes the importance of maintaining a high index of suspicion for Still's disease in a young, otherwise healthy patient with recurrent fevers.

DISCUSSION: Adult Still's disease (ASD) is a rare multisystem autoinflammatory disorder of unknown etiology. Diagnostic delays are common due to its non-specific clinical manifestations and lack of pathognomonic tests. The Yamaguchi criteria have the highest sensitivity (93.5%) for diagnosing ASD. However, infection and malignancy should be excluded. Elevated ferritin is not part of the diagnostic criteria and can be found in a variety of pathological conditions, such as infection, chronic liver and kidney diseases, storage diseases, malignancies and iron overload. *Fautrel et al*. developed updated criteria with increased specificity (98.5%) owing to the inclusion of glycosylated ferritin, which can aid in discriminating hyperferritinemia of ASD from other diseases. This test is not readily available at all health care facilities. Left untreated, ASD can be fatal. Up to 65% of the patients will have elevated

liver enzymes ranging from mild to fulminant liver failure requiring transplantation. The macrophage activation syndrome (MAS), a form of hemophagocytic lymphohistocytosis, occurs in about 12% of ASD patients. Additional complications include pleural and pericardial effusions seen in 25% to 60% of the patients, myocarditis (3%), transient pulmonary infiltrates and acute respiratory distress syndrome. In conclusion, it is important to recognize ASD as an etiology of fever of unknown origin. Diagnosis is frequently delayed. Left untreated, ASD can be fatal due to multisystem involvement.

STILL'S A MYSTERY: A DIAGNOSIS OF EXCLUSION Allison Guttmann; Jason Ng; Ramon Jacobs. New York University School of Medicine, New York, NY. (Control ID #2679885)

LEARNING OBJECTIVE #1: Review existing and future therapeutic options for Adult Onset Still's Disease

CASE: A 45-year-old Hispanic female presented with four weeks of high-grade fever and polyarthralgias, and one week of sore throat and night sweats. She visited an urgent care center and laboratory evaluation revealed white blood cell count 4.6K/uL with 48% bands and lactate dehydrogenase 953 U/L. Serum and urine protein electrophoresis revealed no monoclonal bands, and flow cytometry immunophenotypes were normal. Five days prior to presentation, she developed a pruritic rash on her arms and chest. Her condition failed to improve leading to her hospitalization. Her physical exam revealed a non-blanching erythematous maculopapular rash on her extremities, and pain with range of motion in her knees, ankles, elbows and wrists. Laboratory testing showed hemoglobin 11.2g/dL, erythrocyte sedimentation rate 67mm/hr, c-reactive protein 217mg/L and ferritin 4972ng/mL. Respiratory viral panel, quantiferon gold assay, HIV, parvovirus B19 IgM, CMV/EBV, antinuclear antibody and rheumatoid factor were unremarkable. Peripheral blood smears were negative for Plasmodium, Babesia, Trypanosoma and Microfilaria, as were serologies for Anaplasma, Ehrlichiosis, and Lyme. Whole body computed tomography scan was unrevealing. Skin biopsy showed neutrophilic urticarial dermatosis, and bone marrow aspirate revealed hypercellularity with trilineage hematopoiesis without evidence of lymphoma or leukemia. Given these findings, she was diagnosed with Adult Onset Still's Disease and initiated on corticosteroids. Immunotherapy was considered, however she experienced symptom improvement.

IMPACT: This case allowed us to explore the broad differential diagnosis for fever of unknown origin, forcing us to consider and ultimately exclude a range of pathologies - infectious, malignant, and rheumatologic - before arriving at this diagnosis of exclusion.

DISCUSSION: Adult Onset Still's Disease (AOSD) is rare, with an estimated prevalence of 0.16-1 per 100,000 persons. Lacking a definitive diagnostic test, it is characterized by clinical and laboratory findings including fevers, arthralgias, rash and elevated ferritin. Corticosteroids have been the mainstay of treatment, with 76-95% of patients achieving symptom improvement and resolution of laboratory abnormalities. However, given complications of chronic steroid use, focus has shifted toward interventions on the cytokine cascade, including tumor necrosis factor-α (TNF- α), interleukin (IL)-1 and 6, thought to be a driver in AOSD. Research has shown that while serum TNF-α is increased in AOSD, TNF-α inhibitors offer little clinical benefit, thus shifting focus toward the interleukin response. In one study, the IL-1 receptor antagonist Anakinra resulted in defervescence and resolution of leukocytosis in 79% of subjects, compared to a 36% response with other biologics. IL-6 has also been studied as a treatment target, with Toclizumab showing improvement in arthritic symptoms.

STOP, HYPOTHENAR HAMMERTIME Minnsun Park[2]; Danielle King[1]; Stephen Morris[3]. [1]SLVHCS, New Orleans, LA; [2]Tulane University School of Medicine, New Orleans, LA; [3]Tulane University, New Orleans, LA. (Control ID #2705261)

LEARNING OBJECTIVE #1: Consider hypothenar hammer syndrome as a cause of distal ischemia

LEARNING OBJECTIVE #2: Understand the common angiographic findings in hypothenar hammer syndrome.

CASE: A 69-year-old man presented with acute onset numbness and blue and white discoloration of the fourth digit on his left hand. He has no medical history, including Raynaud's disease, autoimmune, clotting, or other vascular disorders. Family history is significant for a sister with systemic lupus erythematous. He is a carpenter by trade and left hand dominant. He takes no medications. At time of presentation, his pulse rate was 56, blood pressure 103/73, SatO2 96% on room air. Physical exam was significant for pallor of left fourth digit with blue discoloration of the distal phalanx. No tenderness, motor or sensory deficits were noted, with good strong left radial pulse. No rash noted on exam. Laboratory values were unremarkable. Arterial ultrasound of left upper extremity came back positive for Allen test. Given these findings, a left upper extremity angiography was performed, which showed distal occlusion of ulnar artery. The patient's hand re-vascularized without need for intervention. Aspirin 325mg daily was prescribed, and referral to occupational therapy was ordered.

IMPACT: Rapid recognition of distal limb ischemia allows for timely treatment to prevent catastrophic consequences. A detailed history including occupational history may delineate the cause of vascular compromise.

DISCUSSION: Ischemia of the digits of the hand can be caused by numerous factors: Raynaud's phenomenon, autoimmune processes, vasculitis, and cardio-embolic events. A less common cause of upper extremity digital ischemia is hypothenar hammer syndrome. Hypothenar hammer syndrome is an overuse syndrome that is caused by repetitive trauma to the palmar portion of the ulnar artery. This palmar portion crosses the surface of the hypothenar muscles for about 2 cm before penetrating the palmar aponeurosis, making it susceptible to injury. Patients who work with hammers, chain saws, and other power tools that generate vibrations may experience this trauma. Hypothenar hammer syndrome can also manifest in athletes who have repetitive trauma to the palm, such as in karate, baseball, golf, and tennis. If hypothenar hammer syndrome is suspected, angiography is the gold standard for establishing the diagnosis. Common findings on angiography include: 1) tortuous ulnar artery with "corkscrew" appearance, 2) presence of an aneurysm, 3) occlusion of the ulnar artery segment overlying the hook of the hamate, 4) occluded digital arteries in an ulnar artery distribution, and 5) demonstration of intraluminal emboli at sites of digital obstruction. This case is an example of how a few focused questions about a patient's history such as occupation and hand dominance can quickly lead an internist to an accurate diagnosis, even one as rare as hypothenar hammer syndrome.

STRIKING EOSINOPHILIA

Cameron Long[1]; Jaime Palomino[2]; Brandon J. Mauldin[2]. [1]Tulane Medical Center, New Orleans, LA; [2]tulane university, New Orleans, LA. (Control ID #2705483)

LEARNING OBJECTIVE #1: Create a differential for pulmonary opacities with eosinophilia

LEARNING OBJECTIVE #2: Distinguish between Hypereosinophilic syndrome and Chronic eosinophilic pneumonia

CASE: A 68-year old white man, with hypertension and psoriasis (on topical medications) presents with 1 month of fatigue, weight loss, fevers and a dry cough. Since a URI one month ago, he continues to have intermittent episodes of shortness of breath at rest that is not associated with position changes. He denies pleurisy or night sweats. He has no history of asthma, recent foreign travel or incarceration. He is afebrile, pulse of 94, blood pressure of 156/87, respiratory rate of 20, and has an oxygen saturation of 99% on room Air. He has coarse crackles bilaterally. He has no lymphadenopathy or hepatosplenomegaly. His cardiac exam is normal. Labs are notable for a WBC of 16.2 with 35% neutrophils, 7% lymphocytes, 4% monocytes, and 54% eosinophils. He has normal hemoglobin and an elevated ESR and CRP. IGE level is normal. Additional laboratory studies are negative: C-ANCA, P-ANCA, rheumatoid factor, Anti-DS DNA, smith antibody, HIV, Aspergillus antibody, and Beta-(1,3)-D-Glucan. Diffuse nodules and patchy opacities are seen bilaterally on high resolution CT. Bronchoalvelolar lavage reveals no eosinophils, no malignancy and no fungi. A transbronchial biopsy shows interstitial and alveolar eosinophilic infiltration, patchy eosinophilic involvement in blood vessels, and patchy fibrosis. He was started on oral steroids and his symptoms rapidly resolve within 2 weeks.

IMPACT: Clinical history and bronchoalveolar lavage with transbronchial biopsy are essential in sorting out the correct diagnosis in patients with peripheral eosinophilia and pulmonary infiltrates.

DISCUSSION: A unique differential of diseases is associated with peripheral eosinophilia and pulmonary infiltrates. The list includes parasitic and fungal infections, drug reactions, hyper-eosinophilic syndrome (HES), vasculitides, and acute and chronic eosinophilic pneumonias (CEP). CEP requires four weeks of symptoms, pulmonary infiltrates, and peripheral eosinophilia. It is thought to due to TH2 cell and chemoattractant mediated aggregation of eosinophils in the lung, which leads to eosinophil degranulation and tissue injury. A BAL with >40% of cells being eosinophils is diagnostic for CEP. Without eosinophils in the BAL, alternative diseases were explored to evaluate the massive peripheral eosinophilia. HES is a hyper production of eosinophils in the blood (>1500 eosinophils/uL) with end organ involvement. Secondary causes such as parasitic and fungal infection, asthma, neoplasm, Addison's, and viral infections must be excluded. With no blasts on peripheral smear, no anemia or no thrombocytopenia, this patient fits lymphocyte-derived eosinophilia HES. The mainstay of treatment for the majority of non-infectious eosinophilic lung disease including non-myeloid HES and CEP is corticosteroids for symptom improvement.

STROKE IN THE PRESENCE OF A CLOTTING FACTOR DEFICIENCY Joshua M. Rodriguez; Mary Sehl. Ronald Reagan University of California Los Angeles Medical Center, Los Angeles, CA. (Control ID #2704470)

LEARNING OBJECTIVE #1: Recognize the proposed role of factor XII (FXII) in the blood coagulation cascade and its implications in drug development

CASE: A 64 year old man with no past medical history presented with transient temporal vision loss in his right eye. The patient underwent a brain MRI which revealed a small infarct in the left occipital region with a diffusion-perfusion mismatch. On labs, the patient was noted to have an aPTT > 180 s despite not being on any anticoagulation. His surgical history was notable for a hernia repair with no bleeding complications. He had no family history of bleeding diathesis but had an older brother with a FXII deficiency diagnosed in the setting of a cardiac thrombus, and an older sister diagnosed with a recent TIA. Further cardiac work-up including EKG and transcranial doppler were unremarkable. TTE showed no evidence of left atrial enlargement or thrombus. Hematologic work-up revealed a FXII activity of <6%, with a negative anti-phospholipid antibody panel, and an aPTT mixing study showing no detection of an immediate or late acting inhibitor. He was started on daily aspirin and atorvastatin upon discharge with outpatient hematology follow-up.

IMPACT: Upon review of this case, there are some considerations which merit further investigation. First, is thrombosis clinically relevant in FXII deficient patients? Secondly, what is the rational treatment choice for anticoagulation in this patient population? Should certain anticoagulants be avoided? Lastly, given the recent interests in targeting the FXII pathway, a discussion in managing thrombotic risks in this population would be timely and relevant for patients who may be eventually exposed.

DISCUSSION: FXII is a zymogen that is involved in the plasma contact system and acts as a procoagulant, working through the kallikrein-kinin system. FXII deficiency, an autosomal recessive condition, is characterized by a marked prolongation in the aPTT. FXII deficiency does not increase bleeding risk, but is rather linked to possible thrombotic risks in both the arterial and venous systems. In a recent report describing thrombotic events in FXII deficient patients, cases of thrombosis involved both the arterial and venous systems equally, with MI and DVT being the most prevalent respectively. The proposed mechanism for this effect is thought to be related to reduced fibrinolytic activity. Despite increasing evidence of this association, the role of FXII in coagulation remains controversial as controlled clinical studies have shown the opposite. Additionally, epidemiological studies showed a positive association between FXII/FXIIa levels with arterial thrombosis and inflammation. As a result, several classes of FXIIa inhibitors have been developed with most of these inhibitors displaying both anti-inflammatory and thrombo-protective effects. Importantly, treatment with these agents did not impair hemostatic function or increase the risk of bleeding.

STRONGYLOIDER THAN THE AVERAGE SUSPICION: AN INTRIGUING CASE OF PULMONARY STRONGYLOIDIASIS Asad H. Khan[2]; Eesha Khan[1]; Puncho Gurung[1]. [1]Baystate Medical Center, Springfield, MA; [2]Baystate Medical Centre, Broad Brook, CT. (Control ID #2707563)

LEARNING OBJECTIVE #1: Recognize that pulmonary Strongyloidiasis can occur in young, healthy individuals

LEARNING OBJECTIVE #2: Highlight the importance of travel history in helping to make an earlier diagnosis of pulmonary Strongyloidiasis

CASE: A 45-year-old healthy male presented with complaints of a dry cough and acid reflux symptoms and was treated with omeprazole with transient relief. However, a few months later he had a persistent cough and intermittent wheezing and was placed on an albuterol inhaler. The patient had a history of chewing tobacco and occasional cigarette smoking and worked in maintenance at a hospital. Physical exam at that time was consistent with expiratory wheezes. Initial testing revealed a normal chest x-ray (CXR) and pulmonary function tests.

He underwent a barium swallow that showed some esophageal dysmotility and an upper endoscopy that revealed esophagitis. The patient's cough persisted and became productive. Allergy testing done was grossly negative. He was placed on a course of oral prednisone that helped his symptoms transiently. The cough, however, continued and a repeat CXR showed complete left lower lobe collapse and a CT chest revealed a left hilar mass with extension into the left lower lobe of the bronchial tree. Bronchoscopy revealed the entire left lower bronchial tree to be filled with a lesion which was not originating from the bronchial wall and was removed piecemeal. Followup bronchoscopy a month later showed two more similar endobronchial lesions which revealed necrotic debris with eosinophils and Charcot Leiden crystals on analysis. On further questioning, the patient revealed that he was in Mississippi a few weeks prior to developing symptoms. Subsequent testing done was positive for serum IgE, Strongyloides antibody and a marked eosinophilia. The patient was placed on oral Ivermectin and has been stable to date.

IMPACT: This case underscores how systematic and timely investigation can lead to an eventual diagnosis while highlighting the importance of a thorough basic history. It also supports the few case reports in the literature where symptomatic pulmonary Strongyloidiasis has occurred in healthy, immunocompetent individuals.

DISCUSSION: Strongyloides stercoralis is an intestinal parasitic nematode commonly found in certain parts of southeastern United States. Pulmonary symptoms from Strongyloidiasis can be mild, consisting only of cough and bronchospasm, and the importance of a through travel history is crucial. The potential for severe pulmonary disease or 'hyperinfection' syndrome is great in the immunocompromised and has a very high mortality rate, with rare occurrence in immunocompetent hosts. Infection with strongyloides is lifelong and reactivation with suppression of cell-mediated immunity can occur decades after initial exposure and hence systemic corticosteroids should be avoided in such patients where it is not absolutely needed.

SUBACUTE BACTERIAL ENDOCARDITIS IMITATING VASCULITIS: LESSONS FROM AN ATYPICAL CASE

Alexander Teng; Amar Kohli. UPMC, Pittsburgh, PA. (Control ID #2706852)

LEARNING OBJECTIVE #1: Recognize Subacute Bacterial Endocarditis (SBE) as a potential rheumatologic disease mimicker.

LEARNING OBJECTIVE #2: Identify how patient handoffs may cause delay in care and management.

CASE: A 53 year old male with a history of HTN presents with subjective fevers and general malaise. Three months prior, he presented to an outside hospital with a petechial rash and general malaise. Expansive work up found pancytopenia, AKI, and hypocomplementemia but was otherwise negative. A renal biopsy was non-diagnostic: early type I MPGN vs. lupus. He was diagnosed with presumed seronegative SLE and started on prednisone and mycophenolate with improvement in renal function. Two weeks prior to arrival, he reported recrudescence of symptoms and again presented to the outside hospital. Ultimately, he was transferred for a "lupus flare". On arrival, he was afebrile and hemodynamically stable. Physical exam was notable for a transient right lower sternal border 2/6 diastolic blowing murmur (not documented before), and purpura over both legs. Initial labs revealed: AKI (Cr 2.0), pancytopenia, ESR 83, C3 16, C4 < 10, PR3 2.8, and negative ANA. He was started on stress-dose steroids and four sets of blood cultures were obtained (none prior). By hospital day 5, blood cultures were positive in 4/4 bottles (2 sets), with subsequent Streptococcus Sanguinis speciation. A TEE demonstrated bicuspid aortic valve with vegetations, leaflet perforations, and severe regurgitation. A final diagnosis of subacute endocarditis with primarily immunologic manifestations (immune complex GN, purpura, etc.) was made. The patient was treated with ceftriaxone for 6 weeks followed by valve replacement.

IMPACT: With rheumatologic features but an infectious etiology, this case highlights how bias can delay diagnosis, particularly in atypical presentations. It exhibits the need to reevaluate suppositions when initial management fails.

DISCUSSION: This case offers two teaching points. First, it shows how chronic infections can mimic rheumatologic conditions. As per Mahr et al. (2014), 1 in 5 patients with SBE are ANCA positive. It is thought that infection can cause polyclonal B-cell activation and autoantibodies production. This vignette adds to case series of SBE mimicking vasculitis, and the need to exclude infection. Second, this case represents a "perfect storm" in which cognitive biases can impair the physician from pivoting to the right diagnosis. With a handoff framing the case as a "lupus flare", there may have been an over-reliance on prior workup by specialists (expert bias), focus on predominantly rheumatologic exam signs (anchoring bias), and avoidance of tests for alternate hypothesis (congruence bias) until objective results necessitated study (e.g. TEE delay until blood culture result). The confluence of these and other factors resulted in delay of care and undue harm from almost 3 months of immunosuppressive therapy for an infectious condition.

SUBACUTE INFLAMMATORY DEMYELINATING POLYNEUROPATHY MIMICKING TOXIC NEUROPATHY

Hadi Zein; Disha Shah; Jing Guo. New York Presbyterian Queens, Flushing, NY. (Control ID #2706606)

LEARNING OBJECTIVE #1: Recognize subacute inflammatory peripheral neuropathy and distinguish it from other polyneuropathies

CASE: A 68-year-old male presented with progressive distal weakness and sensory loss. Medical history was significant for esophageal cancer for which he underwent chemotherapy with paclitaxel and carboplatin. The last dose was 2 months prior to the onset of symptoms. His distal weakness progressed over 4 weeks. He was unable to feed himself, shave or comb his hair because of the weak grip he was exhibiting. Subsequently, he also developed an unsteady gait. Physical exam indicated symmetrical distal bilateral upper and lower extremity weakness with sparring of the proximal muscles. He was areflexic and showed decreased muscle tone and gait ataxia. All of these findings were consistent with a type of peripheral neuropathy. A lumbar puncture was performed and the cerebrospinal fluid (CSF) studies were unremarkable. Magnetic resonance imaging (MRI) of the brain showed mild white matter changes. Multiple autoantibodies were tested to rule out paraneoplastic syndromes, all of which were negative. Nerve conduction studies on the left arm and left leg showed severe sensorimotor polyneuropathy, with diffuse severely demyelinating features in all nerve segments. A needle electromyogram showed active and chronic denervation in the distal arm and leg segments. Finally, a left sural nerve biopsy was done and showed mild and patchy axonal loss with no evidence of vasculitis or amyloidosis. Given the onset and progression of symptoms, the diagnosis of subacute inflammatory demyelinating peripheral neuropathy (SIDP) was made. The patient was initiated on intravenous immunoglobulins (IVIG). Two weeks after the initial treatment, his gait and his sensation in the extremities improved

IMPACT: SIDP may simulate toxic neuropathy in cancer patients. Electrodiagnostic studies are required in patients with a subacute onset of sensorimotor symptoms to exclude treatable neuropathies. Severe axonal involvement, mixed with demyelinating features calls for additional workup including a nerve biopsy.

DISCUSSION: There are no strict diagnostic criteria for SIDP. However, establishing the correct diagnosis is imperative as it can guide treatment and subsequently, help lead to resolution of symptoms. Given the proximity of the chemotherapy and the onset of symptoms, our patient's presentation can mimic chemotherapy-induced peripheral neuropathy (CIPN). Paclitaxel and platinum-based chemotherapy have been widely reported to be associated with CIPN. However, our patient did not exhibit symptoms during the treatment and showed delayed onset of symptoms. He also experienced extensive motor involvement, which CIPN usually spares. Through our case, we were able to establish the diagnosis of SIDP by ruling out other causes of polyneuropathy, which provided significant clinical improvement for our patient

SUBSTANCE ABUSE AND IMPLICIT BIAS - INCUBATING FATAL INFECTIONS Sisir Akkineni; Hardik Patel; Ravi George. University of Miami, Ft Lauderdale, FL. (Control ID #2702879)

LEARNING OBJECTIVE #1: Recognize implicit bias as an entity in the practice of medicine

LEARNING OBJECTIVE #2: Identifying a complex presentation of substance abuse

CASE: A 32-year-old man with known history of IV drug abuse presented to the ER delirious, complaining of "pain all over" and seeking "dilaudid". He endorsed chills and "pain starting at the head and going down legs like lightning". He appeared agitated and anxious. Physical Exam was significant for tachycardia. Labs showed 11,400 WBCs, urine toxicology positive for opioids and cocaine. He was admitted to the observation unit with presumed diagnosis of substance abuse and opioid withdrawal. Pain management was consulted to assist with managing opioid withdrawal with buprenorphine and naloxone. On hospital day 2, he was febrile. Blood cultures obtained at the time were positive for MRSA. Infective endocarditis was suspected. Subsequently, trans-esophageal echo confirmed tricuspid vegetation. Throughout hospitalization, he continued to complain of "pain all over". On hospital day 3, he reported bilateral lower extremity weakness. An urgent whole spine MRI showed C5-C6 discitis with osteomyelitis and epidural abscess associated with cord compression. This was surgically drained and anterior cervical instrumentation was placed for stabilization. Hospital course was also complicated by sudden onset lower GI bleed. Colonoscopy revealed an arterial bleed in a segment of ischemic colitis. This was attributed to septic emboli and managed with endoscopic clipping. Our patient completed a prolonged course of IV antibiotics and eventually made a full recovery.

IMPACT: This case allowed us to identify a situation where implicit bias could hinder health care delivery to a vulnerable population. Literature review did not yield sufficient research directed towards physician implicit bias towards IV drug abusers and its impact on outcomes when diagnosed with fatal infections.

DISCUSSION: Explicit bias is a reflection of a physician's attitudes toward management of disease recognized on a conscious level. On the contrary, implicit bias refers to the subtle cognitive processing and subconscious stereotypes which affect understanding, actions and decisions on patient management. It is important to understand situations under which implicit bias influences patient management which in turn affects outcomes. An IV drug user complaining of vague pain and seeking opioids by name in the absence of objective clinical findings can trigger implicit bias in physicians. As in the case of this patient, our implicit bias was that he was presenting himself to the ER for secondary gain - seeking more opioids. Effort should be made to obtain unbiased review of systems and thorough physical examination with a low threshold for further evaluation. Infectious complications from intravenous drug use vary from local soft tissue infections to bacteremia, including septic embolization to distant sites. These complications are fatal if they are not recognized early and treated appropriately.

SUCCESSFUL TREATMENT OF SEVERE IMMUNE THROMBOCYTOPENIA AS AN EXTRAHEPATIC MANIFESTATION OF HEPATITIS C Bryan Doherty[1]; Akwaugo Uzoegwu[1]; Dipali R. Sahoo[1]; Andrew Mangano[1]; Emily Touloukian[2]; Vinod E. Nambudiri[1]. [1]Grand Strand Medical Center, Myrtle Beach, SC; [2]Coastal Cancer, Myrtle Beach, SC. (Control ID #2702895)

LEARNING OBJECTIVE #1: Describe a case of secondary immune thrombocytopenia as an extrahepatic manifestation of HCV

LEARNING OBJECTIVE #2: Review the treatment of secondary immune thrombocytopenia

CASE: A 60-year-old female presented to the emergency department endorsing progressive melena, multiple episodes of hemoptysis, epistaxis, and multiple ecchymoses. The diffuse ecchymoses began 2 months prior to admission. The melena had progressed over one week, with hemoptysis starting the morning of presentation along with left-sided abdominal colicky pain. Notable history included longstanding untreated hepatitis C virus (HCV). On presentation, vital signs were within normal limits. Physical exam was notable for cervical lymphadenopathy, a 1 cm hematoma on the right lateral aspect of the tongue, right and left lower quadrant abdominal tenderness and guarding, diffuse ecchymoses, and a petechial rash. Lab values were significant for normal transaminases and coagulation values, normal albumin, anemia, and profound thrombocytopenia (platelets 1,000/uL). HCV viral load was 899,164. Abdominal CT showed no evidence of splenomegaly or hepatosteatosis. The patient was started on methylprednisolone 125 mg IV every 8 hours. After her platelets failed to respond to steroid treatment, intravenous immunoglobulin (IVIG) was initiated. Given persistent thrombocytopenia on IVIG therapy, she was started on rituximab, after which her platelets showed improvement and stabilization. She also received 1 dose of romiplostim. The patient was discharged on 60 mg of prednisone tapered over six-months and was initiated on treatment for hepatitis C. She had no further episodes of bleeding and resolution of thrombocytopenia.

IMPACT: The association between HCV causing immune thrombocytopenia (ITP) as an extrahepatic manifestation has been well documented in patients with evidence of chronic liver disease, but case reports of ITP caused by chronic HCV infection without liver disease are limited. This case adds to the literature an example of ITP as an extrahepatic manifestation of HCV in a patient with normal liver function tests.

DISCUSSION: HCV has been proposed to trigger secondary ITP resulting from the body's production of antibodies against viral antigens that cross-react with normal platelet antigens through a form of molecular mimicry. Thrombocytopenia is a common presenting finding in patients with undiagnosed HCV infection,

though the extent is typically not as profound as frank ITP. The initiation of treatment in patients with ITP is guided by platelet count. Patients with platelet counts below 30,000 or bleeding symptoms should receive either IVIG or glucocorticoids. Patients with platelet counts below 20,000 and those refractory to first line therapy should receive rituximab or be considered for splenectomy. In many cases of secondary ITP, treatment of the underlying condition may improve the platelet count.

SUGGESTIONS FOR IMPROVING CARE OF A PATIENT WHO HAS LEFT AGAINST MEDICAL ADVICE MORE THAN 20 TIMES IN THE PAST YEAR. Dylan Sherry. Beth Israel Deaconess Medical Center, Brookline, MA. (Control ID #2706059)

LEARNING OBJECTIVE #1: When working with patients who frequently leave AMA, communication between providers beyond electronic communication is necessary.

LEARNING OBJECTIVE #2: Contingency plans and standard approaches are important to ensure a consistent message across providers.

CASE: A 72 year old man with cirrhosis due to alcohol use complicated by ascites, hepatic encephalopathy and variceal bleed also with bladder/prostate cancer s/p cystectomy and multiple UTIs with multiple previous instances of leaving AMA presents with alcohol intoxication and hematochezia. He was concerned about his bleeding, yet had a stable hemoglobin/hematocrit on admission with stable vital signs. On the day of admission, he informed his treatment team that he would be leaving against medical advice. He was able to state that he risked worsening bleeding, infection or death in this setting and was deemed to have capacity to leave. In the past 6 months, the patient has left AMA either from the ED or medical floor approximately 20 times. Admissions are frequently for bleeding or infection. Once he has felt well enough, he will often decide to leave against medical advice. In almost all of these instances, he had capacity to make this decision. His reasons for leaving were variable– needing to care for his pet, wanting to see his family, or needing to go to work. There was little communication documented between the multitude of providers who have cared for this patient.

IMPACT: This case has encouraged me to consider compensity to leave AMA as a medical problem in and of itself. The etiology should be understood and communication between providers can provide context and prognosis. Finally, attempts should be made to prevent the morbidity and mortality associated with leaving AMA.

DISCUSSION: Understanding why a patient leaves AMA is paramount to attempting to stem the morbidity and mortality of the patient as well as the increased resource utilization of the hospital. Lack of a primary care physician, substance abuse, male sex, and history of leaving against medical advice have been associated with leaving against medical advice. In an ideal world, one would understand his reason for leaving against medical advice, connect him quickly to a primary care physician, and communicate to all providers a plan for his care going forward. It is not clearly documented in many of the discharge summaries why the patient wanted to leave AMA even though his capacity to do so was clearly indicated. In this case, an e-mail, phone, or face to face conversation between providers who have cared for him may have helped to put pieces together which might not be clear in documentation. Finally, a plan for when it is appropriate for him to be admitted and contingencies for leaving against medical advice should be made clear to all healthcare providers caring for this patient. Helping to provide better care to patients who routinely leave AMA is a difficult iterative process which requires increased communication and contingency planning.

SUPERIOR OPHTHALMIC VEIN THROMBOSIS: A RARE CASE OF OPHTHALMIC EMERGENCY LU CHEN; Garen Polatoglu; PARAG MEHTA; GENNADIY GRUTMAN. NEW YORK PRESBYTERIAN - BROOKLYN METHODIST HOSPITAL, BROOKLYN, NY. (Control ID #2706373)

LEARNING OBJECTIVE #1: Diagnosis and Initial Management of Superior Ophthalmic Vein Thrombosis

CASE: A 44 year-old man with uncontrolled Diabetes Mellitus Type II presented overnight to the Emergency Department for worsening right facial swelling and orbital pain that started ten days prior to arrival. He developed myalgias, arthralgias, fever, and malaise. He reported pain with ocular motion, but denied changes in visual acuity or color perception. Of note, the patient was employed as a construction worker and admitted to frequent wiping of his face with gloved hands. He reported non-compliance with diabetic medications. On ocular exam, chemosis, ptosis and conjunctival injection were noted in the right eye. Extraocular movements were limited by pain and swelling. Visual acuity and pupillary light reflex were bilaterally intact. Periorbital swelling, tenderness and erythema extended to the right maxilla. Phlebitis was appreciable along bilateral frontal sinuses and extended inferiorly to the nasal ridge. Laboratory studies were remarkable for leukocytosis of 14,600 per microliter with neutrophil predominance and glycohemoglobin 11.1%. Initial ophthalmology evaluation suggested Herpes Zoster induced orbital cellulitis. Patient was started on acyclovir and admitted to the medical ward. Maxillofacial Computed Tomography (CT) without intravenous (IV) contrast demonstrated inconclusive findings. He was aggressively managed for sepsis as his cellulitis appeared to worsen. Maxillofacial CT was repeated with IV contrast and demonstrated proptosis of the right eye, thrombosis of the right superior ophthalmic vein and possible cavernous sinus thrombosis. Anticoagulation with unfractionated heparin was initiated and patient was transferred to the Intensive Care Unit in a tertiary care center.

IMPACT: Superior Ophthalmic Vein Thrombosis (SOVT) is a rare condition faced by internists. It is important to suspect the condition in the setting of orbital cellulitis to reduce delay in care and prevent fatal complications. Internists should be vigilant in seeking early imaging studies and ophthalmology consultation for patients with orbital involvement or visual impairment.

DISCUSSION: SOVT is a rare but serious clinical condition that requires immediate intervention. Etiologies most commonly include Infection, followed by trauma, neoplasm, inflammation and hypercoagulable states. Orbital findings with or without optical nerve compression are commonly seen in patients with SOVT. Early recognition of SOVT is crucial for preventing complications such as cavernous sinus thrombosis and permanent blindness. Immediate imaging with CT with IV contrast, emergent ophthalmology consultation, early antibiotic treatment if indicated, and anticoagulation are important steps to optimize patient outcome.

SWEATING OVER A SECOND PARANEOPLASTIC SYNDROME Elise Coulson[1]; Nicholas J. Kiefer[2]; Jason Moran[1]. [1]Beth Israel Deaconess Medical Center, Boston, MA; [2]Beth Isreal Deaconess Medical Center, Brookline, MA. (Control ID #2701449)

LEARNING OBJECTIVE #1: Diagnose the paraneoplastic disease known as Morvan's Syndrome

LEARNING OBJECTIVE #2: Recognize neuropsychiatric symptoms as a potential manifestation of a paraneoplastic syndrome

CASE: A 68 year-old male with a past medical history notable for autoimmune autonomic ganglionopathy (AAG) and thymoma presented with hyperhidrosis. His initial symptoms of AAG were anhidrosis, miosis, and urinary retention. At that time, he was treated successfully with steroids and mycophenolate, but three years later he presented for fatigue and weight loss with work-up revealing a malignant thymoma. He was treated initially with chemotherapy, radiation, and subsequently resection. Five weeks after resection, he re-presented with a chief complaint of new hyperhidrosis, entirely distinct from his prior anhidrosis. He was also found to have severe insomnia, profound anxiety, weight loss, and muscle fasciculations on exam. An EMG was performed which showed diffuse myokymia (fine fascicular contractions), and a serum paraneoplastic panel showed positive antibodies to the Neuronal V-G K+ Channel confirming Morvan's Syndrome (MoS). PET/CT imaging revealed no evidence of recurrent thymoma. After treatment with plasmapheresis and high-dose steroids, his mental status, sleep, muscle fasciculations, and caloric intake all improved, though his hyperhidrosis persisted.

IMPACT: This case illustrates that patients can develop new paraneoplastic syndromes despite being in remission from their cancer. Additionally, multiple distinct paraneoplastic syndromes can develop in a single patient. Lastly, neuropsychiatric symptoms including anxiety and insomnia can rarely be manifestations of a paraneoplastic syndrome.

DISCUSSION: MoS is a rare disorder which is often paraneoplastic in nature and characterized by peripheral nerve hyper-excitability, limbic encephalopathy (LE), and autonomic dysfunction. Autoantibodies to two target antigens associated with the Neuronal V-G K+ Channel, LGI1 and Caspr2, have been implicated in the pathophysiology of both the peripheral and central manifestations. The LE is often manifested as sleep disturbances, cognitive dysfunction, and mood disturbances, while the autonomic dysfunction can manifest as hyperhidrosis and orthostasis. Prior case studies have reported multiple paraneoplastic syndromes in one individual, but they have been in the setting of recurrent disease. To our knowledge there is only one other case in which MoS occurred after resection of thymoma. Typically, discovery of a paraneoplastic syndrome alerts physicians to the presence of the tumor, and treatment would be expected to resolve the syndrome. This case demonstrates that cancer treatment and remission do not always track with paraneoplastic disease. Physicians should consider paraneoplastic syndromes in patients with cancer who present with new neuropsychiatric symptoms. Surveillance is important for recurrence of tumor, but providers should also be vigilant for paraneoplastic syndromes regardless of treatment or remission status.

SYNCHRONOUS PRIMARY GASTRIC DIFFUSE LARGE B CELL LYMPHOMA AND ADENOCARCINOMA: CASE REPORT Punita Grover; Rakesh Gaur; Ayman Qasrawi. UMKC, Kansas City, MO. (Control ID #2706354)

LEARNING OBJECTIVE #1: Recognize the occurrence of concomitant double primary gastric malignancies and the associated treatment challenges.

CASE: 75-year-old Caucasian male with a history of hypertension, hyperlipidemia and type 2 diabetes presented to the emergency department with ST elevation myocardial infarction. Emergent coronary angiography revealed severe three vessel disease. Echocardiogram showed reduced left ventricular systolic function, ejection fraction (EF) of 38%. Routine laboratory investigations revealed acute normocytic anemia, concerning for an occult gastrointestinal bleed in the setting of dual antiplatelet therapy. Esophago-gastro-duodenoscopy (EGD) showed two separate 3-cm ulcers; one in the stomach body and antrum and the other in the cardia and fundus. Histopathology of the gastric body ulcer showed an invasive moderately differentiated adenocarcinoma, negative for H. pylori and HER2/neu. Histopathology of the cardia/fundus ulcer revealed a dense atypical large lymphoid infiltrate, immunophenotypic profile consistent with diffuse large B-cell lymphoma (DLBCL), activated B-cell type. Positron-emission tomography revealed foci of increased floro-deoxyglucose uptake in the gastric cardia and posterior body of the stomach. Bone marrow biopsy showed no infiltrating lymphoma cells and computed tomography of abdomen was negative for metastatic disease. The diagnosis of early stage gastric adenocarcinoma and diffuse large B cell lymphoma, stage IE (Ann Arbor Staging System) was thus confirmed. Following a multidisciplinary review, it was decided to proceed with revascularization prior to initiating treatment for the gastric malignancies. He was at a high risk for consideration of a partial or total gastrectomy owing to his recent cardiac co-morbidities. It was elected to start chemo-immunotherapy, followed by an EGD after three cycles to determine response, and subsequent consolidative radiation. He underwent successful CABG, with improvement in cardiomyopathy. He has received three cycles of RCHOP (rituximab, cyclophosphamide, doxorubicin, vincristine and prednisone) till date.

IMPACT: Treatment of synchronous malignancies has traditionally been according to the stage of adenocarcinoma, with surgical resection being first line therapy followed by chemotherapy.[4] Our approach was different in being primarily non-surgical and based on the presence of lymphoma. Additionally, our case was complicated by coronary artery disease and ischemic cardiomyopathy. Revascularization prior to chemotherapy allowed the cardiac function to recover to allow the use of anthracyclines.

DISCUSSION: Coexistence of primary gastric DLBCL and adenocarcinoma is a rare entity. However, it is important to recognize the presence of concurrent primary malignancies, especially given the vastly different treatment strategies. Pre-operative imaging and biopsy of all suspicious lesions should be carried out. Clear guidelines for management of have not yet been defined and treatment must be individualized.

SYSTEMIC CANDIDA PARAPSILOSIS PRESENTING AS CRITICAL LIMB ISCHEMIA Christina Kitsos; William C. Lorson; Simi Vincent. University of Tennessee Medical Center, Knoxville, TN. (Control ID #2704948)

LEARNING OBJECTIVE #1: Diagnosing *Candida Parapsilosis* endocarditis

LEARNING OBJECTIVE #2: Recognizing the risk factors associated with *C. parapsilosis* fungemia

CASE: A 36 year-old male with a history of IV drug abuse was transferred to a tertiary care center from an outside hospital for an emergent embolectomy due to critical limb ischemia. At the outside facility he reported sudden onset of pain, numbness, and paralysis. He endorsed recent intermittent fevers, chills, and tea colored urine. Ultrasound confirmed an acute embolic occlusion of the right superficial femoral artery. Cultures from the embolectomy grew *Candida parapsilosis* (*C. parapsilosis*). IV micafungin was started. A transesophageal echocardiogram was completed which demonstrated a "bicuspid aortic

valve… A large vegetation involving the aortic valve with severe aortic insufficiency." With these findings, he underwent an aortic valve replacement. Workup for his acute renal failure revealed an infectious embolic etiology, which was confirmed by biopsy. After stabilization, he was discharged with a total of 6 weeks of IV micafungin therapy. Unlike most *C. parapsilosis* infections, this patient had no prior history of hospitalizations, parenteral nutrition, or valvular surgery.

IMPACT: Tennessee has some of the highest reported incidence of illicit drug abuse. This case illustrates how with certain behaviors, IV drug abuse, fungemia is becoming more prevalent. Therefore, in order to save lives, it is imperative to recognize that fungal endocarditis can present with embolic complications.

DISCUSSION: The incidence of fungal endocarditis only accounts for 1.3-6% of all cases of endocarditis. Candida is found to be the cause in 53-68% of all fungal endocarditis cases, but only about 10-15% of those are caused by *C. Parapsilosis*. Candidemia itself carries a high mortality rate and reviews show that candida endocarditis can carry a mortality rate up to 72%. Risk factors include an immunosuppressed state, congenital heart defects, prosthetic heart valves, and IV drug abuse. Twenty five percent of infective endocarditis cases occur on a bicuspid aortic valves, and 10%-30% of bicuspid aortic valves develop endocarditis. Ventral septal defects are thought to cause up to a 20-fold increased risk of endocarditis compared to the general population. IV drug abuse also increases the risk of *C. parapsilosis* infection, with 20% of those infected with *C. parapsilosis* being users of IV drugs. Surgery and valve replacement is the first line treatment for candida endocarditis. For medical treatment, amphotericin-B based preparations, specifically lipid-based preparations, are thought to be most effective. Newer antifungals such as Echinocandins (micafungin) can also be used in place of amphotericin. *C. Parasilosis* is a rare form of endocarditis. If not treated quickly, death is inevitable.

TAFRO: A NEW SYNDROME Rie Ozawa[2]; Akira Ryu[2]; Sandra Y. Moody[1]; Mitsuya Katayama[2]. [1]Kameda Medica Center & UCSF/SFVAMC, Kamogawa City, Japan; [2]Kameda Medical Center, Kamogawa, Japan. (Control ID #2702230)

LEARNING OBJECTIVE #1: Diagnose TAFRO syndrome when the patient has thrombocytopenia, anemia, fibrosis of the bone marrow, renal failure and organomegaly

CASE: A 52-year-old healthy man presented to our hospital with dyspnea and fatigue. He was well until 3 weeks prior, when he noticed mild fatigue and bilateral lower leg edema. He reported a weight gain of 7–10 kg over one month. Workup at a nearby clinic revealed anasarca, acute renal failure and proteinuria. His protein-creatinine ratio was 3.2. He was transferred to our hospital for a kidney biopsy. On physical examination, a 2 × 2 cm left anterior cervical lymph node was noted. He had a distended, but nontender abdomen. There was significant pitting edema of both legs. Laboratory testing revealed a BUN of 82 mg/dL, creatinine 3.2 mg/dL, hemoglobin 9.8 g/dL, platelet count of 66,000, and CRP 18 mg/dL. He underwent computed tomography (CT), which showed multiple small cervical lymph nodes, bilateral pleural effusions, splenomegaly, and ascites. Hemodialysis for uremia was started; he eventually became anuric and dialysis-dependent. Thrombocytopenia and coagulopathy precluded a kidney biopsy; bone marrow biopsy showed a hypocellular marrow. Positron emission tomography showed high uptake in multiple neck lymph nodes bilaterally. Biopsy of the cervical lymph nodes revealed reactive lymphoid hyperplasia. On hospital day 15, his mental status worsened while on dialysis. Large bilateral occipital lobe infarcts were found on brain MRI. He was transferred to the intensive care unit and intubated for airway protection. Pulse steroids and tocilizumab were started for a presumed diagnosis of TAFRO syndrome. On day 17, he had an episode of apnea and was found to be without brain stem reflexes. Head CT showed significant brain edema, and comfort care was initiated. The patient died on day 20, and an autopsy was performed.

IMPACT: When a patient is seen with significant inflammation, thrombocytopenia, and renal failure with minimal signs of infection, malignancy or collagen vascular disease, then TAFRO syndrome should be considered.

DISCUSSION: TAFRO syndrome is a subtype of Castleman's disease; new diagnostic criteria were published in 2016. Over the course of this patient's illness, it became clear that he suffered from this newly established disease. Given the presence of significant inflammation, this syndrome is very difficult to diagnose early, as it is a diagnosis of exclusion, after infections, malignancies and collagen vascular diseases are ruled out. Unfortunately, the patient died; autopsy confirmed the diagnosis. We will share our experience of this rare and newly established disease and the findings of the autopsy.

TAKOTSUBO CARDIOMYOPATHY IN A PATIENT WITH BIPOLAR DISORDER AND AMPHETAMINE OVERDOSE Firas Alzaiem[2]; Yvette DiMarco[3]; Jenyfeer Blanco[3]; Joseph Escobar[3]; Darran M. Khublall[3]; Damian Casadesus[1]. [1]Capital Health Regional Medical Center, Trenton, PA; [2]Ross University School of Medicine, Miramar, FL; [3]American University of the Carribean, Coral Gables, FL. (Control ID #2702868)

LEARNING OBJECTIVE #1: Recognize signs and features of stress induced cardiomyopathy

LEARNING OBJECTIVE #2: Assess social and psychiatric history of patients with chest pain

CASE: A 35-year-old Hispanic female presented to the emergency department (ED) with agitation. She has past medical history of Bipolar disorder and polysubstance abuse and was previously admitted to Crisis Psychiatric ED due to an unidentified drug use secondary to a recent emotional event. Patient also reported dyspnea, pain and paraesthesias in upper extremities, dizziness, and lightheadedness. On physical exam vitals were within normal limits. She was very agitated and confused and did not follow commands or answer questions properly. Cardiopulmonary evaluation was normal and with no abdominal organomegaly. She was treated with two doses of Haloperidol 5mg and Diphenhydramine 50mg, and three doses of Lorazepam 2mg IV within the first 24hours of admission. On the day after admission, the agitation improved, but reported dyspnea with exertion and palpitations. Cardiopulmonary and abdominal exams were normal. Her initial laboratory evaluation revealed: EKG with normal sinus rhythm, Troponin T was 0.28ng/mL, Pro-BNP 3,888pg/mL, and a Urine Analysis positive for amphetamines. Chest radiography exhibited pulmonary edema and cardiomegaly. An echocardiogram showed concentric left ventricular hypertrophy with mildly reduced systolic function, balloon dilation of the left ventricle, apico-lateral hypokinesis. A CT angiogram demonstrated no signs of atherosclerotic lesions of the coronary arteries. Considering the patient's young age, the absence of coronary artery disease risk factors, no significant coronary artery calcification and echocardiogram results, the diagnosis of stress induced cardiomyopathy was established. The patient was discharged home on a trial of metoprolol 12.5mg twice daily and outpatient echocardiogram to follow up in 2 months.

IMPACT: This case reinforced the significance of obtaining a comprehensive history and better understanding the patient's situation in order to properly assess their overall condition. Investing more time investigating the patient's mental status and history leads to a better and more accurate diagnosis.
DISCUSSION: Takotsubo Cardiomyopathy is a transient systolic dysfunction of the apical and midsegments of the left ventricle usually associated with acute emotional stress. Amphetamine stimulating types associated cardiomyopathies describe a novel condition commonly found in young males that present with severe dilated cardiomyopathy. We present a female case with bipolar disorder that used amphetamines due to recent emotional events, who presented with agitation and confusion. Takotsubo cardiomyopathy has been associated with acute psychiatric episodes, stressful events, amphetamines and benzodiazepines use, in which all were present in this patient. This case demonstrates the fundamental significance of obtaining a complete social and psychiatric history when investigating rare etiologies of chest pain.

TAMPONADE MYSTERY - HEART DROWNED BY ANGIOSARCOMA Roshanak Habibi[1]; Alvaro Joaquin Altamirano Ufion[2]; Negar Faramarzi[1]. [1]Presence Saint Francis Hospital, Evanston, IL; [2]Advocate Illinois Masonic Medical center, Chicago, IL. (Control ID #2706370)

LEARNING OBJECTIVE #1: Diagnose a unique cause of cardiogenic shock in a patient with tamponade symptoms.
CASE: 59-year-old male referred by cardiologist to our hospital complaining of worsening shortness of breath, weight gain of 6 pounds, leg swelling and low blood pressures(BP) down to 80/60 mmhg for a few weeks. Medical history was significant for Hypertension, Coronary Artery Disease, and a recent tamponade diagnosed 4 months prior to this hospitalization. A large serosanguinous pericardial effusion was drained at that time with inconclusive fluid analysis. His medications included Amlodipine, Lisinopril and Atorvastatin. Positive findings on exam were a BP of 85/60 mmhg, mild respiratory distress on room air, increased jugular vein pressure, muffled heart sounds and pitting edema of the shins. Echocardiogram showed a moderate sized posterior pericardial effusion with borderline signs of tamponade. The echo also revealed a fibrinous material and stranding suggestive of adhesions in the collection. Ejection fraction was 59%. Attempt to drain the pericardial effusion with subxiphoid pericardial window was terminated due to fusion of pericardium to the anterior surface of right ventricle. Partial pericardiectomy was then attempted with frozen section, which revealed a neoplastic process. Because of these findings, a subtotal pericardiectomy was performed. Repeat echocardiogram showed no further effusion. Final pathology report revealed epithelioid angiosarcoma of the pericardium. Chest computed tomography scan showed nodular opacifications within both lungs with concern for metastasis. His condition stabilized with Lasix and Oxygen. He was then referred to Loyola University for a second opinion regarding his angiosarcoma management.
IMPACT: We described a case of pericardial angiosarcoma in which initially diagnosis was a challenge due to rarity of the pathology. Reporting this case is another example in literature showing how to recognize the rare pattern of such tumors at presentation.
DISCUSSION: Primary malignancies of the heart are so rare that most of the available data come from case reports or large single center based studies, with the overall incidence of 0.02% in the United States. Pericardial angiosarcoma can be seen at almost any age with peak incidence in middle aged men. The majority are asymptomatic until they become large enough to cause symptoms. Pericardial angiosarcoma may arise from the epicardial surface of the heart and penetrate the pericardial space. Signs of right sided heart failure and pericardial effusion are common, which can lead to tamponade. By the time of diagnosis, most patients have metastases, most commonly to the lung. Histologically, angiosarcomas consist of endothelial cells & spindle cells lining, not well-defined anastomotic vascular spaces, causing sheet like pericardial thickening. 90% of patients die within 9 to 12 months of diagnosis without resection. The optimal treatment remains to be discovered.

TARGETING LYME DISEASE WITHOUT A BULLSEYE Jonathan Wolfe[2]; Amar Kohli[1]. [1]UPMC, Mars, PA; [2]University of Pittsburgh Medical Center, Pittsburgh, PA. (Control ID #2705670)

LEARNING OBJECTIVE #1: Diagnose Lyme disease in the absence of erythema migrans.
LEARNING OBJECTIVE #2: Detail the appropriate timing of serologic testing utilized in confirming Lyme disease.
CASE: A 45-year-old woman with no past medical history presented to outpatient clinic with fever, chills, and myalgias. She had been in her usual state of health until five days prior to presentation when she awoke with fever to 101°, chills, diaphoresis, and crampy pain in her shoulders and neck. Her symptoms waxed and waned, but generally persisted prompting a clinic visit for evaluation. Extensive review of systems was negative including cough, rhinorrhea, sore throat, gastrointestinal symptoms, joint pain, or rash. She denied any sick contacts or recent travel. She was an avid gardener at her home in Pennsylvania, and spent a lot of time outdoors. However, she denied a known tick bite. On physical exam, she was diaphoretic with a temperature of 99.4°. Her exam was otherwise unremarkable. Laboratory testing revealed mild leukopenia and thrombocytopenia, normal ESR, elevated CRP, and mildly elevated transaminases. Subsequent ELISA screening test for Lyme was positive. The diagnosis of Lyme disease was confirmed when Western Blot was positive for IgM. She was treated with doxycycline and recovered.
IMPACT: Lyme disease is classically taught as presenting with erythema migrans. While this is true in the majority of cases, a substantial minority of patients present without any rash. Clinicians practicing in Lyme endemic areas must have a high index of suspicion to diagnose Lyme in these cases.
DISCUSSION: Early localized Lyme disease typically presents with non-specific symptoms that may mimic a viral illness. Symptoms are accompanied by a pathognomonic, "bullseye" rash termed erythema migrans in approximately 80% of cases. Patients presenting with erythema migrans should be treated for Lyme disease and do not require confirmatory serologic testing. For patients presenting without a rash, the diagnosis is more challenging. Our patient presented to clinic with nonspecific symptoms. Notably, she denied respiratory and gastrointestinal symptoms, which are not associated with Lyme disease and should prompt an evaluation for an alternative diagnosis. Her physical exam was largely unremarkable, including the absence of a rash. Labs revealed mild transaminitis, leukopenia, and thrombocytopenia, findings which are commonly seen in tick-borne illnesses but also in various viral infections. For patients presenting without a rash, serologic testing may be helpful. However, serologies may be negative for up to several weeks before becoming positive. Serologic testing for Lyme IgM does not become positive for 1 to 2 weeks until after symptoms develop. Lyme IgG appears 1 to 6 weeks after symptoms develop. In our patient, her

IgM serologies were fortunately positive after approximately 10 days, which established the diagnosis.

TAVR AND HEYDE: THE ROLE OF TRANS-CATHETER AORTIC VALVE REPLACEMENT IN AORTIC STENOSIS ASSOCIATED GASTROINTESTINAL BLEEDING Natalie Achamallah; Alexander Hardwick. Santa Barbara Cottage Hospital, Santa Barbara, CA. (Control ID #2692667)

LEARNING OBJECTIVE #1: Illustrate the potential of TAVR in treatment of Heyde's syndrome related bleeding

CASE: A 73-year-old woman with history of diabetes, hypertension, atrial fibrilation and bio-prosthetic aortic valve replacement was evaluated for acute anemia secondary to GI bleed. She had been admitted eight times in the preceding five years for acute anemia requiring transfusion. She complained of progressive exertional dyspnea and angina. Echocardiogram showed aortic valve area of 0.75cm^2 with max velocity 4.5m/s, consistent with bioprosthetic aortic valve stenosis. She subsequently underwent redo sternotomy with redo bio-prosthetic valve replacement. Recovery was complicated by persistent atrial fibrillation requiring cardioversion and amiodarone and she was discharged home one week post-operatively on oral anticoagulation (OAC). In the intervening months she has had no episodes of acute GI blood loss despite OAC for atrial fibrillation. An 84-year-old woman admitted for GI bleed was referred for echocardiogram because of an ejection systolic murmur noted on exam. Medical history included endometrial cancer, hypertension, and diabetes, as well as seven hospitalizations for acute anemia secondary to GI bleed over the preceding four years. Recurrent endoscopy and colonoscopy revealed AVMs requiring cauterization. Echocardiogram demonstrated severe AS with valve area 0.94cm^2 and jet velocity 4.2m/s. She was considered a high risk surgical candidate and instead underwent trans-catheter aortic valve replacement (TAVR) without complication. She has had no further episodes of acute gastrointestinal bleeding despite taking standard dual anti platelet therapy (DAPT) after TAVR.

IMPACT: The first of these cases demonstrates complications after surgical replacement in a patient with multiple co-morbid conditions. The second represents a good outcome following TAVR in a patient with similar co-morbidities who would not have been a candidate for surgery. For both patients, recurrent GI bleeding ceased after aortic valve replacement. The success of the latter illustrates the potential of TAVR in treatment of Heyde's syndrome related bleeding.

DISCUSSION: The association between calcific aortic stenosis (AS) and gastrointestinal bleeding - Heyde's syndrome - has been a controversial one since its proposition in 1958. The source of AS related GI bleeding has been postulated as submucosal angiodysplasia, with related von Willebrand factor (vWF) activation and acquired deficiency secondary to shear forces through the stenotic valve. Although the exact mecahnism remains unelucidated, several studies have demonstrated a temporal association between valve replacement and resolution of GI bleeding. This has been directly demonstrated through measurement of vWF multimer levels pre- and post- valve replacement. With the advent of trans-catheter aortic valve repair (TAVR) a less invasive option now exists for patients with Heyde's syndrome who would otherwise not be surgical candidates.

TB OR NOT TB? THE DRAMA UNFOLDS WITH MACROPHAGE ACTIVATION SYNDROME (MAS) Andrea Beck[3]; Jimmy Mullally[2]; Etsemaye P. Agonafer[2]; Andrew Trifan[1]. [1]University of Pittsburgh, Pittsburgh, PA; [2]University of Pittsburgh Medical Center, Pittsburgh, PA; [3]University of Pittsburgh School of Medicine, Pittsburgh, PA. (Control ID #2672534)

LEARNING OBJECTIVE #1: Recognize the limitations of TB screening prior to initiation of TNF-α inhibitors

LEARNING OBJECTIVE #2: Diagnose MAS in immunosuppressed patients

CASE: A 44-year-old Indian immigrant male with Crohn's Disease presented with a 12-day history of persistent fevers to 103 F without associated cough, shortness of breath, nausea, vomiting, joint pain, myalgias, or rash. He endorsed baseline abdominal pain with defecation and drainage from a previously diagnosed perianal abscess. His medications included budesonide, mesalamine and adalimumab, begun 6 months prior to presentation. On admission, he was febrile to 105 F, tachycardic, and intermittently hypoxic with an otherwise unremarkable exam. His fevers persisted after abscess debridement and treatment with meropenem. CT abdomen then revealed nodules and effusions at both lung bases, raising concern for TB despite a negative PPD prior to initiation of adalimumab. QuantiFERON-TB Gold (QFT-Gold) was indeterminate, but he was empirically treated with RIPE therapy after lung biopsy confirmed caseating and non-caseating granulomatous inflammation. The patient's fever resolved on TB therapy, but labs showed pancytopenia, transaminitis, hypertriglyceridemia, ferritin > 9000, and elevated CRP. Bone marrow biopsy revealed hemophagocytes and rare mycobacteria, and he was diagnosed with concurrent MAS and miliary TB. In addition to RIPE therapy, the patient received 5 days of anakinra during which his labs normalized. Shortly thereafter, he was discharged home.

IMPACT: MAS is a rare, life-threatening condition necessitating prompt recognition and treatment. MAS has not been well-studied in the context of IBD, and there are only a handful of cases published involving MAS, IBD, and TB concurrently. This case provides an example of a successful outcome, which will be useful in determining the appropriate course of treatment for similar patients in the future.

DISCUSSION: This complex case raises several clinical considerations. First, a negative PPD cannot definitively rule out latent TB in patients starting immunosuppressive therapy. For IBD patients on TNF-α inhibitors, TB reactivation still occurs despite compliance with recommended screening. In miliary TB, anergy is as common as 68%. QFT-Gold is a comparable alternative to PPD for latent TB screening, but is not useful for diagnosis of active infection. An indeterminate result is common in immunosuppressed patients. Second, prompt recognition and treatment of MAS was likely critical for this man's survival based on reported mortality rates of 30%. A high index of suspicion is necessary to diagnose MAS since it typically presents in the context of underlying autoimmune disease and acute infection. The immune system is inappropriately over-stimulated in MAS, eventually leading to cytokine storm and multiple organ failure. Hyperferritinemia in an immunosuppressed patient should raise concern for MAS, particularly when accompanied by pancytopenia, hypertriglyceridemia, and hypofibrinogenemia.

THAT TROPONIN IS HIGH, OH MY! Rachel N. Clark. Tulane University, New Orleans, LA. (Control ID #2705348)

LEARNING OBJECTIVE #1: Recognize acute myopericarditis as a cause of acute chest pain.

LEARNING OBJECTIVE #2: Formulate a differential diagnosis for an elevated troponin in the setting of chest pain.

CASE: A 47-year-old woman with SLE and hypertension, presented with an acute onset of sharp, substernal, non-radiating chest pain associated with dyspnea and fatigue. She denied any pain with position changes, paroxysmal nocturnal dyspnea, or orthopnea. Due to fear of a heart attack, she presented to the emergency room for evaluation. Upon physical exam, she was in moderate distress. She continued to complain of pain despite three doses of nitroglycerin. She was afebrile, with a heart rate of 110 and blood pressure of 167/98. The pain was unable to be reproduced with palpation. Cardiovascular exam was significant for a mild friction rub and tachycardia. Pulmonary auscultation was normal. Electrocardiogram was remarkable for sinus tachycardia with no changes suggestive of ischemia. CT angiography was negative for pulmonary embolism. She had a hemoglobin of 10.8, a platelet count of 108, and a normal white count, electrolytes, and liver function. Troponin was elevated to 3.9 and C-reactive protein elevated to 10.5. Transthoracic echocardiogram was normal. Cardiac catheterization was negative for evidence of coronary artery disease. Her chest pain continued to worsen; cardiac MRI exhibited findings suggestive of myopericarditis. Following diagnosis, she was treated with aspirin and colchicine. At her 6-week follow up, her symptoms resolved.

IMPACT: Along with acute coronary syndrome, an internist should consider diagnoses such as myocarditis and pericarditis when evaluating a patient with an elevated troponin. Correct diagnosis can avoid unnecessary invasive procedures and allow initiation of an appropriate treatment plan to minimize long-term morbidity.

DISCUSSION: Acute myopericarditis is primarily a pericarditic syndrome - an acute pericarditis with associated myocardial inflammation. In developed countries, the most common etiology of myopericarditis includes viruses, but other causes include connective tissue diseases. The above etiologies introduce inflammation through direct cytotoxic cellular damage. For diagnosis of myopericarditis, a definitive diagnosis of acute pericarditis is needed and includes at least 2 of the following: typical chest pain, pericardial friction rub, ST segment elevation, and new or worsening pericardial effusion. Once pericarditis has been established, the patient must have cardiac enzyme elevation or cardiac MRI consistent with myocarditis. In order to definitively confirm myopericarditis, histopathologic evidence by endomyocardial biopsy is considered. Prognosis is generally good when treated appropriately to decrease the risk of recurrence. NSAIDs are typically the mainstay of treatment for acute pericarditis. Our patient was treated according to the CORP trial, which included colchicine treatment for recurrent pericarditis.

THE 3 MAGIC WORDS - TELL ME MORE?

Pratyusha Bollimunta[2]; Venu M. Ganipisetti[1]; Sreelakshmi Panginikkod[2]; Sowjanya Naha[2]. [1]Miami Valley Hospital, Evanston, IL; [2]Presence Saint Francis Hospital, Evanston, IL. (Control ID #2706965)

LEARNING OBJECTIVE #1: Recognize importance of assessing dietary habits of patients.

LEARNING OBJECTIVE #2: Recognize Pica and associated perceptions of social stigma

CASE: A 24-year-old female was evaluated for progressively worsening shortness of breath and fatigue for several months along with severe anemia. She had prior extensive workup by her Gynecologist and was diagnosed with iron deficiency anemia presumed to be because of menorrhagia. She was following with her Gynecologist for almost over a year and receiving treatment for menorrhagia, which improved with treatment. However, her anemia was persistent despite being prescribed for iron supplements. Her hemoglobin levels 1 year ago, was 10.5 g/dl, 6 months ago, was 9.2 g/dl and at presentation 6.4 g/dl. Iron indices showed low Ferritin level 14 ng/ml and iron saturation of 7%. Stool occult blood and other anemia workup was negative. After several min into a discussion about her lifestyle and dietary habits, patient confessed that she initially tried to take iron pills, but was not able to be compliant as they made her stomach feel weird and added- " I have been eating toilet tissue paper for some time and I crave for it. I feel very embarrassed about it and did not tell anyone so far". At the time of encounter, she reported that she was consuming about 1–4 rolls per day. A diagnosis of Xylophagia/Pica was made and given her noncompliance with oral iron she was started on parenteral iron. On 6 month follow up, patient reported improvement in fatigue and her craving had resolved.

IMPACT: Xylophagia/Pica are perceived as stigmatizing conditions by patients and the strongest diagnostic tool is effective communication and education. Unless treated the condition can lead to life-threatening emergencies.

DISCUSSION: Pica is defined as craving and ingestion of nonfood or inedible substances. Xylophagia is a type of pica associated with eating paper and its related products. Iron deficiency anemia, zinc deficiency, schizophrenia, obsessive compulsive disorders can all lead to Pica. However, pica itself can lead to iron deficiency anemia. Diagnosis of Pica can be challenging as the only diagnostic tool is strong interpersonal communication with patients and achieving their trust, for them to open up and discuss these issues. Most of the patients as aware that these eating habits are unusual and are embarrassed about them. Untreated pica can cause complications such as intestinal obstruction, gastric perforation, heavy metal toxicity, etc. Correcting the nutritional deficiencies treats the condition, unless a psychiatric condition is involved and such patients should be referred to psychiatrist.

THE ANCA BIAS: IT'S NOT ALWAYS AUTOIMMUNE

Elizabeth Park[2]; Jonathan Cheah[1]; Lee S. Shearer[3]. [1]Hospital for Special Surgery, New York, NY; [2]New York Presbyterian Hospital, New York, NY; [3]Weill Cornell Medical College, New York, NY. (Control ID #2678825)

LEARNING OBJECTIVE #1: Distinguish Cocaine-Induced Elevation of Anti-Neutrophil Cytoplasmic Antibodies [ANCA] from ANCA-Associated Vasculitis [AAV]

CASE: 62 year old man with Diabetes and newly diagnosed Hepatitis C was admitted to the hospital after an episode of passing black clots from the nose and mouth, as well as melena. He complained of chronic subjective weight loss, fatigue as well as oro-palatal pain. His physical exam was notable for a sizable defect of the upper palate and sunken depressions on the nasal bridge. No joint swelling, tenderness nor skin rash were noted and the neurological exam was unremarkable. Initial studies were notable for a rise in Creatinine from a baseline of 1 to 1.89, urinalysis negative for protein or active sediment, and an active Hepatitis C viral load. Given the upper airway bleeding with palatal and nasal defects as well as new renal insufficiency, suspicion was raised for Granulomatosis with Polyangiitis [GPA]. This was further validated when positive ANA [1:80 speckled] as well as a very high titer cytoplasmic ANCA [cANCA] against proteinase 3 [PR3] at 564 and positive perinuclear

ANCA [pANCA] against myeloperoxidase [MPO] were noted. However, his urine toxicology was positive for Cocaine and upon further inquiry, patient endorsed decades of Cocaine use. He also reported chronic Aspirin and Naproxen use. Biopsy of the nasal turbinates was negative for vasculitis. Overall, given the negative biopsy, lack of active urine sediment, and bleeding better explained by medication use, his clinical presentation was thought to be more consistent with a Cocaine Induced Midline Destructive Lesion [CIMDL] rather than GPA.

IMPACT: Despite apparent clinical features and very high titers of cANCA PR3 which may anchor one's thinking towards AAVs such as GPA, the generalist should be aware of common mimics including cocaine.

DISCUSSION: ANCAs can be divided into two distinct fluorescence patterns, cANCA from antibodies against PR3, and pANCA against MPO. ANCAs, while primarily raised by vasculitides, can be raised by medications including Cocaine, Hydralazine and Sulfasalazine, and infections like Hepatitis C and subacute bacterial endocarditis. While cANCA PR3 is frequently found to be positive in both AAV and CIMDL, current research reports discrete differences between the epitopes recognized by PR3 antibodies as well as differences in functionality, including hydrolytic activity of key peptides, suggestive of a different pathophysiology. Beyond biopsy and urine toxicology testing, the presence of a second pANCA subtype human neutrophil elastase [HNE] can be utilized to differentiate CIMDL from GPA. One cohort study demonstrated that 84% of CIMDL patients tested positive for HNE ANCA, while *none* were detected in patients with GPA. The mechanism by which cocaine induced lesions actually trigger ANCA production has yet to be fully elucidated, but barrier dysfunction from both cocaine and chronic nasal colonization of S. aureus has been suggested as one possibility.

THE CALM AFTER THE STORM Effie Tsomos[3]; Neetha Reddy[2]; Vafa Tabatabaie[1]. [1]Montefiore Medical Center, New York, NY; [2]Montefiore Medical Center, Bronx, NY; [3]Montefiore Medical Center, Bayside, NY. (Control ID #2703225)

LEARNING OBJECTIVE #1: Recognize the clinical features of thyroid storm

LEARNING OBJECTIVE #2: Identify the potential benefits of plasmapheresis in resistant thyroid storm

CASE: A 28 year old woman presented with one week of progressively worsening paranoia and auditory hallucinations as well as abdominal pain, vomiting, and increased stool frequency. The patient had a heart rate of 150 beats per minute, pressured speech, and was actively hallucinating. She had a smooth, diffusely enlarged thyroid gland and a bilateral hand tremor. Labs revealed a thyroid-stimulating hormone <0.005 U/mL, free thyroxine >7 ng/dL, and anti-thyroid peroxidase antibody 660 IU/mL. Thyroid US revealed an enlarged, heterogeneous thyroid gland with increased blood flow. The patient was treated accordingly with methimazole, potassium iodide, and propranolol. After 10 days of therapy, the patient continued to hallucinate and her free thyroxine remained elevated at 13 ng/dL. Given that she did not improve on conventional therapy, plasmapheresis was initiated resulting in rapid normalization of thyroid hormone levels after two sessions of plasmapheresis. She subsequently underwent a total thyroidectomy and her thyroid function tests normalized.

IMPACT: Thyroid storm is a life-threatening and rare condition caused by untreated hyperthyroidism. This case demonstrates the need to consider plasmapheresis as a stabilizing measure when patients in thyroid storm do not respond to conventional therapy.

DISCUSSION: Individuals with thyroid storm synthesize and release an excess of thyroid hormone and experience an exaggeration of the usual symptoms of hyperthyroidism such as fever, abdominal pain, nausea, vomiting, diarrhea, and tremors. More serious manifestations of this disease include cardiac failure, arrhythmia, psychosis and hyperthermia. Conventional management of thyroid storm is multimodal. It includes concurrent treatment with methimazole to stop the synthesis of new thyroid hormone followed by potassium iodide to prevent the release of pre-formed thyroid hormone from the thyroid gland, and beta blockers to control hyperadrenergic symptoms. In the rare circumstance that antithyroid drugs do not result in clinical improvement or lowering of thyroid hormone levels, plasmapheresis can be used as a stabilizing measure for thyroid storm, helping reduce thyroid hormone levels while patients await definitive treatment with thyroidectomy. Plasmapheresis works by removing thyroxine-bound globulins in the circulation and replacing this with unbound globulins found in fresh frozen plasma which can subsequently bind free thyroid hormones. It is also thought to assist with removal of factors that exacerbate thyroid crisis such as catecholamines and cytokines. Thus, in patients presenting with thyroid storm, combining the use of antithyroid drugs and plasmapheresis is an effective modality for improvement of clinical symptoms and should be considered in cases of thyroid storm resistant to conventional therapy.

THE CASCADE EFFECT Kimberly R. Cavaliere. Montefiore Medical Center, New York, NY. (Control ID #2700840)

LEARNING OBJECTIVE #1: Recognize the clinical features concerning for cascade stomach.

LEARNING OBJECTIVE #2: Diagnose cascade stomach.

CASE: A 48-year-old man with a history of gallstone pancreatitis and peptic ulcer disease presented to the hospital with abdominal pain, nausea, and emesis for three days. The abdominal pain started 30 min after a meal and persisted, prompting his presentation to the hospital. The pain was a 10/10 burning sensation in the epigastric region, radiating to his back. The patient noted that he had bouts of this abdominal pain for years and despite an extensive work-up, no etiology had been found. Work-up was significant for normal lipase and liver tests, and an abdominal CT scan negative for pancreatitis. The patient was treated with morphine, fluids, viscous lidocaine, anti-emetics and proton pump inhibitors with minimal improvement. An EGD was done which was unremarkable. An upper GI series was then performed to look for structural abnormalities, revealing the presence of a cascade stomach. The patient was first treated with endoscopic botox injections without improvement. He subsequently underwent laproscopic partial gastrectomy without complication. Four days after the surgery the patient's pain was controlled, he was able to tolerate a pureed diet, and he was discharged home.

IMPACT: This case demonstrates the importance of upper gastrointestinal series when evaluating symptomatic patients for structural abnormalities of the gastrointestinal tract, even in the presence of a normal endoscopic evaluation.

DISCUSSION: Cascade stomach is an anatomic anomaly of the gastrointestinal tract in which the stomach is separated into two parts. This separation is caused by the top portion of the fundus folding over the lower portion of the stomach. This anomaly can only be diagnosed by barium studies and often

yields a normal endoscopic evaluation, much like was seen in our patient. On barium exam the swallowed contrast will pool in the first portion of the stomach until it fills to the level of the fundus fold, at which point it flows over, or "cascades" into the lower portion of the stomach. Endoscopic examination is often unrevealing as the endoscope inflation frequently straightens out the problematic stomach fold. Additionally only subtle luminal abnormalities are present, which are often not appreciated. There are many factors that can predispose one to cascade stomach including but not limited to, congenital malformations, external compression, peptic ulcer disease, displacement of the splenic flexure or spleen, and abnormal mobility of the fundus. Symptoms of cascade stomach most frequently occur in the postprandial setting such as gastroesophageal reflux, fullness, and abdominal pain, all of which our patient experienced. Treatment options are limited but are focused on straightening the upper portion of the stomach and include behavioral modifications, such as laying down after eating, and surgical options, such as gastropexy, or surgical resection.

THE CASE OF THE DISAPPEARING CHEST PAIN: MULTIPLE EPISODES OF SUBCLINICAL PERICARDITIS IN A YOUNG ADULT WOMAN WITH SUBSEQUENTLY DIAGNOSED UNDIFFERENTIATED CONNECTIVE TISSUE DISEASE Imikomobong Ibia[1]; Heidi Guzman[1]; Micaela F. Bayard[1]; Joseph Truglio[2]. [1]Icahn School of Medicine at Mount Sinai, New York, NY; [2]Icahn School of Medicine at Mount Sinai, Maplewood, NJ. (Control ID #2706074)

LEARNING OBJECTIVE #1: Develop a differential diagnosis for a young woman with CTD and multiple episodes of severe, self-limiting chest pain

CASE: A 31-year-old female with a history of mild-persistent asthma and recently diagnosed Undifferentiated Connective Tissue Disorder (UCTD) with Hashimoto's thyroiditis came to our clinic with chest pain of five days duration. She described the pain as left-sided, tender, and pleuritic in nature. After days of self-treating with naproxen without improvement, she came in for evaluation. She denied any abdominal symptoms, diarrhea, dysuria, recent travel or sick contacts. Interestingly, she described the pain as similar to episodes she had experienced over the past few years. The previous episodes were almost always identical: days of left-sided, pleuritic chest pain that did not improve with NSAIDs, followed by an emergency room visit without a clear diagnosis, and eventual self-resolution of the pain weeks later. On physical exam, blood pressure was 120/81, heart rate was 95, respiratory rate was in the low 20's, and she was febrile to 39.5C. Upon pulmonary examination, her lungs were clear to auscultation bilaterally, without evidence of rales or decreased breath sounds to suggest a large effusion. She had normal heart sounds and had no signs of lower extremity edema. She was sent to the emergency room to get a chest computed tomography angiography (CTA) to rule out a pulmonary embolism, and considering her history of UCTD, a bedside ultrasound was ordered to rule out a pericardial effusion. Her comprehensive metabolic panel, CBC, CXR, CTA, EKG, and urine were normal. Her CRP was elevated at 68 mg/L, and a bedside ultrasound showed a small pericardial effusion. Rheumatology was consulted given her history of UCTD. It was recommended to start low dose oral prednisone for five days. She was discharged with a diagnosis of pericarditis on prednisone and ibuprofen with follow-up at her primary care doctor and rheumatology. With an additional short course of steroids, her pericarditis slowly resolved over the next few weeks. She was subsequently restarted on her hydroxychloroquine and levothyroxine as previously prescribed.

IMPACT: From our literature review, there are few reported cases of CTD presenting as multiple episodes of subclinical pericarditis. Nonetheless given this case, one must be cognizant that this initial presentation is possible, albeit unusual, and hence CTD should be included in one's differential. In addition, this case emphasizes that patients' CTD may have an early onset of highly active disease. Thus, one should fully evaluate the history of related symptoms and use this to guide treatment.

DISCUSSION: This case stresses that although more common causes of chest pain must be ruled out first (including valvular heart disease, anxiety/depression, musculoskeletal pain, esophageal reflux, pulmonary embolism, pneumonia, pneumothorax, myocardial infarction), a full differential diagnosis for patients with possible CTD includes pericarditis.

THE CASE OF THE MISTAKEN ETIOLOGY: GASTROPARESIS AS A RESULT OF EHLERS DANLOS SYNDROME Bernard Partiula. Northwell Health Lenox Hill Hospital, Brooklyn, NY. (Control ID #2704986)

LEARNING OBJECTIVE #1: Recognize the association between congenital syndromes such as Ehlers Danlos Syndrome and their clinical manifestations.

CASE: A 44 year old female with Ehlers Danlos syndrome (diagnosed 5 years ago after experiencing an unexplained myocardial infarction with 100% patent coronaries) presented with 3 days of nausea and vomiting occurring after meals and intermittent watery, nonbloody, and self resolving diarrhea. The patient denied any sick contacts, travel, or consumption of undercooked or unpasteurized food. A CT abdomen showed mild enterocolitis; the patient was treated and discharged with ciprofloxacin and metronidazole for suspected infectious colitis. She returned to the hospital 2 weeks later with the same symptoms and again discharged on antibiotics. She claimed that despite completing the full course, her nausea and vomiting did not improve. She went to see her outpatient gastroenterologist who performed an EGD and colonoscopy, both of which were normal. She returned to the hospital once more and underwent a gastric emptying study to rule out a functional cause of her nausea and vomiting. The results of the study were abnormal; her gastric emptying times were delayed. Four hours post initiation of the test, she had over 50% food content in her stomach, consistent with gastroparesis (greater than 10%). It was deemed that her gastroparesis was due to Ehlers Danlos, therefore her antibiotics were stopped. She was referred back to her gastroenterologist who started her on a pro-motility drug with good response.

IMPACT: This case shows the importance of not anchoring onto a single, more commonly seen diagnosis (e.g. gastroenteritis), seeing the patient as a whole and considering all differentials, given the medical history and history of present illness. It also makes physicians aware of the broad scope of multiorgan complications of Ehlers Danlos syndrome.

DISCUSSION: Connective tissue is present throughout the body, and in the digestive tract it is essential to the passive mechanical movements needed to complete digestion. Any abnormalities in the tissue are likely to alter the tract's movements, which could contribute to the range of symptoms EDS patients experience. These symptoms include delayed gastric emptying/dysmotility as seen in our patient, heartburn, bloating, and constipation. Our patient presented with recurrent gastrointestinal symptoms in the setting of EDS, was misdiagnosed with an infectious etiology and treated multiple times in the same vein. This case, as emphasized earlier, demonstrates the clear association

between congenital syndromes such as Ehlers Danlos and common clinical conditions such as gastroparesis. It also stresses the importance of a thorough history, complete physical examination, and broad differential diagnosis. This is imperative for preventing misdiagnosis, avoiding any further unnecessary diagnostic tests or treatments, and initiating appropriate therapy in a timely manner.

THE CAT'S OUT OF THE BAG: A RARE PRESENTATION OF INVASIVE PASTEURELLA MULTOCIDA INFECTION Yasmin Marcantonio; Shira Sachs; Prathit Kulkarni; Kevin Ting; Jennifer Lee; Daniel Mendoza. Baylor College of Medicine, Houston, TX. (Control ID #2704275)

LEARNING OBJECTIVE #1: Review risk factors for *P. multocida* infection.
LEARNING OBJECTIVE #2: Recognize complications of invasive *P. multocida* infection.
CASE: A 67-year-old man with uncontrolled Type 2 diabetes mellitus (A1C 12.6), peripheral neuropathy, chronic foot wounds, and prior left below-the-knee and right fifth digit ray amputations presented with three days of right lower extremity erythema, pain, and swelling. The patient also noted new, severe pain in the left lumbar paraspinal muscles over this time period. The day prior to presentation, he developed subjective fever and chills. He reported exposure to a pet cat at home. On exam, he was afebrile with a blood pressure of 85/55 mmHg, heart rate of 120 beats per minute, with a saturation of 97% while breathing ambient air. The right lower extremity was warm to touch with pitting edema and erythema extending from the ankle to the knee; there was full range of motion in the ankle and knee joints. The patient also had pain to palpation of the left paraspinal muscles in the L1-L5 region; there were no overlying skin changes. Laboratory findings were notable for a white blood cell count of 5200 cells/microliter with 96% neutrophils and a lactic acid of 3.7 mmol/L. The patient's hypotension and tachycardia improved with intravenous fluid resuscitation. He was started on empiric vancomycin and ceftriaxone. Blood cultures from admission grew pan-sensitive *P. multocida* in two aerobic bottles and two anaerobic bottles. Contrast-enhanced magnetic resonance imaging of the lumbar spine revealed osteomyelitis of the L4-L5 pedicles with associated myositis of the L1-L5 paraspinal region. The patient improved clinically with ceftriaxone. He was transitioned to oral amoxicillin to complete at least a six-week course of antibiotics as an outpatient.
IMPACT: *P. multocida* cellulitis complicated by distant osteomyelitis and myositis has not previously been described in the literature. Fifty-four cases of *P. multocida* osteomyelitis have been reported; bone infection most commonly results from direct inoculation of the periosteum at the time of a bite or from extension of cellulitis. There are only six reported cases of vertebral osteomyelitis, five of which were attributed to hematogenous spread. There are no reported cases of *P. multocida* myositis.
DISCUSSION: Cellulitis due to *P. multocida* should be considered in patients with exposure to domestic cats or dogs. Resulting bacteremia can occur, particularly in very young, elderly, or immunocompromised patients. Our patient's risk factors for *P. multocida* cellulitis and bacteremia were exposure to a cat and poorly controlled diabetes. In the presence of bacteremia, the patient's musculoskeletal complaints were highly concerning for a focus of metastatic infection. Practitioners should consider *P. multocida* infection in the appropriate clinical context, and must maintain a high index of suspicion for invasive disease.

THE CAVITARY CONUNDRUM Deepak Ravindranathan; Dustin Staloch; Mayur D. Mody; Henry K. Walker. Emory University School of Medicine, Atlanta, GA. (Control ID #2690604)

LEARNING OBJECTIVE #1: Form a differential for cavitary lesions
LEARNING OBJECTIVE #2: Recognize that sarcoidosis can present as pulmonary cavitary lesions
CASE: A 38-year-old black female with prior tobacco abuse presented with four-month history of productive cough, dyspnea, pleuritic chest pain, documented fevers, and a 25-pound weight loss. She was thrice previously treated with antibiotics for presumed pneumonia without improvement. She denied rashes or joint pain. She also denied any exposure to animals, sick contacts, international travel, or history of tuberculosis or incarceration. At presentation, she was afebrile, normotensive, and in no respiratory distress. She was non-toxic appearing. Her lungs were clear to auscultation throughout, clubbing was absent, and no tender nodules were identified. Initial testing showed no leukocytosis and was negative for HIV. Chest radiograph revealed a cavitary lesion in the left upper lobe of the lung. Computed tomography (CT) scan of the chest, abdomen, and pelvis confirmed a 2.6 × 2.4 cm cavitary lesion within the superior portion of the left upper lobe and noted multiple areas of hypoenhancement in the spleen as well as heterogeneous perfusion of the liver with well-defined areas of hyperperfusion. Three sputum samples stained negative for acid-fast bacilli. Her angiotensin-converting-enzyme inhibitor levels were elevated at 83 U/L (normal 9–67) and biopsy showed peribronchial granulomatous inflammation with foci of necrosis with no evidence of malignancy. With no acid fast bacilli or fungal organisms noted on stains, she was diagnosed with sarcoidosis and started prednisone 1 mg/kg daily, reporting drastic symptomatic improvement upon follow-up.
IMPACT: We diagnosed sarcoidosis in an immunocompetent individual with a cavitary lesion. While greater than 90% of sarcoidosis cases have pulmonary involvement, cavitary lesions are rare and seen in 0.6-8.3% of cases per chest radiograph or <5% on CT per literature review. This case reminds clinicians to consider non-infectious, non-malignant etiologies for cavitary lesions and reaffirms presence of sarcoidosis in the differential.
DISCUSSION: Respiratory symptoms encountered by internists typically involve radiographic workup. Cavitary lung lesions can pose a diagnostic challenge. The differential can be dichotomized as either infectious or noninfectious in nature. Infectious etiologies include pneumonia, abscess, tuberculosis, or fungal infections. Noninfectious etiologies include embolism, malignancy, or rheumatological diseases. If infectious workup is unrevealing or antibiotics do not bring clinical improvement, clinicians should consider advanced imaging. While the cavity's location, wall thickness, and relationship to the airway aid in narrowing the differential, biopsy is frequently indicated. Transbronchial biopsy by bronchoscopy has a diagnostic yield of >85% when multiple segments are sampled. It remains unclear why cavitary lesions appear in sarcoidosis, and the natural history of these lesions are largely unknown.

THE COMPLICATED MILLENNIAL
Dorothy Knutsen; Uwe Blecker; Margot Anderson. Tulane University, New Orleans, LA. (Control ID #2705284)

LEARNING OBJECTIVE #1: Gain familiarity with HIV screening guidelines for young adults

LEARNING OBJECTIVE #2: Understand the treatment recommendations for Salmonellosis in immunocompromised patients

CASE: An 18 year-old gentleman was transferred from an outside facility for management of an acute kidney injury with a creatinine of 6, following several days of vomiting and abdominal pain. He had no known medical problems. He had been recently treated for a prolonged psychotic episode secondary to synthetic marijuana use. He was prescribed daily haloperidol, valproic acid, and benztropine. With new fevers and an elevated creatine kinase, NMS was considered but patient had been non-adherent with his medications. His drug screen was negative and he denied current use of synthetic marijuana or bath salts. As his creatinine improved, his lipase and transaminases began to increase, without an increase in abdominal pain or tenderness. The abdominal ultrasound was unremarkable. Gastroenterology was concerned with a possible obstruction as the lipase remained >3000; an MRCP was negative. A screening HIV antibody test was performed during admission and was positive, which was then confirmed with secondary testing. He had a high viral load at time of diagnosis with a low CD4+ cell count (13). Further history was obtained confirmed unprotected sexual intercourse with 5 heterosexual partners in his lifetime. A day later, the outside facility called to report that the patient's blood cultures grew Gram negative rods. The cultures speciated to a nontyphoidal Salmonella, serotype hadar. He was treated with ciprofloxacin for 4 weeks and instructed to follow-up with an Infectious Disease provider in his hometown.

IMPACT: General internists may be the primary evaluators of young adults. Given the variability in presentation from acute to chronic HIV infection, HIV should be included in the differential of any atypical or confusing disease presentation.

DISCUSSION: Adolescents represented one out of every five new HIV diagnoses in 2014 in the United States, with many more unaware of their HIV-positive status. This age group presents specific challenges for HIV prevention with low rates of testing, insufficient sex education, limited condom use, and increased substance use. The USPSTF, CDC, and AAP recommend routine HIV screening in adolescents. These screening tests are especially important in certain states such as Louisiana with one of the highest rates of HIV diagnoses in the country. Salmonellosis is known to cause severe GI infections in immunocompromised patients, as it had in this patient. These patients with dysfunctional immune systems are more prone to the endovascular dissemination of Salmonella, resulting in far more serious complications. An extended course of antibiotics, ideally a fluoroquinolone, for 4–6 weeks in patients with HIV/AIDS is recommended to promote clearance of the organism.

THE CONFUSING NATURE OF ICD INFECTIONS Lindsay McCullough[1]; Sweny Gulati[3]; Kevin A. Johnson[1]; Margaret C. Lo[2]. [1]University of Florida, Gainesville, FL; [2]University of Florida College of Medicine, Gainesville, FL; [3]University of Florida, Lady Lake, FL. (Control ID #2706056)

LEARNING OBJECTIVE #1: Identify risk factors and atypical presentations of cardiac implantable electronic device (CIED) infections

LEARNING OBJECTIVE #2: Evaluate and manage CIED endocarditis in the setting of severe cardiomyopathy

CASE: A 71 years-old male presented with confusion, dyspnea, weakness, leg edema, and myalgias. He had no fevers, cough, hematuria, dysuria, diarrhea, or rashes. History included systolic CHF s/p recent ICD, CKD, diabetes, fibromyalgia on opioids, recent DVT on xarelto, and steroid-dependent COPD. Exam revealed normal vital signs, fluctuating mentation, and signs of volume overload. ICD site had no erythema or fluctuance. Labs noted normal WBC, anemia, elevated creatinine, elevated NT-proBNP, and mild troponinemia. Urine and blood cultures were sent. CXR showed pulmonary edema but no pneumonia. CT head revealed chronic ischemic demyelination. TTE showed reduced EF of 20% with dilation of all heart chambers but no valvular or lead vegetations. Encephalopathy was attributed to morphine overdose and decompensated systolic heart failure. Patient's mentation deteriorated despite appropriate therapy. Both sets of blood cultures later grew Serratia marcecens. Cefepime was promptly started and his encephalopathy improved. CT abdomen/pelvis found no GI or GU source of infection. With Infectious Disease consultation, nidus of Serratia bacteremia was attributed to recent ICD placement. A TEE was postponed due to patient's tenuous clinical state.

IMPACT: This case demonstrates the diagnostic dilemma in the evaluation of encephalopathy. Bacteremia from cardiac implantable electronic device (CIED) infections often present atypically in chronically-ill patients. Many have nonspecific symptoms with no signs of systemic toxicity. Patient-specific risk factors for CIED infections include renal dysfunction, diabetes, heart failure, long-term steroid use, presence of >2 pacing leads, and anticoagulation - all seen in our patient. Procedural risk factors include fever within 24 hours of implantation, preprocedural temporary pacing, early re-intervention, lack of periprocedural antimicrobial prophylaxis, and volume of device implantations. Staphylococcal species contribute to 60-80% of CIED infections. About 9% are from gram-negative bacilli, such as the Serratia bacteremia in our case.

DISCUSSION: Immediate blood cultures and generator-pocket cultures must be obtained in patients with risk factors for CIED infections given the vague, atypical presentations. Those with positive blood cultures, recent antibiotic use, or suspected CIED endocarditis should undergo TEE to evaluate for vegetations. TEE results dictate treatment course. Treatment includes complete removal of all hardware and antibiotic therapy for at least 72 hours or two weeks for lead or valvular vegetations, respectively. Device can be re-implanted upon subsequent negative cultures. Long-term suppressive antibiotic therapy is used for patients who are not candidates for device removal, as true for our patient.

THE COST OF SOBRIETY: DISULFIRAM-INDUCED ACUTE LIVER FAILURE Allison P. Rogers[1]; Stacey Watkins[1]; Starr Steinhilber[1, 2]. [1]University of Alabama at Birmingham, Birmingham, AL; [2]Birmingham VA Medical Center of Alabama, Birmingham, AL. (Control ID #2706017)

LEARNING OBJECTIVE #1: Recognize drug-induced hepatotoxicity as a leading cause of acute liver failure (ALF).

LEARNING OBJECTIVE #2: Identify hepatotoxicity as an uncommon but serious adverse reaction to disulfiram in cirrhotic patients.

CASE: A 72-year-old man with compensated alcoholic cirrhosis presented with 2 days of fatigue and fever without chills, shortness of breath, chest pain, or abdominal pain. His last drink was the evening prior to presentation. He had no acetaminophen use but disulfiram 500mg daily started 10 days prior as an alcohol cessation tool. Initial vital signs included temperature 101.8° F, pulse 95 bpm, and blood pressure 175/80 mmHg. His white blood cell count was $8.0x10^3/mm^3$ with peripheral eosinophilia (20%), aspart aminotransferase

(AST) 42 u/L, alanine transaminase (ALT) 35 u/L, and total bilirubin (tbili) 1.5 mg/dL. Infection was suspected and he was started on broad-spectrum antibiotics while home medications including disulfiram were continued. Antibiotics were discontinued after blood and urine cultures were negative and chest radiograph unremarkable. Fevers persisted, the patient became progressively confused, and disulfiram was discontinued on day 5. His liver enzymes peaked on day 10 with AST 2089 u/L, ALT 1024 u/L, tbili 7.0 mg/dL, and international normalized ratio (INR) 2.3. Comprehensive evaluation for ALF ruled out acetaminophen, hepatitis, autoimmune diseases, and hemochromatosis as possible causes. An abdominal ultrasound showed cirrhosis and patent vessels. It was determined that he had ALF from disulfiram.

IMPACT: Drug-induced ALF accounts for up to 52% of ALF cases in the United States alone, and disulfiram is a rare cause. It is important to understand that alcoholics may have undiagnosed cirrhosis putting them at higher risk for drug-induced ALF such that certain medications should be used with great caution.

DISCUSSION: Disulfiram is a well-established medication for treating outpatient alcohol dependence. In altering the metabolism of alcohol, disulfiram induces adverse reactions including palpitations, nausea/vomiting, blurred vision, and diaphoresis with a goal of motivating the patient to decrease and/or avoid alcohol use. ALF secondary to disulfiram has been documented in case reports with a dose dependent relationship; age and underlying cirrhosis may be risk factors for hepatotoxicity. While no studies exist focusing solely on disulfiram-mediated ALF in patients with pre-existing liver disease, some studies have suggested that chronic liver disease is a risk factor for poor outcomes in drug-induced ALF, as exemplified in our patient. The exact mechanism of liver injury from disulfiram is unclear Case reports support a hypersensitivity-mediated component to this drug-mediated liver toxicity, with common signs and symptoms of rash, fever and/or peripheral eosinophilia. If disulfiram causes jaundice, mortality is thought to be as high as 15–20%.

THE CULTURE CONUNDRUM: A CASE OF CHEST PAIN IN A DRUG USER WITH DEFIBRILLATOR IMPLANTATION Lu Wang[2]; James R. Wong[1]; Xolani Mdluli[1]. [1]Eisenhower Medical Center, Rancho Mirage, CA; [2]Eisenhower Medical Center, Palm desert, CA. (Control ID #2688215)

LEARNING OBJECTIVE #1: Recognize infective endocarditis in patients with atypical presentations of chest pain and pulmonary embolism.

LEARNING OBJECTIVE #2: Manage culture negative right sided endocarditis associated with implantable cardioverter defibrillator lead infection and drug abuse

CASE: A 45 year-old male with a history of intravenous drug use (IVDU), dilated cardiomyopathy and status post implantable cardioverter defibrillator (ICD) placement presented with substernal chest pain for 8 hours. He also reports cough and night sweats for 2 weeks. Physical examination was notable for fever of 100.5°F. He had a 1/6 systolic murmur at right lower sternal border. The ICD generator site was nonerythematous. Initial labs showed leukocytosis of 25.4 k/uL, negative serial troponins, and a drug screen positive for methamphetamine. ECGs and chest X-ray was unremarkable. CT angiogram demonstrated a small thrombus in the left upper lobe. Questioning the diagnosis of pulmonary embolism (PE), a transesophageal echocardiogram was performed and demonstrated vegetations on both the tricuspid valve and ICD lead in the right atrium. Empiric treatment for right-sided infective endocarditis (IE) and septic emboli with vancomycin, gentamicin and rifampin was initiated. The patient demonstrated excellent clinical improvement. His ICD was removed and he wore a wearable defibrillator since then. Initial and serial blood cultures remained negative. For culture-negative IE, antibiotics were changed to vancomycin and cefepime for 6 weeks. A subcutaneous ICD was placed later.

IMPACT: Endocarditis and pulmonary embolism caused by septic emboli should be considered in patients with chest pain, fever, leukocytosis, history of IVDU and ICD placement.

DISCUSSION: The incidence of culture-negative IE is 2–7% of patients with IE when utmost care is taken to obtain blood cultures prior to antibiotic treatment. Risk factors include valvular disease, and presence of cardiac device. PE occurs in 11–40% of the device infection cases. The etiology of our case may include ICD lead infection, IVDU or both. Initial empiric treatment should include coverage of Staphylococcus, Streptococcus and Enterococcus. Vancomycin and gentamicin are the standard approach. Use of rifampin as adjunct therapy for Staphylococcus is recommended in the presence of prosthetic materials, because rifampin penetrates biofilms effectively. If blood cultures remain negative and ICD lead is removed, gentamicin and rifampin are not necessary. Since then, vancomycin and cefepime are used to cover Staphylococcus, Streptococci and aerobic gram-negative bacilli. The duration of antibiotics for complicated IE is 4–6 weeks, while for uncomplicated IE, it is 2 weeks. Our patient had endocarditis complicated by septic emboli and was treated for 6 weeks. Explantation of the ICD is required. Re-implantation could happen 14 days after first negative blood cultures following lead removal if vegetations are present on both valve and lead, 3 days if vegetation is present on lead only.

THE DILEMMA OF MANAGING RUPTURED PANCREATIC PSEUDOCYST WITH COMMUNICATION TO THE GASTRO-INTESTINAL TRACT Mitali Agarwal[2]; Vikas Khullar[1]. [1]University of Florida, Gainesville, FL; [2]University of Florida, Apopka, FL. (Control ID #2705850)

LEARNING OBJECTIVE #1: Define pancreatic pseudocysts and how it is formed.

LEARNING OBJECTIVE #2: Define the main modalities for treatment of pancreatic pseudocysts with an empahsis on endoscopic management.

CASE: This is the case of a 64-year-old female with history of cirrhosis, chronic pancreatitis, and pancreatic pseudocyst (PPC) who was transferred from an outside hospital (OSH) for management of increasing size of PPC. The patient had presented to the OSH with symptoms of nausea, vomiting, decreased oral intake, constipation, and abdominal distention. CT abdomen at the OSH showed increased size of PPC from 45 mm to 88 mm in 6 months, resulting in gastric outlet and common bile duct obstruction. At our hospital, an EUS was attempted, which revealed necrotic PPC with connection into the duodenum. Further evaluation revealed bloody clots and fluid filled debris within the necrotic cavity and duodenum. No further drainage was attempted; it was felt that the pseudocyst would self-resolve by draining into the duodenum. Follow up CT showed decreased PPC size. The patient's symptoms improved.

IMPACT: Due to the paucity of cases in the literature, there is no clear guidelines on the management of a ruptured pancreatic pseudocyst (PPC) that have formed a connection with the gastrointestinal tract. Our case report demonstrates that PPCs that have eroded into the gastrointestinal cavity can be managed conservatively without invasive procedures. Our patient's

pseudocyst self-resolved by draining into the duodenum as evidenced by follow up CT and symptomatic improvement.

DISCUSSION: Pancreatic pseudocyst (PPC) formation is not an uncommon phenomenon following pancreatic insult; however, rupture and fistulous communication between the PPC and the gastrointestinal tract is rare. PPCs are pockets made of granulation and fibrous tissue, mainly containing pancreatic enzymes. They are located within the pancreas or in the adjacent pancreatic space. The optimal management of PPCs that have ruptured or formed a fistula is not clearly defined in literature. PPCs that have not ruptured can be treated via three main mechanisms: percutaneous drainage, surgical intervention, or endoscopic transpapillary or transmural drainage. Endoscopic drainage is the preferred method of treatment because it carries lower risk of complication, with similar rates of success as surgery. However, the feasibility of endoscopic drainage is highly dependent on the location of the pseudocyst. Spontaneous rupture of PPCs can occur through lytic enzymes and compression ischemia into the stomach, duodenum, biliary tract, renal collection system, colon and bronchial tree. Our case report demonstates that when erosion of the pseudocyst occurs near the gastrointestinal tract and a fistula is formed, the fistula can lead to resolution of the pseudocyst. The pseudocyst can self-resolve as it drains into the abdominal cavity.

THE GREAT IMITATOR OF BACK PAIN AND NUMBNESS Jessica Valente; Daniel Kwon; Jeffrey A. Tice. University of California - San Francisco, San Francisco, CA. (Control ID #2706902)

LEARNING OBJECTIVE #1: Recognize the clinical findings and time course of neurosyphilis, in particular tabes dorsalis

LEARNING OBJECTIVE #2: Acknowledge the discordance between clinical findings and cerebrospinal fluid (CSF) fluid studies in diagnosing neurosyphilis

CASE: A 39 year old man with prior occupational back injury and remote methamphetamine use presented to Urgent Care with 2 weeks of back pain and right arm numbness. The numbness was intermittent and associated with stabbing pains in the right upper body that radiated to his epigastrium. He denied headaches or changes in his vision, speech, and gait. He was married, with no new sexual partners. Exam was remarkable for mild tachycardia, decreased sensation to light touch, vibration, and pinprick along entire right upper trunk and right arm, 4/5 right biceps and triceps strength, 3+ patellar reflex in left leg, and palmar erythema of both hands. Pupil exam was unremarkable. Chemistries, complete blood count, thyroid studies, vitamin B12, and HIV were unremarkable. Treponema antibody screen was positive, with Rapid Plasma Reagin (RPR) titer of 1:64. Spinal and head imaging revealed chronic C5-C6 degenerative changes but was otherwise normal. He was sent to the Emergency Department, where lumbar puncture demonstrated normal cell count and glucose, mildly elevated protein count at 59, and negative bacterial cultures and VDRL testing. Given his concerning overall clinical picture, he was treated for neurosyphilis with a 14 day course of intravenous penicillin G. His surveillance RPR titer 3 months later was 1:4, and the lacinating pains had resolved.

IMPACT: Our case highlights the high index of suspicion required for diagnosis of neurosyphilis, and the importance of treatment despite negative CSF VDRL in patients whose clinical features suggest neurosyphilis.

DISCUSSION: The clinical exam and history are key components in accurately distinguishing the stages of syphilis. Primary and secondary syphilis typically present with characteristic skin findings, while tertiary syphilis manifests with symptomatic cardiac and neurological disease. Neurosyphilis can occur at any stage; meningitis and cranial neuropathies more commonly occur in early neurosyphilis (within weeks to years of infection) while paresis, dementia, and tabes dorsalis appear in late neurosyphilis (decades after infection). Distinctive features of tabes dorsalis include posterior column involvement, lancinating pain, Argyll Robertson pupils, arreflexia, and gastric crises with recurrent attacks of epigastric pain. The diagnosis of neurosyphilis can be supported by CSF analysis, with mild lymphocytosis, elevated protein levels, and positive CSF-VDRL. However, literature review suggests negative CSF-VDRL findings in up to 1/3 of patients with tabes dorsalis. It is not uncommon to even have normal CSF results; thus, the diagnosis of tabes dorsalis remains largely clinical. In patients with negative CSF findings, serum RPR titers and symptom resolution can be monitored for treatment response.

THE GREAT UNKNOWN: BUG VERSUS DRUG CAUSING MULTI-ORGAN DYSFUNCTION Freba Farhat[1]; Christopher Iriarte[2]; Julia Schwartz[2]; Charles Mitchell[2]. [1]The George Washington University Hospital, Gainesville, VA; [2]The George Washington University Hospital, Washington, DC. (Control ID #2705352)

LEARNING OBJECTIVE #1: Recognize the need for a broad differential when there may be an opportunity for significant morbidity and mortality.

CASE: A 49-year-old male presented to clinic with a three day history of malaise and rash. His symptoms began as a pruritic rash and tongue irritation. A review of his medications revealed a recent prescription for terbinafine. Physical exam was noteworthy for discrete white papules on the tongue and erythematous papules coalescing into plaques in a morbilliform distribution over the back, chest, abdomen, bilateral upper and lower extremities. Targetoid lesions with dusky centers were present on the dorsal aspect of the hands. Management included punch biopsy, routine labs and initiation of high dose steroids. Within two days of his visit, patient presented to the emergency room with shortness of breath and chest pain. He was found to have a CBC with elevated eosinophils of 740, troponin 10.2, CRP 21 and ESR 21. Based on physical exam, radiographic imaging and EKG there were no signs of heart failure or myocardial infarction. He was admitted to the cardiology service for treatment of presumed myocarditis. Histopathology highlighted spongiotic and superficial perivascular dermatitis with eosinophils and extravasated erythrocytes. Serum testing confirmed high titers of coxsackie B1-6 antibodies.

IMPACT: This case helps to highlight the importance of identifying non-specific rashes when both infectious and drug reactions may be the culprit for multi-organ failure.

DISCUSSION: The challenge of diagnosing any illness based on history and physical exam is one that dermatologists tackle daily. While initial management may not differ, disease complications may go unrecognized if the underlying etiology is misdiagnosed. The initial differential diagnosis included acute drug reaction, viral exanthema, Steven Johnson's syndrome, DRESS syndrome, Leukocytoclastic vasculitis or Erythema multiforme. Initially, the medical team believed it was a drug reaction secondary to terbinafine. The second round of diagnostic investigation led to a diagnosis of DRESS syndrome without using the RegiSCAR Score. The case highlights the importance of a broad differential, appropriate utilization of diagnostic testing and validated scoring criteria to guide treatment and anticipate complications that may cause significant morbidity and mortality.

THE HIDDEN CULPRIT FOR THE ACUTE ANEMIA IN SICKLE CELL DISEASE Arpan Patel[1]; Dipen Khanapara[2]; Yelena Averbukh[1]. [1]Montefiore Medical Center, Bronx, NY; [2]montefiore medical center, Bronx, NY. (Control ID #2707493)

LEARNING OBJECTIVE #1: Recognize the increased risk of colchicine side effects in patients with sickle cell disease

LEARNING OBJECTIVE #2: Understand the basic pharmacology of colchicine toxicity in sickle cell disease

CASE: A 69-year-old man was admitted for altered mental status (AMS). His past medical history was significant for sickle cell disease (SCD), chronic kidney disease (CKD) stage 3, and recent gout flare treated with colchicine. His hemoglobin was found to be 2.9 mg/dl. He underwent workup for worsening of anemia from baseline hemoglobin 6–7 g/dl. No acute source of bleeding was identified in extensive gastrointestinal workup. Laboratory tests revealed normal platelet and white blood cells (WBCs) count, low absolute reticulocyte count (0.8%), negative IgM parvovirus antibody, and normal lactate dehydrogenase (LDH). He received multiple transfusions, following which he maintained his hemoglobin at 8g/dl. The likely source of the acute worsening of hemoglobin was attributed to colchicine-induced erythroblastopenia, and he was discharged and kept under close follow-up. One month after discharge, his hemoglobin was back to baseline (7g/dl).

IMPACT: Colchicine should be used with great caution in patients with sickle cell disease

DISCUSSION: Hyperuricemia is a common feature of sickle cell disease occurring between 31 to 40% (percentage). Increased nucleic acid production, accelerated hemolysis and impaired renal function contribute for such high prevalence of hyperuricemia in sickle cell disease. Management of Hyperuricemia and gout in sickle cell disease patients is limited by a high prevalence of (between 40 to 50) chronic kidney disease. Thus colchicine is more favorable and preferred for managing acute gout compared to NSAIDs. Colchicine should be used with caution in sickle cell disease due to increased risk of side effects for the reasons explained below. Colchicine acts predominantly on actively dividing cells by inhibiting cell division, most commonly affecting the intestinal tract and bone marrow, causing diarrhea and myelosuppression respectively. Red blood cells lineage is more active in sickle cell patients as a mean lifespan of red blood cells in SCD is only 20 days due to chronic hemolysis and ineffective erythropoiesis. Thus having rapidly dividing red blood cell lineage, they are more prone to suppression and causing acute anemia due to erythroblastopenia. Secondly, colchicine side effects are dose dependent and its clearance is decreased in setting of chronic kidney disease in sickle cell patients making them more susceptible to side effects of colchicine.

THE IMPORTANCE OF AUTOMATED EXTERNAL DEFIBRILLATOR IN AMBULATORY CARE FACILITIES Sidra Khalid; Jyothirmai Seepana; Praful Maroo. Fariview Hospital - Cleveland Clinic, Cleveland, OH. (Control ID #2706758)

LEARNING OBJECTIVE #1: − to recognize the importance of time to defibrillation in a cardiac arrest patient

CASE: A 60-year-old female presented for an urgent outpatient appointment with her cardiologist when she became unresponsive in the office. She did not have a pulse, respirations or heart sounds. CPR was initiated and an automated external defibrillator (AED) was obtained. The initial rhythm was ventricular fibrillation. The patient was shocked and return of spontaneous circulation was achieved. Subsequently, the patient became alert and provided a history of left sided chest pain for 3 days. Her vital signs were BP of 170/102 mmHg, pulse 73/min, RR 17/min and afebrile. Her physical examination was unremarkable. EKG showed acute anterior wall MI. She was taken to the hospital and underwent emergency cardiac catheterization, which revealed a total occlusion of the proximal LAD, which was successfully stented. She was admitted to the cardiac care unit and optimal medical management was provided with aspirin, atorvastatin, prasugrel, metoprolol, and lisinopril. She was later discharged home in a stable condition.

IMPACT: This case highlights the importance of an AED in the outpatient setting. The goal of early defibrillation by first responders in an ambulatory setting is less than 3 min. Therefore, having a functional AED is important to prevent morbidity and mortality in a physician's office.

DISCUSSION: AHA in 2015 released that the incidence of out of hospital cardiac arrest is 326, 200. In which the average survival rate is 10.6% with a good neurological function in 8.3%. To achieve better outcomes early defibrillation within 5 min is key. The most frequent initial rhythm is ventricular fibrillation in a cardiac arrest, with defibrillation as its most effective treatment. Each minute that the defibrillation is delayed the probability of successful defibrillation is decreased. Thus, with delayed defibrillation, the ventricular fibrillation coverts to pulseless electrical activity. Survival rates in a ventricular fibrillation cardiac arrest decrease 7 to 10% for every minute the defibrillation is delayed. If the time from the collapse to defibrillation is approx. 6–10 min, many adults retain their neurological function. Hence, the goal is to have AED in accessible places, especially in ambulatory care facilities where trained personnel can recognize cardiac arrest and treat ventricular fibrillation for better survival outcomes in patients.

THE IMPORTANCE OF EARLY DIAGNOSIS AND TREATMENT TO PREVENT PERMANENT VISUAL IMPAIRMENT IN GIANT CELL ARTERITIS Manpreet Parmar; Gargi Patel; Michael Smerina. Rutgers Robert Wood Johnson, Piscataway, NJ. (Control ID #2707267)

LEARNING OBJECTIVE #1: Recognize giant cell arteritis (GCA) with bilateral symptoms early in presentation to direct appropriate treatment

CASE: Patient is an 83-year-old female with a past medical history of hypertension, hyperlipidemia, and anemia who presented with neck pain and jaw claudication. Three days prior to admission, the patient began experiencing sudden onset of cervical neck pain and jaw pain, which progressed to a constant throbbing bitemporal headache. She had similar headaches daily for about a month. One day prior to admission, the patient experienced sudden onset of bilateral cloudy vision while playing the piano. She was unable to read the sheet of music and could only visualize the gross shape of large objects. Given the persistent waxing and waning visual impairment, the patient went to her optometrist the following day, who advised her to go to the emergency room. Vitals signs on admission were stable. Pupils were equally round and 2 mm, but minimally reactive to light and accommodation. Extraocular movements were intact. Visual acuity was impaired, and patient was only able to make out shadows. Patient had bilateral temporal artery tenderness. Laboratory data was significant for elevated ESR (over 140) and CRP (10.2). Patient's signs and symptoms were concerning for temporal arteritis and thus patient

was immediately started on pulse dose steroids and aspirin 325 mg daily. Within about nine hours since admission, she was completely blind bilaterally. MRA of the head showed unusual appearance with prominent venous structure surrounding both optic nerves. Pathology from bilateral temporal artery biopsies showed changes consistent with giant cell arteritis.

IMPACT: This rare and unfortunate case of bilateral temporal arteritis highlights the importance of early diagnosis of GCA. If suspected, patient should immediately be started on pulse dose steroids and treatment should not be delayed for any further imaging.

DISCUSSION: Giant cell arteritis is a large and medium artery vasculitis, which mostly commonly presents in the elderly, leading to visual loss if left untreated. Our patient was experiencing bilateral temporal and frontal headaches for three months prior to admission. Unfortunately, she attributed symptoms to stress related headache. Due to delay in presentation, she had permanent vision loss. It is important to recognize that GCA can present with bilateral symptoms, which could be mistaken as a tension headache until visual symptoms begin. The chance of visual reversibility and recovery largely depends on the length of time that the optic nerve and retina suffer from acute ischemia. In a large retrospective study published in 2002, only 4% of eyes had visual improvement in visual acuity and central visual field, and only when steroid therapy had been started within three to four day of vision loss. Thus, given that the brief, yet critical, interval in which the inflammatory process can be influenced by pharmacotherapy, GCA should remain high on the differential.

THE INSIDIOUS MAC Elizabeth Hayes[1]; Joseph Conigliaro[1, 2]. [1]Hofstra Northwell School of Medicine, Hempstead, NY; [2]Northwell Health, Manhasset, NY. (Control ID #2707545)

LEARNING OBJECTIVE #1: Describe a typical presentation of a *Mycobacterium avium complex* (MAC) infection

LEARNING OBJECTIVE #2: Describe the population where MAC infections should be considered

CASE: 84 yo male presented with dyspnea but no chills, fever, night sweats, chest pain or cough. Past history of lung cancer treated with chemo and lobectomy 20 years ago and no recurrence, 30 pack year smoking history (quit 30 years ago) and significant asbestos exposure. Physical exam with clear breath sounds, O2 Saturation 96%, no cyanosis or clubbing. He had no weight loss and was afebrile. Three months prior he was treated for pneumonia. CT revealed prior right lower lobectomy, COPD and scattered patchy opacity in the right upper and lower lobes and clustered nodularity in the left upper lobe and lingula. CT 3 months later showed resolution of right lower lobe consolidations but new opacities in central bronchi. A new right lower lobe nodule and left upper lobe nodule with "tree in bud" appearance consistent with bronchiectasis were noted. Two months later exam revealed crackles at left base. PFTs showed moderate to severe COPD with loss of alveolar units. CT showed "tree in bud" opacities and new small nodular and patchy opacities in right lower lung. He then presented with cough, purulent sputum, fatigue and unchanged exam. Given chronicity and appearance on CT scan, sputum for MAC infection was sent and was positive with negative blood cultures.

IMPACT: *MAC* infections are becoming more prevalent in immunocompetent patients and are currently more common in the US than TB and increasing in prevalence. MAC infections should be considered in patients with known impaired respiratory defense due to primary or secondary causes and presenting with chronic cough, dyspnea, or fatigue.

DISCUSSION: Risk factors for MAC are divided into primary and secondary causes. Primary includes HIV, inadequate cytokine production or receptors and treatment with TNF-α antagonists or corticosteroids. Secondary causes include functional weakness, lung tissue alternation, chest skeletal malformation, ciliary disorders, airway obstruction and pathologic changes of lung parenchyma seen in patients with asbestos exposure, smokers, COPD, and CF. These factors alter defense mechanisms including alveolar macrophages allowing mycobacteria to colonize. Our patient had secondary risk factors including smoking and change in lung architecture. This case illustrates the insidious onset with nonspecific symptoms such as chronic cough, increased sputum, dyspnea, low grade fever, malaise and weight loss. Due to his vague symptoms, appropriate diagnostic workup with serial CT scans elicited the radiologic pattern suggesting an MAC infection. There are a broad range of radiologic patterns associated with MAC including bronchiectasis, nodular and cavitary lesions, and consolidation with fibrocavitary and nodular bronchiectic forms. Our patient demonstrated a consistent a bronchiectic pattern and multiple small nodules, some at the area of the previous lobectomy.

THE INTERNIST AND THE UTERUS: HOW ARE GENERAL INTERNISTS FAILING REPRODUCTIVE AGE WOMEN? Meghan C. Geary[2]; Mindy Sobota[1]. [1]Brown, Providence, RI; [2]Brown University, Providence, RI. (Control ID #2706489)

LEARNING OBJECTIVE #1: To describe the role of internists in counseling women on pregnancy options

LEARNING OBJECTIVE #2: To examine social determinants of inequality in access to abortion service

CASE: 21-year-old woman with a history of asthma, injection drug use and hepatitis C was admitted with an asthma exacerbation. Last menstrual period was 2 months prior to admission. Ultrasound confirmed an intrauterine pregnancy with gestational age of 63 days. Hearing confirmation of her pregnancy, she stated "I need a Mirena!" Options counseling was provided, including parenting, adoption and abortion. She was certain she did not want to parent or adopt. We discussed aspiration versus medication abortion. She wanted a medication abortion and we referred her to a local clinic that could see her expeditiously as medication abortion is available up to 70 days gestation(Henderson, Hwang et al. 2005, Zane, Creanga et al. 2015). She was dismayed to learn that we could not provide her medication abortion within our hospital and that it would cost $550 despite her Medicaid insurance. In 1976 the Hyde Amendment banned the use of federal funds for abortions with rare exception. Rhode Island is one of 33 states that has not opted to use state funds to cover the banned federal share of abortion services. Our patient was fortunate to receive her medication abortion near her house at a reduced cost due to funding from the National Network of Abortion Funds. Unfortunately she was lost to follow up and never came to clinic for control of her asthma, addiction disorder or placement of her requested Mirena IUD.

IMPACT: 45% of all pregnancies in the US are unintended(Finer and Zolna 2016). As abortion clinics' continue to close(Gerdts, Fuentes et al. 2016) and the political landscape shifts, internists can play a critical role in meeting the fundamental needs of reproductive-age women including counseling and provision of contraception and medication abortion.

DISCUSSION: Internists can play a crucial role in reproductive health care. Patients express a strong desire to receive contraceptive and abortion services

from their PCP,(Godfrey, Rubin et al. 2010, Page, Stumbar et al. 2012, Wu, Godfrey et al. 2015, Summit, Casey et al. 2016) yet internists rarely meet this need(Jacobson, Garbers et al. 2016). Although the ABIM considers family planning a core competency, only 25% of 146 general internal medicine faculty and residents at one academic institution routinely provide contraceptive counseling(Dirksen, Shulman et al. 2014). Internists perform more poorly in contraceptive counseling than do family medicine or gynecology colleagues(Sridhar, Forbes et al. 2015). Referring patients such as ours to specialists for routine reproductive health care risks lack of access and fragmenting patients' care. Almost half of internal medicine residents surveyed at 11 sites were willing to provide medication abortion(Schwarz, Luetkemeyer et al. 2005), but training is lacking. General internal medicine residency is the ideal time to implement such training.

THE LONG CONN: SPONTANEOUS CORONARY ARTERY DISSECTION AS A PRESENTING SIGN Sara Jane Cromer. New York Presbyterian Hospital - Columbia University Medical Center, New York, NY. (Control ID #2672666)

LEARNING OBJECTIVE #1: Consider spontaneous coronary artery dissection (SCAD) on the differential diagnosis for acute chest pain

LEARNING OBJECTIVE #2: Screen patients with diagnosed SCAD for comorbid conditions

CASE: A 57 year-old woman with resistant hypertension, transient ischemic attack 13 years prior, hospitalization for hypokalemia 3 years prior, and distant cocaine and heroin use on methadone therapy presented to the emergency department (ED) for substernal chest pressure. Blood pressure was elevated to 180s/120s. EKG revealed ST elevations in II, III, aVF, and V2-4, and troponin I was elevated to 6.32 ng/mL (normal range 0.01-0.03 ng/mL). Cardiac catheterization revealed spontaneous coronary artery dissection (SCAD) of the distal left anterior descending (LAD) artery with Thrombolysis in Myocardial Infarction (TIMI) flow 3 throughout. She was managed medically, with her course complicated by persistent hypokalemia despite initiation of lisinopril. She presented again to the ED 15 months later with acute "pushing" substernal chest pain. Blood pressures were 200s/100s. She reported that she had recently been discharged from an outside hospital for an episode of syncope then cardiac arrest with course complicated by hypokalemia treated with amiloride. EKG revealed stable T wave flattening in V4-6, and troponin I was elevated to 6.54 ng/mL. Cardiac catheterization revealed dissection of the mid-LAD with TIMI flow 3 and intramural hematoma seen by optical coherence tomography (OCT). She was again managed medically with resolution of symptoms. Given recurrent SCAD, workup was initiated for associated conditions and revealed normal renal artery dopplers but severely elevated aldosterone-renin ratio at 257.5 ng/dL per ng/(mL-h) (normal value < 35 ng/dL per ng/(mL-h)) suggesting primary hyperaldosteronism.

IMPACT: Spontaneous coronary artery dissection (SCAD) is a rare but often under-recognized cause of chest pain and myocardial ischemia which occurs more frequently in young women. 10-year recurrence of SCAD approaches 30%, so investigation of predisposing conditions should be pursued in all patients presenting with unprovoked dissection. Pregnancy or post-partem state and oral contraceptive use in women, severe hypertension, and vascular and connective tissue diseases such as Marfan syndrome, Ehlers-Danlos, and fibromuscular dysplasia (FMD) have been implicated as major contributors to SCAD. In our patient, recurrent hypokalemia and resistant hypertension led to workup for FMD and renal artery stenosis which instead revealed a primary hyperaldosteronism which likely contributed to her profound hypertension and recurrent SCAD.

DISCUSSION: Finally, although SCAD is diagnosed primarily by cardiac catheterization, especially with the increasing prevalence of intravascular imaging such as OCT, intervention is often limited due to inability to pass the point of dissection and an increased risk of complications. Some studies now suggest that medical management is the preferred treatment method for SCAD and its complications.

THE LONG ROAD HOME Meaghan S. Roche. Boston University Medical Center, Boston, MA. (Control ID #2705939)

LEARNING OBJECTIVE #1: Review the diagnosis and treatment of hepatorenal syndrome type 1 (HRS-1)

LEARNING OBJECTIVE #2: Explore the use of interdisciplinary resources to aid in patient-centered care at the end of life

CASE: A 57-year-old gentleman with a history of cirrhosis complicated by recurrent spontaneous bacterial peritonitis (SBP), alcohol use disorder in sustained remission, and bipolar disorder presented with diffuse abdominal pain of one week's duration. He denied nausea, vomiting, or diarrhea, though he noted mild dyspnea that he attributed to increased abdominal girth. His history was notable for cirrhosis due to alcohol use and severe persistent mental illness. He was prescribed furosemide, spironolactone, nadolol, lactulose, and Bactrim, but he endorsed intermittent adherence. The patient had a diagnosis of narcissistic personality disorder in addition to bipolar disorder and had been estranged from family and friends for many years. He lived in housing provided by a non-profit mental health services organization, and his outpatient case manager was his only contact. Paracentesis confirmed the diagnosis of SBP, and the patient was treated with antibiotics and albumin. By hospital day 5, his BUN and creatinine were rising, and he developed persistent oliguria. Urine sediment was bland, and the diagnosis of HRS-1 was made after two days of holding diuretics and giving an albumin challenge. The patient was deemed not to be a liver transplant candidate by gastroenterology due to lack of social support. He was treated for HRS-1 with albumin, octreotide, and midodrine for five days, but his clinical condition deteriorated. At that time, the patient opted to pursue comfort measures, and he repeatedly expressed a desire to return home to be with his cat. Inpatient hospice was felt to be a safer alternative, but the patient adamantly refused. In conjunction with inpatient case management and social work as well as the patient's own case manager, special arrangements were made to discharge home with hospice and visiting nurse services that provided several hours of direct care per day. He passed peacefully at home four days after discharge.

IMPACT: This case has emboldened me to reach out to interdisciplinary team members to strategize creative solutions for patients with challenging social dynamics, especially at the end of life. Additionally, the patient himself reminded me daily of the iterative nature of discussing terminal diagnoses and hospice.

DISCUSSION: This is a classic case of HRS-1, as SBP is the most common risk factor. Furthermore, medical management is often ineffective, and the only definitive treatment is liver transplantation. The case also illustrates the need for coordinated case management in approaching patients with limited social

supports. This patient had no family to help with his care at home, but with input from various team members, we were ultimately able to meet his wishes.

THE MYSTERIOUS MEDIASTINAL MASS

Zunirah Ahmed[3]; Nida N. Ahmed[1]; Syed M. Hasan[2]; Jewell Halanych[1]. [1]UAB, Montgomery, AL; [2]UAB MONTGOMERY, Montgomery, AL; [3]UAB Montgomery, Montgomery, AL. (Control ID #2706786)

LEARNING OBJECTIVE #1: Recognize atypical presentation of renal cell carcinoma.

LEARNING OBJECTIVE #2: Distinguish renal cell carcinoma as a differential diagnosis for anterior mediastinal mass

CASE: A 46-year-old male with past medical history significant for hypertension, multiple urinary tract infections and quadriplegia secondary to gunshot wound presented with palpitations, hiccups and unintentional weight loss. Physical exam was remarkable for tachycardia with irregularly irregular rhythm. Laboratory data was significant for hemoglobin of 9.7gm/dl, TSH <0.01IU/ml, T3> 20 pg/ml. Initial EKG demonstrated atrial fibrillation with rapid ventricular response. Chest x-ray was notable for right paratracheal mass. CT chest showed thyroid gland enlargement and right anterior mediastinal mass measuring 8.2 × 6.0 × 4.9cm. Thyroid ultrasound showed enlarged heterogeneous thyroid gland with increased vascularity. Patient was treated for new onset atrial fibrillation associated with hyperthyroidism. CT abdomen done for unexplained weight loss, revealed hypo-densities in bilateral kidneys. Biopsy of mediastinal mass showed renal cell carcinoma and the patient was referred to oncology for further management.

IMPACT: Certain neoplasms are commonly found in the anterior mediastinum. This case is a reminder to expand the differential of mediastinal masses beyond the expected neoplasms.

DISCUSSION: Mediastinal masses can be divided into three categories depending on their location: anterior, middle and posterior, with anterior mediastinal masses being the most common. These typically include neoplasms of thymus or thyroid, germ cell tumors (notably teratoma), lymphoma or hemangioma. Renal cell carcinoma (RCC) presents with a wide array of symptoms with most common presentation of flank pain, abdominal mass, hematuria and weight loss. Around 16% of RCC patients have advanced disease with metastasis at the time of presentation. Common sites of metastasis include lung, lymph node, liver, bone, and brain. Chest cavity involvement of renal cell carcinoma usually manifests as pulmonary parenchymal disease with or without hilar lymphadenopathy. Renal cell carcinoma manifesting as an anterior mediastinal mass is rare with only two reported cases. One third of patients with renal cell carcinoma do not have the typical triad of presentation. Incidental findings of renal cell carcinoma are now being increasingly reported. This case illustrates an unusual presentation of renal cell carcinoma. It highlights the need to broaden the differential diagnosis of anterior mediastinal masses and merit renal cell carcinoma as one of the differentials.

THE OCCASIONAL UNFORTUNATE COST OF COST-EFFECTIVE MEDICINE

Amanda Bisset[2]; Naomi Karlen[1]. [1]Southeast Louisiana Veterans Health Care System, New Orleans, LA; [2]Tulane University, New Orleans, LA. (Control ID #2705961)

LEARNING OBJECTIVE #1: Explore the risks and benefits of cost-conscious care.

LEARNING OBJECTIVE #2: Discuss the recommendations for diagnosis and treatment of GERD

CASE: A 75-year-old man presented to primary care with 6 months of severe epigastric pain. He described heartburn and pain concerning for gastrointestinal reflux disease (GERD). His prior history included mild pancytopenia, followed by outpatient hematology. Age and risk factor appropriate cancer screening and HIV testing were negative. He denied any alarm symptoms such as dysphagia, weight loss, or bleeding. He was started on a proton-pump inhibitor for empiric treatment. His reflux persisted despite multiple therapies. He was referred for an esophagogastroduodenoscopy (EGD). EGD showed mild gastritis with no malignancy. He was referred to hematology/oncology for urgent bone marrow biopsy. Prior to the biopsy, he was admitted to the hospital for uncontrolled abdominal pain. An abdominal CT showed an adrenal mass measuring 8.5 × 8.6 × 4.3 cm mass with extension into the liver and right kidney. A chest X-ray showed consolidation of the right upper and lower lobes, secondary to a right infrahilar mass. The patient was placed in hospice care due to unresectable presumed adrenocortial carcinoma and died six months after re-presenting to primary care.

IMPACT: Internists are asked to balance not only the benefit and harm of screening tests and diagnostic testing but also the cost of these evaluations. This case demonstrates the role of the internist in high-value, cost-conscious care.

DISCUSSION: To curb the rising tide of health care expenditure, internists have been challenged to maintain high-quality care while reducing health care costs. Suggested principles for providing this care include the following: avoid performing a diagnostic test that does not change management, consider the pre-test probability of a disease, and consider the cost of testing as including the test itself and the downstream costs. Often when pre-test probability is low, the likelihood of a false positive test result is higher than the likelihood of a true positive result. When evaluating reflux, typical symptoms such as heartburn and regurgitation are considered suggestive of GERD. Internists attempt trial of proton-pump inhibitors for eight weeks to control symptoms and support the diagnosis of GERD. In patients diagnosed with GERD, roughly two thirds of patients have normal results on upper endoscopy. As a result, professional societies advocate for empiric treatment of symptoms before further laboratory or radiologic testing. The guidelines recommended for the diagnosis and management of GERD follow the principles of providing high-value, cost-conscious care with the desire to decrease the cost of testing and avoid false-positive results. However, at times, following the principles of cost-conscious care may lead to a delay in testing and diagnosis. Internists must maintain balanced decision-making when approaching each patient and his/her care.

THE PERIL OF AN INITIAL MISDIAGNOSIS

Marc Heincelman. Medical University of South Carolina, Charleston, SC. (Control ID #2703775)

LEARNING OBJECTIVE #1: Define the characteristics that distinguish orbital cellulitis from preseptal cellulitis

LEARNING OBJECTIVE #2: Recognize potential complications of orbital cellulitis including cavernous sinus thrombosis

CASE: A 24 year-old previously healthy man presented with a complicated orbital cellulitis. Symptoms started a few days prior with a pimple on the inside

of his left nostril in which he tried to pop unsuccessfully. The pimple expanded to a fluid collection within the left nostril with surrounding erythema and swelling of the dorsum of his left nose with extension to the left eyelid. Facial swelling was associated with pain and difficulty with eye movements. He presented to an urgent care and was prescribed oral antibiotics for presumed preseptal cellulitis. Over the next day, the patient began having left-sided headaches, decreased visual acuity, and worsening difficulty with extraocular movements. CT revealed an infectious process of the face with intraorbital extension and a cavernous sinus thrombosis. He was referred to our tertiary care center. Temperature was 38.6C. There was bilateral periorbital edema, erythema, and chemosis. The left pupil was 5mm and nonreactive to light. Opthalmoplegia was noted. White blood cell count was 22k/cumm. Blood cultures returned positive for MRSA. MRI Brain confirmed orbital cellulitis with globe distortion, cavernous sinus thrombosis, cerebritis, and a new small left temporal empyema. MRI Angiogram revealed extensive thrombophlebitis of several intracranial arteries and veins. Despite antibiotics, he developed a ruptured brain aneurysm and died.

IMPACT: Our case illustrates an incredibly severe presentation of orbital cellulitis that was initially misdiagnosed as preseptal cellulitis. Pain with eye movements, opthalmoplegia, and a rhinosinus origin of infection should prompt internists to favor the diagnosis of orbital cellulitis over preseptal cellulitis and warrant immediate intravenous antibiotics and inpatient admission.

DISCUSSION: Facial cellulitis is a common disease seen by both internists and hospitalists. When the eyelid is involved, it is imperative to differentiate between preseptal and orbital cellulitis. Preseptal cellulitis is an infection of the anterior portion of the eyelid that spares the orbit and other ocular structures. It is generally a mild infection that does not lead to serious complications and can be managed with oral antibiotics. In contrast, orbital cellulitis is an infection of the orbit including the fat and extraocular muscles. The most common originating source of infection is the paranasal sinuses. Although eyelid swelling and ocular pain occur with both conditions, orbital cellulitis is differentiated from preseptal cellulitis by pain with eye movements, opthalmoplegia, and proptosis. Complications of orbital cellulitis include orbital abscess, cavernous sinus thrombosis, and intracranial extension. Cavernous sinus thrombosis merits consideration with symptoms of unilateral headaches, vision changes, and eye tearing.

THE PITFALLS OF SUPPLEMENT USE Tina Shah; Frederick Yick; Hatef Massoumi; Darlene LeFrancois. Montefiore Medical Center, Bronx, NY. (Control ID #2706726)

LEARNING OBJECTIVE #1: Recognize the importance of taking a thorough medication history including supplement and over the counter medication use.

CASE: A 30 year-old woman presented to her PCP's office with several week history of fatigue, nausea, and vomiting. She also reported two week history of dark urine and yellow-hued skin. Patient denied alcohol use, excessive acetaminophen use and intravenous drug use. Physical exam was remarkable for a lethargic woman with severely jaundiced skin and RUQ tenderness. She was afebrile and her mental status was intact. Initial labs showed AST and ALT greater than 1000, INR of 3, total bilirubin of 16.1, direct bilirubin of 14 and albumin of 3.1. Her labs were consistent with acute liver failure requiring emergent liver transplantation. All viral and autoimmune tests were negative including HAV, HBV, HCV, HIV, EBV, CMV, HSV, smooth muscle AB, mitochrondrial AB and liver-kidney AB. On further targeted history, patient revealed that she had been taking a weight loss supplement for the past six months, which was made of herbal ingredients including black cohosh.

IMPACT: This case highlights the importance of a thorough medication history as patients often ingest substances that may negatively affect their health. Patients may not divulge information about natural or herbal product use unless prompted, as they feel the substances are harmless.

DISCUSSION: Many case reports in the literature report black cohosh as a cause for hepatoxicity. However an analysis done by Teschke et al. of 69 such cases showed only one case with possible causal relationship. Regardless, the NIH has listed black cohosh as a hepatotoxin. Other natural or herbal products the internist should be cognizant of include kava, green tea extracts, usnic acid, among many others. Many of these products have been implicated as hepatotoxic through case reports, but data is scarce. The perceptions of safety surrounding "herbal" or "natural" products remain an issue that internists must face. Public perception of these alternative therapies being harmless continues to be pervasive. It is imperative that internists remain vigilant and elicit a thorough medication history during patient encounters, as patients may not consider these products as part of their medication list. It is important to recognize that many of these products may not have a proper safety profile and can be toxic and life threatening, as highlighted in our case of acute fulminant liver failure.

THE ROOT OF THE MATTER: A CASE OF PAP SMEAR AVOIDANCE Adaugo Amobi[1, 2]; Katherine Johnston[1]. [1]Massachusetts General Hospital, Brookline, MA; [2]Harvard Medical School, Boston, MA. (Control ID #2680197)

LEARNING OBJECTIVE #1: Recognize signs a patient with a history of intimate partner violence (IPV) may exhibit during pap smear examinations.

LEARNING OBJECTIVE #2: List steps for conducting trauma-informed cervical cancer screening.

CASE: Ms. M is a 37 yo F with h/o of hypertension presenting for her annual physical and to establish care. Her last pap smear was over 7 years ago and she says she hates pap smears. She has no history of abnormal pap smears. Review of systems is otherwise negative. Social history is significant for a former abusive relationship. Ms. M is not sexually active. She has no family history of cancer. As she is assuming the dorsal lithotomy position she becomes pale, diaphoretic and tremulous.

IMPACT: This case taught me to always directly ask about trauma as a cause of patient difficulty with pap smears.

DISCUSSION: A history of intimate partner violence (IPV) should be considered as a cause of patient difficulty with pap smears. Nearly 1 in 5 women in the US have been raped and 43% of women have experienced sexual violence other than rape, for example, sexual coercion, throughout their lifetime. Women with a history of IPV may display signs of tremulousness, diaphoresis, tachypnea, tearfulness, and sometimes dissociation (non-response to verbal stimuli) during pap smear testing. A history of IPV of any type, physical, sexual and emotional, is associated with increased risk of cervical dysplasia (OR 2.6). Victims of sexual abuse have a particularly elevated risk of cervical cancer due to increased exposure to high-risk HPV strains. These patients may be 4.5 times more likely to test positive for high risk HPV strains compared with women without a sexual

abuse history. Increased avoidance of pap smears in patients with trauma history also results in detection of cervical dysplasia at later, invasive stages. It is important to inquire about patients' past experiences with pelvic exams and directly ask about trauma as one possible cause of difficulty with undergoing pap smears. This conversation should occur prior to examination while patients are fully clothed. Trauma-informed clinical practice includes validating patients' anxiety about the test. Women should then be reassured that steps can be taken to alleviate fears and discomfort. Patients can be encouraged to bring a companion for support and be assured that they can stop the exam at any time. Patients can reposition themselves more comfortably and self-insert the speculum. Anxiolytic medication can be used during office testing. An alternative to office-based pap smears is vaginal self-collection swabs to detect high-risk strains of HPV. This method, when used as primary screening to detect CIN2 or worse, has a sensitivity of 76 and specificity of 86% compared to 91 and 88% respectively with clinician-obtained liquid based cytology. Exams under anesthesia can be offered if prior attempts at pap smears are unsuccessful. All healthcare providers should be proficient in trauma-informed cervical cancer screening.

THIRD TIME IS A CHARM: MISSED ENDOCARDITIS IN AN INTRAVENOUS DRUG USER Jacob Hupp; Michael Chandler. Summa Health System, Ravenna, OH. (Control ID #2694603)

LEARNING OBJECTIVE #1: Evaluation of intravenous drug users
LEARNING OBJECTIVE #2: The evolving definition of Sepsis

CASE: The patient is a 33 year old woman who presents to the third different emergency room in three weeks with similar symptoms. The patient complains of dyspnea, weakness, and abdominal pain for the past six weeks. During her previous two emergency department visits, laboratory evaluation including CBC, CMP, and UA was unremarkable except for documentation of anemia. She was found to have a fever, patchy bilateral pneumonia, and a urine toxicology positive for heroin. On her third presentation, she had all prior findings, but was hemodynamically unstable and had acute kidney injury. A CTA showed multiple large pulmonary emboli. Surgical pulmonary artery embolectomy retrieved multiple large septic emboli. Echocardiogram showed a 1.3x2.1cm tricuspid vegetation as well as a perivalvular abscess and associated atrial-septal defect. Further evaluation revealed septic emboli to the left kidney, liver, spleen, brain, and multiple medium and large joints. Blood cultures grew MSSA. She developed complete heart block, requiring a permanent pacer. After a 56 day hospital stay, multiple abdominal, cardiac, and orthopedic procedures, and IV antibiotics, she was eventually discharged to a long-term acute care facility.

IMPACT: This case offers a rare presentation and complication of a common disease. As IV drug use continues to rise in the US, devastating complications such as this are likely to become more prevalent. Increased vigilance by primary care providers will be vital moving forward.

DISCUSSION: There has been a steady increase in the amount of illicit drug users over the last decade, costing the American healthcare system over 11 billion dollars annually. There is a large gap between prevalence and available treatment programs and facilities. It is estimated that, of the patients that would benefit from treatment in a specialty facility, only 11% were able to receive it. It is crucial to maintain hypervigilance. HIV, hepatitis, STDs, tuberculosis, acute psychosis, endocarditis/bacteremia, and drug overdose are all ailments that the CDC has identified as directly tied to drug use. Sepsis is the leading cause of death from infection and accounts for over 20 billion dollars in hospital costs in 2011. The Society of Critical Care Medicine published new recommendations for the diagnosis of sepsis in *JAMA*. The new guidelines aim to quickly identify the patients at highest risk of sepsis. The Sequential Organ Failure Assessment (qSOFA) is a diagnostic tool that can be done at bedside by healthcare staff. It consists of three questions: Is there an alteration in mental status? Is the systolic blood pressure ≤100mmHg? And is the respiratory rate >22? Two or more of these being present increases the risk of a prolonged hospital stay or death during admission.

THREE CASES OF AORTITIS FINALLY DIAGNOSED BY PET/CT

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LEARNING OBJECTIVE #1: When we consider aortitis, PET/CT is useful for diagnosis.

CASE: Case 1: A 17-year-old woman was admitted to our department due to persistent fever for 2 months and bilateral femoral pain for 1 month. On admission, her temperature was 38.0 degrees Celsius. In physical examination, she had an induration at inside of bilateral thighs and weakness at bilateral lower limbs. Ultrasound examination and MRI revealed thick wall of bilateral femoral vein, but biopsied vessel had neither inflammation nor thrombi formation. Case 2: A 80-year-old woman with a history of cerebral infarction was admitted to our hospital due to high fever for 2 months. Two months before admission, she started to have mild fever, visual field constrictions and diplopia. Her visual field constriction and diplopia improved without any treatment, but her fever persisted, so she was admitted to our hospital. On admission, her temperature was 37.3 degrees Celsius. In physical examination, abdominal bruit was audible, but temporal artery was not tender and no induration was found. Case 3: A 71-year-old woman with a history of left breast cancer was admitted to our hospital due to high fever, loss of appetite and sore throat. 2 months before visiting, she had high fever, loss of appetite and sore throat. She visited previous hospital, and antimicrobials were prescribed. But her fever persisted, so she was admitted to our hospital. On admission, her temperature was 37.9 degrees Celsius. Abdominal bruit was audible in physical examination, but temporal artery was not tender and no induration was found. Every case showed no typical abnormal findings as aortitis which made it difficult to diagnose immediately. Enhanced CT could not be performed for Case 1 because of asthma. Enhanced CT of Case 2 and 3 revealed thickening of the arterial wall but the finding was difficult to be distinguished from atherosclerosis. PET/CT with 18F-FDG showed high maximum standardized uptake value (SUVmax) at aorta and major branch arteries in all three cases, so Case 1 was diagnosed as Takayasu's arteritis, and Case 2 and 3 were as giant cell arteritis. Predonisolone was administered, then their symptom was resolved quickly.

IMPACT: Patients with persistent fever and non-specific abnormalities, aortitis should be a differential diagnosis. SUVmax of PET/CT was useful to distinguish arteries with inflammation from atherosclerosis.

DISCUSSION: Primary aortitis showed variety of symptoms and findings, which could cause difficulty for diagnosis. We could diagnose three cases of fever of unknown origin as aortitis using PET/CT. SUVmax of PET/CT with

18F-FDG was useful to detect arteritis with inflammation. Disadvantage of PET/CT is that intracranial legions cannot be detected, but 15% of giant cell arteritis is not accompanied by temporal arteritis, as Case 2 and 3. Therefore, PET/CT can be a useful diagnostic tool of aortitis when biopsy of arteries seems impossible or low yield.

THROMBOSIS AND THROMBOCYTOPENIA: AN UNUSUAL DIAGNOSIS AND A THERAPEUTIC DILEMMA Muhammad Hammad; Sowjanya Naha; Marianna Sargsyan; Kushal Naha. Presence Saint Francis Hospital, Evanston, IL. (Control ID #2703208)

LEARNING OBJECTIVE #1: Recognize the characteristic clinical presentation of PNH

LEARNING OBJECTIVE #2: Initiate appropriate therapy for thrombosis in patients with PNH

CASE: We report a 38 year old Caucasian male who presented with chest pain, shortness of breath and right leg pain and swelling after a trivial injury. At presentation he was noted to be pale and tachycardic. Examination of his right calf demonstrated swelling and tenderness. Cardiac and respiratory examination was unremarkable. Preliminary blood work showed marked pancytopenia. Thoracic CT angiography was negative for pulmonary embolism. Venous sonography of his right leg confirmed presence of deep vein thrombosis. Further laboratory evaluation was consistent with hemolysis. Flowcytometry for CD 59 showed deficient clones confirming the diagnosis of paroxysmal nocturnal hemoglobinuria (PNH). Bone marrow study subsequently ruled out coexisting aplastic anemia and/or myelodysplasia. An IVC filter was placed because of high risk of bleeding with anticoagulation. The patient, thereafter, reported recurrence of his respiratory symptoms and repeat CT angiography showed an acute pulmonary embolism involving the distal right main pulmonary artery extending into the segmental branches. He is now on follow up with Hematology and is expected to shortly commence therapy with eculizumab.

IMPACT: How did this case change my practice? Venous thromboembolism (VTE) is commonly encountered in everyday clinical practice. Evaluation for underlying thrombophilia often has no immediate impact on medical management. PNH is unique inasmuch that specific therapy exists in the form of eculizumab that has been shown to reduce the risk of recurrent thrombosis. This case therefore underscores the importance of screening patients with unprovoked VTE for underlying PNH.

DISCUSSION: PNH is a rare acquired hematopoietic stem cell disorder characterized by the unique combination of pancytopenia and thrombophilia. Primary presentation with thrombosis is rare in PNH and seen in only 5% of cases, although over 40% of patients ultimately develop this complication. Thrombosis is typically venous and often occurs in unusual locations such as hepatic, portal, mesenteric and cerebral veins. Individuals with PNH granulocyte clones that make up more than 60 percent of white blood cells are at highest risk; these clones constituted over 80 percent of our patient's leukocytes. Pancytopenia is typically modest; however it can be severe if PNH overlaps or co-exist with aplastic anemia and rarely myelodysplastic syndrome. These conditions, therefore should be ruled out especially in setting of severe pancytopenia, as was done in this case. This patient also demonstrates the therapeutic challenge posed by simultaneous presence of thrombocytopenia and thrombosis. While insertion of an IVC filter is helpful, only eculizumab has been shown to reliably lower the risk of thrombosis in patients with PNH.

THYROTOXIC HYPOKALEMIC PARALYSIS: A LIFE-THREATENING PRESENTATION OF THYROTOXICOSIS Iris Huang. Mount Sinai, New York, NY. (Control ID #2706403)

LEARNING OBJECTIVE #1: Recognize the clinical features of thyrotoxic hypokalemic paralysis (THP)

LEARNING OBJECTIVE #2: Manage and prevent THP

CASE: 21 year-old Hispanic male with past medical history of hyperthyroidism of unknown etiology presented with one day of severe diffuse weakness accompanied by profuse vomiting and diarrhea. He had worsening diarrhea, palpitations, night sweats and insomnia for six months. He drank four beers at a party two days prior to presentation and took thyroid medications intermittently. Significant physical exam findings included an ill appearance, tachycardia to 110 bpm, 2/5 upper and lower extremity strength and enlarged non-tender thyroid gland. He did not have fever, hypotension or exophthalmos. Admission labs included leukocytosis with 92% neutrophils, potassium 1.9 mEq/L, troponin 0.48 ng/mL and creatinine kinase myocardial band 8.2 ng/mL. Electrocardiogram showed sinus tachycardia, diffuse ST depressions and QTc interval of 600. Upon transfer to the Cardiac Monitoring Unit, he was started on methimazole and propranolol with aggressive intravenous potassium and magnesium supplementation. Thyroid hormone levels resulted the following morning: TSH 0.01 mIU/mL, T4 22.8 μg/dL and T3 317 ng/dL. After resolution of his weakness and tachycardia in 24 hours, he was discharged home with endocrinology follow-up, extensive counseling and bedside medication delivery.

IMPACT: THP is a life-threatening presentation of thyrotoxicosis and can be diagnosed clinically based on presenting signs, symptoms and basic labs before TSH and T4 levels result. Key features include diffuse weakness, tachycardia, signs and symptoms of thyrotoxicosis and hypokalemia. These features should be recognized early so that prompt triage to a Cardiac Monitoring Unit and management with thionamides, beta blockers and potassium supplementation are initiated.

DISCUSSION: THP is caused by excess thyroid hormone, adrenergic activity and potassium influx into skeletal muscle. The incidence of THP is approximately 0.2% in non-Asian populations with over 95% of cases occurring in men. Clinical features of THP include diffuse weakness greater in lower extremities, tachycardia and signs and symptoms of thyrotoxicosis. Although rare, cases of respiratory muscle weakness requiring mechanical ventilation and life-threatening arrhythmias have been reported. Management of THP involves decreasing thyroid hormone synthesis with thionamides. Beta-blockade with propranolol decreases adrenergic activity and potassium entry into cells. Potassium and magnesium levels are aggressively supplemented and frequently monitored to avoid rebound hyperkalemia. Cardiac monitoring is recommended given the risk of arrhythmias. Common triggers of THP include strenuous physical activity, increased alcohol and carbohydrate intake and medication non-adherence. Therefore, educating hyperthyroid patients about the signs and symptoms of thyrotoxicosis, dietary and lifestyle modifications and the importance of medication adherence can prevent recurrent THP.

THYROTOXIC PERIODIC PARALYSIS: AN ALARMING DISEASE WITH AN INEXPENSIVE DIAGNOSIS AND SIMPLE CURE Pauras Memon. Washington University in St. Louis, St. Louis, MO. (Control ID #2706289)

LEARNING OBJECTIVE #1: Recognize TPP in a patient presenting with sudden unexplained weakness

CASE: A 37 year-old African American male with no significant past medical history presented to the ED with one day of progressive paralysis in his extremities. He endorsed progressive generalized weakness and loss of muscle mass over the preceding few months so began a strenuous exercise regimen in the week prior to presentation. A few days later, he noticed worsening proximal muscle weakness more prominent in his lower extremities to the point that he was unable to lift his legs out of bed and hence presented to the hospital. On review of systems he endorsed palpitations, heat intolerance, diarrhea, and a 20-pound unintentional weight loss over the same time period. He denied any focal neurologic deficits, fevers, recent upper respiratory illness, chest pain, or history of strokes or seizures. Notable social history revealed that he had just started working at a pizza shop and his carbohydrate intake had increased for this reason. He denied any alcohol use, smoking, or illicit drug use, family history was non-contributory, and he did not take any medications. In the ED his vital signs were stable and physical exam was otherwise unremarkable except for 0/5 strength in all extremities and a goiter without nodules. No focal neurologic deficits were appreciated. Labs were notable for a potassium level of 2.1 mmol/L and TSH of <0.01 mcIUnits/ml, free T4 3.38 ng/dl, and FT3 12.20 pg/ml. ECG was concerning for U waves in leads V4-V6. His overall picture was concerning for thyrotoxic periodic paralysis (TPP). He was immediately given IV potassium chloride and his paralysis completely resolved within hours. His hyperthyroidism was treated with methimazole and propranolol and he underwent radioactive iodine ablation shortly thereafter.

IMPACT: Prior to encountering this patient, TPP was not something I routinely considered. This case changed my thinking when approaching young patients with paralysis. In addition to conditions such as Guillan-Barre syndrome, transverse myelitis, myasthenic crisis, and botulism, TPP will also be high on my differential diagnosis.

DISCUSSION: This patient presented with a classic case of TPP as he fit the male demographic, was experiencing symptoms of hyperthyroidism, recently started exercising, and increased his carbohydrate intake - the latter two have been known to trigger TPP. Sudden paralysis in a young adult can be an alarming presentation which often prompts an extensive and expensive diagnostic workup. Although TPP is a relatively rare condition (occurring in 0.1–0.2% of individuals with hyperthyroidism, 2% in Asians), diagnosis is cost-effective and treatment with non-selective beta-blockade, potassium repletion, and correction of hyperthyroidism can completely reverse symptoms. Hence, TPP should always be a consideration in such patients in the appropriate clinical context.

TITLE: A LEGION OF CK: LEGIONELLA PNEUMONIA PRESENTING AS RHABDOMYOLYSIS-INDUCED ACUTE RENAL FAILURE

Jason Unger; Tanner Slayden; Chin Hee Kim. Walter Reed National Military Medical Center, Bethesda, MD. (Control ID #2707184)

LEARNING OBJECTIVE #1: Recognize the rare extrapulmonary manifestations of Legionella pneumophila.

LEARNING OBJECTIVE #2: Recognize the limitation of the Legionella urinary antigen test in the setting of international travel.

CASE: A previously healthy 51-year-old woman presented with seven days of fatigue, muscle weakness, hemoptysis, diarrhea, and oliguria after returning from vacation to Abu Dhabi and Dubai two days prior to presentation. She had no mylagia or sick contacts. She spent most of her time in five-star hotels, except for one planned excursion to ride camels in the desert. She only drank bottled water, but utilized air conditioning heavily. On admission, she was febrile, tachycardic, hypoxic, and had coarse crackles over the right basilar lung field. Labs were significant for leukocytosis with a left shift, hyponatremia, elevated creatinine, transaminitis, hyperbilirubinemia, and a CK of 130,000U/L. Urine studies were significant for a FENA of 0.8 and muddy brown casts consistent with acute tubular necrosis from rhabdomyolysis. Chest imaging showed a right lower lobe infiltrate. Broad-spectrum antibiotics were administered for severe sepsis from pneumonia. Despite aggressive IV hydration, kidney function continued to worsen, and she remained oliguric. Dialysis was initiated. With concomitant hyponatremia and diarrhea, suspicion for legionella remained high despite a negative urine legionella antigen. Legionella serum titer ended up being positive at 1:528 (>1:128 cut off for diagnosis). With legionella pneumonia diagnosed, antibiotics were deescalated to a fluoroquinolone. She had clinical improvement with resolution of serum legionella antibody titer. Her kidney function also improved, and dialysis wasn't required at discharge.

IMPACT: This patient presented with an atypical presentation of legionella pneumonia complicated by rhabdomyolysis-induced acute renal failure. The severity of her disease with no significant immunosuppressive risk factors and negative urine legionella antigen test show the importance of having a high degree of suspicion for L. pneumophilia in cases of new pneumonia with extrapulmonary manifestations.

DISCUSSION: Only 43 publications between 1980 and 2016 (mainly case reports) discuss the link between L. pneumophilia and rhabdomyolysis. This may be secondary to direct infection of the organism into muscle or through release of endotoxin. Other infections, such as Staph aureus, Strep pyogenes, and viral etiologies, are associated with rhabdomyolysis. We also show the limitation of the legionella urine antigen. For serogroup 1, the urinary antigen is highly sensitive and specific; but for non-serogroup 1 (more likely in setting of international travel), sensitivity and specificity are unknown. Patients with pneumonia, diarrhea, and electrolyte abnormalities should have L. pneumonia high on the differential even with a negative urine antigen. A serum legionella antibody is a useful confirmatory test, and a CK should be ordered if there is renal involvement.

TO CLOSE OR NOT TO CLOSE A PATENT FORAMEN OVALE: THAT IS THE QUESTION

Waleed Al-Darzi[1]; Maxim Zlatopolsky[2]; Alaa Abu Sayf[1]; Rana L. Awdish[1]. [1]Henry Ford Hospital, Detroit, MI; [2]American University of the Caribbean, Coral Gables, FL. (Control ID #2687668)

LEARNING OBJECTIVE #1: Recognizing that cardiac shunting often occur in setting of severe pulmonary hypertension (PH) and serves to relieve the severe increase in the right sided pressures.

LEARNING OBJECTIVE #2: Recognizing one of the contraindications to patent foramen ovale (PFO) closure.

CASE: A 65-year old female presented to Heart Failure clinic after a follow up transthoracic echocardiography (TTE). She complained of dyspnea, bilateral lower extremity edema, and right 4th digit pain. On physical exam, patient was noted to have darkening of her right 4th digits. She had hypoxia with higher oxygen requirement than baseline. Past medical history is significant for Interstitial Lung Disease (ILD), Pulmonary Hypertension (PH) groups (2 and

3), coronary artery disease with three prior stents, and chronic diastolic dysfunction. Her TTE showed EF of 50%, pulmonary artery systolic pressure of 60 mmHg, and large (greater than 20 bubbles) PFO, that is new, with predominantly right to left shunting across the atrial septum. Patient was hospitalized due to concern for paradoxical emboli and for her hypoxia. Right heart catheterization (RHC) was done that showed mean Pulmonary arterial pressure of 45 mmHg, wedge pressure of 8 mmHg, cardiac index of 2.13 L/min/m2, pulmonary vascular resistance of 840 dynes.sec.cm-5 (10.5 Wood units), and systemic vascular resistance (SVR) of 797.84 dynes.sec.cm-5 at rest. CT angiography was done that showed acute pulmonary embolus (PE) to segmental branches of right lower lobe and demonstrated stable ILD. An upper extremity arterial study demonstrated reduced perfusion to the right 4th digit attributable to a possible embolic event. High intensity heparin was initiated. Risks and Benefits of PFO closure were discussed at a multi-disciplinary meeting. Given that patient's PVR > 2/3 of SVR in the RHC, PFO closure was deferred. The patient was ultimately discharged on warfarin.

IMPACT: Careful decision making in PFO closure should be pursued for PH patients, even in presence of a known indication for closure. One of the contraindications to PFO closure is the irreversible pulmonary hypertension (PVR >2/3 SVR or pulmonary artery pressure > 2/3 systemic arterial pressure). It is important to recognize that closure of PFO in those situations could precipitate decompensation of right ventricular (RV) function and sudden drop in cardiac output which could be fatal.

DISCUSSION: While PFO closure may be pursued in cases of paradoxical emboli, a risk/benefit analysis, especially looking at PH, is necessary. In this case, acute PE is the likely cause of acute rise in the right sided cardiac pressures. Eventually, the acute PFO provided a necessary outflow tract for right sided pressure overload.

TOO HEALTHY FOR HOSPICE: WHEN THE RIGHT CARETAKER CHANGES A PATIENT'S PROGNOSIS Jessica Tanenbaum[2]; Hadas Reich[1]. [1]NYU, NEW YORK, NY; [2]NYU, New York, NY. (Control ID #2704431)

LEARNING OBJECTIVE #1: Appreciate caregivers' influence on prognosis in patients with life-limiting disease

CASE: A 93-year-old bedbound woman with dementia was referred from medicine clinic to a resident-led home visit program. The patient appeared to be near the end of life. She had a Functional Assessment Scale (FAST) score of 7D (that is, she would be unable to sit without assistance), as well as cachexia, evidence of recent weight loss, and pressure ulcers. The patient's family and home health aide (HHA) agreed to hospice enrollment and a referral was placed. Follow-up several months later revealed that the hospice agency had deemed the patient too well for their services. We made a second home visit and observed that the patient was no longer cachectic, was free of pressure ulcers, and was more interactive. While her dementia remained life-limiting, we agreed that she was no longer hospice-eligible. Discussion with the patient's HHA of over 30 years revealed that our initial evaluation had occurred soon after the aide's month-long vacation. She had returned to find her patient in severe decline. We are not sure if the patient's appetite lapsed without her regular companion, if substitute caregivers showed inadequate persistence with spoon feeding, or if other factors accounted for the patient's previous grave condition. However, subsequent visits reinforce our impression that our patient is sustained by her deep connection with her regular caregiver.

IMPACT: Hospice evaluations do not account for non-patient factors such as caregiver quality. However, for patients with dementia, key hospice criteria such as change in body weight and presence of pressure ulcers may relate as much to caregiving quality as to the patient's disease. Accurate prognostication should take into account the quality of available home care.

DISCUSSION: While evidence suggests that disabled elderly patients with home attendants fare better than those without (Albert et al. 2005), the precise health advantage conferred by superior caretakers is not easily measured. However, during home visits to disabled elders, we have observed caregivers' potential impact on patient health. For example, some home attendants are eager for a doctor's home visit; they have been waiting to show us their observations about skin breakdown or lists of needed medical supplies. Others appear passive or disconnected. Homebound elders with dementia are highly vulnerable to caregiver neglect (Boye and Yan 2016). But apart from cases of frank neglect or abuse, the relationship between patient and home attendant may still be of prognostic value. Here, we observed that the remarkable bond between a long-time attendant and an elderly frail patient allowed the patient to "graduate" from hospice eligibility. Although doctors may focus on patients' internal pathophysiology, it is intuitive that the quality of daily care a patient receives can also profoundly influence outcomes, often to a greater degree than our own medical interventions.

TRICK OF THE TRAIT Jay J. Chudow[1]; Jeremy Fertel[1]; Tulay Aksoy[2]. [1]Montefiore, Bronx, NY; [2]Montefiore Medical Center, Bronx, NY. (Control ID #2703826)

LEARNING OBJECTIVE #1: Distinguish hemoglobin electrophoresis patterns; including Sickle-Beta plus thalassemia (S/β^+-thal)

LEARNING OBJECTIVE #2: Diagnose acute splenic sequestration crisis (ASSC) in a minor hemoglobinopathy

CASE: A 61 year-old Antiguan woman with reported sickle cell trait presented with several days of lethargy, multiple pre-syncopal episodes and one hour of generalized weakness following a recent three-day trip to Puerto Rico. She was afebrile, tachycardic, and lethargic but responsive to voice without other neurologic deficit. Initial hemoglobin was 12 and leukocytosis to 18K. Later, she experienced worsening mental status and abdominal tenderness. The spleen was 14cm with acute splenic infarct by ultrasound and CT. Hemoglobin decreased to 7, platelets dropped to 80K. Hemoglobin electrophoresis revealed 21% HbA and 62.7% HbS consistent with S/β^+-thal, confirmed by genetic analysis. Her mental status improved to baseline following exchange transfusion to HbS <30%.

IMPACT: This is a rare presentation of ASSC in a patient with a minor hemoglobinopathy. It highlights the need for recognition of different patterns of hemoglobin electrophoresis before making the assumption of sickle cell trait as in this patient's reported past medical history.

DISCUSSION: There are several known mutations to the HBB gene which encodes the hemoglobin beta chain; including sickle cell and beta thalassemia mutations. Approximately three million people carry at least one sickle cell gene in the United States underscoring the need familiarity with related conditions. There are typical patterns on hemoglobin electrophoresis in various disease states. In the normal state >95% HbA and no HbS is produced. Sickle cell trait, with one mutation, produces 50% HbA and 40% HbS. Sickle cell disease, with no normal HBB gene, produces no HbA and >85% HbS. Sickle beta thalassemia occurs when both mutations are inherited. There are two main

variants: S/β^0-thal produces no HbA and near 80% HbS whereas S/β$^+$-thal produces near 20% HbA and 60% HbS. S/β^0-thal is clinically similar to HbSS disease. S/β$^+$-thal has a milder clinical course and retained splenic function. ASSC is a sudden, massive pooling then destruction of red blood cells in an enlarging spleen with marrow activity. It is commonly encountered in children with HbSS disease before eventual splenic autoinfarct and rare in those with minor hemoglobinopathies such as S/β$^+$-thal. Triggers for ASSC are the same as a vaso-occlusive crisis. This patient denied high altitude travel and infectious work up was negative. The cause of this episode is unclear though air travel is possible, a reported trigger in case reports. Further research is necessary to fully understand the pathophysiology of this crisis in a patient with S/β$^+$-thal at a late stage in life.

TUBE TROUBLES: AN UNCOMMON CAUSE OF NEUTROPENIA

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LEARNING OBJECTIVE #1: Recognize copper deficiency as a cause of neutropenia that should be considered in cases without identified etiology.

LEARNING OBJECTIVE #2: Develop a low threshold for assessing copper deficiency in patients receiving tube feeds chronically.

CASE: A 47-year-old man with profound cognitive impairment and epilepsy secondary to infantile meningoencephalitis was admitted from his long-term care facility for neutropenic fever and diarrhea. He was quadriplegic, with permanent gastrostomy tube and Foley catheters in place. His admission exam was pertinent for normal temperature, chronic contractures in the arms and legs. His gastrostomy tube and Foley catheter sites appeared normal, without signs of infection. There was no lymphadenopathy or organomegaly. Initial laboratory investigation identified a white blood cell count of 2,600 cells per microliter with an absolute neutrophil count of 260 cells per microliter, hemoglobin of 12.3 grams per deciliter, and platelet count of 342,000 cells per microliter. Bone marrow biopsy was performed which showed a mild myeloid hypoplasia with megaloblastic and megaloblastoid features. Cytogenetic evaluation, flow cytometry and myelodysplastic syndrome fluorescence in situ hybridization panel was normal. A serum copper level resulted at 2 micrograms per deciliter. Daily intravenous copper chloride was started. Within two days, the patient's absolute neutrophil count returned to 5,300 cells per microliter. The patient's diarrhea resolved without intervention during the hospital stay. He was subsequently discharged to his long-term care facility with oral copper supplementation.

IMPACT: This case highlights the importance of considering copper deficiency in cases of neutropenia without identified cause. In particular, institutionalized patients and those undergoing chronic enteral feeding are at high risk for developing nutritional deficiencies.

DISCUSSION: Internists commonly encounter neutropenia. Although vitamin- and mineral-associated neutropenias are less common compared to other etiologies, they should always be included in the differential diagnosis. Copper deficiency is clinically characterized by fragile hair, skin depigmentation, muscle weakness, neurological and hematological abnormalities. It frequently results from malabsorptive diseases, including cystic fibrosis, inflammatory bowel disease or malabsorption following bariatric surgery. In the case of our cognitively impaired, quadriplegic patient, his only manifestation of copper deficiency was neutropenia. Patients chronically bed-bound due to underlying neurological diseases and on permanent tube feeding are at high risk of developing copper deficiency. There is currently no consensus about the most appropriate dose, duration, route and form of copper supplementation. In this case, our patient responded quickly to daily 2.5 mg intravenous copper chloride, a dose and formulation reported in other case reports. His copper level returned to normal range after 2 days' supplementation.

TYPE B LACTIC ACIDOSIS IN A PATIENT WITH METASTATIC SQUAMOUS CELL LUNG CANCER

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LEARNING OBJECTIVE #1: Recognise Type B lactic acidosis as a cause of anion gap metabolic acidosis in patients with aggressive solid tumors and liver metastasis

LEARNING OBJECTIVE #2: Distinguish between type A and type B lactic acidosis

CASE: A 63-year-old man with poorly differentiated squamous cell carcinoma of the right lung presented with worsening shortness of breath. He denied fevers, sick contacts, travel, or focal symptoms. Medications included hydrocodone, ranitidine and senna. He was afebrile, hemodynamically stable, well perfused with oxygen saturation 97% on room air. Decreased breath sounds over the right upper lung field and non-tender hepatomegaly were noted. Laboratory testing showed unremarkable blood counts and renal function, bicarbonate 20 mmol/L (ref 22–30), anion gap 21 mmol/L (ref 8–16), AST 174 U/L (ref 15–41), ALT 90 U/L (ref 5–58), Alkaline phosphatase 931 U/L (ref 40–129) and lactate 7.6 mmol/L (ref 0.5–2.2). CT scan revealed interval enlargement of the lung mass with innumerable metastatic lesions in the liver and hepatomegaly. He had no symptomatic, laboratory or imaging evidence of infection. He was hemodynamically stable, euvolemic and was not taking any medications that could contribute to lactic acidosis. A repeat lactate was 9.2 mmol/L. His elevated lactate was presumed secondary to extensive tumor burden and liver dysfunction. He declined further testing/treatment and was transitioned to hospice care.

IMPACT: This case describes lactic acidosis in a patient with a solid tumor and liver dysfunction secondary to metastasis. Though type B lactic acidosis is known to occur in haematological as well as solid malignancies, it remains a diagnosis of exclusion and it is necessary to rule out sepsis, tissue hypoperfusion or drug effects (alcohol, salicylates, reverse transcriptase inhibitors) as potential causes of the elevated lactate.

DISCUSSION: Lactic acidosis can occur in the presence (type A) or absence (type B) of tissue hypoperfusion. It has high sensitivity but poor specificity for tissue hypoperfusion. Type B lactic acidosis can be seen with cancer, renal or liver disease, drug or toxin ingestion or congenital enzyme deficiency. Cancer-associated type B lactic acidosis has rarely been described with solid tumors. This is postulated to be a result of the Warburg phenomenon of altered energy metabolism in cancer cells, whereby they preferentially undergo aerobic glycolysis, leading to production of lactate from pyruvate, instead of the more energy efficient oxidative phosphorylation. Liver dysfunction secondary to metastasis with resultant decreased clearance of circulating lactate by the liver (Cori Cycle) likely also played a role in lactic acidosis in this patient. The etiology of malignancy associated hyperlactatemia is thus likely multifactorial.

Hyperlactatemia has been shown to be a negative prognostic marker in cancer patients. This case highlights an unusual cause of lactic acidosis in a patient presenting with progression and metastasis of lung cancer with high tumor burden.

ULCERATIVE SKIN LESIONS IN A PATIENT WITH A PERIPHERAL T-CELL LYMPHOMA Sean E. Scott[1, 2]; Mary Maiberger[3]; Ribka Ayana[1]. [1]Washington DC VA Medical Center, Washington DC, DC; [2]Edward Hébert School of Medicine, Bethesda, MD; [3]Washington DC VAMC, Washington DC, DC. (Control ID #2705956)

LEARNING OBJECTIVE #1: Recognize the variable clinical presentations of pyoderma gangrenosum (PG)

LEARNING OBJECTIVE #2: Articulate the differential diagnosis of cutaneous lesions in patients with hematologic malignancies

CASE: A 62 year-old man developed a painful, indurated ulcer on his mid upper back.Three weeks prior, he was admitted with melena and found to have a bleeding, ulcerated gastric mass on esophagogastroduodenoscopy, with biopsy revealing a peripheral T cell lymphoma.Two days after a bedside incision and drainage was performed on the back lesion, it transformed into a five centimeter draining, erythematous, edematous plaque with central ulceration and overhanging borders.Within the next week, he developed several new lesions including a two by two centimeter eroded, draining, purulent plaque at the site of a previous intravenous line on the right forearm and a two by three centimeter vegetative, exophytic, tender nodule with crusting on the right temporal scalp.The patient did not have any fevers. A punch biopsy of the right forearm lesion revealed a heavy infiltrate of neutrophils in the dermis with GMS, PAS, and Gram stains negative for microorganisms. The patient was diagnosed with pyoderma gangrenosum and started on high-dose prednisone. Two days after starting prednisone his lesions dramatically decreased in size, erythema, and induration and continued to improve over the following weeks with a slow prednisone taper.

IMPACT: Pyoderma gangrenosum occurs in association with various systemic disorders including hematologic malignancies approximately 50% of the time. Rarely is peripheral T-cell lymphoma associated with PG, as in our patient.This case represents one of the few reported cases in literature.

DISCUSSION: Pyoderma gangrenosum is an uncommon neutrophilic dermatosis.Patients often present with a small papule or pustule. It rapidly progresses to an erythematous, exquisitely tender plaque, pustule, or nodule, which may ulcerate.PG can also appear atypically as bullous, pustular, or vegetative lesions.Diagnosis is based on clinical and histopathologic findings and exclusion of other causes.Skin biopsy and tissue culture are important for ruling out other conditions.Pathergy, the appearance or worsening of skin lesion at the site of minor trauma, occurs in 25-50% of patients and is a contraindication for surgical management of the ulcers.The differential diagnosis for patients with hematologic malignancies who develop ulcerative cutaneous lesions should include: infection by bacteria, deep fungi, or atypical mycobacterium; malignancy, such as leukemia cutis; neutrophilic dermatoses, such as PG and Sweet's syndrome; inflammatory conditions, such as vasculitis; and paraneoplastic disorders.PG should be considered when evaluating ulcers, especially in patients with rapidly progressive lesions and systemic diseases known to be associated with PG.Incision and drainage or surgery of these lesions can lead to pathergy, resulting in significant pain, morbidity, and scarring.

UNCHARTED COURSE: MAPPING THE PATH OF FAMILIAL MEDITERRANEAN FEVER (FMF) IN JAPAN Ryuichi Sada[2]; Mitsuya Katayama[2]; Sandra Y. Moody[1, 2]. [1]Kameda Medica Center & UCSF/SFVAMC, Kamogawa City, Japan; [2]Kameda Medical Center, Kamogawa, Japan. (Control ID #2707430)

LEARNING OBJECTIVE #1: Recognize that familial Mediterranean fever (FMF) occurs among people of Japanese descent.

LEARNING OBJECTIVE #2: Recognize that asking a simple question such as "Have you had similar symptoms in the past several years?" may help the patient recall relevant symptoms.

CASE: A healthy 24-year-old Japanese man presented with a six-week history of fever, headache, and fatigue. He was well until a low-grade fever and difficulty walking developed six weeks before admission. He had no relevant past medical or family history. Because his symptoms did not resolve after his primary care doctor prescribed levofloxacin and acetaminophen four weeks before admission, he was admitted for evaluation. On physical examination, his vital signs were stable except for a temperature of 37.5° C. He had no meningeal signs, skin rashes, or joint swelling. Laboratory data were completely normal, including two sets of blood cultures, thyroid and adrenal function tests, anti-HIV antibody, rheumatoid factor, antinuclear antibody, cerebrospinal fluid and whole body computed tomography. His fever and headache resolved spontaneously, and he was discharged to home two weeks later. However, general fatigue persisted, interfering with his ability to work. Four months after the previous admission, a low-grade fever recurred for eight days. He was asked a simple question, "Have you had similar symptoms in the past several years?" He informed us that he had experienced similar symptoms two to three times per year in the last two years. Based on this history, we suspected FMF and performed genetic screening and found MEFV exon 2 mutations. We diagnosed an atypical phenotype of FMF (atypical FMF) and treated him with oral colchicine. His fever resolved, but the fatigue persisted. Etanercept was added to his treatment regimen and his symptoms resolved completely which led him to return to work.

IMPACT: This case highlights the importance of taking an accurate medical history regarding recurrent fever. A simple question can help diagnose periodic fever syndrome. Atypical FMF tends to present with low-grade fever, a longer duration of symptoms, and a lower frequency of febrile attacks.

DISCUSSION: Patients with FMF are reported to be predominantly from the Mediterranean region, however, FMF can occur among people of Japanese descent. One case series mentioned that over one-third of patients with FMF in Japan have an atypical clinical course. Atypical FMF is usually difficult to diagnose quickly because the clinical features of atypical FMF differ from the typical phenotype of FMF, and because patients with atypical FMF might not be aware that a single disease may be the cause of several episodes of fever. The first step in the diagnosis of periodic fever syndrome is taking an accurate medical history concerning recurrent fevers. Genetic screening is essential for the diagnosis of FMF, and MEFV mutations in other than exon 10 are related to atypical FMF.

UNCONVENTIONAL BUT PATIENT CENTERED APPROACH TO MARKEDLY ELEVATED HEMOGLOBIN A1C Rebecca Kapolka. Indiana University, Indianapolis, IN. (Control ID #2707576)

LEARNING OBJECTIVE #1: Recognize the importance of a patient centered approach to clinical decision making and adapting guidelines and how this can improve outcomes.

CASE: A 50 year old Hispanic female presented to establish care after moving from Mexico. A live interpreter was utilized during the visit. She had known type 2 diabetes mellitus and hypertension but was not currently on any treatment and did not know the results of her recent blood sugars or hemoglobin A1C (HbA1C). She reported symptoms of increased fatigue, polyuria and polydipsia. Her exam was significant for a blood pressure of 152/92, BMI of 36, trace lower extremity edema and stasis dermatitis of the anterior shins bilaterally. Monofilament testing was normal bilaterally. Pertinent labs included an HbA1C of 12.9, random blood glucose of 317, urine ketones of 50, urine glucose of 1000, and microalbuminuria of 100. Given the patient's markedly elevated HbA1C, I initially proposed starting metformin and basal insulin. The patient was visibly upset by these recommendations and began to cry. With the assistance of the interpreter I was able to better understand that her fear of insulin resulted from the recent passing of her mother who was also on insulin for diabetes management. Although I explained the benefits of insulin, she was still very upset. I acknowledged her fears and we came up with a plan to trial only oral medications and lifestyle changes for the next 3 months. She thanked me for giving her the chance to improve.She was started on metformin 1000mg twice daily, glipizide 5mg daily, and lisinopril 10mg daily in addition to lifestyle modifications. She was provided with a glucometer and supplies. When she returned to clinic three months later, she reported blood sugars of 70–165. She reported excellent compliance with her medications, decreased consumption of carbohydrates including rice and tortillas, and increased physical activity by walking around her neighborhood. Her repeat HbA1C was 6.3 and random blood glucose was 159. She was continued on her oral regimen. A subsequent follow up visit three months later again confirmed her excellent compliance and glycemic control with an HbA1C of 6.5 and random blood glucose of 131.

IMPACT: This case highlights the difficulties that language barriers contribute to the patient-physician relationship and how taking the time to better understand their beliefs and valuing their opinions regarding treatment can lead to better outcomes.

DISCUSSION: This case demonstrates the importance of addressing patient values and incorporating their preferences into their management plan. The 2016 American Diabetes Association guidelines recommend a patient centered approach to diabetes management. However, they also recommend starting a much more aggressive glycemic control regimen including insulin for patients with HbA1C greater than 10. This case demonstrates a situation of when to adapt guideline recommendations based on the patient's values and preferences.

UNILATERAL ADRENAL HYPERPLASIA: AN UNUSUAL PRESENTATION OF PRIMARY ALDOSTERONISM AND HYPERTENSIVE EMERGENCY Steven Song; Joselle Cook. SUNY Downstate Medical Center, Brooklyn, NY. (Control ID #2700528)

LEARNING OBJECTIVE #1: Recognize unilateral adrenal hyperplasia, a rare subset of primary aldosteronism, as a cause of long-standing refractory hypertension.

CASE: A 54-year-old African American woman presented with complaints of headache, blurred vision, and progressive bilateral leg swelling for the past week. This was her 4th visit to the hospital in 4 months with similar complaints. Medical history was significant for 10 years of refractory hypertension, many no-show visits, consequent chronic kidney disease stage 4, on a 5 drug anti-hypertensive regimen. Admission blood pressure (BP) was 248/164 mmHg. Physical exam was significant for bilateral papilledema and lower extremity edema. Labs demonstrated acute deterioration in her renal function with creatinine 6.8 mg/dL (increased from baseline 3.3 mg/dL) and hypokalemia (3.0 mEq/L). She was admitted to the ICU for management of hypertensive emergency, with initiation of nitroglycerin drip and improved BP. Once stabilized and normokalemic, workup demonstrated elevated plasma aldosterone, suppressed plasma renin activity, and an aldosterone-to-renin ratio of 48.8 ng/dl per ng/(ml*h). Workup for pheochromocytoma was negative. Renal artery ultrasound revealed no stenosis. CT abdomen reported thickening of the left adrenal gland with features suggestive of hyperplasia. The patient was transitioned to oral anti-hypertensive agents with resolution of her clinical symptoms. She was scheduled for adrenal vein sampling and possible laparoscopic left adrenalectomy.

IMPACT: This case of long-standing uncontrolled hypertension and eventual discovery of unilateral adrenal hyperplasia (UAH) on admission emphasizes that secondary causes of long-standing refractory hypertension not be overlooked. The differential of UAH and similar pathologies should be considered in these patients. Early recognition would direct management more conclusively and prevent irreversible end-organ damage.

DISCUSSION: Primary aldosteronism (PA) is a principal disorder of the zona glomerulosa that is characterized by hypertension, hypokalemia, increased plasma aldosterone, and suppressed plasma renin activity. Actual prevalence of PA is reported in 5 to 15% of the hypertensive population. The eponymous Conn's syndrome, which described aldosterone-producing adenomas (APA), is the most common subtype, implicated in 50-70% of cases of PA; bilateral adrenal hyperplasia accounts for 30%. Unilateral adrenal hyperplasia (UAH) however, is a rare cause of PA accounting for less than 1% of cases. Though hyperplastic on imaging, histopathology of UAH has demonstrated adenomatous changes, and is managed as an adenoma. Early recognition is crucial to prevent permanent long-term sequelae, as management is distinctly different for adenomas versus bilateral hyperplasia. Laparoscopic adrenalectomy is indicated for both APA and UAH, resulting in normalization of BP and resolution of hypokalemia in as few as 2 years post-procedure. Bilateral adrenal hyperplasia is managed medically.

UNMASKING THE TRUE CULPRIT: IMPARTIAL TREATMENT LEADING TO DEFINITIVE DIAGNOSIS Justine Phifer[1]; Linda Wang[2]; Yelena Averbukh[2]. [1]Montefiore Medical Center, Bronx, NY; [2]Montefiore Medical Center, New York, NY. (Control ID #2704348)

LEARNING OBJECTIVE #1: Identify bilateral tubo-ovarian abscesses as an uncommon presentation of disseminated tuberculosis

LEARNING OBJECTIVE #2: Understand the pathophysiology of TB associated immune reconstitution disease

CASE: A 28-year-old HIV-negative woman from West Africa presented with an enlarging left neck mass of three weeks and twenty-pounds of unintentional weight loss for four months. The mass was 3x4cm, firm, non-tender, and a fine needle aspirate was non-diagnostic. A CT of the neck revealed a conglomerate of necrotic lymph nodes and a MRI of the brain revealed multiple intra-parenchymal,

ring-enhancing supra and infratentorial lesions with surrounding edema and mass effect. Xpert® MTB/RIF PCR of a core biopsy of the mass confirmed Mycobacterium tuberculosis (MTB) and RIPE therapy was initiated. Three months prior, the patient presented with abdominal pain and fevers of five months, and was found to have bilateral tubo-ovarian abscesses (TOA). A Quantiferon® test was positive, but an aspirate of the abscess was negative for MTB and other bacteria. She was treated with a two-week course of doxycycline and levofloxacin, which led to an improvement in her symptoms before she re-presented with the neck mass three months later.

IMPACT: Internists in the U.S. see increasing numbers of patients from TB endemic areas, necessitating recognition of various TB presentations. Frequent prescription of fluoroquinolones also requires knowledge of partially treated TB and immune reconstitution disease (IRD).

DISCUSSION: Disseminated TB increases in frequency with immunodeficiency, but may also present in patients with intact immune systems. Genitourinary TB is an uncommon presentation of TB and is even less common in immunocompetent persons. IRD occurs when previously subclinical or partially treated opportunistic infections worsen as a result of host inflammatory response activation. It can occur when an immunocompromised person achieves restoration of immune function, and is most commonly reported in HIV positive individuals receiving anti-retroviral therapy. In this setting, mycobacterial infections are most commonly implicated. However, IRD can occur in young, HIV seronegative patients, such as this patient. In persons with active TB, there may be an alteration in the balance of immunosuppressive and pro-inflammatory mechanisms and amplified cell-mediated immune responses that can lead to paradoxical reactions early in anti-TB treatment. In this case, the patient underwent partial treatment for TB while being treated for TOA and subsequently developed worsening TB lymphadenitis.The lymph nodes are the most common site of TB IRD and lymphadenitis can be observed in up to 25% of HIV uninfected patients. After initiation of anti-TB therapy, patients may develop paradoxical worsening of their symptoms before resolution. Physicians should be aware of uncommon presentations of disseminated TB, including genitourinary TB, and that they may affect immunocompetent patients who are younger in age and from TB endemic regions.

UNMASKING THE TRUTH ABOUT MASKED MACROCYTOSIS: REVEALING FOLATE AND VITAMIN B12 DEFICIENCIES IN A PATIENT WITH BETA THALASSEMIA TRAIT Elissa Szalkiewicz. Montefiore Medical Center, NYC, NY. (Control ID #2706227)

LEARNING OBJECTIVE #1: Recognize masked macrocytosis in patients with co-existing beta thalassemia trait and folate and vitamin B12 deficiencies

CASE: A 38 year old man presented with 2 months of worsening weakness and exertional dyspnea. He denied signs of bleeding. For the past two years he had been eating only one small meal at night. His past medical history was significant for beta thalassemia trait, Gilbert's disease, and bipolar disease. Denied alcohol use. On physical exam, he had conjunctival pallor and a flow murmur. Labs revealed CBC: WBC 5.9 k/ul, RBC 1.04 mL/uL (L), Hgb 3.0 g/dL (L), Hct 9.0% (L), MCV 86.5 fL, RDW 21.6% (H), and Plts 170 k/uL. Additional labs: reticulocyte index 0.3 (L), LDH 1971 U/L (H), haptoglobin <8 mg/dL (L) and serum folate <2 ng/mL (L), vitamin B12 192 pg/mL (L), homocysteine 35.4 umol/L (H), and methylmalonic acid 150 nmol/L. Intrinsic factor antibody was positive. Peripheral blood smear showed: anisocytosis, poikilocytosis, and hypersegmented neutrophils. It was concluded that the patient had severe vitamin B12 and folate deficiencies in the setting of pernicious anemia and dietary insufficiency with megaloblastic anemia, ineffective erythropoiesis and hemolysis. He was transfused three units of packed red blood cells and administered parenteral cobalamin and enteral folate with clinical improvement, increased reticulocytosis and stability of his hemoglobin.

IMPACT: This case changed my thinking about macrocytosis associated with vitamin B12 and folate deficiencies and made me realize that the macrocytosis could be masked.

DISCUSSION: Vitamin B12 and folate deficiencies are typically investigated for as the cause of anemia when patients present with labs consistent with macrocytic anemia; however, the macrocytic expression of megaloblastic anemia can be masked in the setting of co-existing disorders such as iron deficiency and thalassemia. Evidence of these disorders can be revealed in the RDW, reticulocyte index, and peripheral blood smear. Vitamin B12 and folate deficiencies should be in the differential diagnosis in patients with known thalassemia and worsening non-macrocytic anemia. Patients with beta thalassemia trait typically have mild anemia that is microcytic with a normal RDW. When RDW is elevated in these patients, it is suggestive of a coexisting hemolytic, hemorrhagic or maturation disorder. These disorders can be distinguished from each other by the reticulocyte index, which is high (>2.0) in hemolytic and hemorrhagic disorders and low (<2.0) in maturation disorders such as vitamin B12 and folate deficiencies. The peripheral blood smear could have evidence of anisocytosis, poikilocytosis, and hypersegmented neutrophils which are not masked by coexisting beta thalassemia trait and are common in vitamin B12 deficiency. It is important to remember not to rule out Vitamin B12 and folate deficiencies in the absence of macrocytic anemia because the macrocytosis can be masked as in patients with co-existing beta thalassemia trait.

UNUSUAL CASE OF JAUNDICE Valentine O. Millien[2]; Ryle W. Przybylowicz[1]; Janis L. Sethness[1]; Lee Lu[1]. [1]Baylor College of Medicine, Houston, TX; [2]Baylor College of medicine, Houston, TX. (Control ID #2707317)

LEARNING OBJECTIVE #1: Review spontaneous tumor lysis syndrome

LEARNING OBJECTIVE #2: Recognize that spontaneous tumor lysis syndrome (TLS) could be the initial manifestation of small cell lung cancer.

CASE: A 63-year-old male with HTN, COPD, and chronic HCV infection presented with progressively worsening abdominal distention, jaundice, and scleral icterus. Physical exam was significant for jaundice and mildly distended abdomen with fluid wave. His laboratory studies revealed ALT 71, AST 116, alkaline phosphatase 324, total bilirubin 11.2, direct bilirubin 7.4, total protein 6.1, albumin 1.9, LDH 457, Bun 72 and Cr 7.75 (baseline Cr 0.8). In addition, other significant laboratory derangement included uric acid 18.5, phosphorus 7.6, corrected calcium 10.2, and potassium 5.1; these results were consistent with tumor lysis syndrome based on Cairo-Bishop criteria. He was immediately treated with rasburicase and intravenous fluid repletion. An abdominal ultrasound showed multiple masses in the liver with cirrhotic changes, but the alpha fetoprotein was normal at 2.33 ng/mL. Biopsy of liver masses revealed small cell carcinoma consistent with lung primary given history of heavy smoking. The patient subsequently underwent whole body PET-CT which showed left upper lobe lung mass with metastases to ribs and skull. He was diagnosed with spontaneous TLS caused by small cell primary lung cancer.

Given overt liver failure, persistent renal impairment despite treatment, and the extent of his metastases, the patient elected to be discharged home on hospice.
IMPACT: Spontaneous tumor lysis is a rare oncologic emergency classically seen in hematologic malignancies. This patient presented with spontaneous TLS as the initial manifestation of small cell lung cancer. Physicians must have low threshold for suspicion of this rare entity, in the proper clinical context, to initiate prompt lifesaving treatment.
DISCUSSION: Tumor lysis syndrome after initiation of cancer treatment is an oncologic emergency. Spontaneous TLS which occurs in absence of treatment is a rare form of TLS seen in about 1% of hematologic malignancies and in even rarer instances, in solid organ malignancies. In review of literature, there have been only two cases of spontaneous TLS reported in small cell lung cancer. The mechanism is not well known and is often seen in high tumor burden and high proliferation rate. Therefore, high index of suspicion and low threshold for treatment should be maintained in patients who present with high risk for lung cancer and laboratory findings suggestive of spontaneous tumor lysis syndrome in order to promptly diagnose and treat this lethal disease process.

UPPER GASTROINTESTINAL (GI) BLEED AS A MANIFESTATION OF POORLY DIFFERENTIATED METASTATIC SQUAMOUS CELL CARCINOMA (SCC)OF THE LUNG Richa Bhardwaj[1]; Gaurav Bhardwaj[2]; Raffi Karagozian[2]. [1]University of Connecticut, Hartford, CT; [2]Saint Francis Hospital, Hartford, CT. (Control ID #2704006)

LEARNING OBJECTIVE #1: Recognize upper GI bleeding as a potential complication of metastatic primary lung cancer.
LEARNING OBJECTIVE #2: Distinguish and manage upper GI bleeding secondary to metastatic lung cancer
CASE: 39-year-old female presented to the ED with complaints of dizziness and black tarry stools for 1 day. The patient had a history of smoking (23 pack years) and was diagnosed with stage IV, SCC of the lung (T2N3M1) about 6 weeks ago. She was started on a chemotherapy regimen with paclitaxel and carboplatin. Initial workup revealed a hemoglobin and hematocrit of 7.9 gm/dL and 23.7 and a platelet count of 14,000/u L.Initial EGD assessment revealed blood clots in the stomach with poor visualization of the fundus. No source was identified.A second look EGD demonstrated a large(6cm × 6cm), ulcerated, friable, mass in the gastric fundus that was biopsied.Final pathology of the mass revealed poorly-differentiated carcinoma consistent with her preexisting non-keratinizing SCC of the lung that showed immunoreactivity for Pan-Keratin, p40, p63, and p16. Given the advanced disease of the patient, she was started on Nivolumab and localized radiation therapy (RT). However she continued to have progression of disease with a significant decline in her performance status. Patient subsequently passed away due to widely metastatic cancer.
IMPACT: This case highlighted the importance of considering gastric metastasis as a potential cause for upper GI bleeding in patients with primary lung cancer. Also it is imperative to establish metastaic lesions as the cause of bleeding as the management strategies in these scenarios may include chmotherapy and RT in addition to the other endoscopic modalities.
DISCUSSION: Primary lung cancer frequently metastasizes to the contralateral lung (49.8%), liver (36.9%), adrenal gland (30.8%), and bones (29.4%), while metastasis to digestive system are rare (0.2% - 5.0%).Although most gastric metastases are asymptomatic, when overlooked or misdiagnosed, fatal complications such as severe bleeding and perforation can occur.Histologic types of lung cancer involved in gastrointestinal metastasis are not well known and according to studies these lesions have most commonly been reported as adenocarcinomas (27%). These metastatic foci mostly present as asymtomatic submucosal lesions.If symptomatic,the major symptoms include upper abdominal pain,anemia,melena or hematemesis.Management strategies include approaches such as chemotherapy, RT and surgery.For patients with advanced disease, RT may be used to manage GI bleeding in patients who are unable to undergo surgery or endoscopy. Studies have reported a significant improvement in hemoglobin levels with RT,along with an increase in mean survival. To conclude,in patients with lung cancer presenting with a GI bleed, evaluation for possible GI metastasis must be considered for appropriate management. Palliative RT can impact quality of life and prognosis in these patients but additional studies are required to further establish its role.

UREA-INDUCED OSMOTIC DIURESIS AS AN UNSUSPECTED CAUSE OF HYPERNATREMIA IN HYPERCATABOLIC STATE
Guramrinder S. Thind; Karthik Kailasam; Richard Roach. Western Michigan University School of Medicine, Kalamazoo, MI. (Control ID #2701321)

LEARNING OBJECTIVE #1: Identify the presence of hypercatabolic state in a patient with sympathetic hyperactivity due to anoxic brain injury.
LEARNING OBJECTIVE #2: Diagnose and manage urea-induced osmotic diuresis and differentiate it from diabetes insipidus.
CASE: A 57-year old male with a history of type-2 diabetes was admitted to the intensive care unit (ICU) after he had a cardiac arrest. In the field, patient received several rounds of epinephrine and defibrillation, and spontaneous circulation returned after 25 min. Patient was intubated for airway protection. He was found to be unresponsive on arrival and hypothermia protocol was initiated. Upon conclusion of therapeutic hypothermia, patient started developing high-grade fever, tachycardia, and hypertension. Sympathetic hyperactivity due to anoxic brain injury was suspected. At the same time, his serum sodium and urine output started trending up. On day 4, his serum sodium was 158 Meq/L and urine output was 6 L/day. Further workup showed: serum osmolality: 346 mosm/kg, urine osmolality: 771 mosm/kg, urine sodium: <20 Meq/L, and urine urea nitrogen: 810 mg/dl. The high urine osmolality ruled out diabetes insipidus. BUN at this time was 38 mg/dL. Urea-induced osmotic diuresis was suspected as the cause of patient's polyuria. Patient's protein intake at that time was not high enough to cause this degree of urea production. Hence, body protein wasting due to a hypercatabolic state was suspected. Sympathetic hyperactivity and underlying insulin resistance likely contributed to the hypercatabolic state. Intravenous D5W and free water flushes via OG tube were administered. The dysautonomia resolved after a few days, and his serum sodium and urine output returned to normal.
IMPACT: This case identifies urea-induced osmotic diuresis as an important cause of polyuria and hypernatremia in critically ill patients. Temporary hypercatabolic carbolic state in ICU patients can be caused by various causes including sympathetic hyperactivity due to anoxic brain injury. While working up these patients, both urine osmolality and urine urea nitrogen should be checked. Replacement of free water via intravenous (D5W infusion) or oral route is the only effective treatment strategy.
DISCUSSION: Urea is the end product of protein catabolism and a known cause of osmotic diuresis. Both high protein intake and increased proteolysis can increase urea production. Hypercatabolic states are common in ICU

patients. Underlying insulin resistance and a surge of counterregulatory hormones (e.g. cortisol in stress response, catecholamines in sympathetic hyperactivity) facilitate whole-body proteolysis. Increased urea production in these cases may cause osmotic diuresis, which eventually leads to hypernatremia. Sympathetic hyperactivity commonly seen after anoxic brain injury is an important cause of hypercatabolic state. Notably, central diabetes insipidus is also possible with anoxic brain injury can cause hypernatremia and poluria; urine osmolality level of >600 mosm/kg effectively rules it out.

UTILITY OF CARDIAC MAGNETIC RESONANCE IMAGING IN PATIENTS WITH HYPERTROPHIC CARDIOMYOPATHY

Kristin Mangalindan; Edward Hulten; Kevin Woods; John Lichtenberger; Paul G. Peterson; Maureen Hood; Vincent Ho. Walter Reed National Military Medical Center, Bethesda, MD. (Control ID #2704377)

LEARNING OBJECTIVE #1: Recognize utility of dobutamine stress cardiac magnetic resonance (CMR) imaging in patients with hypertrophic cardiomyopathy (HCM)

CASE: A 53 year old man with history of HCM and dynamic outflow obstruction status post septal myectomy presents with declining exercise tolerance and chest pressure with rest and exertion. He was on ranolazine with some relief but reported symptoms worse than his pre-operative state. Medical history notable for HCM on verapamil and coronary artery disease on aspirin and atorvastatin. He had a septal myectomy in 2013 with normal post-operative gradient. Family history remarkable for father with myocardial infarction at 56. On exam, 2/6 holosystolic murmur was heard across the precordium and increased to 3/6 with Valsalva, more notable than prior exams. With concern for worsening HCM, repeat stress echocardiogram was performed, showing moderate mitral regurgitation (MR) and sub-chordal systolic anterior motion (SAM) of the anterior mitral leaflet at rest. However, image quality was limited due to muscular chest and fibrosis from prior sternotomy. With suspicion for underestimation of disease, dobutamine stress CMR was performed to better assess anatomy during simulated exercise physiology. It revealed a 23% decline in aortic flow at stress indicating left ventricular outflow tract (LVOT) obstruction, increased MR at stress, elongation of anterior mitral leaflet, and inappropriate blood pressure response to stress (40mmHg SBP decrease, resulting in termination of exam), all of which were not elucidated with echo. Patient was referred to a specialized HCM center for concurrent myectomy and mitral valve Alfieri stitch. Genetic testing for his aggressive disease revealed MYBPC3 gene positivity. He is asymptomatic at 16 month follow-up.

IMPACT: The diagnosis of HCM is commonly focused on LV hypertrophy while MV abnormalities receive less emphasis. Echocardiograms are routinely used to evaluate HCM, but have limitations in patients with large body habitus or prior CT surgeries and can underestimate MV pathology. These patients are rarely referred for dobutamine stress CMR, which can evaluate fibrosis, ischemia, outflow obstruction, and MR volume, providing invaluable information regarding prognosis, management, and eventual surgery.

DISCUSSION: Dobutamine stress CMR is underutilized in evaluation of HCM. In our patient, increased LV intracavity pressure from LVOT combined with SAM resulted in severe MR underestimated by echo. An eccentric, posteriorly directed MR jet hit the atrial wall and lost kinetic energy, decreasing the echo Doppler velocity (Coanda effect) and miscalculating MR severity. On CMR, aortic flow decreased with stress, consistent with eject-obstruct-leak physiology that was prevalent in our patient with an elongated mitral leaflet, but only elucidated clearly on CMR. With careful patient selection and monitoring, dobutamine stress CMR has been proven to be a safe and accurate assessment for diagnosis, prognosis, and procedural planning.

UTILITY OF PET SCANS IN BIOPSY NEGATIVE LUNG MASSES

Andrew Kelly; Bryden Considine. University of Connecticut, Hartford, CT. (Control ID #2706156)

LEARNING OBJECTIVE #1: Outline the utility of PET (positron emmision tomography) imaging in biopsy negative lung masses in identifying and treating malignanies.

CASE: A 29 year-old male with history of asthma presented to the hospital for progressive dyspnea and neck swelling. Two years prior workup for a cough revealed a large right lung mass whose biopsy pathology revealed mixed small T and B lymphocytes, but was non-diagnostic. He was lost to follow up. On return to the emergency department he had right-sided neck pain and swelling, orthopnea and paroxysmal nocturnal dyspnea but no dyspnea on exertion, no pedal edema, no chest pain or palpitations. His vitals included: T 97.2 °F, HR 107, BP 120/82, RR 20. On exam he had a thick neck with bilateral cervical adenopathy but no JVD or change in color of the head and neck. He had bulky right sided supraclavicular adenopathy. He had decreased breath sounds over the right upper lung fields with dullness to percussion. He did not have any wheezes, stridor or rales. He had tachycardia but no murmurs, gallops or rubs. His abdominal exam was benign. He had no pedal edema, axillary or inguinal lymphadenopathy. Work-up with a chest X ray and CT scan of the chest and neck which revealed an interval enlargement of the right upper lobe lung mass 11.7 cm × 12.5 cm transaxially × 14.5 cm craniocaudally, near complete occlusion of the right upper bronchus and the mass also encircled the lower trachea. He additionally had evidence of superior vena cava syndrome. He was discharged for outpatient follow up to schedule a PET scan which guided a biopsy that was able to established the diagnosis of large B cell non-Hodgkin's lymphoma. He was started on R-EPOCH and after 6 cycles, his latest PET scan shows interval shrinking of the tumor size, now 6.9 cm × 5.2 cm × 5.1 cm with mild FDG activity.

IMPACT: This case exemplifies the utility in additional imaging where otherwise repeat biopsies would result in added testing with its inherent risks including hemorrhage and pneumothorax and prolong time to diagnosis.

DISCUSSION: It is not uncommon to have non-diagnostic results on bronchoscopy or IR guided biopsy of lung masses due to a variety of reasons including inadequate sampling of the actual mass lesion. Additionally with large, fast growing tumors, the risk of sampling areas of necrotic tissue increases as the mass outgrows its blood supply making pathology non-diagnostic. This case highlights the utility in obtaining PET imaging to further guide repeat biopsies. A PET scan will readily show areas of metabolically active tissue and help with staging disease which also guides the definitive chemotherapeutic regimens. Without considering PET imaging, repeat biopsies by IR or endoscopy can continue to yield non-diagnostic results and ultimately delay patient care. Repeat non-diagnostic biopsies would also unnecessarily put the patient at increased risk of hemorrhage, pneumothorax.

VENTRICULAR ARRHYTHMIA IN A PATIENT WITH MYOTONIC DYSTROPHY

Yuichi Murayama[2, 2]; Ivor Cammack[1]; Hiroyuki Sato[2]; Kentaro Hayashi[2]; Yuichiro Mori[2]; Haruki Sasaki[2]; Satoshi Yuda[2]; Mitsugu

Hirokami[2]. [1]Keijinkai, Yoichi, Japan; [2]Teine Keijinkai Hospital, Sapporo, Japan. (Control ID #2703045)

LEARNING OBJECTIVE #1: Recognize the increased risk of arrhythmia in patients with this condition, and the limitations of echocardiogram in patient assessment.

LEARNING OBJECTIVE #2: Assess use of implantable cardioverter defibrillators (ICD) in patients with myotonic dystrophy.

CASE: A 45 year-old Japanese woman collapsed while gambling. Bystander CPR was performed immediately, and she was transported to hospital via ambulance. On arrival at the hospital, she was in sinus bradycardia, but remained unconscious and was intubated. Her vital signs were stable and there were no other abnormal physical findings. Her long-term medical conditions are type 1 myotonic dystrophy (DM1), type 2 diabetes mellitus and dyslipidemia. Her regular medications are teneligliptin, glimepiride and rosuvastatin. She is an ex-smoker, with no pertinent family history. Her initial blood results showed a raised white blood cell count of 11430/μL, and slightly deranged liver function (ALP 416 IU/L, γ-GTP 112 U/L). Her venous blood gas showed pH of 7.14 with lactic acidosis. Her EKG showed sinus bradycardia on arrival but she then had an episode of ventricular fibrillation. She underwent electrical defibrillation, and reverted to atrial fibrillation with bradycardia. Her EKG showed atrioventricular block and a prolonged QT interval and electrophysiological testing confirmed HV interval prolongation(110msec) but showed noinducible sustained ventricular tachycardia. An echocardiogram reported normal left ventricular structure and function. Coronary arteriography was normal, and an acetylcholine provocation test was negative. A sub-endocardial myocardial biopsy showed fibrosed interstitial tissue and replacement of connective tissue by fat. These findings are consistent with DM1. She made a good recovery and was extubated. A joint decision was made to implant an ICD prior to discharge.

IMPACT: Although DM1 is known to cause left ventricular hypertrophy, dilatation, and systolic dysfunction, in our case the patient had a normal echocardiogram. This was an unexpected finding. Her EKG and myocardial biopsy however revealed the underlying conduction system pathology which led to her potentially fatal arrhythmia. This highlights the limitations of echocardiography in assessing the cardiac conduction system.

DISCUSSION: DM1 is the most common muscular dystrophy among adults. This hereditary condition is known to cause ventricular arrhythmia and sudden death. This case highlighted the importance of screening for arrhythmia risk in DM1 patients, and showed the limitations of echocardiography in this case. Fortunately, this patient had a good outcome despite her out-of-hospital cardiac arrest. Chromosomal testing can confirm diagnosis of DM1 and can also predict disease severity. We also discuss the use and benefit of ICDs in this group of patients, and compare to previous case reports.

VITAMIN C-INDUCED RENAL FAILURE: A CAUTIONARY TALE IN ALTERNATIVE MEDICINE Michael D. Richter1; Stuart A. Ostby[2]; Ognjen Gajic[3]. [1]Mayo Clinic, Rochester, Rochester, MN; [2]Mayo Clinic School of Medicine, Rochester, MN; [3]Mayo Clinic, Rochester, MN. (Control ID #2706136)

LEARNING OBJECTIVE #1: Identify the potential harm of non-prescription ascorbic acid supplementation.

LEARNING OBJECTIVE #2: Recognize the importance of historical data in cases of acute renal failure.

CASE: A 69-year-old man with history of type II diabetes mellitus, obesity, and nephrolithiasis presented with three days of generalized weakness. During this period he also suffered from intermittent shortness of breath, loose stools, and decreased urine output. Ten days prior to his presentation, a chiropractor recommended he take a "Vitamin C Flush" to help with chronic constipation. This consisted of roughly 6 grams of over-the-counter ascorbic acid daily for one week. He had a history of calcium oxalate stones though no known diabetic nephropathy or other renal disease. Initial laboratories revealed a creatinine of 11.8 (from baseline of 1.1 two months prior), potassium of 9.0, and pH of 7.1. Electrocardiogram demonstrated wide complex QRS and peaked T waves prompting immediate treatment with calcium chloride, bicarbonate, insulin, and dextrose. Upon admission to the ICU, he received repeat doses of medical therapy and underwent urgent hemodialysis for hyperkalemia. Further laboratory work-up revealed oxalate crystals in his urine and a blood oxalate level of 22.8 μmol/L (normal limit <1.8). ESR, C-reactive protein, peripheral smear, creatine kinase, haptoglobin, antinuclear antibodies, HIV antibodies, and a hepatitis B and C panel were all normal. Renal biopsy demonstrated oxalate nephropathy with interstitial inflammation indicative of acute interstitial nephritis. The patient was treated with a three week course of prednisone and continued on hemodialysis. Six weeks after discharge his creatinine was down to 4.9 and he was producing roughly 1–2 liters of urine daily, though continued to require three-times-weekly hemodialysis.

IMPACT: This case illustrates the potential serious consequences of supplement misuse and addresses the misconception that ascorbic acid is a universally benign water-soluble vitamin. Patients are increasingly seeking alternative therapies and clinicians should routinely ask about these practices, particularly in patients with underlying kidney disease, altered metabolism, or advanced age.

DISCUSSION: Oxalate nephropathy is most commonly seen with ethylene glycol ingestion, though several studies have identified ascorbic acid as a causative agent. It is most common in patients with existing renal disease or fat malabsorption syndromes such as gastric bypass, celiac disease, and Crohn's disease. Biopsy is required for definitive diagnosis though urine crystals and blood oxalate levels can be suggestive. Temporary hemodialysis may be adequate in some cases though chronic renal failure has been described.

VOMITING AND WEIGHT LOSS IN A YOUNG WOMAN WITH TUBEROUS SCLEROSIS COMPLEX (TSC) Joo-Hye C. Park[1]; Mariecel Pilapil[2]. [1]Hofstra Northwell School of Medicine, Hempstead, NY; [2]Hofstra Northwell School of Medicine, New Hyde Park, NY. (Control ID #2699379)

LEARNING OBJECTIVE #1: Discuss how common primary care complaints such as vomiting and weight loss may have unique etiologies in patients with TSC.

LEARNING OBJECTIVE #2: Review the common clinical features of TSC and the need for periodic surveillance.

CASE: SB is a 23 year old female with TSC who presented with vomiting, anorexia, and weight loss. She had non-bloody non-bilious vomiting every 2–3 days for 4 weeks, decreased appetite, and unintentional weight loss of 30 lbs over 6 months. Her medical history included TSC diagnosed at 5 months old after presenting with infantile spasms, developmental delay, renal angiomyolipomas, cardiac rhabdomyoma, and retinal hamartoma. Her psychiatric history included depression, anxiety, psychosis with a prior episode of

anorexia and weight loss, and obsessive compulsive disorder with restricted dietary intake. Her father died at age 30 from a pancreatic neuroendocrine tumor (pNET). CBC and CMP were normal. A CT scan showed a mass at the pancreatic head measuring 4.5 × 6.1 × 4.4 cm. An endoscopic ultrasound with fine needle aspiration suggested a neuroendocrine neoplasm. An octreotide scan confirmed a somatostatin receptor-bearing lesion, confirming the diagnosis of pNET. SB underwent a Whipple procedure, and surgical pathology demonstrated a well-differentiated pNET, grade 2, T2N0, with negative surgical margins. At 2 months post-op, SB had no vomiting, improved appetite, and gained 20 lbs. MRI at 5 months post-op showed no evidence of metastatic or recurrent disease.

IMPACT: Evaluation of new symptoms in patients with genetic syndromes such as TSC requires expansion of the differential diagnosis. Common complaints such as vomiting and weight loss in a young female pose a diagnostic pitfall, particularly in a patient with psychiatric disease. While neuroendocrine tumors are rare in the general population, our case highlights the importance of familiarizing oneself with features of a multisystemic disease such as TSC.

DISCUSSION: TSC is an autosomal dominant neurocutaneous disorder characterized by hamartomas in multiple organs. It affects 1 in 14,000, and the most commonly affected tissues include: brain, kidney, lung, skin, teeth, heart, and eye. Patients often also have cognitive deficits, autism, and behavioral problems. GI involvement usually presents in the form of asymptomatic colorectal polyps, but it is rare in TSC. GI symptoms such as vomiting and weight loss, therefore, may often be attributed to psychiatric causes even by physicians familiar with the clinical features of TSC. PNETs are rare, representing 1–2% of all pancreatic tumors, with an annual incidence of 2.2 per 1,000,000. Associations between TSC and pNET via the mTOR oncogenic pathway have been reported, with pNETs developing in approximately 1.5% of TSC patients, far greater than in the general population. PNET also develops at an earlier age in patients with TSC than without. Our case highlights the need for a broad differential in workups of patients with complex disorders in a primary care setting.

WAS IT HIDING IN PLAIN SIGHT? Tehseen Haider; shahistha hameed; Mahsa Kanzali; Maneesha Bangar. montefiore medical center, Bronx, NY. (Control ID #2706143)

LEARNING OBJECTIVE #1: Identify the psychosocial factors associated with patients, hindering the provision of complete history.

LEARNING OBJECTIVE #2: Recognize the importance of performing complete physical examination on first encounter with patients.

CASE: A 41 year old African American male from North Carolina (NC) with history of microcytic anemia presented with dizziness and blood in stools. He also reported one episode of syncope and 10 lbs unintentional weight loss over 1 month. He had conjunctival pallor, posterior cervical lymphadenopathy, mild epigastric discomfort, and a normal rectal exam. Genitourinary exam was not performed. Laboratory workup was significant for hemoglobin (Hb) of 4.3 g/dL, hematocrit (Hct) 15.1%, mean corpuscular volume (MCV) of 73.6 fL, iron studies consistent with iron deficiency anemia. One year back he had extensive work up for microcytic anemia in NC including bone marrow biopsy which revealed hypercellular marrow, no tumor infiltrates and negative chromosomal analysis. He received 4 units of packed red blood cells with appropriate response. He underwent colonoscopy which was normal. While, he was sedated on table for colonoscopy, a large, fungating and ulcerated penile mass with oozing blood was discovered. He revealed that he had been hiding this mass from doctors and nurses for over a year as he was scared. Biopsy of the mass showed Invasive squamous cell carcinoma. He underwent radical penectomy, bilateral orchiopexy, and perineal urethrostomy.

IMPACT: The importance of detailed physical examination including the rectal and genital exam cannot be stressed enough. Physical examination still holds the key to diagnosis and diminished focus on it may lead to medical errors and delayed diagnosis which may be harmful to the patient.

DISCUSSION: Recently there have been many publications reporting a decline in physical examination skills. This has caused many detrimental diagnostic and therapeutic consequences which could have been prevented easily. The major cause of error is simply that physical examination is not performed. Physical examination is a low cost procedure which requires skill. Consequences of an inadequate physical examination are missed, delayed or incorrect diagnosis, unnecessary exposure to radiation or contrast or invasive diagnostic tests, unnecessary or delayed treatment. It is recommended that physicians should seek full exposure of the patient when necessary. Physicians should also be taught to identify psychosocial factors which may hinder in obtaining the required information from the patient. Sometimes patients are not comfortable disclosing information especially if it relates to genitourinary complaints, in which case appropriate setup should be provided and patient reassured.

WASHED AWAY: AN UNUSUAL CASE OF ACUTE RENAL FAILURE AND PROFOUND ELECTROLYTE DISTURBANCES Matthew Labriola; Maria K. Abril; David Y. Ming. Duke University Medical Center, Durham, NC. (Control ID #2703811)

LEARNING OBJECTIVE #1: Recognize the clinical features of diuretic poisoning

LEARNING OBJECTIVE #2: Manage the ethical dilemma of Munchausen by proxy

CASE: A 61 year-old woman presented with 3 months of nausea and generalized weakness. She denied diarrhea, persistent vomiting, or chest pain. She was afebrile, non-tachycardic, with blood pressure 76/51 mmHg. She was obtunded with dry mucous membranes and cool extremities. Laboratory studies revealed hypokalemia (1.8 mmol/L), hypomagnesemia (1.0 mg/dL), and acute renal failure (BUN 218 mg/dL, Cr 13.2 mg/dL) with an anion gap metabolic acidosis (anion gap 44). She developed torsades des pointes requiring emergent dialysis. Her clinical status improved, and she was discharged home in stable condition. Her husband, a physician, exhibited behaviors that raised concern for the patient's safety. For example, he initially refused central line placement and dialysis. He disclosed that he lavaged ciprofloxacin into the patient's bladder to treat urinary tract infections. In light of these behaviors and the pattern of electrolyte derangements, diuretic poisoning was suspected. A urine diuretic screen sent on admission returned negative. Due to recurrent hypokalemia noted at a follow-up visit, a urine diuretic screen was repeated and returned positive. A diagnosis of Munchausen by proxy was made. An adult protective services (APS) report is pending.

IMPACT: This case prompted consideration of diuretic abuse as a possible cause of acute renal failure with profound electrolyte depletion in the setting of inappropriate spousal behavior when common etiologies have been ruled out. These cases can be difficult to detect given challenges in obtaining historical details and potential for false negative diuretic screens. It is important to speak with the patient and family members separately when adult abuse is suspected.

DISCUSSION: This case of acute renal failure was due to diuretic poisoning by the patient's spouse. If a patient presents with acute renal failure with hypotension, hypokalemia, and hypomagnesemia, causes of volume loss must be suspected, including persistent vomiting, diarrhea, or urinary losses. Diuretic use (intentional or unintentional) must be considered when more common causes have been ruled out, especially in the setting of unusual spousal behavior. A high level of suspicion is required as it is difficult to obtain accurate historical details and there is potential for false negative diuretic screens. The urine diuretic panel is 75–95% sensitive, but if negative and high clinical suspicion exists, the test should be repeated. This case highlights the ethical dilemma of treating a patient suffering from Munchausen by proxy. It is particularly challenging to confront medical professionals as they are knowledgeable regarding objective data and can offer alternative medical explanations to disguise the etiology of the patient's condition. In such scenarios, it is important to confront the patient and spouse separately, and an APS report should be filed.

WERNICKE'S ENCEPHALOPATHY: ANOTHER GREAT MIMICKING SYNDROME

Darran M. Khublall[1]; Jenyfeer Blanco[1]; Joseph Escobar[1]; Yvette DiMarco[1]; Firas Alzaiem[3]; Damian Casadesus[2]. [1]American University of the Caribbean, Miami, FL; [2]Capital Health Regional Medical Center, Trenton, PA; [3]Ross University School of Medicine, Miramar, FL. (Control ID #2702872)

LEARNING OBJECTIVE #1: Recognize the clinical features of Wernicke's encephalopathy in a patient with an atypical presentation.

LEARNING OBJECTIVE #2: Assess all pertinent differential diagnoses while further investigating the most likely problem.

CASE: A 59-year-old Hispanic male presented to the emergency department (ED) with the sudden onset of right-sided weakness, altered mental status and difficulty walking. The symptoms were witnessed by family members and began one hour before evaluation in ED. He also reported shortness of breath and denied nausea, vomiting, dizziness, chest pain. His past medical history was significant for cocaine and alcohol abuse, hypertension and cerebrovascular event with a right hemiplegia. His vital signs showed elevated blood pressure. At the physical examination the patient was alert, awake, yet confused. Neurological examination showed minimal right side weakness in upper and lower extremities and decreased sensation on V3 distribution. His initial laboratory evaluation showed PT 10.9 sec, APTT 27.1 sec, INR 0.95, BUN 32, Creatinine 1.6, WBC count of 11.1, hemoglobin of 11.9 and urine drug screen positive for cocaine and cannabinoids. Emergent CT of the brain without contrast showed no acute intracranial hemorrhage, tentorial infarction, mass effect or midline shift. Compared with previous studies there was focal low attenuation within the left corona radiata. The patient received an NIH score of 1 and it was determined that he was not a candidate for tpA. A further neurological evaluation was performed and the symptoms resolved. MRI/MRA of the brain showed T2 hyperintensity in the mammillary bodies, thalami and periaqueductal grey matter with patent intracranial arteries. The findings suggested Wernicke's encephalopathy and he was started on thiamine 500mg for 2 days and 200mg for the next 10, Folic acid at 1mg daily and Vit B12 1000mcg sublingual for the next 30 days. Upon follow up evaluation the patient exhibited no neurologic symptoms and was noted to be awake and oriented to person, place and time.

IMPACT: This patient presented with typical signs and symptoms of a cerebrovascular event, he did not present to the ED with the classic triad of oculomotor dysfunction, ataxia and encephalopathy. Only through a careful revision of his past medical history and through further studies was the diagnosis of WE supported. This case demonstrates that patients do not always read the book, and uncommon presentations require detailed evaluation for the correct diagnosis and treatment.

DISCUSSION: Wernicke's encephalopathy (WE), an acute neuropsychiatric condition, is caused by thiamine deficiency and has been associated with background of alcoholism especially in many countries where the alcohol consumption has escalated over the past decade. Three common Wernicke's encephalopathy manifestations include ocular abnormalities, ataxia or unsteadiness, and confusion. Despite these constellation of symptoms, WE may also exist behind what at first appears to be a typical CVA.

WHAT IN THE LYMPH IS GOING ON?

Brittany D. Jones-Linares[1, 3]; Sherwin Hsu[2, 1]; Phillis Wu[2, 1]. [1]David Geffen School of Medicine, Palmdale, CA; [2]Olive View - UCLA Medical Center, Sylmar, CA; [3]Charles R. Drew University of Medicine and Science, Los Angeles, CA. (Control ID #2701370)

LEARNING OBJECTIVE #1: Evaluate a patient with diffuse lymphadenopathy in the acute care setting.

LEARNING OBJECTIVE #2: Recognize the differential diagnosis of a patient presenting with generalized lymphadenopathy.

CASE: A 54 year-old previously incarcerated homeless man presented with five months of worsening scrotal edema, lower extremity swelling, and tender diffuse lymphadenopathy. He also noted a fifty-pound weight loss, night sweats and exertional dyspnea. Initial vitals were notable for tachycardia and tachypnea. He had prominent submandibular (6x7cm), supraclavicular, axillary (10x10cm) and inguinal (8x10cm) lymph nodes bilaterally. All nodes were firm, immobile and tender to palpation. The lungs were clear, there was no JVP elevation, and no organomegaly noted in the abdomen. There was significant scrotal swelling and bilateral pitting edema of the lower extremities. Skin examination revealed no jaundice or rashes. Labs revealed leukocytosis with neutrophilic predominance, normocytic anemia, low albumin, high ferritin, elevated lactate, LDH of 1039 and uric acid was 6. A comprehensive infectious workup, including blood/urine cultures, fungal studies, HIV, sputum TB cultures, and viral hepatitis,was negative. CT scans of the neck, chest, abdomen and pelvis revealed diffuse multi-compartmental lymphadenopathy, pulmonary nodules and a lateral soft tissue mass at C1 causing pathologic fracture. MRI Brain showed dural enhancement. Lymph node biopsy revealed pathology consistent with ALK negative anaplastic large cell lymphoma. He was subsequently started on CHOEP chemotherapy.

IMPACT: Lymphoma should be considered in patients with peripheral or generalized lymphadenopathy. Non-Hodgkin Lymphoma is a common cause of cancer in the United States. Aggressive lymphomas commonly present with a rapidly growing mass, B symptoms, and/or elevated levels of serum lactate dehydrogenase and uric acid from tumor lysis. Due to associated morbidity and mortality it is a diagnosis that should not be missed and work-up needs to be expedited in patient with significant symptoms or evidence of high cell turnover.

DISCUSSION: Lymphadenopathy is a common complaint encountered by internists. When diffuse, it typically indicates a systemic process. The differential includes autoimmune, malignant, and infectious etiologies. A complete history is the first step in evaluating diffuse lymphadenopathy. A thorough

review of systems (fevers, night sweats, weight loss, arthralgia, rash, etc.), including duration of lymphadenopathy, along with exposure, social, and family histories is important. A thorough physical exam should be performed with focus on the location, size, consistency, and tenderness of the lymph nodes. Workup should be initiated with basic blood work and then targeted further depending on the differential. Complete evaluation of lymph nodes should be performed with CT scans with IV contrast for full evaluation. If lymphoma is high on the differental, than an excisional biopsy is the gold standard.

WHAT LIES BENEATH: HODGKIN'S LYMPHOMA MIMICKING RECURRENT CRYPTOGENIC ORGANIZING PNEUMONIA Asma Khatoon; Salman Raheem; Kyrstin Eklund; Amit Mann. Methodist Dallas Medical Center, Dallas, TX. (Control ID #2690723)

LEARNING OBJECTIVE #1: Our patient presented with an assortment of previous illnesses which caused a diagnostic conundrum. Good history taking and organized approach to her case ultimately helped in not only diagnosing Hodgkin's lymphoma but also timely instatement of treatment for this highly curable condition.

CASE: A 25-year-old Hispanic female presented to our hospital with a 2-day history of abdominal pain which began abruptly and was associated with fevers, chills as well as intermittent nonproductive cough which had been present since her last episode of pneumonia about 6 months ago. She was admitted to the ICU for management of septic shock and briefly required pressor support along with broad spectrum antibiotics. Past medical history was remarkable for Brill-Zinsser disease and cryptogenic organizing pneumonia (COP), both diagnosed 2 years ago. She had traveled to Mexico 2 months ago, and was treated for recurrent Typhus at that time. Hypotension improved however, she continued to have fever daily despite adequate treatment of her presumed pneumonia. A wide array of tests ensued to rule out infectious and autoimmune causes of her fever. Patient tested negative for HIV, TB, syphilis, Legionella, Chlamydia, Streptococcal pneumonia, Typhus and various other serologies. Tests of autoimmunity remained negative as well. Imaging revealed bulky lymphadenopathy in paratracheal, subcarinal, paraaortic lymph nodes and around bifurcation of aorta along with left pelvic and obturator lymph nodes. CT chest was concerning for recurrence of COP. Review of lung biopsy report from an outside hospital was consistent with COP. Patient eventually underwent an excisional lymph node biopsy. Histopathology and immunohistochemical stains identified Reed-Sternberg cells and thus a diagnosis of Hodgkin's lymphoma was made. Oncology service was consulted and patient was initiated on appropriate chemotherapy with quick resolution of fevers.

IMPACT: This case illustrates the importance of avoiding anchoring heuristic. Anchoring Heuristic, also known as focalism, refers to the human tendency to accept and rely on, the first piece of information received before making a decision.

DISCUSSION: Cryptogenic organizing pneumonia (COP) represents a kaleidoscope of morphologies and concepts, often confused with a series of conditions, among which the most feared are Hodgkin's lymphoma and bronchoalveolar carcinoma. We present the case of a young female with previously known diagnoses of COP and Brill-Zinsser disease in the setting of new onset lymphadenopathy. The non-favorable evolution of her symptoms and the high index of suspicion of the conditions that may mimic the COP histopathological pattern, were the basis of our persistence in getting the *real diagnosis*.

WHAT THE EYES DON'T SEE, THE HEART DOES GRIEVE OVER Michael Sciaudone. Tulane University, New Orleans, LA. (Control ID #2705909)

LEARNING OBJECTIVE #1: Discuss the causes of endophthalmitis

LEARNING OBJECTIVE #2: Recognize the severity of systemic infections due to Candida

CASE: A 71-year-old Peruvian woman presented with blurry vision and bilateral eye pain. Within the preceding months, she had multiple abdominal surgeries, including an incarcerated inguinal hernia repair with ileostomy and acute cholecystitis requiring cholecystostomy tube. During her hospitalizations, she developed bacteremia and fungemia on several occasions, with multiple Gram negative bacteria and Candida albicans. Upon this presentation, she was febrile and tachycardic. She had bilateral conjunctival injection, hypopyon, and severely decreased visual acuity. She also had a III/VI harsh holosystolic murmur at the apex. Thorough ophthalmic exam revealed evidence of bilateral endophthalmitis. Antifungal agents and antibiotics were initiated. Transesophageal echocardiogram revealed severe mitral regurgitation and a 16 × 15 mm mitral valve vegetation and a perforated aneurysmal posterior mitral valve leaflet. She underwent bilateral vitrectomy. Eye lesions appeared consistent with fungal endophthalmitis. Blood and vitreous humor cultures were obtained, but remained negative (drawn after antimicrobial therapy). Given the size of the vegetation and intraoperative findings, she was treated with flucytosine and ambisome for a suspected Candidal infection. She continued to spike fevers and developed heart failure, but refused valve replacement surgery as she wished to return to her home country.

IMPACT: In a patient with bilateral endophthalmitis, an internist should consider and evaluate for a systemic source of infection such as endocarditis.

DISCUSSION: correctly diagnose endophthalmitis, a high degree of suspicion is needed, as referral to ophthalmology is critical. Endophthalmitis may be due to exogenous or endogenous causes. Frequently, exogenous endophthalmitis is associated with trauma or surgery. Endogenous endophthalmitis implies a hematogenous source. Blood cultures and intraocular cultures should be obtained upon presentation along with an echocardiogram, as endocarditis may be the source of infection. While Candida is the most common organism to cause endogenous endophthalmitis, other causes can include Strep pneumo or Staph aureus. In our case, we suspected hematogenous seeding from endocarditis or an intra-abdominal infection, given the patient history of multiple complicated abdominal surgeries and recurrent bacteremia and candidemia. Candida is a rare but morbid cause of infective endocarditis. Arterial embolization and metastatic infections such as endophthalmitis are more frequent in candidal endocarditis. Valve replacement should be strongly considered as a mortality benefit for antifungals and surgery compared to antifungals alone has been demonstrated. In cases in which valve replacement is not feasible, lifelong suppressive antifungal therapy should be considered.

WHEN A BROKEN HEART LEADS TO A PAINFUL STOMACH Shadi Dowlatshahi[1, 2]; Patricia Lorenzo[2]; Wei-I Vickie Wu[2]. [1]Oregon Health and Science University, Portland, OR; [2]Keck School of Medicine University of Southern California, Los Angeles, CA. (Control ID #2705215)

LEARNING OBJECTIVE #1: Recognize gastroparesis as a potential complication of radiofrequency catheter ablation in the treatment of atrial fibrillation

CASE: This is a 67-year-old female with history of hypertension, and atrial fibrillation (AF) status post radiofrequency (RF) catheter ablation one week prior, who presented with new onset of abdominal pain with associated nausea and vomiting. Post procedure the patient was doing well, however over the course of the week the patient noted diffuse abdominal pain that was worse after eating. She noted symptoms of abdominal bloating, nausea and vomiting after only a few bites. Patient also reported constipation. On exam, vitals were normal. Abdominal exam revealed the presence of bowel sounds, and a distended abdomen with diffuse tenderness to palpation. No guarding or rebound was present. CT abdomen was performed showing gastric distention but no evidence of obstruction. A nuclear medicine gastric emptying study was ordered and showed 45% retained food at 3 hours, confirming the diagnosis of gastroparesis. Nasogastric tube was placed with initiation of IV metoclopramide. Patient reported improvement of her symptoms within two days and her diet was advanced to a low fat and fiber diet. After discussion with cardiology and gastroenterology, the etiology of the patient's gastroparesis was determined to be related to recent RF catheter ablation.

IMPACT: Gastroparesis is an under-recognized complication of radiofrequency catheter ablation.

DISCUSSION: Refractory AF may be treated with RF catheter ablation. Although complications are infrequent, most physicians are aware of cardiac complications that may result, such as embolic events. However, few clinicians are cognizant of the extracardiac complications that may occur with catheter ablation. Gastroparesis is characterized by the delayed emptying of gastric contents in the absence of a mechanical obstruction. While typically recognized as a complication of diabetes, gastroparesis may occur in the acute setting after RF catheter ablation secondary to paraesophageal vagal nerve plexus injury. Patients will typically present within 72 hours post-procedure. As few cases have been reported, it is difficult to define the incidence of this complication. In a study by Kuwahara et al. (2013) only 11 of the 3,538 patients monitored post ablation developed gastroparesis. Patients with recent RF catheter ablation who present with symptoms suggestive of gastroparesis should raise suspicion. A gastric emptying study should be ordered for confirmation. Treatment is similar to other etiologies of gastroparesis, including a low fat and fiber diet, and use of pro-kinetic agents. Symptoms typically resolve within 6 months, without further need for treatment. As catheter ablation continues to be a frequent treatment modality for refractory AF, physicians should be aware of this rare complication to aid in early detection and treatment.

WHEN A SIMPLE CYST CAN THREATEN YOUR LIFE Christian Ibanez; Shayan Siddiqui; Dianne Srinilta; Omar Bazzaz; Roger D. Smalligan. Texas Tech Univ Health Sc Center - Amarillo, Amarillo, TX. (Control ID #2699852)

LEARNING OBJECTIVE #1: Recognize an uncommon etiology of seizures in a young person

LEARNING OBJECTIVE #2: Understand the risks, including death in a patient with a colloid cyst

CASE: A 37yo male with unknown past medical history was found unresponsive in his vehicle and brought to the emergency room for evaluation. On exam, vitals were HR 72, BP 111/66, RR 13, T 37C, SpO2 100%. In the ER, the patient had several episodes of generalized tonic-clonic seizures and was intubated and sedated for airway protection. Lab work was normal except for glucose of 141, bicarbonate 18.0, WBC 16.6 with 88.1% neutrophils. Urine toxicology was negative. A CT scan of the brain showed a hyperdense mass involving the junction of the lateral and third ventricle suggestive of a colloid cyst with local mass effect causing obstructive hydrocephalus. Lumbar puncture was negative except for an elevated opening pressure. MRI confirmed the suspicion of a colloid cyst. A chest x-ray was suggestive of aspiration pneumonitis. The patient was treated with levetiracetam, dexamethasone, and piperacillin/tazobactam. With his seizures controlled, the patient was extubated. Despite long, sincere conversations with the primary team and the neurosurgeon regarding the need to resect the cyst, the patient decided to leave against medical advice.

IMPACT: This case reminds physicians to consider alternative etiologies when a patient presents with acute seizures. Urgent neurosurgery may be needed to prevent morbidity and mortality in a patient with a colloid cyst that is causing obstructive hydrocephalus.

DISCUSSION: New onset seizures in a young adult is a common presentation on the hospital service. Common etiologies include nonadherence to antiepileptic medications, alcohol/drug intoxication or withdrawal, metabolic or electrolyte disturbances and head trauma. This case highlights an unusual etiology–obstructive hydrocephalus secondary to a colloid cyst. Colloid cysts are a developmental malformation consisting of a fibrous outer layer and a mucin-producing inner epithelium. The most common location for colloid cysts is the anterior roof of the third ventricle, near the Foramen of Monroe, exactly as seen in our patient. They are usually asymptomatic; however, when symptoms do occur they include intermittent headaches and those related to obstructive hydrocephalus and the associated increased intracranial pressure such as nausea, vomiting and seizures. On exam there is papilledema. Those with symptoms are more commonly young adults. Rarely, drop attacks and even sudden death can occur if there is herniation. Our patient denied headaches and drop attacks prior to his seizures and presentation to the emergency room. Management of symptomatic colloid cysts requires surgical resection with ventriculoperitoneal shunt placement or aspiration.

WHEN ASCITES ISN'T CLEAR Nicole H. Dillow[2]; David Kiviat[1]; Susanne Anderson[1]; Margaret C. Lo[1]. [1]University of Florida College of Medicine, Gainesville, FL; [2]University of Florida Health, Gainesville, FL. (Control ID #2709426)

LEARNING OBJECTIVE #1: Identify the risk factors of chylous ascites

LEARNING OBJECTIVE #2: Diagnose and manage chylous ascites

CASE: A 66 year-old cachectic male presented with acute epigastric pain and in severe sepsis. History included alcoholism, duodenal ulcer s/p ablation, and gallbladder perforation s/p recent cholecystectomy. Initial GI exam revealed no ascites or rebound tenderness. Labs noted leukocytosis with bandemia, elevated LFTs, and mild lipase elevation. CT abdomen revealed pancreatic inflammation with scant fluid in peripancreatic area. MCRP confirmed an acute interstitial edematous pancreatitis. Blood cultures later grew ESBL E. Coli; meropenem was started. Hospitalization was complicated by a long MICU stay for septic shock and acute hypoxic respiratory failure. Repeat CT abdomen showed increased fluid in the peritoneal cavity. Paracentesis revealed spontaneous bacterial peritonitis (SBP). Ceftriaxone was added and percutaneous drain placed with high output. Fluid culture and cytology were negative. Soon thereafter, ascitic fluid changed from purulent to milky white. Ascitic

triglyceride level was high (289mg/dL), confirming diagnosis of chylous ascites. Surgery declined TIPS procedure. Fluid output slowly stabilized with low fat diet and maximum octreotide dose. Given prolonged hospital course, patient was transferred to an acute care hospital for further care.

IMPACT: This case demonstrates that ascites is not always a result of portal hypertension and can result from lymphatic processes. Any source of lymphatic leakage or obstruction can lead to chylous ascites. Abdominal surgery and trauma are well-cited causes. Our case adds to the limited literature of acute pancreatitis and laparoscopic cholecystectomy as additional rare risk factors for chylous ascites.

DISCUSSION: Chylous ascites is often manifested as painless abdominal distension. Index of suspicion should be high for those with risk factors. Most common ones include congenital lymphatic abnormalities and malignancy, notably lymphoma. Other risk factors include right-sided heart failure, constrictive pericarditis, abdominal radiation, and cirrhosis. In developing countries, infectious causes (i.e. tuberculosis, filariasis) are well-reported. Paracentesis is key for diagnosis; the fluid will be milky white from high triglycerides >200mg/dL. Fluid analysis should include cytology to evaluate for malignancy. Chyle leaks can lead to complications from loss of protein, lipids, water, immunoglobulins, vitamins, and electrolytes. Prognosis is poor. Patients often develop severe malnutrition, impaired immunity, and recurrent infections. Treatment is mostly conservative and includes high-protein/low-fat diets, therapeutic paracentesis, and somatostatins. Paracentesis provides symptomatic relief, but can accelerate complications. TPN can be used to reduce chyle production from enteral intake. TIPS and LeVeen shunt are for refractory cases but carry high morbidity. Therapy must target the underlying cause and address nutritional support.

WHEN ENDOCARDITIS BESPOKE CANCER Serin Edwin; Isha Shrestha. MacNeal Hospital, Berwyn, IL. (Control ID #2706579)

LEARNING OBJECTIVE #1: Recognize Non-Bacterial Thrombotic Endocarditis as a rare cause of systemic embolization

LEARNING OBJECTIVE #2: Judiciously screen for associated malignancies upon detection of Non-Bacterial Thrombotic Endocarditis

CASE: An 83-year-old female with a PMH significant for DM, HTN, HLD, left temporoparietal CVA with resulting aphasia, and a recent admission for DVT and PE, presented with lethargy and poor oral intake. In the ED, patient was noted to have altered mental status. Physical examination was remarkable for BP at 94/60, receptive and expressive aphasia, mild right sided weakness, and a tongue deviation to the left. Chest X-ray was unremarkable. EKG showed a normal sinus rhythm, moderate voltage criteria for LVH, and inverted T-waves. Laboratory findings were significant for an elevated troponin at 2.4, WBC count of 14.7, and urinalysis showing 10–15 WBCs. She was started on Lovenox for the treatment of NSTEMI and IV antibiotics for UTI. Over the next 24 hours, the patient became more lethargic and an MRI was performed, which revealed a hemorrhagic left frontal lobe infarction and numerous new bilateral cerebral and cerebellar infarctions, suspicious for embolic infarctions. Lovenox was immediately discontinued due to the hemorrhagic infarction, and the concern for showering emboli prompted a TEE to be performed. TEE showed a moderate sized vegetation attached to the anterior mitral leaflet measuring 8x5mm in size, and a diagnosis of endocarditis was made. Blood cultures were however found to be negative. This raised a suspicion of Non-Bacterial Thrombotic Endocarditis (NBTE). A screening CT abdomen pelvis was done, which confirmed findings consistent with metastatic disease in the liver, pancreas and kidney. Over the hospital course the patient became progressively less responsive. Given her poor prognosis due to the likely advanced malignancy and stroke, the patient was transferred to hospice.

IMPACT: This case demonstrates the importance of a high index of suspicion for NBTE in presentations suggesting systemic embolization. This enables screening and detection of serious underlying associated diseases, including malignancies.

DISCUSSION: Non-bacterial Thrombotic Endocarditis is a rare disease entity, even more rarely identified ante-mortem. This condition is characterized by sterile cardiac vegetations caused by fibrin and trapped platelets on an uninflamed valve leaflet. Presentations usually involve evidences of systemic embolization, ranging from rash, hematuria and digital ischemia, to stroke and chest pain. Echocardiography is used to identify vegetations, with a notable absence of organisms causing endocarditis on microbiology. Management involves anticoagulation with LMWH or UFH indefinitely. Valvular surgery is performed in cases where appropriate. This condition is most commonly associated with malignancy, as was seen in this patient. Other associations include a hypercoagulable state, SLE, RA, and RHD. A workup for these underlying etiologies is recommended in cases of NBTE.

WHEN IS THE DUKE CRITERIA NOT ENOUGH? Faraz Fiazuddin[2]; Farah Ladak[3]; Temple Ratcliffe[1]. [1]UTHSCSA, San Antonio, TX; [2]University of Texas Health Science Center - San Antonio, San Antonio, TX; [3]University of Texas Health Science Center San Antonio, San Antonio, TX. (Control ID #2687868)

LEARNING OBJECTIVE #1: To identify Infective Endocarditis in the absence of Duke's criteria.

CASE: A 54 years-old-woman presented with one week of progressive fatigue, shortness of breath, and productive cough. Physical exam revealed fever of 101.6 F, poor oral dentition, bilateral pulmonary crackles and left lower quadrant abdominal tenderness. Initial laboratory workup was remarkable for elevated procalcitonin which prompted initiation of broad spectrum antibiotics. Chest X-ray was concerning for a multifocal pneumonia and subsequent CT chest showed multifocal airspace opacities concerning for septic emboli. CT abdomen/pelvis showed a probable splenic infarct. There was moderate tricuspid regurgitation with no vegetations or perforations, and preserved ejection fraction on echocardiogram. On second day of admission she became acutely confused without any focal neurological deficits. CT head showed recent left occipital and cerebellar infarcts and subsequent MRI brain revealed posterior and middle cerebral artery infarcts concerning for embolic phenomenon. Infectious workup was only significant for Methicillin-susceptible Staphylococcus aureus (MSSA) positive sputum culture; multiple blood cultures obtained throughout admission were negative for any microbial growth. Despite negative blood cultures, absence of valvular vegetations on echocardiogram; the patient's radiological findings were consistent with septic emboli to brain, lungs and spleen from presumed MSSA Infective Endocarditis.

IMPACT: Infective endocarditis although uncommon is associated with significant morbidity and mortality (in-hospital 14-22%). Early and accurate diagnosis is essential to prevent negative outcomes. The modified Duke criteria is a validated diagnostic tool, however it must be used along with clinical

judgement and in context of pre-test probability. Our case signifies that physicians should have a low threshold for initiating therapy if the clinical presentation suggests IE even in the absence of Duke criteria.

DISCUSSION: Infective endocarditis(IE) has significant morbidity and one-year mortality of 20-40% which makes timely diagnosis vital. Modified Duke criteria employs pathologic, clinical and imaging modalities to stratify patients as definite, possible or rejected IE. Given the poor prognosis without treatment, the sensitivity and specificity (each around 80%) of the modified Duke criteria are suboptimal. Echocardiography is the primary imaging modality used for diagnosis, however transesophageal echocardiography(TEE) can miss the diagnosis in up to 30% of cases. Clinicians should consider further imaging modalities such as CT if TEE is unrevealing in highly suspicious cases.

WHEN IT SOUNDS AND LOOKS LIKE LYMPHOMA AND IT'S NOT: A CASE OF SARCOIDOSIS PRESENTING AS LYMPHOMA

Songprod Lorgunpai; Craig Gordon. Boston Medical Center, Boston, MA. (Control ID #2702550)

LEARNING OBJECTIVE #1: Recognize night sweats, weight loss, lymphadenopathy, and hypercalcemia as manifestations of sarcoidosis

CASE: A 39 year old man presented with left flank pain. Urinalysis revealed 3+ blood and calcium oxalate crystals. CT abdomen/pelvis revealed a left obstructing 8mm kidney stone as well as extensive abdominal and pelvic lymphadenopathy concerning for lymphoma. The patient was admitted to the oncology service where in addition to left flank pain, the patient reported night sweats, decreased appetite, and 40 pound weight loss over the past few months. Physical exam revealed large bilateral axillary and inguinal lymphadenopathy, up to 3–4 cm in size. Labs showed a serum calcium of 10.9 mg/dL. CT thorax revealed diffuse mediastinal, hilar, pericardial, and axillary lymphadenopathy, as well as lung nodules. Excisional biopsy of a right axillary lymph node revealed non-necrotizing granulomas with no features of a lymphoproliferative disorder or epithelial tumor. Flow cytometry, histoplasma antigen, mycobacterial culture, and special stains for acid-fast bacilli and fungi were negative. Patient was diagnosed with sarcoidosis and started on prednisone 40 mg daily. Repeat imaging revealed significant improvement in lymphadenopathy and lung nodules. Repeat serum calcium was 9.3 mg/dL.

IMPACT: This case reveals the perils of premature closure of diagnostic thinking as all clinicians involved in the case were convinced he had lymphoma. It highlights the necessity to consider the complete differential diagnosis of the patient's systemic symptoms, laboratory, and imaging data.

DISCUSSION: Sarcoidosis is a granulomatous disorder with noncaseating granulomas in the numerous involved organs. Sarcoidosis involves the lung in over 90% of patients. However, sarcoidosis can involve any organ system, and up to 30% of patients present with extrapulmonary sarcoid. This patient presented with weight loss, night sweats, and diffuse lymphadenopathy concerning for lymphoma but an estimated 15% of patients with sarcoidosis will have peripheral lymphadenopathy. Constitutional symptoms such as weight loss and night sweats occur in about 30% of patients with sarcoid. Hypercalcemia is observed in 10% of patients with sarcoidosis but 40% have hypercalciuria, leading to calcium-oxalate kidney stones, as seen in this patient. Lymph node biopsy can help differentiate sarcoidosis from lymphoma. However, a biopsy cannot definitively diagnosis sarcoid, as sarcoid granulomas have no unique histologic features to differentiate them from other granulomas. When this patient's biopsy revealed non-necrotizing granulomas, it was important to exclude the alternative possibilities of malignancy, mycobacterial, or fungal infections prior to diagnosing sarcoidosis and starting corticosteroid treatment.

WHEN KNOWLEDGE MAY NOT EMPOWER: THE CASE OF AN INCIDENTAL ABDOMINAL MASS

Shiyun Chua; Elizabeth Hutton. Boston Medical Center, Cambridge, MA. (Control ID #2690062)

LEARNING OBJECTIVE #1: Describe an unusual case of asymptomatic small lymphocytic lymphoma

LEARNING OBJECTIVE #2: Discuss the challenge of "incidentalomas" in the context of medical overuse

CASE: A 68 year-old man was sent to the hospital from urgent care due to severe crampy epigastric pain, vomiting and diarrhea, and new bradycardia. Exam revealed a diaphoretic male with epigastric tenderness and a heart rate in the 40s. Labs, including CBC, hepatic and renal function, were unremarkable. CT angiogram, ordered to rule out aortic dissection, instead showed a 7.5cm mesenteric mass adjacent to the descending colon and multiple enlarged mesenteric lymph nodes. Further testing, including CA19-9, CEA, LDH, beta-2-microglobulin, and serum protein and immunofixation electrophoresis, was normal. IR-biopsy of the mass revealed small mature B-cells consistent with small lymphocytic lymphoma (SLL). Hospital course was otherwise uneventful, with swift resolution of symptoms. Subsequent outpatient evaluation, including PET-CT and colonoscopy, revealed no blood involvement or other disease sites. He had no recurrence of initial symptoms. Given asymptomatic benign disease, the hospital tumor board recommended continued observation.

IMPACT: This case illustrated for me the challenge of an "incidental finding" in terms of potential medical overuse and the impact on my own decision-making in future similar cases.

DISCUSSION: This patient presented with a common nonspecific complaint that was short-lived and resolved without intervention, suggesting a benign cause e.g. viral gastroenteritis. The abdominal mass discovered as part of the workup was incidental, but sparked off a battery of tests resulting in the diagnosis of an indolent disease not necessitating any intervention. SLL is a relatively benign chronic lymphoproliferative disorder, synonymous to chronic lymphocytic leukemia (CLL) but for the lack of lymphocytosis. Management options of resection and radiation therapy may pose more risk than benefit. This case illustrates the challenge of "incidentalomas" for clinicians. On one hand, identifying SLL allowed monitoring for future progression. Yet, given the low risk of progression, the patient may have been subjected to unnecessary iatrogenic harm, including radiation, an invasive procedure, and the emotional stress caused by a cancer diagnosis. As high-value care has become a priority in medicine, there is increased attention to medical overuse, defined as "health care where potential for harm exceeds possible benefits". Factors contributing to medical overuse include fear of malpractice litigation and cognitive bias that "more is better". The phenomenon of "investigation momentum" has also been identified, when an ambiguous test result sparks a self-propelling cascade of further testing. Although a number of efforts have been launched to curb medical overuse, there is a need for further research and focus on high-value care curriculum in residency, particularly with the anticipated shift to capitated payments.

WHEN OLD CLOTS PRESENT LIKE NEW ONES Eesha Khan2; Asad H. Khan[2]; Vikram Grewal[2]; Mitkumar Patel[1]. [1]Baystate Medical Center, Springfield, MA; [2]Baystate Medical Center, Springfield, CT. (Control ID #2707285)

LEARNING OBJECTIVE #1: Identify key clinical and radiographic features of chronic thromboembolic pulmonary hypertension (CTEPH).
LEARNING OBJECTIVE #2: Discuss the management of CTEPH.
CASE: 51 year old female with a history of bilateral pulmonary emboli diagnosed five years ago and long-standing myasthenia gravis presented with pleuritic chest pain and dyspnea for three days. Physical examination was significant for tachycardia, new-onset hypoxia, jugular venous distension and a holosystolic murmur at the left sternal border. Initial work-up revealed an elevated D-dimer and a normal chest X-ray. She was initially suspected to have recurrent acute pulmonary embolism (PE) and a CT pulmonary angiogram (CT-PA) was done. CT-PA was negative for an acute PE but showed a small pericardial effusion, evidence of right heart dysfunction and a chronic calcified thrombus in the distal right pulmonary artery. Transthoracic echocardiogram (TTE) showed a moderate-sized pericardial effusion, severe right ventricular (RV) dysfunction with right-to-left septal shift, severe pulmonary hypertension (PH), severe tricuspid regurgitation and a right atrial thrombus. She was diagnosed to have chronic thromboembolic hypertension (CTEPH) complicated by RV failure and right atrial thrombosis. She was urgently referred to a CTEPH center where she underwent bilateral pulmonary thromboendarterectomy (PTE), tricuspid valve repair and right atrial thrombectomy. Repeat TTE showed a decrease in RV size, improvement in pulmonary artery (PA) pressures from 122 mm Hg to 54 mm Hg and resolution of the pericardial effusion. Post-operative ventilation/perfusion (V/Q) scan showed interval improvement in perfusion bilaterally, with persistent defects in left upper and right lower lungs. She was sent home on riociguat and warfarin.
IMPACT: This case highlighted the importance of evaluating for CTEPH when a patient with a prior PE presents with progressive dyspnea, once other common causes are excluded.
DISCUSSION: CTEPH is a treatable and potentially curable form of pulmonary hypertension. Early diagnosis and referral to a CTEPH center is crucial for improved prognosis. Typically, patients present with progressive dyspnea and exercise intolerance, in the setting of a prior PE. A V/Q scan, right heart catheterization (RHC) and pulmonary angiography are key diagnostic tests. Rarely, however, patients can be diagnosed with presumed CTEPH and referred for PTE without RHC and pulmonary angiography. In these patients, diagnosis can made with echocardiographic findings plus either CT-PA or magnetic resonance imaging (MRI) abnormalities, as in the case above. The cornerstone of treatment is PTE and lifelong anticoagulation. For inoperable or persistent CTEPH, medical therapies have recently come to the fore. Riociguat, a soluble guanylate cyclase inhibitor, is the preferred drug for persistent CTEPH. While our patient showed a dramatic improvement in PA pressures, she had residual PH and some persistent filling defects on V/Q scan and was therefore started on riociguat.

WHEN PNEUMONIA IS NOT WHAT IT SEEMS - A CASE OF AMIODARONE INDUCED LUNG INJURY Edmond Fomunung. UT Southwestern Medical School, Dallas, TX. (Control ID #2687952)

LEARNING OBJECTIVE #1: Diagnose amiodarone induced pulmonary toxicity
CASE: A 83-year-old woman with a history of atrial fibrillation on amiodarone 200mg/day for 8 years presented with report of a non-productive cough of approximately 1 week's duration. She was noted to febrile and hypoxic with an elevated white blood cell count. A chest xray was significant for confluent airspace consolidation in the right upper lobe, as well as within the left perihilar and lower lung zones, and small bilateral pleural effusions, all suggestive of multifocal pneumonia. She was started on empiric antibiotics for community acquired pneumonia. By the third day of hospitalization, there remained no clinical improvement. She continued to be hypoxic and leukocytosis continued to worsen. A CT scan of the chest showed patchy areas of groundglass, septal thickening, volume loss, scattered parenchymal bands and subpleural poorly defined nodular opacities. Transbronchial lung biopsy showed fibrous nonspecific interstitial pneumonia (NSIP) and organizing pneumonia, both related to amiodarone induced pulmonary toxicity.
IMPACT: Amiodarone induced pulmonary toxicity presents in myriad ways, including interstitial pneumonitis and organizing pneumonia, as in our patient. This pathology should always be suspected in patients with a history of amiodarone use, and particularly when there is no response to standard microbial therapy if pneumonia is initially suspected.
DISCUSSION: Amiodarone is the most widely prescribed antiarrhythmic in the United States, and a mainstay in the management of atrial fibrillation. The use of amiodarone is however complicated by its myriad side effects, with pulmonary toxicity being among the most adverse side effects of amiodarone use. Amiodarone induced lung injury comes in several forms including interstitial pneumonitis, organizing pneumonia, acute respiratory distress syndrome, diffuse alveolar hemorrhage, pulmonary nodules, solitary masses and pleural effusions. Interstitial pneumonitis is the most common of these presentations. The risk factors for development of toxicity may include duration of therapy, cumulative dose, daily dose usually greater than 400mg/day and pre-existing lung disease. Plain radiographs usually show new, diffuse or localized reticular, ground glass and mixed opacities. High resolution computed tomography should be obtained, and in the case of interstitial pneumonitis, may show areas of high attenuation in the lungs, specific for amiodarone toxicity. While not necessary, a lung biopsy is the gold standard in the diagnostic evaluation. Organizing pneumonia, another feature of amiodarone pulmonary toxicity, is present in approximately 25% of cases. It is suggested by acute or subacute onset mimicking pneumonia, patchy consolidative opacities on imaging and no response to antimicrobial therapy. A lung biopsy is needed to establish the diagnosis. Management involves discontinuation of amiodarone and generally a course of systemic glucocorticoid therapy.

WHEN SEVERE HYPOTENSION ISN'T SEPSIS Sophia Chang; Heather L. Briggs. University of Texas Health Science Center at San Antonio, San Antonio, TX. (Control ID #2701616)

LEARNING OBJECTIVE #1: Recognize causes of severe hypotension
LEARNING OBJECTIVE #2: Recognize the influence that cognitive bias may have on medical decision making
CASE: A 52 year old man with a past medical history of type 2 diabetes mellitus, and hypertension was admitted for pre-syncope. He had woken up feeling as if he was going to faint. EMS was called and he was brought to the hospital. On admission, his examination revealed significant hypotension (74/

42). His physical exam was otherwise unremarkable. Laboratory studies demonstrated white blood cell count 16K, creatinine 2.8 (baseline 0.8), and lactic acid 3.7. He initially received 3L of IV fluids as well as vancomycin and ceftriaxone for possible sepsis. His mean arterial pressure (MAP) was initially greater than 60 and soon dropped. He was pending transfer to the ICU for vasopressor support while he received an additional 2L of fluid. Vasopressor support was not needed as the MAP remained above 60. With a Sequential Organ Failure Assessment (SOFA) score of 3 and a concern for an occult infection, sepsis was at the top of the differential. Further studies including urinalysis, chest x-ray, and blood cultures were all negative for infection. Upon review of his home medications, he reported the recent initiation of canagliflozin. On repeat questioning, the patient reported increased urinary frequency since initiation of his medication. Given the lack of infectious source, and the resolution of his hypotension and acute renal failure with fluids, it was thought that canagliflozin was the culprit.

IMPACT: When the patient initially presented, the diagnosis was sepsis, but this was not supported by other clinical data. The primary team had to overcome the anchoring effect, which is when a provider will rely on the initial information, i.e. "anchor," to make ensuing decisions. The team had to overcome this bias to effectively diagnose the patient. This experience challenged the team to be more aware of anchoring bias and gather all the data of the admission to develop a differential diagnosis.

DISCUSSION: Canagliflozin is a SGLT-2 inhibitor that leads to increased urinary excretion of glucose which can contribute to significant hypovolemia. In this particular case, acknowledging the anchoring effect and re-evaluating the patient, allowed the team to recognize the side effects of canagliflozin as a potential cause of the clinical symptoms. This prevented the patient from receiving unnecessary antibiotics for a prolonged period of time. In a recent article, Tobler et al., described a database review that identified that cognitive bias was associated with diagnostic decisions. Recognition of these biases, including the anchoring effect, and the possible influence on decision making is an important part of education in clinical reasoning.

WHEN THE RULES DON'T APPLY: ANTICOAGULATION IN PATIENTS WITH INFECTIVE ENDOCARDITIS AND EMBOLIC STROKE Leah Harvey; Jonathan Ohm; Samantha Zullow; Frank Schembri. Boston Medical Center, Boston, MA. (Control ID #2671292)

LEARNING OBJECTIVE #1: To discuss the indications for anticoagulation in the setting of endocarditis and stroke

CASE: Case 1: 26 year old female with HCV and IVDA presented with tachycardia, a IV/VI apical systolic murmur with palpable thrill, Janeway lesions, weak left radial and ulnar pulses, and cyanosis of her left hand. Blood cultures grew MSSA, E. faecalis, Pseudomonas aeruginosa, and Bacillus subspecies. TEE confirmed mitral valve endocarditis. Duplex arteriography revealed occlusive thrombi at her left brachial and radial arteries, requiring embolectomy. CT demonstrated septic emboli to her lungs, kidneys, spleen, and brain, including a right prefrontal gyrus embolic stroke. She was treated with therapeutic heparin, as it was felt that the benefit of preserving perfusion to her left arm and avoiding necrosis outweighed the risk of conversion from embolic stroke to intercerebral hemorrhage (ICH). Case 2: 34 year old male with HCV and IVDA presented with tachycardia, tachypnea, III/VI systolic murmur at the left sternal border, and bilateral upper extremity wounds. Blood cultures grew MRSA, E. coli, and Strep. constellatus. TEE revealed vegetations at the tricuspid valve, right ventricular outflow tract, and the sinus of valsalva. CTPA demonstrated cavitary lesions and pulmonary emboli (PE). Further imaging revealed septic emboli to his spleen, kidneys, and frontal lobe. His admission was further complicated by GI bleed and respiratory failure requiring intubation. It was determined that the risk of hemorrhagic conversion (HC) outweighed the benefit of treating the PEs, particularly given concern for GI bleed, and both therapeutic and prophylactic heparin were held.

IMPACT: As these patients with IE and embolic stroke demonstrate, anticoagulation may be indicated to treat limb ischemia or PE, but benefits should be carefully balanced with inherent risk of HC.

DISCUSSION: Patients with Infective Endocarditis (IE) are at high risk for embolic events, including embolic stroke. Risk factors for embolization include: vegetations >1cm, Staph. aureus endocarditis, delay in effective antibiotic therapy, and comorbidities such as atrial fibrillation. Early surgical intervention has been found to be beneficial in patients with ongoing thrombotic events despite antibiotic therapy, although such patients are often unstable and poor surgical candidates. Current guidelines recommend anticoagulation in patients with typical indications, such as mechanical valves or atrial fibrillation. However, for patients with thromboembolism, guidelines are less clear. Experts suggest that the risk of complications from withholding anticoagulation be balanced against the risk of bleeding, particularly the risk of HC of acute stroke. In an acute care setting, patients are often sedated and neurologic exams are difficult to perform. Therefore, if anticoagulation is used, serial imaging should be performed to monitor for HC of septic emboli in the brain.

WHERE HAS ALL THE BICARB GONE?: AN UNRESPONSIVE PATIENT AND AN UNKNOWN INGESTION William L. Vail; Shwetha Iyer. Montefiore Medical Center, Bronx, NY. (Control ID #2706323)

LEARNING OBJECTIVE #1: Recognize the clinical presentation of topiramate toxicity

LEARNING OBJECTIVE #2: Identify topiramate toxicity as a potential cause of hyperchloremic non-anion gap metabolic acidosis

CASE: A 23 year-old obese woman was brought to the emergency department by EMS after ingesting an unknown quantity of medication. She was in her usual state of health 12 hours previously but was later found collapsed at home. Vital signs were normal. She was difficult to arouse and did not follow simple commands. She would open her eyes and withdraw from noxious stimuli. Her pupils were 4mm bilaterally and sluggishly reactive. Reflexes were +2 and symmetric. Labs revealed a bicarbonate of 11 mEq/L and chloride of 116 mEq/L with an anion gap of 16. Arterial blood gas revealed a pH of 7.33, pCO2 26mmHg. Serial EKGs showed normal sinus rhythm with normal QRS intervals. Nortriptyline, acetaminophen, and salicylate were undetectable in the serum. Valproic acid levels were within normal limits. The topiramate level was 33.8 mcg/ml 24 hours after ingestion (Reference range for psychiatric use 2.0 - 8.0 mcg/ml).

IMPACT: General internists are often confronted with the difficulties of identifying drug ingestions. Physical exam and lab abnormalities become paramount to diagnosis and treatment when an accurate history of potential ingestions cannot be obtained.

DISCUSSION: Topiramate is a sulfamate-substituted monosaccharide anticonvulsant medication used to treat various seizure disorders and, more

recently, as a mood stabilizer. It is thought to inhibit voltage-sensitive sodium and calcium channels and potentiate gamma-aminobutyric acid (GABA) mediated chloride currents. It also selectively inhibits two isoenzymes of carbonic anhydrase found in the glial cells of the brain and in proximal tubules of the kidney. The most common symptoms of topiramate toxicity are somnolence, dizziness, ataxia, and diplopia. Psychosis, hepatic failure, encephalopathy, hyperthermia, nephrolithiasis, paresthesia, and seizures have also been reported. Most cases resolve within 48 hours with no long-term sequelae. Rarely, coma and death due to overdose have been reported. The most consistent lab abnormality found in topiramate toxicity is metabolic acidosis due to the inhibition of carbonic anhydrase, leading to loss of bicarbonate in the proximal tubules, and subsequent retention of chloride to sustain electrical neutrality. Thus, topiramate toxicity often presents with a hyperchloremic non-anion gap metabolic acidosis, consistent with a Type 2 renal tubular acidosis. Urine pH may be high in the immediate setting of toxicity. A positive urine anion gap can also be seen due to chloride and ammonia ion retention as well as the inability of the kidney to reabsorb bicarbonate. Clinicians should recognize these unique pathopharmacological aspects of the drug topiramate, especially when other substances are eliminated as potential causes as it can help in distinguishing the presentation of its toxicity.

WHERE O WHERE ART THOU ANEURYSM Gray Jodon[2]; Timothy Miller[3]; Chi Zheng[1]. [1]Denver Health, Denver, CO; [2]University of Colorado, Denver, CO; [3]University of Colorado School of Medicine, Loveland, CO. (Control ID #2704085)

LEARNING OBJECTIVE #1: Diagnose PAN (polyarteritis nodosa) without biopsy

CASE: A 42 year-old man with a history of recent hepatitis B virus (HBV) infection, hepatitis C, and IV drug abuse presented from an outside hospital (OSH) with abdominal pain for one month and concerns for necrotizing pancreatitis. CT at the OSH revealed ovoid pancreatic hypodensities, splenic infarcts, bilateral renal infarcts, and possible splenic vein thrombosis. Physical exam was significant for diffuse abdominal tenderness to palpation, testicular pain with palpation, and decreased sensation in bilateral lower extremities. The above imaging combined with a normal lipase was not consistent with necrotizing pancreatitis. Serologic testing for lupus, Sjogren's syndrome, anti-neutrophilic cytoplasmic antibody (ANCA) related vasculitis, anti-phospholipid antibody syndrome, IgG4 related disease, multiple myeloma, HIV, and paroxysmal nocturnal hemoglobinuria were unrevealing. Blood cultures were negative and echocardiography did not reveal a cardioembolic source. CTA of the abdomen revealed no evidence of aneurysms of the small and medium vessels. Our differential involved vascular phenomenon, including thrombotic, embolic and vasculopathic causes. Given his recent history of HBV, PAN was high on the differential. A repeat CTA on hospital day 7 revealed renal artery aneurysms suggestive of PAN. Biopsy was deferred as the patient met American College of Rheumatology diagnostic criteria for PAN. He was discharged on tenofovir and prednisolone, but was readmitted 4 days later for cardiogenic shock due to stress induced cardiomyopathy related to coronary aneurysms versus cerebral aneurysms. He was treated with plasma exchange with recovery of his cardiac function and resolution of his symptoms.

IMPACT: The patient's clinical presentation and evidence of aneurysms on CTA were used to meet the American College of Rheumatology's diagnostic criteria for PAN. The patient was able to forgo a biopsy due to the presence of aneurysms. Because biopsy is not required for diagnosis if aneurysms are present, imaging to evaluate for aneurysms in patients suspected to have PAN should be pursued prior to pursuing biopsy. This could ultimately lead to less patients requiring an invasive procedure.

DISCUSSION: PAN is an ANCA-negative, necrotizing vasculitis of the small to medium arteries without signs of glomerulonephritis or vasculitis of the arterioles, capillaries or venules. Approximately 20% of PAN cases are associated with hepatitis B virus (HBV) or hepatitis C virus (HCV) infection. Diagnosis requires angiographically proven aneurysms or biopsy with evidence of vasculitis in addition to certain clinical symptoms. In the presence of these symptoms and angiographic evidence of aneurysm, biopsy is not required for diagnosis. For HBV-associated PAN, treatment should be aimed at the viral infection in addition to immunomodulatory therapy, such as plasma exchange, aimed at the associated inflammation.

WHY IS THE CALCIUM STILL SO HIGH? - ACCIDENTAL HYPERVITAMINOSIS D IN A HEALTHY YOUNG MALE TAKING DIETARY SUPPLEMENTS Erica C. Dwyer. Cambridge Health Alliance, Somerville, MA. (Control ID #2709594)

LEARNING OBJECTIVE #1: Recognize and treat excessive vitamin D supplementation.

CASE: A 35 year old male with history of anxiety presents to the emergency room with vomiting, dehydration, decreased appetite, weakness, and dizziness for 2–3 weeks. His sister is also ill, and he recently attended a church meal. He reports treating his symptoms with marijuana, as well as dietary supplementation for GI health with boric acid, chia seeds, concentrated Vitamin D powder and diametacious earth, all purchased online. His physical exam was unremarkable. BMP and CBC were normal, but his Ca was found to be elevated at 14.2 mg/dl. Renal function was normal, Serum PTH was low; PTH-rp was negative, Vitamin D, 25 hydroxy >150 ng/ml. With aggressive hydration the Ca level improved to 12.4 mg/dL and he was sent home with instructions to avoid further supplements and calcium containing products. He was readmitted 2 days later with renewed symptoms and a higher Ca of 15.8 mg/dl. He now received Zoledronic acid and further hydration. By the second discharge he had a Ca of 8.9 mg/dl and was no longer receiving IV fluids. He felt much improved. Two weeks and 3 months after discharge his Ca levels remained normal. His Vitamin D level remained elevated (>150 ng/ml) a month after discharge. Even three months later the level was still an unusually high 90 ng/ml.

IMPACT: This case highlights the availability of vitamin D at toxic doses and the importance of taking a supplement history. It also shows the prolonged time course of Vitamin D elimination and demonstrates the importance of treating both acute hypercalcemia (with IV hydration) and delayed hypercalcemia (with bisphosphonates). There are prior reports of accidental hypervitaminosis from incorrect Vitamin D dosing; this case reveals another dangerous source of excessive Vitamin D intake: the internet.

DISCUSSION: Elevated calcium caused by hypervitaminosis can persist and continue to rise for several weeks as Vitamin D levels remain high and continue to stimulate mobilization of calcium to the blood stream from the bone. In this case the patient's inpatient providers did not initially anticipate to what extent his calcium levels would continue to rise even after early inpatient stabilization. IV bisphosphonates were used to prevent this when he required admission a

second time. Estimates revealed that the patient had most likely ingested around 6 million units of Vitamin D within a few weeks. He liberally sprinkled Vitamin D powder (which he had purchased from the internet to promote bone health) on his food and was unaware of the total amount he was consuming and its potential side-effects.

YERSINIA POLYARTHRITIS IN A YOUNG ADULT Mariella Ntamatungiro. Weill Cornell Medical College-New York Presbyterian Hospital, New York, NY. (Control ID #2707408)

LEARNING OBJECTIVE #1: Recognize the broad differential of Polyarthritis in a Young Adult

LEARNING OBJECTIVE #2: Review the Epidemiology, Clinical Features, Pathophysiology of Yersinia Polyarthritis

CASE: 24 year old male presents with a migratory polyarthritis of the left knee, hip and elbow. He reported a sore throat and cough 1 week prior and a recent episode of unprotected oral sex. He denied diarrhea, rash, tick bites, fever, chills, nausea or vomiting. He was afebrile with tender, erythematous joint effusions of the left hip, elbow, and knee with decreased range of motion secondary to pain. Oropharynx was without erythema or exudates. Knee aspiration had a cell count of 20K, mostly polymorphic neutrophils with negative gram stain and culture. Imaging demonstrated large joint effusions of knee and hip. Urine, urethra, rectal samples were collected and Ceftriaxone therapy was started. Samples returned negative for gonorrhea and chlamydia with no clinical improvement. Ceftriaxone was stopped. Extensive infectious workup returned negative including tuberculosis, Beta hemolytic streptococci (A,C,G),HIV, Hep A,B,C, CMV, EBV, Parvo B19,Rhinovirus, and Enterovirus. Blood and urine cultures were negative. Empiric steroid therapy was started. Yersinia Entercolitica stool PCR and HLA B27 were positive. Patient clinically improved on steroids and was discharged home with a steroid taper.

IMPACT: Clinicians should broaden polyarthritis differential in a sexually active adult beyond gonorrhea to include GI pathogens which commonly cause reactive arthritis. Yersinia is the only GI pathogen that causes pharyngitis. Post infectious arthritis from Yersinia can occur after resolution of diarrhea and can be absent from history. Yersinia stool PCR can return positive after resolution of diarrhea.

DISCUSSION: Reactive arthritis is commonly caused by GI and urogenital pathogens such as Yersinia, Shigella, Campylobacter, Ecoli, C.diff, Chlamydia and Gonorrhea. Other Infectious causes include Staph aureus, Group A strep,Hep A,B&C, HIV, Rubella, Parvo, Alpha virus, Dengue, Mumps, EBV, Cocksakie and Adenovirus. Yersinia enterocolitica is the only acute bacterial diarrheal illness that also causes pharyngitis. Twenty percent of Yersinia infections present with sore throat.The post infectious sequelae often present several weeks after resolution of diarrhea and shedding of Yersinia can continue resulting in a positive stool PCR. It targets the large weight bearing joints with swelling, effusions and pain. The time course varies from being self-limited to lasting few months with few cases persisting as a relapsing chronic polyarthritis with increased prevalence amongst Northern Europeans who are HLA-B27 positive. Yersinia is usually absent from the synovial fluid. There is antigenic similarity of yersinia antigens to antigens in the joints of certain susceptible people. It is believed that an immune response to yersina antigen cross react against host antigens.

ZEBRAS DRESSED AS HORSES: AN UNDER DIAGNOSED CAUSE OF ACUTE CORONARY SYNDROME

Kaylee J. Shepherd. UT Southwestern, Dallas, TX. (Control ID #2706715)

LEARNING OBJECTIVE #1: Recognize risk factors for Spontaneous Coronary Artery Dissection (SCAD).

LEARNING OBJECTIVE #2: Diagnose SCAD in a young female patient.

CASE: Patient is a 40 year-old Hispanic female with history of cesarean section four weeks prior complicated by pulmonary embolism (PE) one week postpartum on treatment with Lovenox who presented with chest pain. The pain began 12 hours earlier after eating breakfast, described as substernal, pressure pain, associated with radiation down the left arm, occurred with both exertion and at rest, and was intermittent, lasting only a few min. Other than her PE, she has no medical history. Upon presentation, EKG was notable for new ST depressions in the lateral leads and troponin T <0.01ng/mL. A CT pulmonary angiogram was performed showing resolution of her PE. Repeat troponin overnight was 0.52ng/mL in the setting of continued intermittent chest pain. Urgent left heart catheterization revealed a 99% occlusion in first obtuse marginal artery (OM1). Intravascular ultrasonography (IVUS) demonstrated a large dissection of OM1 with a hematoma and no evidence of atherosclerosis. Patient had successful balloon angioplasty of OM1 and was discharged with 1 month of clopidogrel followed by indefinite aspirin therapy.

IMPACT: When a young female patient without cardiovascular risk factors presents with chest pain, we might be quick to brush off the diagnosis of ACS and look for other etiologies of chest pain. Although SCAD is uncommon, this life threatening condition can present as chest pain alone, STEMI, ventricular arrhythmia, or even sudden death. It is important to have a high index of suspicion for SCAD, especially in a young peripartum female patient.

DISCUSSION: SCAD is defined as a separation of the inner layers of the coronary artery, creating a false lumen and intramural hematoma that can impede blood flow. SCAD is poorly understood. Patients are often healthy women in their 40-50s, most without atherosclerosis or other cardiovascular risk factors. 30% of all SCAD patients are postpartum, usually within a few weeks of delivery, suggesting a relationship to changes in hormone levels. Other notable risk factors are fibromuscular dysplasia, extreme physical exertion, connective tissue diseases, severe emotional stress, vasculitides, uncontrolled hypertension, and cocaine use. Patients present with symptoms indistinguishable from atherosclerotic ACS. Diagnosis can possibly be made on angiogram, however, IVUS or optical coherence tomography is usually needed. Without studies that specifically address the management of SCAD, it is unclear if standard medical management for atherosclerotic coronary heart disease is also beneficial in SCAD. Acute management is debated and the benefit of dual antiplatelet therapy in SCAD not treated with a stent is unknown.

ZIEVE'S SYNDROME AS A CAUSE OF HEMOLYTIC ANEMIA IN THE SETTING OF ALCOHOLIC CIRRHOSIS Connor M. Pihl[2]; Christopher Ghiathi[2]; Yana Thaker[2]; Nancy Simon[1]. [1]UWMC, Seattle, WA; [2]University of Washington, Seattle, WA. (Control ID #2710873)

LEARNING OBJECTIVE #1: Recognize the broad differential required in the evaluation of a patient with hemolytic anemia in the setting of alcohol abuse and liver disease.

LEARNING OBJECTIVE #2: Diagnose and manage Zieve's syndrome when common causes of hemolytic anemia have been ruled out to avoid unwarranted invasive diagnostic interventions.

CASE: A 38 year-old woman with alcoholic cirrhosis admitted for evaluation of hemolytic anemia. She was diagnosed with cirrhosis 6 weeks prior, after presenting with altered mental status and several months of worsening jaundice in the setting of alcohol abuse. At that time, she required blood transfusion with a hematocrit of 16.4g/dL, but had no signs of bleeding. She was referred to hepatology clinic for management, where it was noted that despite gradual improvement in AST/ALT, albumin, and INR, her anemia persisted and bilirubin increased to 17g/dL. Endoscopy revealed small varices and portal gastropathy, but again no evidence of bleeding. Additional testing showed a negative DAT, normal B12/folate, low haptoglobin, increased LDH, and high reticulocyte count consistent with non-autoimmune hemolysis. On admission, she was without subjective complaint, with a hematocrit of 16g/dL and bilirubin of 20g/dL. She denied any infectious symptoms and did not take medications or supplements prior to her initial presentation. She had no family history of anemia, and had been abstinent from alcohol since being diagnosed with cirrhosis. Physical exam was significant for profound jaundice and hepatosplenomegaly. Peripheral smear showed wildly appearing red blood cell morphologies, including many acanthocytes and macrocytes. Hematology was consulted and the patient was determined to have Zieve's syndrome given her hemolytic anemia in the setting of alcohol abuse and cirrhosis. She was managed with blood transfusion and B12/folate therapy to maximize bone marrow production. She was encouraged to remain abstinent from alcohol and discharged with primary care follow-up for ongoing monitoring and blood transfusion as needed.

IMPACT: Though first described in 1957, Zieve's syndrome has been under-reported in the English-language literature. It remains a rarely recognized cause of hemolytic anemia despite recent evidence that it is more common than previously thought.

DISCUSSION: Hemolysis in Zieve's syndrome is the result of erythrocyte cell membrane defects and acquired pyruvate kinase deficiency caused by alcohol-induced hepatocellular dysfunction. It is a diagnosis of exclusion that must be considered for a patient with hemolytic anemia and alcoholic hepatitis or cirrhosis, and should be ruled out prior to invasive diagnostic testing. While the definitive treatment is alcohol cessation, recovery requires improvement in liver function and thus can be slower in patients with more extensive disease. These patients should receive B12 and folate to maximize bone marrow production, and be followed closely in the outpatient setting with transfusions as needed.

ZOSTER TO THE MUSCLE Muhammad A. Saeed[2]; Sarabjeet Suri[2]; Yelena Averbukh[1]. [1]Montefiore Medical Center, Bronx, NY; [2]Montefiore Wakefield Campus, Bronx, NY. (Control ID #2703708)

LEARNING OBJECTIVE #1: To identify Herpes Zoster Virus (Varicella) as one of the etiology of rhabdomyolysis

LEARNING OBJECTIVE #2: To recognize complications of Varicella infection

CASE: A 73 year-old man with diabetes mellitus and hypertension presented with one week of low back pain and left-sided chest wall rash. He also reported myalgias, fatigue, and dark discoloration of urine. There was no report of a recent crush injury, trauma, or excessive exercise; his medication list did not contain a statin. He had vesicular lesions in the distribution of left T7 dermatome. Labs revealed serum potassium 5.2 mEq/L, acute kidney injury with creatinine 2.84 mg/dl, creatine kinase (CK) >80,000 U/L, aspartate aminotransferase (AST) 420 U/L, alanine aminotransferase (ALT) 264 U/L, and normal bilirubin. His thyroid stimulating hormone level was normal. The patient was treated with normal saline at 150 ml/hour with frequent monitoring of urine output, creatinine, and CK. The rash was diagnosed as Herpes Zoster, for which he was treated with Valacyclovir. Over the subsequent days, the skin lesions crusted and renal and liver function tests returned to normal. CK trended down to 7,510 U/L. He was discharged home with outpatient follow up with Nephrology team.

IMPACT: Varicella may be an underlying cause of rhabdomyolysis therefore due importance should be given to thorough history taking and complete skin examination. In addition, complaint of fatigue and severe myalgias in a patient with Herpes Zoster should raise suspicion for rhabdomyolysis which would warrant further testing and lead to correct diagnosis.

DISCUSSION: Rhabdomyolysis is a syndrome of skeletal muscle breakdown and necrosis resulting in the release of intracellular contents, most importantly CK and potassium. Clinically, rhabdomyolysis can be asymptomatic, though could be potentially life-threatening. Some of the most common causes of rhabdomyolysis are trauma/crush injury, alcohol abuse, illicit drug use, and medication induced. Lesser known causes include viral infections such as influenza virus, herpes simplex virus and varicella. Only a few case reports were found supporting the association between Varicella and rhabdomyolysis in immunocompetent hosts. The mechanism of injury is postulated to be skeletal muscle breakdown; the exact pathogenesis remains unknown. Herpes Zoster is a known sequel to the infection with Varicella virus and is due to viral reactivation from its latent state in a posterior dorsal root ganglion and typically presents with vesicular rash in the dermatome distribution. Zoster presentation may be complicated by painful neuropathy in the affected dermatome distribution or superinfection with other bacterial organisms. Other common complications include laryngitis and pneumonia; Pneumonia being the most common complication in immunocompetent hosts. Lesser known complication of localized presentation with Herpes Zoster is diffuse rhabdomyolysis. When associated with rhabdomyolysis, varicella is associated with higher mortality and morbidity.

INNOVATIONS IN MEDICAL EDUCATION (IME) "'SE HABLA ESPAñOL': UNDERSTANDING LANGUAGE BARRIERS FOR SPANISH-SPEAKING PATIENTS AND ENGAGING SPANISH-FLUENT RESIDENTS TO BRIDGE GAPS IN CARE." Christopher Moreland[1]; Julie R. Gilbreath[2]. [1]The University of Texas HSC - San Antonio, San Antonio, TX; [2]UTHSCSA, San Antonio, TX. (Control ID #2705544)

NEEDS AND OBJECTIVES: Texas has the second largest Hispanic population in the United States (U.S.) according to 2010 U. S. census data, which found that nearly 40% of the state population identifies as Hispanic. As this segment of the population continues to increase, the number of patients with limited English proficiency (LEP) has likewise increased, with 12% of Spanish speakers in Texas reporting they speak English less than "very well." Because of a paucity of Spanish-fluent providers, LEP patients often report increased

health disparities, worse clinical outcomes, and decreased patient satisfaction.[1,2] We will observe access to care and quality in our institution.

SETTING AND PARTICIPANTS: UTHSCSA internal medicine residents enrolled in the Spanish Language Access Elective during the PGY-2 or PGY-3 year observed and interacted with LEP patients in both the inpatient and outpatient setting at University Health System in San Antonio, Texas.

DESCRIPTION: Spanish fluency was assessed in the enrolled residents. They subsequently reviewed literature on health care disparities impacting LEP patients and the use of interpretation. They also participated in a brief immersive simulation representing a language barrier. Residents conducted interviews with Spanish-speaking patients to explore their experiences seeking medical care. Residents also observed four different types of interpretation: in-person professional Spanish interpreter, over-the-phone interpretation, trained bilingual health system staff interpretation, and video interpretation. Residents also had the opportunity to shadow professional interpreters and Spanish-speaking internists and subspecialists. They documented and discussed observations with the supervising faculty. At the end of the rotation, residents recorded a short video of themselves explaining disease processes or a procedure in Spanish as they would to a Spanish-speaking patient.

EVALUATION: Three residents have participated in this elective since it launched in 2015. Residents have shared their experiences in writing and through group discussions with faculty and interpreters. These discussions have also identified areas for practice improvement and engaged two residents in quality improvement projects.

DISCUSSION/REFLECTION/LESSONS LEARNED: Residents completing the elective reported increased awareness of health disparities and barriers to care for Spanish-speakers and their own limitations utilizing Spanish medical terminology. This Spanish Language Access Elective provides residents with the opportunity to observe a complicated and challenging health care system and how the LEP population in San Antonio navigates it, while simultaneously giving the residents the opportunity to assess their capabilities as medical providers themselves and effect change through quality and practice improvement. Since it capitalizes on resources and perspectives already present in our system (e.g., patients, other clinicians, interpretation services), this elective can be generalized to other programs.

"WHAT DID THEY SAY?" TEACHING HEALTH LITERACY AND COMMUNICATION SKILLS TO INTERNAL MEDICINE RESIDENTS TO IMPROVE THE PATIENT EXPERIENCE

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NEEDS AND OBJECTIVES: Residents are often considered the frontline doctors on general medicine inpatient services and responsible for most of the doctor-patient communication. Our inpatients indicated on satisfaction surveys that there was room for improvement on the item, "My doctors explained things to me in a way that I could understand". We hypothesized that the reasons for this communication gap were residents' lack of adequate training in bedside communication skills and difficulty in recognizing poor health literacy among inpatients. Efforts aimed at clear communication can lead to improved patient care outcomes and satisfaction. Thus, we developed a curriculum for residents that focuses on effective tools for clear communication of medical information to patients on bedside rounds.

SETTING AND PARTICIPANTS: Participants included all senior ($N = 120$) internal medicine and internal medicine-pediatric residents at the University of Pittsburgh Medical Center, where residents are at the helm of the general medicine inpatient daily bedside rounds.

DESCRIPTION: Participants attended a 3-hour workshop in June 2016 led by internal medicine clinician educators which included didactics outlining clear communication techniques, including, asking "what questions do you have?" which is the standard accepted method to elicit patient questions in the literature. The intervention also involved small group discussion, role play, and video demonstration of simulated bedside rounding conversations. Attendings were introduced to the curriculum and asked to reinforce its content in real time.

EVALUATION: 75/120 residents attended (participation 63%) and 96% of those who attended completed pre/post surveys to evaluate knowledge and attitudes. Knowledge scores improved from 71.4 to 85.7% correct ($p < .0001$). Attitudes also improved, including the importance of translating medical information for patient care (Likert scale where 1 = Not important and 5 = Very important, mean pre 4.56 vs post 4.81, $p = .0001$) and for satisfaction (4.54 vs 4.81, $p < .0001$), introducing self and role (4.06 vs 4.56, $p < .0001$), and asking the patient "what questions do you have?" (4.82 vs 4.87, $p < .0001$). Objective communication skills were measured by comparing 333 pre and post workshop observations of bedside rounds using a standardized checklist. Observed communication skills improved, including residents introducing themselves to the patient (49% vs 67%, $p = .001$), using plain medical language when giving medical information (89% vs 96%, $p = .018$), and asking "what questions do you have?" (16% vs 59%, $p < .0001$).

DISCUSSION/REFLECTION/LESSONS LEARNED: Our results demonstrate the impact of this intervention across all outcomes assessed and shows a small investment of curricular time devoted to health literacy and clear communication can significantly and objectively increase residents' ability to translate medical information, and improve their knowledge and attitudes in these domains. This intervention can be readily disseminated to improve bedside patient communication and ultimately the patient experience.

PUTTING THE PIECES TOGETHER: TEACHING PATIENT SAFETY USING THE JIGSAW MODEL

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NEEDS AND OBJECTIVES: As the learning environment becomes increasingly more complex, it is often challenging for educators to find innovative strategies to engage learners and effectively teach patient safety. Teaching and learning patient safety requires strong emphasis on diagnostic errors, teamwork and building a culture of trust and dependability. The objective of this study was to design and implement a patient safety learning exercise using the simple jigsaw technique and compare this method with the traditional small group exercise to teach principles of diagnostic errors.

SETTING AND PARTICIPANTS: The study took place at Stony Brook University Hospital. Participants included 96 internal medicine residents

DESCRIPTION: Each session began with a written mortality script of a medical error. After reading the mortality script, the intervention group using the jigsaw method was organized into 4 jigsaw groups of 4 trainees each. Each member of the group was assigned to a different reading piece related to error analysis: A) Anatomy of a medical error, B) Three "A" errors, C) Other

cognitive pitfalls, or D) cognitive de-biasing strategies. Group members then joined members of other groups assigned to the same reading piece with the goal of becoming experts in the topic by using a guiding question template. Eventually, trainees leave their expert groups and return to their original groups to "piece together" a structured cognitive root cause analysis using a modified fishbone diagram and action plan for the error described in the case. The control group received the same content in a small group format using the same amount of allotted time one faculty facilitator per group. Trainees completed pre/post knowledge assessment test for both the intervention group (jigsaw method) and control group (small group exercise). TeamSTEPPS Teamwork Attitudes Questionnaire (TAQ) before and after the workshop and a post-workshop satisfaction survey.

EVALUATION: A total of 96 internal medicine trainees of all PGY levels participated in the activity, 48 residents participated in the intervention and 48 residents participated as the control group. The data is currently being analyzed and will be ready in time for the poster presentation. We anticipate higher posttest and TAQ scores in comparison to pre-test scores for the intervention and control groups. Additionally, we anticipate a greater delta in the jigsaw intervention group in comparison to the control group. Results are pending as to the Likert scale ranking of the jigsaw model versus the traditional small group format when it comes to learning patient safety.

DISCUSSION/REFLECTION/LESSONS LEARNED: Our study demonstrates that a jigsaw cooperative learning approach can be a unique technique to engage trainees to learn core concepts of patient safety. The jigsaw method emphasizes peer teaching and can be used with one facilitator as opposed to small group exercises that require many facilitators. This model of teaching uses fewer resources and also emphasizes the importance of teamwork and cooperative learning.

2PM FREE MASSAGE: LEADING SUSTAINABLE ORGANIZATIONAL CHANGE AND PREVENTING BURNOUT VIA A STRATEGIC IMPLEMENTATION OF A FREE THERAPEUTIC MASSAGE SERVICE IN A COUNTY INTERNAL MEDICINE RESIDENCY PROGRAM Kin Wai Hung[2]; Guilianne Morden[2]; Duminda Suraweera[1]; Erica V. Tate[1]; Soma Wali[1]. [1]Olive View UCLA Medical Center, North Hollywood, CA; [2]Olive View - UCLA Medical Center, Sherman Oaks, CA. (Control ID #2706297)

NEEDS AND OBJECTIVES: Burnout rate has reached epidemic levels among medical residents in the newest studies presented at the 2015 American Psychiatric Association Annual Meeting. Results revealed that internal medicine residents have in fact one of the highest burnout rate (79%). While multifaceted strategy and interventions have been proposed to address burnout for medical residents, current data on interventions for physician burnout are insufficient to recommend particular measures, as more studies are needed to examine the applicability and utility of these interventions in resident physicians.

SETTING AND PARTICIPANTS: In a collective effort to promote workplace wellness and prevent resident burnout in a County hospital setting, management team including Chief Residents and Department Chair from an internal medicine residency program teamed up to take action to improve the workplace environment via a strategic implementation of a twice weekly, free therapeutic massage service.

DESCRIPTION: Successful implementation of the massage service included three key stages. First, a needs-assessment on resident burnout was conducted that led to the eventual buy-in from key stakeholders including administrative approval to implement the therapeutic massage service. Second, local massage teaching institution was contacted to establish strategic collaboration to allow consistent massage training and in return free massage service provided for residents. Finally, operation of massage service was provided in easily assessable location at the resident lounge, service capacity was limited to 20 min interval for total of 3 hours daily, and service scheduling streamlined via Doodle, a free online scheduling tool. A total implementation cost of $150 was spent on the purchase of a dedicated massage chair.

EVALUATION: Utilization data from Doodle and quality data from focus group survey was obtained for analysis. Of the total 168 massage sessions in the first 12 weeks since launching, massage service was utilized at 80 to 100% daily capacity. Approximately 90% of all 75 residents in the residency program have utilized the massage service at least once, and up to 40% of all residents has utilized the service at least twice. Preliminary focus group analysis revealed that residents enjoy the wellness atmosphere created by the massage service in the workplace setting, that the notion of having an onsite massage service reminds residents to make time during work hour to be mindful of their stress level, and that the massage service not only provided a restful mental break, but also a physical rejuvenation for residents.

DISCUSSION/REFLECTION/LESSONS LEARNED: Please see Impact section as below

A COACHING PROGRAM FOR FACULTY DEVELOPMENT IN PRESENTATION SKILLS Jeremy Smith; Laura Zakowski. University of Wisconsin, Madison, WI. (Control ID #2700852)

NEEDS AND OBJECTIVES: Peer coaching, often used to improve skills of medical faculty, involves three principles: direct observation, targeted feedback and deliberate practice. Studies show these principles improve clinical skills, but how they might impact presentation skills is less clear. Many faculty give large-group presentations that require capturing and maintaining audience attention, but have never received any relevant training. Feeling ineffective is linked to burnout and programs to improve feelings of competence could facilitate resilience. We assessed the effect of peer coaching principles on faculty presentation skills.

SETTING AND PARTICIPANTS: Our weekly Medicine Grand Rounds involves a one-hour talk on a clinical or research topic. All members of the Department of Medicine are invited, with 75–125 usually attending. Roughly 12 junior faculty (Assistant Professors) are scheduled to present each year. Between Sept 2015 and Dec 2016, each was offered coaching prior to presenting

DESCRIPTION: Junior faculty were paired with a peer coach. One week prior to Grand Rounds, the speaker and coach met in the auditorium for a practice run. The coach observed the presentation with a locally-developed evaluation tool assessing: speaking techniques (use of voice, gestures, pauses, movement; avoidance of non-words), optimal PowerPoint use, development of a dynamic learning climate (physical/emotional), establishment and communication of teaching goals, and techniques to promote audience understanding and retention. After receiving feedback on specific behaviors, the presenter repeated parts of the talk (i.e. deliberate practice) to improve skills. Coaching lasted 1–1.5 h.

EVALUATION: Twelve of 14 junior faculty scheduled to give Grand Rounds participated. Each evaluated the coaching program and completed measures of self-assessed skill and confidence after the final presentation. They reported improved skills (mean 9.0 on 1–10 scale, 10 = skills much improved), more comfort delivering a large-group talk (mean 8.8), and felt somewhat more likely to engage in future speaking opportunities (mean 6.9). All would strongly recommend the coaching program (mean 10.0). When queried how their presentations changed, the most frequent answers were: more succinct, organized slides; use of pauses, gestures, movement, and eye contact to increase energy and engagement; use of a catchy opening statement and first slide; and effective/appropriate use of slide animation.

DISCUSSION/REFLECTION/LESSONS LEARNED: Participants found the coaching program effective in improving their presentation skills and comfort levels and would strongly recommend it to others. Twelve of 14 invitees signed up for this non-mandatory opportunity, and we believe that speaks to the desire faculty have to obtain feedback on their teaching skills, particularly junior faculty who are often thrust into prominent teaching situations without having had adequate training. Future plans include validation of the presentation evaluation tool and online dissemination of the coaching program.

A CURRICULUM TO IMPROVE RESIDENT KNOWLEDGE AND SATISFACTION IN CARING FOR HOSPITALIZED PATIENTS WITH ADDICTION - UPDATE Payel J. Roy[2]; Zoe M. Weinstein[1]; Kristen DiBlasi[2]; Shruti Shantharam[2]; David Yuh[1]; Linda Neville[1]; Alexander Y. Walley[2]. [1]Boston Medical Center, Boston, MA; [2]Boston Univ, Boston, MA. (Control ID #2707436)

NEEDS AND OBJECTIVES: We previously described a new curriculum to improve knowledge and satisfaction among internal medicine (IM) residents who care for patients with substance use disorders (SUD) and addiction; this abstract seeks to provide an update regarding the evaluation of the curriculum's efficacy. Residents frequently care for patients with SUD but are significantly less likely to experience satisfaction in managing SUD in comparison to other medical issues. In July 2015, the Addiction Consult Service (ACS) was started, aimed at improving the care of hospitalized patients with SUD. We addressed resident discomfort by providing a curriculum as part of the ACS in order to increase their knowledge in the field of addiction and consequently their satisfaction in caring for patients with SUD.

SETTING AND PARTICIPANTS: Setting: academic safety net hospital. Primary Participants: IM residents rotating on the ACS. Secondary: IM residents who consult the service.

DESCRIPTION: The ACS functions similarly to other consulting services in IM specialties. IM residents can rotate on the service, serving as primary consultant, or they can consult the service for help in caring for inpatients with SUD. Residents have a rotation-specific curriculum developed using ACGME Core Competencies. Objectives include diagnosing SUD and understanding pharmacotherapy for alcohol and opioid use disorder. Residents who consult the ACS have increased exposure to SUD and its treatment as well, from direct communication with the ACS team.

EVALUATION: Prior to starting the ACS, we found significant dissatisfaction among our residents in caring for patients with SUD. At the end of the academic year in June 2016, we surveyed a total of 60 internal medicine residents regarding both their knowledge in addiction and their satisfaction in caring for patients with addiction. There were three groups: residents who rotated on the consult service ("rotated"; 16/60), residents who consulted the service but did not rotate ("interacted"; 37/60), and residents who had no interaction with the service ("neither"; 7/60). Our knowledge assessment consisted of 10 multiple-choice questions. Mean scores were: 79% correct for the rotated group, 64% interacted, and 51% neither. Using analysis of variance, we found that these groups were statistically significantly different from each other. We based our satisfaction survey on the Short Alcohol and Alcohol Problems Perception Questionnaire (SAAPPQ) and its analysis; our survey showed a trend towards improved satisfaction for residents based on their level of interaction with the service and we are currently fully analyzing these data.

DISCUSSION/REFLECTION/LESSONS LEARNED: The ACS provides residents the opportunity to care for patients with SUD under the guidance of experts in the field. We found that although residents experience less comfort and satisfaction in managing patients with SUD, we can improve this by using targeted curricula to increase their knowledge regarding addiction, and consequently, their satisfaction in caring for these patients.

A FLEXIBLE, MULTI-MODAL SHARED DECISION MAKING TRAINING IN FOR RESIDENTS Lewena Maher[3]; Kathleen Fairfield[2]; Paul Han[2, 1]; Leo B. Waterston[2, 1]; Kristen A. Sciacca[1]; Sean Lena[1]. [1]MMC, Portland, ME; [2]Maine Medical Center, Portland, ME; [3]Maine Medical Center Research Institute, Portland, ME. (Control ID #2700472)

NEEDS AND OBJECTIVES: Shared decision making (SDM) training for residents is an important but unmet need. The objective of this study was to develop and test the feasibility, acceptability, and initial outcomes of different SDM training strategies

SETTING AND PARTICIPANTS: Internal Medicine, Family Medicine, Urology, and OB/GYN residents at an urban teaching hospital.

DESCRIPTION: We developed a flexible multi-modal training program consisting of several components: 1) in-person didactic training (consisting of a 1-hr lecture), 2) online didactic training (consisting of a 1-hr e-learn module), 3) observed structured clinical examination (OSCE) training using standardized patients (SPs), and 4) point-of-care coaching and evaluation. All four residency programs implemented either the in-person or online didactic training. The Internal Medicine, Family Medicine, and Urology programs additionally implemented OSCE training, while the OB/GYN program implemented point-of-care coaching and evaluation; these training experiences utilized clinical cases selected by each program.

EVALUATION: Two programs (Urology and OB/GYN) elected to implement the e-learn module as a group didactic experience. The other two programs (Internal Medicine and Family Medicine) implemented the e-learn independently, and a total of 12/18 eligible residents completed the module. Pre-post assessment of these residents' subjective competence in SDM skills showed improvement in the proportion of residents indicating high confidence in: 1) their understanding of SDM (42% pre-module vs. 75% post-module, $p = .05$), and 2) their ability to engage patients in SDM (33% pre-module vs. 58% post-module, $p = .05$). However, residents gave qualitative feedback that the e-learn module was difficult to navigate and of modest educational value. PGY3 Internal Medicine and Family Medicine residents ($N = 22$) completed the OSCE. Pre-post evaluations showed improvement in the proportion of residents indicating high confidence in: 1) eliciting the patient's values and

preferences (5% pre-OSCE vs. 39% post-OSCE, p 0.0009) and 2) discussing pros and cons of treatment with patients (14% pre-OSCE vs. 48% post-OSCE, $p = 0.0001$) Implementation of point-of-care coaching and evaluation of SDM in the OB/GYN program was not successful. The selected clinical scenario—vaginal birth after Cesarean—did not occur as frequently as anticipated; residents and faculty had difficulty identifying these patients prior to or at the time of the visit, resulting in missed opportunities to evaluate residents' SDM skills.

DISCUSSION/REFLECTION/LESSONS LEARNED: Didactic training in SDM is feasible and potentially effective in increasing residents' subjective competence in SDM, but elearn training may have limited acceptability to residents. OSCE-based experiential training appears to be acceptable and effective, but may be less feasible depending on program resources. Point-of-care coaching and evaluation may also have limited feasibility. Further research in this area is needed develop and evaluate alternative strategies to train residents in SDM.

A LONGITUDINAL CURRICULUM IN ELECTROCARDIOGRAM INTERPRETATION FOR THIRD YEAR MEDICAL STUDENTS Adrienne W. Mann[1, 2]; Alexis Z. Tumolo[1]; Christopher King[1]. [1]University of Colorado, Denver, CO; [2]Denver VA Medical Center, Denver, CO. (Control ID #2707033)

NEEDS AND OBJECTIVES: The electrocardiogram (ECG) is a commonly used diagnostic test. ECG interpretation skills are generally taught during the 3rd year Internal Medicine clerkship. At our institution, this was done in a non-standardized lecture-based format without assessment of learner's knowledge, skills, or confidence. This educational innovation aimed to develop the knowledge, skills, and attitudes necessary to systematically analyze, interpret, and communicate key findings of ECGs among 3rd year medical students by delivering a curriculum covering all ECG diagnoses in the Clerkship Directors in Internal Medicine (CDIM) learning objectives.

SETTING AND PARTICIPANTS: The course was delivered to third year medical students on the 8-week Hospitalized Adult Care (HAC) Clerkship.

DESCRIPTION: Six flipped-classroom sessions were delivered across the 8-week HAC Clerkship in 3 consecutive blocks. Before each session, learners reviewed materials covering a topic in ECG interpretation. During the sessions, they worked in small groups applying skills they learned to the interpretation of 5 tracings, reporting their findings to the larger group. A Chief Resident provided feedback and facilitated discussion of key findings. Learners completed a pre- and post-assessment using a previously validated tool, and reported confidence in several tasks.

EVALUATION: 62 students have completed the curriculum. There was statistically significant improvement on on each of the 17 questions of the knowledge assessment (p-value ranging from 0.02 to <0.0001). Mean performance improved from 45% to 88% ($p < 0.0001$) with mean increase of 5.8 correct answers. Over 90% of learners correctly identified Atrial Fibrillation, Right Bundle Branch Block, 1st Degree Atrio-ventricular Block, Atrial Flutter, Hyperkalemia and Premature Ventricular Complexes, with 98% correctly identifying ST-elevation Myocardial infarction on the post-test. Students responded to 9 questions assessing confidence in various components in ECG interpretation on a 4-point Likert scale (potential for maximum of 36 cumulative points). Pre-scores ranged from 3–30, and post scores ranged from 18–35 with mean improvement in overall score of 10.9 points ($p < 0.0001$)

DISCUSSION/REFLECTION/LESSONS LEARNED: Implementation of an ECG curriculum in HAC clerkship resulted in statistically significant improvement in identification of important findings and confidence in ECG interpretation among 3rd year medical students. Verbal feedback from the students was positive, but students requested revision of the dense and lengthy preparatory materials, and more in-depth annotated discussion of each tracing covered in the sessions, which have now been revised. Evaluation of student performance with the updated format is ongoing.

A MULTIFACETED APPROACH TO IMPROVE RESIDENT OUTPATIENT PANEL MANAGEMENT Patrick J. Sayre; Kathryn Anderson; Robin E. Canada; Marc Shalaby. University of Pennsylvania, Philadelphia, PA. (Control ID #2703441)

NEEDS AND OBJECTIVES: Residents in our program identified outpatient panel management as an area of need for increased instruction. We conducted a survey of interns and residents in our program that included questions directed across a variety of topics related to panel management. Informed by our survey findings, we developed a module for the resident curriculum with the following objectives. At the conclusion of the module, residents should be able to 1) utilize a standard system for ensuring the resolution of outstanding patient care issues, 2) formulate and enact action plans when high risk or complex patients do not show for appointments, and 3) participate in formal handoffs for outpatients with active issues when transitioning on or off of outpatient rotations.

SETTING AND PARTICIPANTS: Our curriculum was designed for interns and residents at an outpatient general internal medicine practice associated with a university-affiliated primary care residency program.

DESCRIPTION: We developed a set of tools to improve resident outpatient panel management. The first component is an importable "smart-text" statement for electronic clinic notes. It includes mandatory editable text that serves as a forcing function to prompt residents to identify any critical tasks or issues that require active surveillance. The second component is an electronic spreadsheet stored on a shared, secure drive. Each resident maintains their own spreadsheet, which records patients with outstanding tasks or issues, along with a management plan and due date. Residents routinely review and update their spreadsheet to ensure completion of all outstanding tasks. The third component is a standard handoff tool that residents use to sign out to their clinic partner when transitioning on or off of their outpatient rotations. Finally, we developed a didactic session to instruct residents in the use of these tools.

EVALUATION: This curriculum is in progress and will be delivered for the first time in early spring 2017. The planned evaluation will include early and late post-module surveys as well as course director review of importable smart-text utilization and spreadsheet upkeep.

DISCUSSION/REFLECTION/LESSONS LEARNED: Active surveillance to ensure resolution of critical patient care issues and effective communication with colleagues regarding complex patients are essential skills for successful outpatient panel management after graduation from residency. It is necessary for residents to build a solid foundation in these skills during their training.

A MULTIMODALITY MUSCULOSKELETAL CURRICULUM FOR INTERNAL MEDICINE RESIDENTS Ami DeWaters; Una E. Makris; Andres Quiceno; Lynne Kirk. UT Southwestern Medical Center, Dallas, TX. (Control ID #2697978)

NEEDS AND OBJECTIVES: Knee and shoulder pain are among the most common reasons for outpatient visits in primary care, however internal medicine (IM) residents are uncomfortable diagnosing and treating these disorders. Many curricula have been proposed to address this deficiency, but have generally used one method of teaching, and have lacked simulation training and clinical experience. The objectives of this multimodal curriculum were to combine small group didactics with simulation training and clinical experience to improve IM residents' confidence, knowledge, and skill in diagnosing and treating common knee and shoulder disorders.

SETTING AND PARTICIPANTS: All 102 second and third-year residents in the UT Southwestern Internal Medicine Residency Program were studied. Half of the residents have their continuity clinic in a safety-net clinic and half of the residents in a VA clinic. The curriculum was implemented for residents in the safety net clinic with the VA clinic residents as controls. Interns were excluded due to scheduling conflicts.

DESCRIPTION: In August 2016, the 51 intervention residents began the multimodal curriculum comprised of 4, hour long, small group sessions embedded in the residents' clinic week lectures. Sessions covered: focused history, physical exam, radiographic findings, and treatment of knee and shoulder disorders. Common knee and shoulder disorders were defined as OA, tendon/ligament injuries, bursitis, RA, and gout. There was also an hour long simulation training session on performing intra-articular knee and shoulder injections. Each resident was assigned at least once to a dedicated knee and shoulder clinic operated weekly in the safety-net clinic. Prior to the curriculum, both the intervention and control groups of residents ($n = 102$) were asked in-person to complete a validated musculoskeletal skills confidence survey and a validated written musculoskeletal knowledge exam (passing score 70%).

EVALUATION: The response rate was 51% (52 completed both). 30 respondents were intervention residents. At baseline, the confidence survey (based on a 5 point Likert scale) revealed only 12% of all residents felt somewhat or very comfortable performing a knee/shoulder exam. 10% of residents were somewhat comfortable treating musculoskeletal disorders; none felt very comfortable with treatment. Only 1 resident passed the knowledge exam; scores ranged from 24-71% (average score, 47%). In March 2017, all 102 residents will be asked to complete the follow-up confidence survey, the written exam, and also an objective structured clinical examination of a knee or shoulder disorder, and differences between the intervention and control groups will be assessed.

DISCUSSION/REFLECTION/LESSONS LEARNED: IM residents continue to feel ill-equipped to examine and treat common knee and shoulder disorders, and exhibit poor musculoskeletal knowledge. Our intervention aims to significantly increase confidence, knowledge and skills of IM residents in diagnosing and treating common knee and shoulder disorders.

A NOVEL CURRICULUM FOR HOSPITALIST FACULTY IN PROVIDING CARE TO GERIATRIC HIP FRACTURE PATIENTS

Aditi Puri[2]; Rollin Wright[3]; Melissa McNeil[3]; William Levin[1]. [1]University of Pittsburgh Medical Center, Gibsonia, PA; [2]University of Pittsburgh Medical Center, Pittsbrugh, PA; [3]University of Pittsburgh Medical Center, Pittsburgh, PA. (Control ID #2692646)

NEEDS AND OBJECTIVES: According to the CDC, at least 300,000 people older than 65 are hospitalized for hip fractures annually. Society of Hospital Medicine recognizes geriatric care as one of the core competencies, and hospitalists frequently provide care to geriatric hip fracture patients. Clearly physicians need to be compenent i proviing care to such patients.

SETTING AND PARTICIPANTS: Our goal was to design an effective online module for the hospitalist faculty and geriatric fellows that covered basic principles of care in geriatric hip fracture patients at academic medical setting.

DESCRIPTION: With the expertise of a geriatrician, we designed an interactive case-based online educational module, delivered through a virtual patient software available at our institution. The case started with a patient presenting with a hip fracture and went through various common medical problems during hospitalization before post-operative discharge. We focused on recent evidence about mortality associated with hip fractures, guidelines about pain control, guidelines about deep venous thrombosis prophylaxis, guidelines about delirium management, recent evidence about nutrition, KATZ ADL scale and Clinical Frailty Scale.

EVALUATION: Evaluation of the curriculum consisted of pre and post-test surveys delivered through REDCAP software immediately after the module and at 30-60-day point. The surveys assessed knowledge and comfort levels based on questions designed by the authors. We used the Wilcoxon Sign rank test to analyze significant increase in comfort level and knowledge scores. Participants were asked to rank the helpfulness of the module based on a 5-point Likert scale. The curriculum was delivered to 52 participants and we had a response rate of 63.5% ($N = 33$) in the immediate post-module survey. Participants reported a significantly improved comfort level with regard to understanding surgical outcomes, using functional scales for prognosis, evidence about mortality related to hip fractures, factors that increase risk of delirium, delirium treatment. There was a significant increase in knowledge base noted ($p = 0.001$). On average participants ranked the helpfulness as 4.54 on the Likert Scale. We had 55.8% ($N = 29$) respondents for the 30-60-day survey. Compared to the pre-module survey, participants continued to report an increased comfort level in using functional scales for prognosis, evidence about mortality related to hip fractures, factors that increase risk of delirium, delirium treatment. Once again, there was also a significant increase in knowledge compared to pre-module survey ($p = 0.0006$).

DISCUSSION/REFLECTION/LESSONS LEARNED: Our module led to an increase in comfort and knowledge of participants, with evidence of knowledge retention in our 30-60-day survey. Thus, this convenient, electronic module design was an effective and educational tool for the hospitalist faculty, and may be used for many educational topics for busy clinicians. Further evaluation of the curriculum will measure sustained knowledge base and changes in provider behavior.

A NOVEL OSCE CASE TO ASSESS MEDICAL STUDENTS' UNNECESSARY TEST UTILIZATION AND COMMUNICATION SKILLS

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NEEDS AND OBJECTIVES: Concerns about health care costs and potential risks of medical interventions have prompted efforts to decrease utilization of those with low likelihood of benefit (i.e. Choosing Wisely[1]). Medical educators must train learners to consider value in their care of patients, and to communicate with patients about both value and risk, particularly when

patients request low value tests or treatments. Novel assessments are needed to determine whether learners achieve these competencies. This innovation aims to evaluate a new observed, structured clinical examination (OSCE) case to assess medical students' value-based care and communication skills. [1] http://www.choosingwisely.org

SETTING AND PARTICIPANTS: This innovation took place at the Albert Einstein College of Medicine in Bronx, NY. One-hundred seventy-eight third year medical students participated in this OSCE case as part of an 8 case clinical skills assessment.

DESCRIPTION: In the OSCE case, students evaluated a standardized patient (SP) with acute low back pain who requests an MRI, which is not clinically indicated.[2] SPs used checklists to assess students' history (11 items), physical examination (9 items) and communication skills (with a previously validated tool adapted to measure Choosing Wisely communication skills, 14 items). SPs assessed whether a student had referenced medical guidelines (yes/no) and informed them of any risks to unnecessary medical testing (yes/no) in their response to the MRI request. Students completed a post-encounter exercise in which they were asked about their response to the patient's request for MRI. [2]Chou R et al. Lancet 2009; 373:463–72.

EVALUATION: Mean performance on the case was 62.2% (SD 12.2%, range 40–92%). Forty-two students (24%) indicated they would order an MRI. A minority of students referenced clinical practice recommendations or informed the SP about risks of unnecessary testing (79/44 and 60/34%, respectively). The reliability of this OSCE case, using the borderline regression method,[3,4] was good ($R^2 = 0.65$). Future analyses will include: (1) assessing the correlation between history and physical examination checklist scores and ordering an MRI; (2) analyzing students' clinical reasoning regarding ordering an MRI (as documented in the post-encounter note), and (3) analyzing transcripts of students' communication with the SP in response to the request for an MRI. [3]Homer M and Pell G. Med Teach 2009; 31:420–5. [4] Hejri SM et al. J Res Med Sci 2013; 18:887–91.

DISCUSSION/REFLECTION/LESSONS LEARNED: We used an established method of performance-based assessment (OSCE) to assess student competency in value-based care. Preliminary analyses indicate while most students adhered to clinical practice recommendations, most failed to educate the patient about the evidence informing the decision, and risks of harm. Our findings can inform future curriculum development aimed at training learners both to consider value and communicate about value with patients.

A NOVEL SYSTEMS-BASED PRACTICE CURRICULUM ENABLES PRE-CLINICAL STUDENTS TO LEARN AND CONTRIBUTE MEANINGFULLY TO SYSTEMS IMPROVEMENT Lynnea Mills; Marwa Shoeb; Ari Hoffman; Steven Ludwin; Adeena Khan; Cindy Lai. UCSF, San Francisco, CA. (Control ID #2702847)

NEEDS AND OBJECTIVES: Systems-based practice (SBP) is critical to physicians' work and is gaining emphasis in medical school curricula. In this pilot curriculum for first-year medical students, we developed a novel didactic and experiential approach to teaching SBP skills, seeking to help students apply newly-acquired SBP concepts to inpatient improvement projects to add value to the clinical environment.

SETTING AND PARTICIPANTS: 12 first-year medical students assigned to our Hospital Medicine site for their clinical preceptorship

DESCRIPTION: We developed a 17-session curriculum to teach traditional clinical skills alongside novel SBP concepts. We presented didactics and workshops around QI terminology and methods, healthcare costs/value, health IT, and patient experience. Sessions were developed and facilitated by junior faculty with SBP interests, and emphasized real-world examples of translating SBP skills into improved quality of care. Students used their growing QI skillset to contribute to four improvement projects: reducing unnecessary phlebotomy, improving patients' sleep, improving the EMR's interface with primary teams, and humanizing patients through personal photos at bedside.

EVALUATION: We surveyed students on knowledge and skills learned after each session, as well as globally at the end of the curriculum. Response rate was 100 and revealed that students felt they could define QI terms (mean 4.2 on 1–5 Likert scale of "strongly disagree" to "strongly agree"), develop goals for QI projects (mean 4), and describe factors driving healthcare costs (mean 3.8). Students felt the curriculum was relevant to their professional development (mean 4.3) and that they would apply the learned SBP concepts and skills to their future work (mean 4). Content analysis revealed that students particularly valued SBP experiences that involved direct patient interactions, and further showed that students engaged in critical thinking related to effects of SBP on authentic clinical practice, controversies surrounding SBP issues, and consequences of current approaches to SBP. Faculty analysis of project outcomes demonstrated a significant positive impact of the students' work on QI outcomes.

DISCUSSION/REFLECTION/LESSONS LEARNED: Our results show that curricula integrating clinical and SBP learning can effectively teach pre-clinical students the basic concepts and skills of SBP. Furthermore, students' feedback indicates that the ability to tie SBP content into clinical skills and contextualize it with real patients may even be necessary for maximum learning and retention of SBP for learners with minimal prior clinical experience. Even without significant clinical experience, however, students were able to use this fairly brief exposure to SBP to propel them into high-level thinking about key systems issues. Finally, dedicated SBP curricula with close faculty mentorship can empower students to contribute meaningfully to systems improvement projects in clinical settings, even at early stages of training.

A STANDARDIZED PATIENT PROGRAM QUALITY IMPROVEMENT PROJECT: USING A SP DATABASE TO UNDERSTAND OUR SP COMMUNITY, MONITOR QUALITY, AND COLLABORATE EFFECTIVELY ACROSS SP PROGRAMS Sondra Zabar[1, 1]; Lisa Altshuler[1, 1]; Adina Kalet[1, 1]; Virginia Drda[1, 3]; Meg Anderson[1, 3]; Ruth Crowe[2]; Alexandra Mack[1]; Colleen Gillespie[1, 1]. [1]NYU School of Medicine, New York, NY; [2]NYU School of Mediicne, New York, NY; [3]NY Simulation Center, New York, NY. (Control ID #2705498)

NEEDS AND OBJECTIVES: Standardized Patients (SPs) are integral to health care professions (HCPs) training. We must understand this workforce, make effective use of SPs' skills, and ensure they accurately portray cases and rate learners. To be authentic, simulation should reflect the demographics of the population served, while providing exposure to less commonly seen patients. We created an SP database to facilitate our work with SPs; review their demographic characteristics; and align information on SP performance -to better serve our educational mission.

SETTING AND PARTICIPANTS: NYSIM (Simulation Center for NYU Langone and the City University of NY) serves hundreds of HCP training

programs for learners at all levels. While sharing common resources, many programs independently recruit and train SPs.

DESCRIPTION: We fielded a web-based survey for SPs and staff to populate the database. Survey items were iteratively reviewed by staff and SPs to ensure items elicited key information. Questions included basic demographics; SP experience/training; other professional background; and relevant physical findings (eg scars, cardiac findings). SPs also uploaded a headshot and resume. Staff separately input information about SPs' work on cases and programs; information about case portrayals; types of cases for which the SP is best suited, and other relevant information.

EVALUATION: To date, we have 232 SP surveys, representing the majority of SPs at NYSIM. Demographics included gender (43% male, 56% female, 1% transgender), age range (x = 34.9 years, range teen to 75+) and self-identified race (71% Caucasian, 17% African-American, 25.6% Asian/South Asian, 3.5% Middle Eastern, 3% Native American/Pacific Islander and 9% other). 22% are bilingual, with over 20 languages represented. SPs had a broad range of SP experience (x = 2.8 years, S.D. = 1.8, range 0–20 years). Almost all SPs were trained in basic case portrayal, with others being trained in aspects of the physical exam, emotional issues, giving feedback, and high stakes rating. SPs bring other skills to their work, including teaching (75%) or healthcare (12%). Survey information helps educators recruit SPs and identify (re)training needs. SPs who perform high stakes exams or are Unannounced Standardized Patients are shielded from general recruitment in order to maintain their anonymity.

DISCUSSION/REFLECTION/LESSONS LEARNED: An SP database is useful for a high volume simulation center. Information in a searchable SP data base allows programs to understand the potential pool and expertise of SPs, and to track learners' exposure to specific SPs (this is relevant as our internal data reveal that SPs with more experience tend rate towards the middle of the scale). The demographic characteristics of our SPs broadly match the profile of our healthcare systems, and tracking the data allows us to maintain a good fit between SPs and our environment.

A TARGETED 1-YEAR RESEARCH CURRICULUM Elizabeth Cerceo. Cooper University Hospital, Cherry Hill, NJ. (Control ID #2706701)

NEEDS AND OBJECTIVES: The Accreditation Council for Graduate Medical Education (ACGME) recommend that faculty should encourage and support residents in scholarly activities. However, many programs struggle to augment the residents' research output. We sought to develop a robust and sustainable longitudinal curriculum, providing the formal mentoring infrastructure along with foundational instruction for practically conducting research.

SETTING AND PARTICIPANTS: Second-year internal medicine residents

DESCRIPTION: The curriculum was created as a two-pronged approach to 1) increase the practical knowledge and skills to conduct research and 2) pair residents with dedicated research facilitators. The first part of the approach was to provide a series of lectures to solidify the residents' research foundation.The second key part of the initiative was to engage a small number of faculty identified for their interest in research and to pair them with a small group of 3–4 residents.The facilitator *may* also be the content expert in the resident's area of interest but this was not a requirement. If residents had interest in another area, the facilitators would help find a content expert to work alongside the facilitator. However, it was the facilitator's job to move the research goals forward, whether the research is done primarily with that mentor or with a second research mentor. Seven evening workshops were scheduled throughout the year. Mentors would meet or email their small group regularly to keep them on the planned timeline. Additional funding was secured to augment the time spent by the faculty. The lectures were designed to match the evening workshops with the themes and content, supporting the active work in the evening. Each evening workshop started with goal-setting, after which the facilitator guided the residents' clinical questions. The workshops, however, provided a clear timeline for completion of each step of the research process.

EVALUATION: Faculty evaluate each resident biannually based on attendance, participation, quality of contribution, and quality of deliverables for each session. The assessment tool is mapped to the Milestones. The residents also evaluate their facilitators and the efficacy of the program as a whole.

DISCUSSION/REFLECTION/LESSONS LEARNED: The structure and timeline of this curriculum contributed to accountability. We realized much more time had to be devoted to developing the clinical question. After constructive feedback, more realistic projects (smaller scale, more retrospective) were pursued. While much of the work was conducted in these scheduled workshops, a good deal of additional time was required to complete the necessary tasks at each step.

ALIGNING RESIDENT AND MEDICAL STUDENT TEACHING PROGRAMS: ASSESSMENT OF A NOVEL TRAINING APPROACH FOR FUTURE PHYSICIAN EDUCATORS Toshiko Uchida; Robyn Bockrath; Katherine Wright; Clare Petrie; John X. Thomas; Elizabeth R. Ryan. Northwestern University Feinberg School of Medicine, Chicago, IL. (Control ID #2701078)

NEEDS AND OBJECTIVES: Peer teachers have similar student outcomes when compared to faculty teachers,[1] but there are limited opportunities for providing students with feedback on their teaching. The objective of this project was to evaluate the quality of the narrative feedback that residents provide for senior (M4) students' teaching.

SETTING AND PARTICIPANTS: At Northwestern University Feinberg School of Medicine all M4 students are required to teach junior students and M4s receive feedback on their teaching from volunteer residents. In this novel alignment of teaching programs along the medical education continuum all M4s and residents participate in a teacher-training program. This analysis includes written feedback to M4s and participant satisfaction survey data from 2011–2016.

DESCRIPTION: A convergent parallel mixed methods approach was used based on a previously established operational definition of feedback in clinical education.[2] The quality of resident feedback provided to M4 students ($n = 445$) was analyzed by two independent raters and discrepancies were resolved by a panel of experts. Quality of feedback was coded on a 4-point scale: providing weak feedback (0), making a specific observation (1), identifying a performance gap (2) or stating an actionable item for improvement (3). Feedback was further qualitatively analyzed for the presence of themes formally taught in the teacher-training program: setting expectations, self-assessment and learner engagement.

EVALUATION: The overall mean quality rating of feedback was 2.72 (scale 0–3). Of the 445 feedback narratives, 1.8% provided weak feedback, 10.1% made a specific observation, 2.2% identified a performance gap and 85.8% stated an actionable item for improvement. For all resident subspecialties and years of involvement, over 81% of feedback achieved the highest

quality rating (3). The following themes were present in the feedback narratives: setting expectations (31.7%), self assessment (34.2%) and learner engagement (56.4%). Overall, M4 and resident satisfaction with the teaching program ranged from 4.7-5.2 (1 = extremely dissatisfied, 6 = extremely satisfied).

DISCUSSION/REFLECTION/LESSONS LEARNED: This analysis found that residents are providing high quality written feedback on M4 teaching regardless of the year of participation or specialty. Both residents and M4s report high satisfaction with the program. The higher prevalence of learner engagement noted in feedback may reflect the emphasis placed on engagement during the formal training provided to residents. REFERENCES:
1) Rees EL, Quinn PJ, Davies B, Fotheringham V. (2015). How does peer teaching compare to faculty teaching? A systematic review and meta-analysis. Medical Teacher, 38(8), 829–837. 2) van de Ridder JM, Stokking KM, McGahie WC, ten Cate OT. (2008). What is feedback in clinical education? Medical Education, 42, 189–197.

AN INNOVATIVE APPROACH TO TEACHING ASYLUM MEDICINE AND PROMOTE RESILIENCE IN TRAINEES WHO EVALUATE TORTURE SURVIVORS: THE OBSERVERSHIP MODEL IN A SIMULATION CENTER
Katherine C. McKenzie[1]; Arielle Thomas[2]; Kimberly Ono Ayala[1]. [1]Yale School of Medicine, New Haven, CT; [2]University of North Carolina, Chapel Hill, NC. (Control ID #2695128)

NEEDS AND OBJECTIVES: In 2015, 65 million individuals worldwide were displaced from their homes due to persecution and more than 172,000 individuals applied for asylum in the US. A medical forensic evaluation of asylum seekers can increase the likelihood of a successful asylum case. With this innovative model, we sought to meet the high demand of trainees interested in asylum evaluations and model coping mechanisms to promote resilience in this difficult field..

SETTING AND PARTICIPANTS: Up to 8 medical trainees observe asylum evaluations behind a one-way mirror in a Simulation Center ("Sim Center"), with access to technologically-advanced equipment allowing them to view the exams with ease.

DESCRIPTION: Trainees review asylum medicine course material and the applicant's affidavit and are queried about vicarious trauma with a supervising physician before and after the evaluation. Supervising physicians model self-care behaviors and coping mechanisms. Over the last 3 months 21 trainees have received a post-observership survey with Likert-type and narrative questions.

EVALUATION: 71% trainees responded; 79% were under age 25. 63% were female, 16% were foreign-born, and none of the participants were past asylum seekers or refugees. Almost 38% have had some experience working with refugee or immigrant populations. All respondents felt that it was a worthwhile experience and would recommend the learning opportunity to a colleague. Being in the simulation center itself was conducive to the learning experience for all of the participants but 84% felt that being in the room would have been more helpful. Eighty-five percent of participants denied vicarious trauma and 100% felt that they received adequate emotional support during their experience. Finally, 89% of participants were interested in participating in another evaluation. Narrative responses include: "I enjoyed the observership, as it was good to see in person how asylum evaluations are performed, what types of clinical signs to look for, how to engage with a refugee, etc." "Even though we're not providing care, I wouldn't have realized otherwise how emotionally significant it would be to provide a medical evaluation." "…However, I'm not sure I would have much to gain from a second observership."

DISCUSSION/REFLECTION/LESSONS LEARNED: Some medical schools receive large numbers of referrals for medical evaluations of asylum seekers and have ample faculty support. For other institutions, the demand by trainees for an introduction to the field outstrips referrals and the availability of faculty mentors. Additionally, some trainees desire an episodic, brief introduction. This ongoing study was highly rated by participants who felt the Sim Center was conducive to learning, although many would prefer a more interactive experience. Observerships are ideal for institutions where referral volume and faculty mentorship are limited: they offer the best opportunity for the greatest number of interested trainees.

ONLINE RESOURCE URL (OPTIONAL): http://medicine.yale.edu/intmed/genmed/asylum/https://medicine.yale.edu/emergencymed/simulation/

AN INNOVATIVE APPROACH TO TEACHING RESIDENTS HOW TO ADDRESS HEALTH CARE INEQUITIES
Ashley N. Tran; Gayatri Patel; Jennifer Siegel. Boston Medical Center, Boston, MA. (Control ID #2706867)

NEEDS AND OBJECTIVES: Efforts to address health care inequities at the physician level have traditionally focused on improving a provider's cultural competency. While these interventions address cultural and linguistic barriers between patients and providers, they do not always highlight the institutional and socioeconomic factors outside of the clinical encounter that deeply impact health and well being. Further, these efforts are not always based on the actual concerns of the communities served. There is a need for more innovative approaches to integrate social determinants of health curricula that are accountable to community needs into internal medicine residency programs. The objective was to improve resident physicians' knowledge of the social determinants of health and awareness of community resources that can positively impact patient health.

SETTING AND PARTICIPANTS: The participants were first-year residents in the internal medicine training program at a large, urban academic medical center.

DESCRIPTION: We developed a half-day curriculum which included a brief didactic lecture providing an overview of social determinants of health followed by a more experiential learning approach. The residents were taken on a guided walking tour of the neighborhood surrounding Boston Medical Center. Residents visited various community sites including a homeless shelter, medical respite facility, substance use treatment center, and hospital food pantry. Leaders in community health at these sites also had the opportunity to share their experiences with patient advocacy.

EVALUATION: A survey was completed by 20 residents three months post intervention. It assessed the quality and impact of the new curriculum on their existing clinical practice.

DISCUSSION/REFLECTION/LESSONS LEARNED: Overall, feedback from participants was overwhelmingly positive. Fifty percent of residents stated that the session moderately improved their knowledge of the social determinants of health. In addition, sixty percent of residents stated that the tour increased awareness of local resources by a great extent. These changes were also reflected in a self-reported increase in the number of resident referrals to the food pantry, inpatient and outpatient substance use services, and better

coordination of care when discharging patients to homeless shelters. Residents also had a better understanding of community health, and the majority felt better equipped in utilizing external resources for patient care.

AN INNOVATIVE CURRICULUM FOR TEACHING TUTORING SKILLS TO FOURTH YEAR MEDICAL STUDENTS: VIDEO MODULES, STANDARDIZED TUTEES, AND SELF-DESIGNED LESSON PLANS Marjorie E. Bateman[4]; Robert B. Jones[4]; Erik Green[4]; Mira John[4]; Bradford Hilson[4]; Jordan Wlodarczyk[4]; Norman Kreisman[3]; Catherine Jones[2]; Chayan chakraborti[1]. [1]Tulane, New Orleans, LA; [2]Tulane University SOM, New Orleans, LA; [3]Tulane University School of Medicine, Mandeville, LA; [4]Tulane University School of Medicine, New Orleans, LA. (Control ID #2705894)

NEEDS AND OBJECTIVES: To increase the student-driven peer tutoring resources at Tulane, we developed the "Upperclassmen Tutoring Underclassmen in Basic sciences And Test-taking" (UpTUBAT) elective. UpTUBAT aims to increase academic support for underclassmen and to enable upperclassmen tutors to develop tutoring skills. It strives to improve the attitudes and practices of tutors and tutees with regard to peer education and learning.

SETTING AND PARTICIPANTS: We studied the Physiology (MS1 year) and Mechanisms of Disease (MS2 year) courses. Participants were divided into four groups: tutors, tutor control, tutees, and tutee control. 18 tutors and 8 tutor control members were recruited from the membership of the Alpha Omega Alpha Honor Society. Tutee and tutee control members were recruited from first and second year medical students (up to 400 students).

DESCRIPTION: We used TutorLingo (©Innovative Educators, Inc) modules, standardized tutee experiences, and faculty-led discussions to train upperclassmen in tutoring. TutorLingo is a commercially-available training portal featuring video modules. After completing TutorLingo, tutors apply the lessons in 3 tutoring scenarios with standardized tutees. After receiving feedback from standardized tutees, the tutors meet with a faculty member to discuss the scenarios and strategies for addressing challenging tutoring situations. The tutors then design and host two-hour tutoring sessions. The structure models the tutoring cycle, including an agenda, review of concepts, testing of understanding, summary of take-home points, and time for questions.

EVALUATION: Pre- and post-tutoring surveys assess the attitudes and practices of the tutors and tutees on tutoring and learning the material. Pre-tutoring surveys for tutees also include educational background information which examines factors associated with seeking tutoring. We measured the effects on tutee grades by collecting the average score and the number of failing students for each exam, divided into those receiving or not receiving tutoring for each exam. Statistical analyses will evaluate changes in tutor attitudes and practices, tutee attitudes and practices, and tutee grades using t-test and chi-squared for univariate analyses and ANOVA for other analyses.

DISCUSSION/REFLECTION/LESSONS LEARNED: UpTUBAT is one of the first student-generated peer-tutoring electives in the medical school setting. Another unique aspect is the standardized tutee training session. Our standardized tutee sessions train tutors to lead large group tutorials in the basic sciences. While standardized patient sessions are well-validated for improving clinical skills, they have primarily been used to teach responses to clinical scenarios, not to teach tutoring. Tutors appreciate the opportunity to practice TutorLingo lessons in standardized tutoring scenarios. Over the semester, tutors hosted an average of 35 tutees per weekly session. Tutees have become more comfortable engaging with the material and with each other.

AN INNOVATIVE INPATIENT SAFETY CURRICULUM FOR RESIDENTS John Szymusiak1, 1; Catherine Polak[1]; Kwonho Jeong[3]; Doris M. Rubio[1, 3]; Stephanie B. Dewar[1]; Andrew Urbach[1]; Michael D. Fox[2]; Alda Maria Gonzaga[1]. [1]University of Pittsburgh School of Medicine, Pittsburgh, PA; [2]Nemours Alfred I. duPont Hospital for Children, Wilmington, DE; [3]University of Pittsburgh, Pittsburgh, PA. (Control ID #2690956)

NEEDS AND OBJECTIVES: Patient safety is an important part of resident education. A local needs assessment of pediatric residents showed that >93% of residents agreed safety was important for their education and practice. Only 13% felt comfortable using root cause analysis (RCA) and 48% felt prepared to apply safety principles to a future career. We aim to increase residents' comfort applying safety principles, satisfaction with their safety education, knowledge of safety, and event reporting rates.

SETTING AND PARTICIPANTS: The curriculum was delivered to PGY-2 and above pediatric, internal medicine-pediatric, and triple board residents at the Children's Hospital of Pittsburgh during a monthly, 1-hour long morning report session.

DESCRIPTION: Content covered system-based thinking, terminology, 2nd victim phenomenon, RCA, and medication errors. The multidisciplinary sessions included 20 min of didactic with the remaining time for group discussion or activities. The final 5 min of the sessions reviewed an event report that led to a system-level change to provide feedback to residents and illustrate reporting efficacy.

EVALUATION: Eligible residents were surveyed before and after the 5-month curriculum. Attitudes were assessed with a 5-point Likert scale and free response questions, knowledge with a 20-question multiple choice test, and reporting behaviors by self-report. Residents with pre- and post-data were analyzed using the Wilcoxon matched-pairs signed-ranks test. Fisher's exact test was used to see if attendees had improved attitudes and knowledge scores compared to non-attendees. Qualitative answers were analyzed for themes. Of 75 eligible residents, 45 (60%) completed the pre-survey and 43 (57%) completed the post-survey, with 26 (35%) doing both. Of these, 15 (58%) attended curricular sessions and 11 (42%) had not. Attendees showed significant increases ($p < .05$) in their comfort with RCA, preparedness to apply safety to future practice, and curricular satisfaction. Non-attendees showed no significant attitudinal changes. More attendees had improved knowledge of how to report and comfort with RCA than did non-attendees ($p < .05$). There were no changes in knowledge scores or event reporting. Qualitative questions identified learning about the reporting process, RCAs, and follow up on event reports as valuable parts of the curriculum. Residents desired more time to debrief about safety events.

DISCUSSION/REFLECTION/LESSONS LEARNED: Attendees showed improved attitudes and preparedness to apply safety to their future practice. This was not due to maturation as non-attendees showed no changes. Attendees did not show improved knowledge scores, possibly due to poor attendance or an overly challenging test. While attendees said they would report more in qualitative questions, they did not report filing more event reports- the reasons for this dissonance need to be explored further. Residents appreciate having a forum to vent and deal with the emotions involved in

errors. This curriculum would be easily transferable to other specialties or institutions.

AN INNOVATIVE RESIDENCY LONGITUDINAL QUALITY IMPROVEMENT CURRICULUM Shelly-Ann Fluker; Stacy Higgins. Emory University School of Medicine, Atlanta, GA. (Control ID #2706624)

NEEDS AND OBJECTIVES: The Emory Primary Care Internal Medicine Track has included team based quality improvement (QI) projects in the curriculum for over 8 years. However, teams have been structured around residents' continuity clinic, leading to large teams of both primary care and categorical residents with only a few residents accountable for project completion. In addition, projects spanned one academic year with a new project starting annually, with limited impact on patient outcomes. Our objective was to determine the feasibility of implementing a longitudinal QI project in the primary care (PC) residency track.
SETTING AND PARTICIPANTS: All PC residents participated in the curriculum. The 8 residents of each class rotate onto ambulatory blocks as a group over sequential months. Residents' continuity clinic site is Grady Memorial Hospital, Atlanta's safety net hospital.
DESCRIPTION: The PGY3 class initiated the project during their fall ambulatory block then subsequent classes worked on the project during their ambulatory blocks in the winter and spring. Each class met with the curriculum faculty mentor at the start and end of the block. At the beginning of each month, the current status of the project was reviewed and the goals for the month defined. Each block, a resident team leader was selected and teams had dedicated curricular time for working meetings. Project materials were housed on a university based online file sharing site.
EVALUATION: In year one, residents successfully selected a target, reviewed baseline data, made an aim statement, created a cause and effect diagram, and initiated a Plan-Do-Study-Act cycle. Specifically, residents chose to focus on improving diabetes control in patients with HbA1c > 10. After creating the cause and effect diagram, residents created a 16 item patient survey to determine which of the patient factors they identified played the most important role in their patient population. The survey was distributed to 150 patients over a 3-month period and results are being used to inform a test of change. Residents successfully handed off the project from one ambulatory block group to the next and completed the project goals for each month. The project has continued in the 2nd year of the curriculum incorporating retained residents and new interns.
DISCUSSION/REFLECTION/LESSONS LEARNED: A dedicated faculty mentor and resident team leader were key in ensuring that the project moved forward. Utilizing an online file sharing tool was essential for longitudinal communication between groups. Finally, providing residents with dedicated project work time during the ambulatory block led to the engagement and participation of the majority of residents in the project. Despite these successes, progress on the project was slow due to gaps between each ambulatory block. In addition, the goals for the months had to be revised based on the progress from the previous month and the new or differing ideas and input from the each subsequent group working on the project.

AN INTER-PROFESSIONAL PRIMARY CARE BASED CHRONIC PAIN MANAGEMENT AND OPIATE USE DISORDER CURRICULUM FOR INTERNS AND NEW ADVANCED PRACTITIONERS Natalie Ronshaugen; Sharon Wretzel. Baystate Medical Center, Springfield, MA. (Control ID #2703206)

NEEDS AND OBJECTIVES: Interns and new advanced practitioners (AP) often have insufficient education treating patients with chronic pain or opiate use disorder (OUD). This inter-professional curriculum improves diagnosis and treatment. Objectives *Recognize a new provider's educational needs in chronic pain management and OUD *Discover how to use institutional and community resources to help design an OUD curriculum *Learn how to design an inter-professional curriculum on OUD
SETTING AND PARTICIPANTS: Incoming interns and new AP participate in an intensive lecture series in the first three months of practice followed by intern experiences in clinic based and community organizations addressing OUD throughout the year.
DESCRIPTION: OUD is a potentially lethal disease that is often inadequately taught. In our residency program, we designed a curriculum to address this educational need. Our primary goal was to allow interns and new AP to gain a sense of mastery treating OUD and chronic pain in the outpatient setting. Our secondary goal was to model inter-professional learning. During ambulatory orientation, our interns and AP undergo a two-day intensive, inter-professional didactic lecture series from nurses and doctors on chronic pain management, opioid use and abuse, harm reduction, and buprenorphine management. Participants engage in interactive training in motivational interviewing with social workers and discussions with patients in recovery. The curriculum continues for interns throughout the year with experiences in community and clinic based buprenorphine clinics, twelve step programs, and detoxification facilities. There are also two ambulatory didactic lecture conferences during the year for all residents and AP on substance use disorders.
EVALUATION: Prior to the start of the curriculum, interns and AP had an average pretest score of 48% with a range between 25–75% correct. After the lecture series, the average score was 69% on the posttest with a range of scores between 50–88% correct. Initially, participants in the program mentioned feeling uncomfortable about opiate prescribing and chronic pain management. Participants voiced fears about opiate addiction and "failing to recognize misuse." However, participants largely found the curriculum helpful. One participant mentioned, "I feel more comfortable approaching the patient with chronic pain. (I have) more options and opiates are only one modality."
DISCUSSION/REFLECTION/LESSONS LEARNED: This curriculum improved our interns' knowledge of OUD and chronic pain management as well as how different professions impact a patient's care in OUD. Further, while the number of AP residency programs is increasing, many new AP graduates are still caring for patients with OUD with only a minimal amount of knowledge of how to do so. This curriculum can also serve as a guideline for clinics interested in improving AP knowledge of OUD. Future areas of growth for this curriculum include addressing methamphetamine use disorder; establishing a resident-run buprenorphine clinic; and improving education among clinic nurses in OUD.

AN INTERPROFESSIONAL AMBULATORY SIGNOUT: MOVING BEYOND DOCTOR-CENTERED CARE Nancy A. LaVine; Lauren Block; Daniel J. Coletti; Frank Cacace; Jennifer Verbsky; Jason Ehrlich; Johanna Martinez; Norma Roberts-Zahra. Northwell Health, New Hyde Park, NY. (Control ID #2702017)

NEEDS AND OBJECTIVES: Residency programs are moving towards block scheduling to improve the ambulatory experience. While there has been focus on improving handoffs in the inpatient setting, ambulatory signouts have centered on year-end transfers of care. Block scheduling creates a need to bridge care between rotating groups of residents. As primary care refocuses on team-based care, it is important that members of different professions are involved in the signout process. To optimize a team-based approach to primary care, ensure patient safety, and maintain continuity in the ambulatory setting, our objective was to establish an interprofessional clinic signout process.

SETTING AND PARTICIPANTS: Northwell Health's IMPACcT (Improving Patient Access, Care and cost through Training) Program is a HRSA funded 'clinic within a clinic' at our largest internal medicine residency site. Participants include faculty and learners from internal medicine, pharmacy, psychology, and physician's assistant (PA) programs. IMPACcT has a 4 + 1 schedule for residents, 4 week block for pharmacy students, 6 week block for PA students, and a once weekly schedule for the psychology extern. The clinic team is supported by a full-time medical assistant and patient coordinator. Each of these groups is represented at the weekly signout.

DESCRIPTION: We created a signout process to be completed at the end of each resident block week. The medical assistant (a continuous team member) maintains the signout process. Modeled on common inpatient practice, dedicated signout time (60 min) on Friday afternoons allows the team to discuss outstanding patient issues to be passed on to the next iteration of the care team. Interprofessional team members are assigned to follow up based on the nature of the issue (e.g. the pharmacy team will call Mr. X to ensure he was able to obtain asthma medications, the coordinator will reach out to ensure Ms. Y scheduled her follow up with her cardiologist). The signout sheet completed each week includes patient demographics, the required task, and identifies the responsible team member.

EVALUATION: To date, 26 weekly signouts have been completed; 24 included interprofessional team members (10 residents, 7 pharmacy students, 3 PA students, the medical assistant and the patient access coordinator). IMPACcT team members are being surveyed on their experiences with the signout process, with focus on utility and confidence in the signout process/ team communication. These responses will be compared to those in Northwell's traditional residency clinic, where no formal signout process exists.

DISCUSSION/REFLECTION/LESSONS LEARNED: With the move to block scheduling in residency clinics, an ambulatory signout process has become crucial for patient care. Incorporating multiple professions in an interprofessional ambulatory signout supports team based care and continuity as a means to mitigate the rotational nature of resident clinic schedules. Dedicated time to work on this process, as well as a team member devoted to maintaining the process, have been instrumental.

AN INTERVENTION TO EMBED CLERKSHIP LEARNING OBJECTIVES FOR MEDICAL STUDENTS INTO INPATIENT TEAMS AND CLARIFY TEAM MEMBER EXPECTATIONS Julien J. Dedier[1]; Sonia Ananthakrishnan, MD[2]. [1]Boston University, Boston, MA; [2]Boston University School of Medicine, Boston, MA. (Control ID #2705933)

NEEDS AND OBJECTIVES: Clerkship directors set educational goals for medical student rotations based on national and local directives shown to improve educational outcomes, and rely heavily upon attendings and residents who work with students to achieve these goals. However, attendings and residents are often unaware of key clerkship expectations for student education, and students are frustrated by these evaluators' unspoken or inconsistent expectations. Our objectives were to increase (1) knowledge and (2) achievement of our 3rd-year (M3) medicine clerkship's key educational objectives for students within ward teams; and (3) to stimulate a broader team-based discussion (TBD) of goals and mutual expectations.

SETTING AND PARTICIPANTS: We targeted inpatient medicine teams at Boston Medical Center, Boston University School of Medicine's flagship teaching hospital. Teams consisted of 1 attending, 1 resident, 2 interns and 2–3 M3 students.

DESCRIPTION: The intervention consisted of (1) a printed tool outlining the clerkship's educational goals and expectations of each team member, and (2) brief training for students and resident team leaders to use this tool. We included the tool in the course 'passport' students received at the start of the medicine rotation, and directed students to share it with the resident and attending on each team to trigger a TBD of goals/expectations. Student training occurred at the medicine clerkship orientation. Residents were training to facilitate the TBD at existing teaching sessions.

EVALUATION: We interviewed M3 students, medicine residents and medicine ward attendings to inform the intervention. We created surveys to assess the 3 objectives stated above, and prospectively assessed outcomes in all team members pre-intervention (4 teams) and during the intervention (8 different teams). We compared pre-intervention to intervention results using Chi-square and Fisher's exact tests for categorical variables, 2-sample t-tests for continuous variables, and the Wilcoxon rank sum test for Likert scale responses. In the formative phase we interviewed 14 M3 students, 11 residents and 5 attendings. In the assessment phase we surveyed 71 subjects (pre-interventio$n = 24$, interventio$n = 47$). The proportion aware of key clerkship expectations such as those governing M3 admissions, M3 electronic order entry, number of patients M3s should carry, and teaching expectations for residents and attendings was 19–41% greater on intervention vs. pre-intervention teams. On average, the likelihood these expectations were met was 14% greater on intervention teams. A TBD was more likely to occur on intervention teams (91.1% vs. 83.3%).

DISCUSSION/REFLECTION/LESSONS LEARNED: The intervention was associated with greater overall awareness and achievement of the clerkship's educational objectives for students, and with a high proportion of teams discussing goals and mutual expectations. This intervention addresses an important problem impacting the quality of medical education, and is easily adapted to any team-based rotation or set of educational objectives.

ANALYSIS OF THE EFFECT OF AN INTERPROFESSIONAL EDUCATIONAL PROGRAM ON MEDICAL STUDENT'S KNOWLEDGE AND ATTITUDES REGARDING PATIENT SAFETY AND INTERPROFESSIONAL LEARNING Yahya Ibrahim; Rebeca Kelly; Ramy Mando; Maya Dassanayake; Megan Birkhold; Mary Beth O'Connell; Diane L. Levine. Wayne State University, Detroit, MI. (Control ID #2706286)

NEEDS AND OBJECTIVES: Annually, medical errors cost $17 billion and result in 251,000 deaths. Healthcare professionals are responsible for preventing errors. Thus students need patient safety (PS) training. We developed an interprofessional (IP) PS program to educate pharmacy and medical

(med)students together to prevent, recognize, analyze, and report medical and medication errors. We report program effectiveness on med student PS attitudes, knowledge and impact of IP learning.

SETTING AND PARTICIPANTS: Third year pharmacy and med students. Workshop delivered by IM Clerkship Director and Pharmacy educator.

DESCRIPTION: 4-hour program included mini-lectures, Grey's Anatomy episode portraying a medical error, and IP group work with 1–2 pharmacy and 7–8 med students/group. Topics included overview of errors, analysis tools, just culture, human factors engineering, reporting, and PS committees.

EVALUATION: Students completed investigator-created pre-survey assessing PS knowledge and attitudes and the Healthcare Professionals Patient Safety Assessment Curriculum Survey (HPPSACS) added at midpoint of year. Students completed post surveys with additional program evaluation items. Students created a unique identifier. Only those who provided identifiers and completed both surveys were included. Likert-like questions were analyzed using Wilcoxon signed rank sums (SPSS 22). Pre/post knowledge-questions were scored analyzed with Chi square. Open-ended questions were analyzed qualitatively. Project was IRB exempt. 180 med students attended. Matched surveys were available for 136 investigator and 81 HPPSAC surveys. Pre-program nearly all students agreed that health professionals need to understand PS principles (96%), that learning to improve PS is appropriate use of curricular time (94%), and that errors causing no harm need to be reported (94%). Post-program more students believed working in an IP team improved PS (92 to 99%, $p < 0.05$). More students strongly agreed errors should be evaluated by IP committees (35 to 61%, $p = 0.003$) and non-healthcare professionals should be members of committees (19 to 51%, $p < 0.001$). Self-assessment of PS knowledge increased (30 to 94%, $p < 0.001$), as did knowledge about medical error (31 to 94%, $p < 0.001$). Students reported more comfort reporting (40 to 83%, $p < 0.001$) and analyzing errors (30 to 84%, $p < 0.001$). PS committee familiarity improved (32 to 67%, $p < 0.001$). Objective assessment of knowledge (PS terms and concepts) improved ($p < 0.001$).

DISCUSSION/REFLECTION/LESSONS LEARNED: IP education has been used to teach PS. Problems with sustainability have been described. We have been able to deliver an IP PS education to a large med school class. This workshop was initially delivered as a uniprofessional activity. Addition of a pharmacy educator enhanced the curriculum and has resulted in improved exposure to mediation errors and IP education. The workshop is fun to deliver and provides an opportunity for team teaching. We have been able to sustain by being flexible in scheduling and carving out one half day of faculty time every 2 months.

APPLYING LESSONS FROM INPATIENT MEDICINE TO THE OUTPATIENT SETTING: THE IMPROVING PATIENT ACCESS CARE AND COST THROUGH TRAINING (IMPACCT) CLINIC Lauren Block[4]; Nancy A. LaVine[3]; Daniel J. Coletti[4]; Johanna Martinez[4]; Celia Lu[4]; Alice Fornari[1]; Joseph Conigliaro[2]. [1]Hofstra NSLIJ SOM, Hempstead, NY; [2]North Shore LIJ Health System, New Hyde Park, NY; [3]Northwell Health, New Hyde Park, NY; [4]Northwell Health, Lake Success, NY. (Control ID #2702730)

NEEDS AND OBJECTIVES: Demand for primary care providers in the United States is growing as fewer trainees are entering primary care careers relative to hospital medicine and subspecialty fields. Hospital medicine has been more attractive to many trainees because of collaborative care provided by a multidisciplinary team, as well as shift work, which is facilitated by a well-developed sign-out process. We sought to build an interprofessional primary care training program based on the principle of team-based care by applying successful features of hospital medicine - service weeks, daily "rounds" and signouts - to the ambulatory setting.

SETTING AND PARTICIPANTS: Through a five-year HRSA funded program we initiated a primary care training program for internal medicine residents, medical students, physician assistant students, pharmacy students and health psychology externs at Northwell Health in July 2016.

DESCRIPTION: Our program is structured using a "4 + 1" system, in which both residents and faculty complete "on-service" weeks. Similar to the hospitalist attending model, on-service weeks allow faculty to strengthen working relationships, foster teamwork, and reinforce patient continuity. Two dedicated non-clinician team members facilitate care coordination by arranging specialty patient appointments and helping patients navigate the health system. "Rounds" occur in the form of interprofessional huddles, during which all team members discuss patient care plans and divide daily work during time set aside at the beginning of each clinical session. At the end of each week, a formal interprofessional "signout" allows all team members to review and pass along outstanding issues to the incoming team. While faculty and residents rotate "off-service" each week, continuity is provided by our patient access coordinator, medical assistant, PA student, and pharmacy student.

EVALUATION: A total of 695 patient visits occurred from July-November 2016. Faculty development sessions prior to the start of the IMPACcT clinic were held to prepare for interprofessional huddles. All IMPACcT patient visits have included the participation of at least one additional clinical team member (pharmacy, medical student, PA student, or psychology extern) to support the medical resident. Interprofessional huddles have occurred prior to each half day clinical session. Analysis of focus group data suggests that our patients recognize the value of an interprofessional approach and report receiving direct benefit from team-based care. Comparison of clinical quality indicators between IMPACCT and our traditional residency clinic show favorable performance in pneumococcal vaccination (87.5% vs. 83%), mammography (68% vs. 67%) and colorectal cancer screening (58% vs. 46%, $p < 0.01$).

DISCUSSION/REFLECTION/LESSONS LEARNED: We built a team-based primary care clinic and training program by applying successful inpatient principles of service weeks, care coordination, rounds, and signout to outpatient residency practice. Preliminary data suggests promising quality, process, and patient reported outcomes.

APPLYING QUALITY IMPROVEMENT TO JOY IN PRACTICE: A CLINIC-BASED CURRICULUM FOR TRAINEES Nicholas Meo; Evan Paul; Jeff Redinger; Milner Staub; Elizabeth Wahl; Mehraneh Khalighi; Chen Wu. VA Puget Sound Health Care System, Seattle, WA. (Control ID #2707014)

NEEDS AND OBJECTIVES: Emphasis on joy in practice has been suggested as a method to improve physician work-life satisfaction. We sought to teach the basics of quality improvement (QI) to internal medicine (IM) residents as a tool to improve joy in the workplace. We developed, implemented, and assessed a month-long curriculum to train residents to utilize QI to improve their own job satisfaction and fulfillment in practice.

SETTING AND PARTICIPANTS: Fourteen second-year IM residents ($n = 14$) participated in a primary care immersion curriculum through the University

of Washington, with QI projects implemented in three different primary care settings.

DESCRIPTION: Six faculty members with QI and medical education expertise collaborated to develop a 4-part workshop. The first session consisted of a 3-hour didactic lecture introducing QI methods and application to joy-in-practice interrupted by breakout sessions in which residents brainstormed their own projects with facilitator input. At the session's end, residents were instructed to develop a current state analysis and design an initial Plan-Do-Study-Act (PDSA) cycle around their specific joy-in-practice aim over the following three weeks. Sessions two and three were conducted as 1-hour off-site phone interviews with faculty to gauge progress and provide feedback. The final session was a 2-hour presentation, with residents showcasing their progress to faculty and fellow residents.

EVALUATION: Qualitative and quantitative evaluations were completed by 14 and 12 residents, respectively. All had prior experience with concepts and tools used in QI, but none had previously implemented a QI project. End-of-course combined ratings for quality, relevance, usefulness, and influence on future practice were 4.83, 4.92, 4.83, and 4.83, respectively, on a 5-point Likert scale. Qualitative feedback included: "I hadn't thought to improve workplace satisfaction in QI, but I loved that the course made me think about my own job satisfaction in medicine", "Great experience overall, loved that we were guided along by faculty every week", and "I will definitely change the way that I think about QI research in the future".

DISCUSSION/REFLECTION/LESSONS LEARNED: IM trainees have few self-advocacy tools. Teaching QI with the goal of improving joy in practice was perceived as novel, enjoyable, and empowering. All trainees were able to develop basic QI skills within a short timeframe, requiring minimal, periodic faculty input over the 4-week course to construct a practical and personally fulfilling improvement project. Importantly, this innovative curriculum empowers residents to advocate for their own satisfaction in the workplace and suggests a future role for incorporating joy-in-practice themes as one way to improve uptake of QI instruction.

ARE ACCELERATED 3-YEAR MD PATHWAY STUDENTS PREPARED FOR DAY ONE OF INTERNSHIP? Adina Kalet[3, 3]; Kinga L. Eliasz[3, 3]; Grace Ng[3, 3]; Demian Szyld[1, 3]; Sondra Zabar[2, 3]; Martin V. Pusic[3, 3]; Colleen C. Gillespie[3]; Lynn Buckvar-Keltz[3, 3]; Joan Cangiarella[3]; Steven B. Abramson[3]; Thomas S. Riles[3, 3]. [1]Harvard Medical School, Boston, MA; [2]NYU School of Medicine, New York, NY; [3]New York University School of Medicine, New York, NY. (Control ID #2705542)

NEEDS AND OBJECTIVES: To address rising education costs, physician shortages, and the need for educational reform, several medical schools have developed accelerated 3-year MD programs. In 2013, NYU School of Medicine began its new 3-year MD program with guaranteed acceptance into residency upon graduation. Using the AAMC's 13 Core Entrustable Professional Activities for Entry into Residency (CEPAER) framework, we designed an immersive 4-hour simulated "Night on Call" (NOC) experience to compare performance of our first graduating cohort of fifteen 3-year MD students (3A), with third (3T) and fourth year (4T) students in the traditional 4-year MD program.

SETTING AND PARTICIPANTS: 73 medical students (39 women, age 26.5 (+2.6) years; 36 '3T', 12 '3A', 25 '4T') completed an IRB-approved NOC at our simulation center 4 weeks prior to the end of their third or final year of medical school.

DESCRIPTION: We developed NOC to measure competence and entrustment across all 13 CEPAERs from the perspective of patients, nurses, and attendings. During the simulation, a medical student rotated through a series of 8 clinical coverage scenarios including: 4 standardized patient (SP) cases with varying degrees of complexity, each of which require answering a call from a standardized nurse (SN), evaluating an SP with the SN in the room, making immediate management decisions and writing a coverage note; a phone call to an experienced clinician to orally present (OP) the case; formulation of a clinical question and finding the most appropriate evidence-based medicine (EBM) answer using digital library resources; a clinical vignette (CV) to test ability to recognize a pre-entrustable peer; and a handoff (HO) of 4 cases to a peer (a senior medical student). CEPAERs assessments based on validated tools included communication, physical exam, patient education and interprofessional teamwork skills assessed by an SP and SN, and clinical reasoning based on notes, OP, EBM, CV, HO. Each rater also provided an entrustment judgment.

EVALUATION: Although overall student performance improved across cases and some interesting individual performance patterns emerged, there were no significant differences across the three groups in the core competency and entrustment measures evaluated across various NOC activities.

DISCUSSION/REFLECTION/LESSONS LEARNED: The 13 CEPAERs are meant to define what students should be expected to perform (without direct supervision) prior to entering residency. Our results, based on multiple rater perspectives, suggest that our cohort of 3A students is as prepared for residency as their 4T counterparts.

ASSESSING THE IMPACT OF A PATIENT CENTERED INTERVIEWING CURRICULUM Arash Nafisi. Olive View - UCLA Medical Center, Los Angeles, CA. (Control ID #2703970)

NEEDS AND OBJECTIVES: Trends in primary care emphasizing productivity have been associated with provider burnout, lower provider satisfaction, and correlate with decreased patient satisfaction. Data from numerous surveys assessing patient experience, including CG-CAHPS, reflect this impression. Our objective is to provide our internal medicine residents with training to enhance practical, empathy-based interviewing and communication skills in primary care, to improve the quality of patient visits without sacrificing efficiency.

SETTING AND PARTICIPANTS: Participants include all internal medicine first year categorical and preliminary housestaff. Training occurs in the ambulatory setting during protected didactic time, approximately three to four months after the start of intern year.

DESCRIPTION: Patient centered interviewing is an evidence-based method that highlights the importance of building rapport and earning patient trust, while also appreciating provider time constraints. It emphasizes provider understanding of how illness impacts the patient, noting that patients often do not seek medical care solely because of a symptom but also for its personal context. We created an evidence-based curriculum modeled after Smith's book titled *Patient-Centered Interviewing*, and based on Frankel's Four Habits Model of Communication conceptual framework. The curriculum includes a highly interactive, three-hour, small group session with video demonstration and group skills practice that highlights specific ways to enhance

communication with patients, while appreciating provider time constraints. We believe this method of interviewing not only improves patient satisfaction, but also enhances satisfaction of our internal medicine residents when caring for patients in the outpatient setting.

EVALUATION: 105 residents have thus far completed our training in patient centered communication. We evaluated the impact of this intervention via resident post-test surveys and assessed patient satisfaction through pre and post-test evaluation using a validated patient questionnaire developed by Smith, et al. After completing the training, 92% of residents stated having a better understanding of what it means to be patient-centered, 76% felt more skilled in communicating with patients and 57% reported being more patient centered. Moreover, 40% of residents noted feeling connected with their patients and reported being satisfied after patient encounters more often; roughly the same number of residents stated having empathy for their patients more often. 62% of residents stated their efficiency with each patient encounter had improved.

DISCUSSION/REFLECTION/LESSONS LEARNED: A focused curriculum on evidence based, patient-centered communication improved self-perceived resident communication, empathy and efficiency in primary care, while simultaneously enhancing resident satisfaction. It remains to be seen whether findings are sustained over time and whether this intervention impacts patient satisfaction.

BACK TO THE BEDSIDE IN THE OUTPATIENT SETTING: EXAM ROOM PRESENTATIONS IN RESIDENT CONTINUITY CLINIC Rachel Vanderberg; Carla Spagnoletti; Melissa McNeil. University of Pittsburgh Medical Center, Pittsburgh, PA. (Control ID #2701627)

NEEDS AND OBJECTIVES: Current literature suggests bedside presentations in both inpatient and outpatient settings are beneficial for patients and learners. Exam room presentations (ERPs) in resident continuity clinic (RCC) have the potential to meet several current needs in medical education including operationalizing ACGME Milestones through direct observation, improving patient satisfaction, and promoting patient centered care. Despite these benefits, we suspect the majority of case presentations in RCC take place away from the patient. At our institution, 65% of faculty preceptors reported never utilizing ERPs, while the remaining 35% reported using ERPs less than 25% of the time. We aimed to assess the feasibility of ERPs as a precepting model in RCC by identifying faculty perceived barriers.

SETTING AND PARTICIPANTS: General Internal Medicine faculty at the University of Pittsburgh who precept RCC.

DESCRIPTION: Faculty were invited to complete a survey regarding ERPs, defined as the initial case presentation and discussion in the exam room with both the patient and attending physician present. The survey asked them to rate 10 barriers to ERPs on the following scale: not a barrier, somewhat of a barrier, or a significant barrier. Faculty were then invited to an ERP workshop which included a PowerPoint presentation and video demonstration. Afterwards, faculty were encouraged to pilot ERPs in RCC over the next month with a goal of performing 1–2 ERPs per half day. After the pilot period, faculty were asked to complete the same survey.

EVALUATION: The response rate for the pre-survey was 74% (26/35). The most frequently perceived barriers (barriers rated as either somewhat or a significant barrier) included learner discomfort, time, and ability to review the chart at 96%, 92%, and 81% respectively. The response rate for the post survey was 71% (24/34) and 83% of the faculty indicated they tried an ERP at least once. In the post survey, 7, 83, and 62% of the faculty identified learner discomfort, time, and ability to review the chart, respectively, as barriers. Over half of the faculty felt that patient discomfort, attending physician discomfort, ability to write an attending attestation, and bedside teaching were not barriers to ERPs. Time was the most frequently identified barrier in the post survey and represented the most substantial barrier as 50% of faculty rated time as a significant barrier in both surveys. Despite these perceived barriers, 50% of the faculty, representing a 15% increase from the initial faculty usage rate, indicated they would continue to use ERPs.

DISCUSSION/REFLECTION/LESSONS LEARNED: Faculty consistently identified time as a barrier to ERPs in RCC. Learner discomfort and ability to review the chart were more frequently perceived as barriers to ERPs prior to the pilot period. Several faculty identified urgent care appointments as an ideal venue for ERPs in the comments section of the survey. We are currently seeking to further understand the role and feasibility of ERPs in RCC through qualitative work with faculty and residents.

BEDSIDE TRANSITION OF CARE AS A NEW ASSESSMENT TOOL OF NIGHT FLOAT RESIDENTS Mark Ridder; Ali Al-Hilli; Adnan Kiani; Ateeq Rehman. Marshfield Clinic, Marshfield, WI. (Control ID #2703039)

NEEDS AND OBJECTIVES: Residency programs are using a night float rotations system to manage duty hour restrictions. There are notable advantages and disadvantages to this system. Feedback from supervising physicians to residents during night float is very limited, mainly due to the lack of opportunities direct observation of residents' performance. Whilst it has been hypothesized that this period of attending-resident dissociation is crucial to the development of residents' confidence, as they transition from being constantly supervised to functioning independently, constructive feedback from attendings remains paramount to their professional development. Our literature review revealed only a few studies that assessed resident and patient attitudes towards this approach.

SETTING AND PARTICIPANTS: The key participants during this signout are the patient, the admitting night float residents, the day team including the attending, residents, students and the patient's nurse. The night float residents deliver the signout at the bedside.

DESCRIPTION: Our residency program has transitioned from a milestone-based curriculum to one that relies upon Observable Practice Activities (OPAs). We began utilizing post-call, bedside signouts as part of our night float curriculum since the beginning of 2016. This information exchange includes all the key components of the history and physical with a focus on the assessment and plan, using language that is understandable by the patient. Patients are encouraged to participate in the discussions. This patient-centered activity is directly observed by the supervising attending to assess the strengths and weaknesses of the night float residents.

EVALUATION: We observed that this method of rounding does not significantly lengthen the duration of signouts compared to traditional table signouts. In addition, patients who received care through this method perceived that they had spent more time with their medical team and were more satisfied with their care.

DISCUSSION/REFLECTION/LESSONS LEARNED: Our reflection upon this innovation demonstrates that bedside signouts to transition patient care

from the night float team to the day team provide a feasible new valuable OPA opportunity, to facilitate attending evaluation of residents, with the added benefit of delivering high-quality patient-centered care.

BEYOND THE TEACHING CLINIC: BUILDING RESILIENCE THROUGH CARE COORDINATION

Catherine Jones[2]; Anjali Niyogi[1]; Ashley Wennerstrom[2]. [1]Tulane University, New Orleans, LA; [2]Tulane University SOM, New Orleans, LA. (Control ID #2706212)

NEEDS AND OBJECTIVES: provide important systems navigation services utilizing trained medical students as care coordinators; Understand the importance of prioritizing systems navigation education in early clinical education, Identify opportunities to build curriculum around care coordination within the continuum of medical education, Articulate the connection between resilience and the creation of integrated systems navigation programs for medical learners,

SETTING AND PARTICIPANTS: Medical students functioned as care coordinators in several settings focusing on vulnerable patients: 1) Luke's House, a free clinic serving primarily undocumented immigrants; 2) the Student Hotspotting program and the Social Contexts in Medicine programs, which train students in a robust social determinants of health curriculum before they go on to provide support for high utilizers; and 3) the Formerly Incarcerated Transitions clinic, in which students support people recently released from incarceration in accessing primary healthcare and other wraparound services.

DESCRIPTION: Healthcare systems are constantly evolving, particularly with new legislative changes aimed at serving an aging population with complex medical needs. Best outcomes now require familiarity with systems-based practices, in addition to medical knowledge. Training in system-based coordination and provision of care can begin in medical school. One way to incorporate students into this learning process is to provide opportunities for students to assist patients in navigating the complex healthcare system. Immediately after Hurricane Katrina, at a time when our local urban underserved population had scant options for healthcare, student run clinics emerged throughout New Orleans. However, the development of local health infrastructure including community health centers has now made the role of student clinics unclear. Students and faculty have come to conceptualize a new role for students and their clinics, focused on identifying and solving health care system problems by de-prioritizing traditional clinical shadowing experiences in favor of building a network of trained, committed student care coordinators to assist patients in navigating the larger healthcare system.

EVALUATION: Evaluation has occurred in all contexts, with the aims of ensuring that patients receive the followup care they need. This is achieved by personal phone calls to participants and chart checking the medical records.

DISCUSSION/REFLECTION/LESSONS LEARNED: As a result of these programs, students have gained confidence with local resources and systems navigation, as well as real-life knowledge of how the social determinants of health impact patients' health outcomes. Preliminary data show increased linkage to primary care and decreased utilization of acute care services for primary care needs among small sets of patients in some of these settings.

BEYOND TRADITIONAL ROLE PLAY: PRACTICING COMMUNICATION SKILLS DURING INTERN SIMULATION "BOOT CAMP"

Katherine A. Iossi[1, 2]; Craig Tanner[2, 3]; Megan Moody[1]. [1]Portland Veterans Affairs Healthcare System, Portland, OR; [2]Oregon Health and Science University, Portland, OR; [3]Legacy, Portland, OR. (Control ID #2707119)

NEEDS AND OBJECTIVES: Concerns existed that residents had deficits in skills traditionally taught "on-the-job" or experientially that were not covered in our core curriculum. We planned a 5-day simulation "boot camp" to teach skills in procedures, clinical reasoning under pressure, and communication. We developed the 1/2 day communciation session. Objectives: Practice a tool to facilitate improved code status discussions Practice 2 methods to improve communication during difficult conversations Give and receive specific behavioral feedback around communication skills Develop increased confidence in having difficult conversations

SETTING AND PARTICIPANTS: −Mid-sized academic program, 30 categorical interns -Intern Intensive "boot camp" took place at OHSU's Sim Lab −1/2 day on communication with 5–6 interns per group, repeated x6

DESCRIPTION: Residents, staff, and leaders in communication skills were surveyed on skills interns should learn early. Teaching methods were identified including a) Traditional role play using SPAM, a pneumonic tool described in the literature to guide code status discussions, with simple cases; and b) The Vital Talk method described by Back et al. for providers to practice skills with an actor while learning to give and receive specific behavioral feedback in a peer group. Materials can be shared with credit. Cases were adapted for interns and actors trained. ½ Day Agenda: 1-SPAM Overview: Surrogate, Prior stated preference, Assume full code, More later 2-SPAM Role Play: simple Code Status scenarios acted out with one intern as patient and one as provider 3-Overview of tools to address emotion: a) Ask-Tell-Ask, b) NURSE pneumonic (name the emotion, understand, respect, support, explore) + wish/worry statements 4-Vital Talk Role Play with actor as patient's family member - each intern in the "hotseat" with actor once -intern identifies a skill to practice, others instructed to take note of specific words that promote reactions in actor, timeout when encounter gets difficult(actor trained to be filled with emotion) -group shares specific words that elicited positive response in actor -intern in hotseat identifies the hard part, seek suggestions of words to try from group -intern re-enters encounter with words to address emotion, actor trained to authentically respond to emotions being addressed, time called when intern addresses emotion -intern states take-home point 5-Closing -handout given with tools and references -interns write note with skill they want to be practicing 6 months from now to be mailed then

EVALUATION: −Received IRB approval for pre/post surveys -Interns rated usefulness of session high and noted improved confidence having difficult conversations -Positive feedback from instructors and actors

DISCUSSION/REFLECTION/LESSONS LEARNED: −Interns learn as much observing as in the hotseat -Interns requested more VItal Talk practice, specifically in goals of care -We must train actors to have strong emotion entering encounter

BRIDGING THE GAP: CREATING AN INTERDEPARTMENTAL QUALITY AND SAFETY ENGAGEMENT CURRICULUM FOR TRAINEES

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Chicago, Skokie, IL; [2]University of Chicago, Chicago, IL; [3]University of Chicago Medical Center, Chicago, IL. (Control ID #2705574)

NEEDS AND OBJECTIVES: Recent guidelines from the ACGME Clinical Learning Environment Review (CLER) recommend residents receive formal training in quality improvement and patient safety (QI/PS). Our objective was to design an educational intervention for post graduate year 1 (PGY1) trainees in surgery, pediatrics and internal medicine introducing them to hospital and educational leaders while learning the basics of quality improvement and patient safety. Sepcifically to: 1. Build trainees' foundational knowledge of core principles of QI/PS 2. Engage trainees in institutional QI/PS priorities 3. Meet CLER and ACGME recommendations for QI/PS education

SETTING AND PARTICIPANTS: In September 2015, 79 PGY1 residents in surgery, pediatrics, and internal medicine took a pretest, evaluating knowledge and attitudes of basic QI/PS. Based on this needs assessment, learning objectives were identified in three areas: quality improvement, quality assessment, and patient safety. Residency program directors for the three core programs approved the learning objectives and the Graduate Medical Education (GME) office supported the curriculum.

DESCRIPTION: During the 2015–6 academic year, QI educators and hospital leaders delivered 3 required one hour lectures to PGY1's. The first session included a review of root cause analysis/event reporting and completion of a fishbone analysis. The second lecture included review of internal and external quality metrics. Finally, hospital quality annual goals were reviewd and PGY1's developed aim statements, QI measurements, and proposed interventions for one of the hospitals priority metrics.

EVALUATION: Learner assessment included pre-post knowledge tests and activities to assess skills. Pretest completion rates were high (surgery (9/9, 100%), pediatrics (23/23, 100%), IM (41/46, 89%), and overall (73/79, 92%). 65% of PGY-1s reported brief quality training in medical school; 90% reported brief safety training. The curriculum pre-test resulted in a mean and median score of 43.5% (10/23 points, range 22%-78%). On average, learners showed better knowledge of core QI/PS principles (mean score 48.2%) than of institutional QI/PS priorities (33.6%). On 5-point Likert scales, residents had strong positive responses regarding the importance of QI/PS to their education (4.6 and 4.8), but low confidence of their knowledge of institutional procedures (2.3 - 2.6). Familiarity with hospital leadership was modest on Likert scale and knowledge questions.

DISCUSSION/REFLECTION/LESSONS LEARNED: Our pre-test data suggests that training on QI/PS is needed during residency. We demonstrated feasibility of an interdepartmental QI/PS curriculum to meet national training guidelines and learning objectives. Our future plans include roll out to all PGY-1's and first-year fellows. We learned that an interdepartmental curriculum supports efficient use of faculty and administrative resources while achieving CLER goals. Using hospital senior administrators as teachers fosters resident engagement with hospital priorities.

BRINGING DESIGN THINKING TO MEDICAL EDUCATION: STUDENT DESIGN PARTNERS AS CURRICULUM CO-CREATORS

Daniel R. Wolpaw; Kevin Black; Terry Wolpaw. Penn State College of Medicine, Hershey, PA. (Control ID #2704762)

NEEDS AND OBJECTIVES: Design Thinking features cycles of 1) discovering end-user perceptions, 2) exploring opportunities, 3) generating and testing prototypes, and 4) analyzing/evolving results. Our project objective was to build on the experience of Olin College of Engineering to embody the principles of design thinking in "Student Design Partners" (SDPs) as part of our efforts to take a fresh look at medical education at an expanding regional campus.

SETTING AND PARTICIPANTS: Five SDPs, admitted to Penn State College of Medicine in 2016, deferred matriculation for one year to co-create and pilot elements of a curriculum planned for Penn State's University Park medical school campus. SDPs received a one-year stipend and subsequent scholarship support.

DESCRIPTION: SDPs and faculty participated in iterative cycles of Design Thinking focusing on 1) "mapping" the geography, population, society, and culture of the region, 2) developing immersive patient-navigator experiences in regional primary care practices, 3) shaping processes for small group inquiry-driven learning, 4) piloting formative narrative-based assessment strategies, and 5) mapping learning objectives and applying the science of learning to educational design.

EVALUATION: SDPs kept daily logs of their experiences and reflections, shared narratives and recommendations with faculty, and learned to apply qualitative research methods to this data to support design thinking cycles. Among the curricular processes that evolved substantially during the design year were: a) development of clinical immersion sites, b) balancing clinically driven inquiry with the achievement of core educational milestones, c) developing aligned assessment strategies, and d) engendering learner confidence in novel educational designs.

DISCUSSION/REFLECTION/LESSONS LEARNED: 1) SDPs contribute on the dance floor (curricular pilots) and from the balcony (critiquing, revising and planning). Despite the inherent tension in these simultaneous roles, SDPs found their balcony views, focused by a growing understanding of education science and supported by faculty collaboration and mentorship, to be important in modulating the uncertainty of new curriculum designs. 2) The almost total inclusion of SDPs in curriculum planning has been "liberating" to faculty long accustomed to planning education and later negotiating learner reactions. 3) It is possible to create learner roles that embody principles of Design Thinking. Our goal is to support this design mindset in succeeding cohorts of students to keep education programs fresh and dynamic.

BRINGING RESIDENT REPORT PEARLS FOR ALL: ONE CHIEF RESIDENT BLOG POST AT A TIME

Irina Kryzhanovskaya; Myung S. Ko. UCSF, San Francisco, CA. (Control ID #2707556)

NEEDS AND OBJECTIVES: Promoting adult learners to continue their education independently is one of the most important objectives of graduate medical education (GME). A common example of this occurring in Internal Medicine residency programs nationwide is a chief resident-facilitated case conference, also known as Resident Report. However, little is known about whether the clinical cases or concepts discussed during report leave a lasting impact on the resident learners, particularly as the busy clinical context may detract from knowledge acquisition, retention, and optimization of the learning climate. The objective of our project was to use an online blog organized by chief residents to summarize the salient teaching points from report, reference key literature, and provide a way for residents to reinforce concepts independently.

SETTING AND PARTICIPANTS: This project took place within the Internal Medicine Residency Program at University of California at San Francisco (UCSF). Participants included chief residents at each of three UCSF-affiliated Hospitals, and the resident physician trainees enrolled in the UCSF IM Residency Program.

DESCRIPTION: Following every Resident Report, the chief residents at each hospital submit a one page blog post detailing the learning points derived from each report session. Each entry starts with a de-identified "one-liner" for the patient case followed by pertinent clinical pearls from the discussion. The posts end with a link to a notation program (Evernote) to allow for resident and faculty subscribers to use the pearls in their own teaching materials in the future. The blog can be accessed easily from online search engines, and the platform generates daily emails to subscribers when a post is completed.

EVALUATION: The chief resident blog has 711 posts to date with a total of 12,525 visitors, 40,114 views, and 51 subscribers. We plan to evaluate the effectiveness of the blog by organizing resident focus groups and circulating a residency-wide survey on the utilization and clinical relevance of the website. The goal will be to understand how the blog is used by learners and its impact on knowledge retention as well as other functions like future clinical teaching and patient care.

DISCUSSION/REFLECTION/LESSONS LEARNED: Little is known about best practice for using online blog posting for dissemination of teaching material from resident reports or case conferences in GME. We hope to demonstrate widespread use of the blog as an effective complement to resident report teaching and assess its impact on knowledge retention by residents, clinical teaching, and patient care.

ONLINE RESOURCE URL (OPTIONAL): https://ucsfmed.wordpress.com/

BUILDING A 4-YEAR MEDICAL STUDENT SUBSTANCE MISUSE CURRICULUM Sandeep Kapoor[1, 3]; Tamar Harel[3]; Judith M. Brenner[3]; Joseph Conigliaro[1, 3]; Jeanne Morley[1, 3]; Mark Auerbach[2]; Jonathan Morgenstern[2]; Nancy Kwon[2]; Lauren Block[1, 3]. [1]Northwell Health, Lake Success, NY; [2]Northwell Health, Great Neck, NY; [3]Hofstra Northwell School of Medicine, Hempstead, NY. (Control ID #2702746)

NEEDS AND OBJECTIVES: Our objective was to implement a four-year longitudinal curriculum aimed at improving knowledge, attitudes, and skills in substance misuse screening, brief intervention, and treatment (SBIRT) among medical students.

SETTING AND PARTICIPANTS: The study participants included 100 MS1 and 100 MS2 students at Hofstra Northwell School of Medicine during the 2015–2016 academic year. The curriculum description extends to the MS3 and MS4 student cohorts (see URL).

DESCRIPTION: Our curriculum was collaboratively taught by communications and SBIRT faculty and health coaches. The first year medical student (MS1) session addressed knowledge, skills and attitudes (*KSA*) in regard to the spectrum of alcohol use. Session components included an Alcoholics Anonymous meeting with a reflection (*A*), pre-reading, and large group discussion on screening for alcohol misuse (*K*). Standardized patients (SPs) were included to add authenticity to role-plays (*S*). The second year (MS2) curriculum extended *KSA* by focusing on drugs of abuse. Pre-reading (*K*) focused on interventions for patients who screen positive for substance abuse. Students were taught and practiced a brief negotiated interview (BNI) approach with SPs (*S*). Students were offered an opportunity to work with a health coach in practice (*A*). During the third year, a case-based conference provided a knowledge and skills refresher. An OSCE and a final essay question were added for all MS3 students. An elective rotation in SBIRT was offered to all MS3 and MS4 students.

EVALUATION: An evaluation of the curriculum was conducted by examining: 1) MS1 and MS2 final essay data (*K*); 2) MS1 and MS2 clinical skills assessment data (*S*); 3) pre- and post-session survey data (*A*); and 4) student evaluation data (*feedback*). Quantitative pre- and post-session survey data was analyzed using t-tests. *Knowledge* A total of 98 and 100% received passing scores on the exam question in the MS1 and MS2 cohorts. *Skills* Checklist questions were scored by SPs trained to the cases. A total of 93%, 99%, and 93% of students received full credit in the following categories: screening, being non-judgmental, and patient education. Seventy one percent of MS2s provided feedback on SP alcohol use, a second-year skill. *Attitudes* Following the session, students were more likely to agree that incorporating SBIRT into medical practice is important (4.4 vs. 4.1 on 1–5 Likert scale, $p < 0.01$). Students reported being more comfortable asking patients about substance use (3.6 vs 2.8, $P < 0.001$) and assessing patient readiness to change (3.7 vs 2.9, $p < 0.001$). *Feedback* Eighty nine percent of students agreed the session enhanced their learning and 89% felt the session fostered active learning.

DISCUSSION/REFLECTION/LESSONS LEARNED: We designed, implemented, and evaluated a four-year curriculum on substance misuse screening and counseling. First and second year student data suggests the curriculum enhanced student knowledge, skills, and confidence in practicing SBIRT techniques.

ONLINE RESOURCE URL (OPTIONAL): http://hofstranorthwellsbirtcurriculum.webstarts.com

BUILDING RESILIENCE, BOOSTING COMMUNITY, AND PROMOTING MEDICAL EDUCATION RESEARCH: CENTER FOR EDUCATIONAL INNOVATION AND SCHOLARSHIP Arabella L. Simpkin[1, 2]; Katrina Armstrong[1, 2]; Alberto Puig[1, 2]; Stephen B. Calderwood[1, 2]. [1]Massachusetts General Hospital, Boston, MA; [2]Harvard Medical School, Boston, MA. (Control ID #2672282)

NEEDS AND OBJECTIVES: We are in an exciting phase of healthcare transformation with a consequent responsibility to train physicians to thrive in a changing environment. This is driving a growing recognition of the need to create new approaches to education delivery and to nurture leaders of education reform. To address this challenge we developed a Center for Educational Innovation and Scholarship (CEIS) at Massachusetts General Hospital (MGH) that aims to: promote development and evaluation of innovative educational approaches; advance medical education scholarship and investigation; foster faculty development; and provide mentorship to boost a sense of community, and consequently build resilience, among medical educators.

SETTING AND PARTICIPANTS: Catalyzed within the Department of Medicine at MGH, the CEIS is now home to 80 faculty and fellows across six Departments (Medicine; Surgery; Emergency Medicine; Anesthesiology; Pediatrics; Obstetrics & Gynecology).

DESCRIPTION: In meeting the mission of the CEIS to engage, enthuse, and educate faculty and fellows in medical education research, we developed a monthly "medical education think-tank" where two scholars present specific

questions/hurdles for discussion with the group to empower peer learning, inspire ideas and collaborations, and share best practices for educational strategy. Internal grant funding is available to support projects. To develop and enhance skills, we are running the AAMC Medical Education Research Certificate (MERC) workshops.

EVALUATION: To evaluate success of the CEIS, we are measuring: faculty demand/satisfaction (community at monthly meetings); faculty engagement in education research (presentations/publications); commitment to development of education research skills (achievement of MERC qualification); collaboration on projects across departments; successful grant applications; implementation of innovative educational strategies; and academic promotion.

DISCUSSION/REFLECTION/LESSONS LEARNED: Looking toward global needs in the 21st century, experts have called for a new wave of medical education reforms. The CEIS aims to encourage physicians to enter this space, promoting focus on research and innovation. We have seen the rapid creation of a multidisciplinary community, which we hope will bridge silos and help build resilience among faculty. We have reflected on the challenges in this emerging space, including the paucity of external grants to adequately protect faculty time, and the need to expand our view of scholarship (and markers of success) recognizing newer peer-reviewed journals, those with lower impact factors, and acknowledgment of the influence and importance that the 'grey literature' (blogs, social media posts) has on dissemination of findings. Innovation Centers can ensure academic health centers optimize their teaching and research missions, enhancing value through leadership, education, engagement, and scholarship for the benefit of both the physician and patient experience. It is only by embracing efforts in this arena that we will thrive in the next era.

BUILDING SKILLS AND REKINDLING JOY: A CME COURSE ON CARING FOR VULNERABLE PATIENTS

Katherine Lupton[1]; Margaret B. Wheeler[2]; Dean Schillinger[1]. [1]University of California San Francisco, San Francisco, CA; [2]University of California, San Francisco, San Francisco, CA. (Control ID #2707028)

NEEDS AND OBJECTIVES: The care of patients who are vulnerable and underserved is complex; a purely biomedical approach cannot address the many medical, psychosocial and societal factors complicating their care. Few formal professional development opportunities provide guidance on working with underserved populations. Providers' lack of confidence and competence contribute to both inequities in care and provider burnout. We designed a Continuing Medical Education (CME) course with the following objectives: 1. Provide evidence-based strategies for working with marginalized patients 2. Fill an unmet need for professional development relevant to vulnerable patients 3. Foster a supportive community of like-minded providers working with the underserved

SETTING AND PARTICIPANTS: Our course was offered through the University of California San Francisco Office of CME. In the inaugural year, 166 health care professionals attended. The majority were in primary care: 70% were physicians, 20% mid-level practitioners, and the remainder nurses and allied health professionals. Though most were from California, 16 states and Canada were also represented.

DESCRIPTION: "The Medical Care of Vulnerable and Underserved Patients" is a 3-day CME course open to all health professionals. We began by conceptualizing social vulnerability as it pertains to patient care, followed by topics relevant to the care of patients who are poor and ill. Content experts presented each area, ranging from disease-specific management in vulnerable patients to population-specific topics. Content promoting provider well-being included personal reflections from the safety net, a burnout prevention workshop, and brainstorming around the creation of an on-line community.

EVALUATION: 98 of 166 attendees (59%) completed course evaluations. All lectures and workshops were highly rated; average scores for each talk and the overall course exceeded 4.5 out of 5. After attending, over two-thirds reported "somewhat more" or "much more" (a) knowledge and (b) confidence caring for vulnerable patients; over 60% reported gaining new strategies and skills. Almost 80% felt "somewhat more" or "much more" re-energized in their work. Thirty-five percent predicted feeling "somewhat less" or "much less" burnout in the future.

DISCUSSION/REFLECTION/LESSONS LEARNED: Course evaluations demonstrate that we filled a need for CME training specific to working with underserved patients. The potential impact on re-energizing providers and mitigating burnout was striking, and will be explored at future course offerings. A CME course that develops a shared understanding of complex socio-medical phenomena, focuses on approaches to care for underserved patients, and promotes a sense of community and higher mission is feasible and effective.

CAPITALIZING ON AUTHENTICITY: IMPLEMENTATION OF A SKILLED NURSING FACILITY BASED INTERPROFESSIONAL GERIATRICS ELECTIVE

Laura K. Byerly[1, 2]; Leslie C. Floren[1]; Bridget C. OBrien[1]; Michi Yukawa[1, 2]. [1]University of California, San Francisco, San Francisco, CA; [2]San Francisco VA Medical Center, San Francisco, CA. (Control ID #2693364)

NEEDS AND OBJECTIVES: Geriatrics, especially within a skilled nursing facility (SNF) such as the VA's Community Living Center (CLC), can provide much needed authentic and practical interprofessional (IP) clinical and teamwork exposure for health professions students. Such experiences must be carefully designed to maximize IP student learning. We present the design and implementation of a novel IP SNF geriatrics elective that engages medical (MD), pharmacy (PH), and physical therapy (PT) students in collaborative care. Course objectives focus on 4 geriatric competencies common to all 3 professions: 1) Identify medications to be avoided/used with caution in geriatric patients, 2) Construct IP patient care plans, 3) Evaluate patients with recent falls/construct fall prevention plans, and 4) Work cooperatively on patient-centered IP teams.

SETTING AND PARTICIPANTS: The San Francisco VA CLC cares for >100 veterans on IP teams including faculty/staff in medicine, nursing, pharmacy, rehabilitation, social work, nutrition, recreation therapy, and spiritual care. Our IP elective includes 4th year MD, 4th year PH, and 3rd year PT students.

DESCRIPTION: Our 2-week elective activities focus on geriatric IP care for CLC patients. IP student teams engage with 6–8 CLC residents by: evaluating functional status/fall risk, participating in medication reviews, and presenting at CLC IP team meetings. Student teams huddle daily to discuss clinical and team challenges; they have dedicated team time to review charts, brainstorm care plans, and develop recommendations. We developed multiple assessment tools aligned with course objectives, including pre- and post-course assessments regarding geriatric competencies, 360-degree self and CLC team assessments, and team note rubrics.

EVALUATION: Twenty-three students (11 MD, 11 PH, 2 PT) enrolled in the 2016–17 pilot. Preliminary feedback from students ($n = 10$) suggests this

course fills important gaps (SNF setting, IP teams) in their education; all felt integral to the CLC team, had meaningful IP staff/faculty interactions, and engaged in valuable real-world patient encounters. Challenges identified by students include role uncertainty in unfamiliar activities and differing personal goals. Elective development and implementation challenges include negotiating CLC space and allotting adequate time and activities for meaningful learning experiences across multiple professions, as well as administrative time needed to coordinate schedules, recruit faculty and identify patients.

DISCUSSION/REFLECTION/LESSONS LEARNED: This project showcases the potential for engaging IP learners in a typically untapped SNF model of care. The SNF environment allows for authentic application of IP team learning and is an exciting option to consider for advanced student teaching. Administrative commitment to ensure meaningful and well-structured student experiences is critical, as is development of materials and activities capable of engaging all levels/types of IP learners. Our experience provides insights that could help others create similar IP SNF electives.

CARING FOR OUR MOST VULNERABLE: DEVELOPING A FACULTY CULTURE FOR INTERPROFESSIONAL EDUCATION IN A CLINIC FOR HOMELESS VETERANS Carole Warde[1]; Briana Cowan[1]; Lillian Gelberg[1]; Margi Stuber[2]; Janette Lie[3]; Kristin Kopelson[3]; Meredith Magner-Perlin[1]; Peter Capon-Newton[1]. [1]Greater Los Angeles VA Health System, North Hills, CA; [2]Greater Los Angeles VA Medical Center, Los Angeles, CA; [3]Greater Los Angeles VA Health System, Los Angeles, CA. (Control ID #2706933)

NEEDS AND OBJECTIVES: Homeless Veterans have complex medical, social and psychosocial needs that are best addressed by high-functioning interprofessional care teams. We describe a faculty development program to promote a culture of interprofessionalism, humanism, and self-care within a VA-homeless patient aligned care team (HPACT) in preparation for implementing an interprofessional academic training program (IATP).

SETTING AND PARTICIPANTS: The VA Office of Academic Affiliations Centers of Excellence (CoE) in Primary Care Education supported the development of this IATP in a large homeless clinic (HPACT). The health care teams utilize clinical teams that include nursing, social work, mental health, pharmacy and primary care disciplines; they work closely work with VA-funded housing programs. The included health professional training programs mirror the team composition.

DESCRIPTION: Faculty from all represented professional training programs participated in faculty development six months prior to trainee arrival. Their learning emphasized role modeling and communication skills to promote a culture of interprofessionalism, humanism, and self-care. Leadership structures and learning exercises were designed to embody four goals. 1) Culture of interprofessional collaboration: Core faculty practiced together managing a shared patient panel, often in multidisciplinary visits. Team huddles were adapted from the traditional medical-nursing model to incorporate mental health and social work professionals. Each profession defined terminology and developed a shared language relevant to all. 2) Culture of shared decision-making: Weekly leadership meetings encouraged participation of all professions. Meetings utilized rotating leadership roles, shared agenda setting, time-keeping, and structured facilitation. Reflection at the end of meetings focused on process improvement. 3) Culture of humanism and sustained relationships: Faculty development sessions used storytelling, active listening, awareness of self and colleagues to promote humanistic qualities and understanding of the social determinants of health determinants. 4) Culture of self-care: meetings began with mindful meditation and/or check-ins.

EVALUATION: Feasibility, efficacy, and favorability of the faculty development program are being formally assessed using qualitative and quantitative methods, including semi-structured in-depth interviews and questionnaires with program faculty.

DISCUSSION/REFLECTION/LESSONS LEARNED: A faculty culture of interprofessionalism, communication and self-care for IPE in a clinic for homeless Veterans developed as a result of longitudinal relationships characterized by shared trust, respect, psychological safety and consensus decision-making. Existing dysfunctions in the clinical culture and the traditional professional hierarchy are barriers that we have had to address. A healthy faculty culture is necessary to sustain the tenacity, creativity and teamwork required to care for Veterans with complex needs and to develop an IP training program.

CHAMPION PROVIDER FELLOWSHIP: ENHANCING PHYSICIAN ENGAGEMENT IN OBESITY PREVENTION Vanessa Thompson[1]; Alana Pfeffinger[3]; Alicia Fernandez[1]; Dean Schillinger[1]; L. E. Goldman[2]. [1]UCSF, San Francisco, CA; [2]University of California San Francisco, San Francisco, CA; [3]University of California, San Francisco, San Francisco, CA. (Control ID #2706675)

NEEDS AND OBJECTIVES: The 2012 IOM *Report on Obesity* urged providers to “advocate for institutional, community and state-level strategies to improve physical activity and nutrition resources for patients and communities.” This recommendation represents a shift in the traditional role of the physician - moving from interventions with individuals in the clinic to upstream interventions that prevent disease in the community. The skills and knowledge of policy, systems and environmental (PSE) change strategies required for this advocacy work are not included in most traditional clinical training programs. The Champion Provider Fellowship (CPF) was developed as an innovation in continuing medical education to fill this gap to enable healthcare providers to advocate for change.

SETTING AND PARTICIPANTS: Primary care physicians in California with a commitment to obesity prevention were recruited through partnerships with California statewide healthcare organizations, professional societies and county health departments. 41 actively practicing physicians and dentists from throughout California were recruited.

DESCRIPTION: The fellowship was developed as a partnership between the California Department of Public Health and the University of California, San Francisco. Selected participants attended a two-day initial training on the need and skills for policy, systems, and environmental change in obesity prevention. The CPF also provided participants with ongoing training, technical assistance and community connections to support physician work-plans. Key strategies for ongoing support of program participants included 1) a webinar series; 2) a year-two skills booster; 3) ongoing individualized technical assistance; and 4) facilitated county-specific meetings.

EVALUATION: The evaluation of program success focused on provider engagement by cataloging activities. Providers completed an electronic survey at 9 months and 18 months to capture self-reported activities related to obesity prevention. Activities were categorized by target level in the socio-ecological model, focus within obesity prevention and activity type. Survey response rate was 50% ($n = 22$). Of these, 86% ($n = 19$) were actively engaged in obesity

prevention efforts and 91% ($n = 20$) had discussed obesity prevention with their local health department. Fellows felt highly engaged and energized by participation, and strongly planned to continue their participation in the CPF and obesity prevention activities. Barriers to engagement included competing time constraints and lack of resources.

DISCUSSION/REFLECTION/LESSONS LEARNED: Practicing physicians can develop the knowledge and skills to use their respected status in the community to support advocacy efforts to prevent obesity. Because physician time is limited, models that link providers with their local health departments and other community-based organizations can provide busy clinicians with opportunities to leverage their unique voice in the community and enhance physician sense of wellbeing.

ONLINE RESOURCE URL (OPTIONAL): championprovider.ucsf.edu

CHANGING AN AMBULATORY CULTURE ONE DIDACTIC AT A TIME: USING INTERPROFESSIONAL CURRICULAR INNOVATIONS TO UNIFY A PATIENT CENTERED MEDICAL HOME

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NEEDS AND OBJECTIVES: An increasing number of primary care practices across the country are becoming Patient Centered Medical Homes. This should create curricular and workflow collaboration that benefits multiple interprofessional (IP) learners. Internal medicine residents may possess a limited understanding of non-physician team members' scopes of practice and have little experience with collaborative care. The Division of General Internal Medicine at Northwell Health sought to create IP ambulatory curricula that integrate non-physician team members to improve residents' knowledge of their colleagues' roles and foster a more collaborative educational and clinical environment.

SETTING AND PARTICIPANTS: Over a 2 year period, IP curricula were developed by internal medicine faculty, clinical pharmacists, and a clinical psychologist. These were delivered via our weekly ambulatory team based learning (TBL) conferences and our ambulatory academic half day conferences. Participants included 150 internal medicine residents, 25 pharmacy students, 3 PA students, 4 nurses, 4 medical assistants, 2 secretaries, and 2 social workers.

DESCRIPTION: We started by enriching our TBL modules to include learning objectives written by our pharmacists on drug management and our psychologist on behavioral health issues in the chronically ill. We then began incorporating pharmacy students as active participants, 1) working alongside senior medical residents during TBL to create a metabolic syndrome medical jeopardy game board for juniors highlighting indications, side effects, and medication dosages, and 2) teaching residents indications for key vaccines during an academic half day session on preventative care. Most recently, we integrated our non-clinician staff during a "family feud" game where residents listed the perceived responsibilities of our secretaries, nurses, medical assistants, social workers and pharmacists and perceptions were compared to the staff's subsequent answers. This activity catalyzed subsequent resident and staff collaboration on joint ambulatory quality improvement projects, which concluded the session.

EVALUATION: Qualitative data reflected a high level of satisfaction among non-clinical staff members. We plan to survey residents and all IP learners about their satisfaction with these sessions, improved knowledge of team members' roles and responsibilities, and potential impacts upon patient care and outcomes.

DISCUSSION/REFLECTION/LESSONS LEARNED: We believe that these IP didactics will deepen the appreciation of all team members and learners in our clinic. Sharing curricular design and delivery has also been a boon for division members traditionally shouldering the workload.

COACHING RESIDENTS IN THE AMBULATORY SETTING USING DIRECT OBSERVATION TO FACILITATE DELIBERATE PRACTICE

Ryan Graddy; Stasia Reynolds; Scott Wright. Johns Hopkins University School of Medicine, Baltimore, MD. (Control ID #2698179)

NEEDS AND OBJECTIVES: Direct observation of clinical practice is essential for accurately assessing residents and providing specific feedback. Opportunities to do this are infrequent, especially in busy outpatient teaching practices. We aimed to assess the acceptability and utility of a direct observation and coaching intervention in a resident GIM ambulatory practice.

SETTING AND PARTICIPANTS: The Johns Hopkins Bayview GIM Clinic is a mixed faculty/resident practice in which all residents care for their own patient panels and are precepted by primary care faculty. Although preceptors are encouraged to supervise and teach residents in the exam rooms, direct observation of complete patient visits is rare.

DESCRIPTION: The authors developed a 33 item "yes/no" behavioral checklist for direct observation linked to published tenets of clinical excellence. The checklist is divided into 6 domains: professionalism & humanism, communication, EMR use, diagnostic acumen, navigation of the healthcare system, and knowledge. Two faculty members with clinical precepting and coaching experience observed 47/48 IM residents during an entire patient visit in the fall of 2016, using the checklist to guide their formative evaluation. After each encounter, residents used the same checklist for self-assessment. Self-assessments were compared with what was noted by the coaches and were reviewed during formal feedback coaching sessions. Finally, residents completed an evaluation of the coaching experience and listed objectives for improving their performance.

EVALUATION: The most regularly performed behavior was listening attentively (100%), while least frequent was the acknowledgement of the role of the computer in the visit (39%). Areas of inaccurate self-assessment were identified where resident checklist answers differed from faculty (discordant responses). 18% of responses were discordant. The behaviors most commonly self-reported as completed but not observed by preceptors were collaboration with the patient when using EMR (36% of residents), handwashing (31%), and acknowledgement of the role of the computer in the visit (20%). The most common resident goals for improvement following coaching were partnering with patients (48%), agenda-setting/time management (43%), and optimizing EMR use during the encounter (35%). Residents consistently rated the coaching experience as one that was comfortable and added value beyond traditional precepting. All (100%) expressed interest in receiving additional coaching. At 1 month follow-up, 22/23 respondents reported that they had changed their practice based on self-identified goals for practice improvement.

DISCUSSION/REFLECTION/LESSONS LEARNED: Directly observed resident outpatient clinical visits by experienced preceptors identified important blind spots in resident self-assessment. Coaching sessions based on these

encounters were viewed favorably and helped residents to identify areas for improvement that led to behavior change. Direct observation and coaching, while time-intensive, is a valuable tool for resident ambulatory education.

COLLABORATING AT THE BEDSIDE: A SIMULATION-BASED CURRICULUM FOR INTERPROFESSIONAL EDUCATION michael picchioni. baystate medical center/tufts university, Springfield, MA. (Control ID #2707575)

NEEDS AND OBJECTIVES: Interprofessional Collaboration (IPC) is necessary for patient care yet Interprofessional Education (IPE) remains limited in professional training. Our aim was to create a well-received high value IPE learning experience resulting in greater competence in IPC.

SETTING AND PARTICIPANTS: Participants include third year medical students, nursing residents, and pharmacy residents and students who were doing their clinical training at an Academic Medical Center.

DESCRIPTION: Each participant completed an online module introducing IPC, a description of training in each profession, and core concepts in Teamwork. An introductory session brought participants together to familiarize them with the program, the Sim Lab and each other. Subsequently small teams with representatives of each profession addressed a series of 3 simulated-patient problems with a semi-structured debrief after each encounter. Various roles, contributions, communication, and elements of teamwork were emphasized.

EVALUATION: Effectiveness was measured by the validated IPC Competency Attainment Survey (ICCAS)[3] comparing pre- and post-intervention scores. A focus group was held for additional understanding of outcomes and suggestions on how to improve the program. Findings to date: ICCAS scores improved for nearly all 20 items. Small sample size limited statistical power with only one item ("express my ideas and concerns") reaching a $p < 0.05$. Given high baseline scores we looked at the "top box" score. The overall proportion who "Strongly Agree" with competency attainment increased from 26% to 49% with a trend toward significance ($p = 0.09$). Qualitative results supported these findings and identified themes of Trust, Mutual Respect, and Collaboration. The program was well received.

DISCUSSION/REFLECTION/LESSONS LEARNED: We attribute our success to the use of simulation which provides a shared clinical problem solving activity and using teamwork as an organizing theme. Previously we noted that poorly matched learners can limit or even undermine the learning goals. Each trainee must feel empowered to contribute and not overly relied upon to carry the group. We are nearing the ideal balance though pharmacy residents late in their training occasionally felt the latter. Future iterations will include pharmacy students or early residents.

CONNECTING THE DOTS: A RESIDENT-CENTERED APPROACH TO TEACHING PRACTICAL SKILLS IN AMBULATORY CARE Amy D. Lu[1]; Jaishree Hariharan[2]. [1]University of Pittsburgh Medical Center, Pittsburgh, PA; [2]University of Pittsburgh Medical center, Pittsburgh, PA. (Control ID #2706780)

NEEDS AND OBJECTIVES: Traditional model of ambulatory training employs a top-down, front-loaded approach where residents are given short clinic orientation, expectations, introduction to EMR, and directed to see patients under faculty supervision. No formal instruction follows to ensure residents are gaining practical skills required for success, leaving residents frustrated and overwhelmed. We developed an innovative curriculum with resident-centered workshops to build practical skills to excel in ambulatory care.

SETTING AND PARTICIPANTS: This pilot curriculum included 39 upper level residents in the general internal medicine continuity clinic at University of Pittsburgh medical center.

DESCRIPTION: Pre-intervention surveys were administered with questions directed at current confidence in completing routine clinic tasks using EMR, inter-visit care, and utilization of ancillary services. Residents rated their confidence in performing tasks using a 5-point Likert scale from "not at all confident" to "very confident". We implemented training workshops that highlighted nuances of EMR navigation to bolster clinic efficiency, standardized documentation to improve interdisciplinary communication, and resident-centered troubleshooting of practical ambulatory problems. Sessions were developed with resident input and led by rising chief medical residents with faculty facilitators during pre-clinic conferences. We also introduced monthly team meetings where residents discuss difficult patient cases with team-based staff including clinical pharmacist, social worker, and diabetic educator. Residents were again surveyed at 6 months on the same measures queried in the pre-intervention survey.

EVALUATION: Twenty-six of 39 residents completed the pre-intervention survey and 25 residents completed the 6-month follow-up survey. In our preliminary analysis, the percentage of residents who felt "pretty confident" or "very confident" in using the EMR for routine clinic tasks increased from 40% to 77% after the workshops. Similarly, the proportion of residents who felt confident with managing inter-visit care including triaging patient telephone encounters and responding to test results increased from 42% to 77 and 37.5% to 61.5%, respectively. Finally, residents reported increased confidence in communicating with different members of the care team, from 42% to 61.5%, after adoption of monthly team meetings.

DISCUSSION/REFLECTION/LESSONS LEARNED: Our pilot curriculum demonstrated >20% improvement in confidence in EMR proficiency, team-based care, and communication after the first 6 months. Utilizing resident-developed, resident- led sessions at regular intervals provides resident training and empowerment with excellent patient care. In the future, we plan to formalize training to all residents, creating a culture of confidence and efficiency, and stewarding resident leaders in ambulatory care.

CONSCIOUS OBSERVATION AND ANALYSIS OF SUBCONSCIOUS THINKING (COAST): THE HARBINGER OF METACOGNITIVE APPROACH TO CLINICAL REASONING Fatima Shahid[1]; Hashim Abbas[1]; Mohammad G. Mohmand[2]; Neha Gupta[1]; Susan Vehar[1]; Mrinalini VenkataSubramani[1]; Megan McGervey[1]; Ali Mehdi[1]. [1]Cleveland Clinic Foundation, Cleveland, OH; [2]Cleveland Clinic Foundation, Beachwood, OH. (Control ID #2700618)

NEEDS AND OBJECTIVES: Clinical reasoning is the skill of using available information to come up with an accurate diagnosis and treatment strategy. Improving clinical reasoning among trainees is an ongoing challenge despite being integral in reducing diagnostic errors. We introduce an innovative approach where metacognition i.e. thinking about thinking is used to increase awareness of the subconscious thought processes and cognitive biases and hence improve clinical reasoning.

SETTING AND PARTICIPANTS: Our intervention consists of a biweekly conference for internal medicine residents in all levels of training. 25 residents attend each session and are subdivided into smaller groups.
DESCRIPTION: The COAST approach is grounded in transformative learning theory that refers to reshaping of perspectives through deep exploration of assumptions.We hope to instrument better diagnostic reasoning capacity and minimize cognitive errors through our approach. The conference proceeds as below: − A resident team member briefly highlights the clinical scenario. - Small groups discuss the case and identify an initial diagnosis. - "Thinking aloud", residents reflect on the thought processes behind the initial diagnosis and the cognitive biases involved. - Small groups then engage in further evaluation of the case by ordering diagnostic tests as needed until a final diagnosis is reached. - In a large group, residents "think aloud", explaining the rationale for the tests and diagnosis, and identify the cognitive biases that influenced the decision making.
EVALUATION: Qualitative data from resident reflections was collected. A survey questionnaire and two resident focus groups are planned to gain more insight into the points raised by the reflections. This data will be analyzed via thematic analysis.
DISCUSSION/REFLECTION/LESSONS LEARNED: Preliminary sampling of the data indicates successful transformational learning. This is important as there is no consensus regarding the nomenclature or the teaching strategy of clinical reasoning and there is a paucity of literature around this important construct in graduate medical education. Our interactive case based strategy introduces the concepts and lexicon of clinical reasoning into the world of residency. Noteworthy is that trained faculty with good facilitating skills, along with smaller groups are pre-requisites for the success of the conference.

CREATING A SUSTAINABLE INTERPROFESSIONAL AMBULATORY CARE TEAM TRAINING: ALL HANDS ON DECK Lisa Altshuler2; Nadiya Pavlishyn[2]; Elizabeth Saviola[4]; Anne Dembitzer[2]; Richard E. Greene[2]; Andrew B. Wallach[1]; Reina Smith[1]; Kelly J. Crotty[3]; Mark D. Schwartz[2]; Sondra Zabar[2]. [1]Bellevue Hospital, New York, NY; [2]NYU School of Medicine, New York, NY; [3]New York University, NY, NY; [4]Health and Hospitals Corporation, New York, NY. (Control ID #2704634)

NEEDS AND OBJECTIVES: Team-based primary care (PC) is seen as the best way to provide proactive, patient-centered quality care. However, developing these team-based skills is difficult in the ever-shifting, stressful healthcare environment. We sought to develop effective training to enhance team functioning at an urban safety-net hospital, with the goal of clinical transformation (e.g. improving clinic flow, enhancing care for patients with diabetes).
SETTING AND PARTICIPANTS: Team training intervention at Bellevue Hospital's Adult Ambulatory Care Center, flagship of the NYC Health & Hospitals (H + H), serving poor, diverse patients with complex medical and social needs. There are 4 adult PC teams, each with 8 attending physicians, 20 residents, 1–2 physician assistants, 2 nurses, 5 patient care associates (PCA), and 2 clerical associates (CA), all caring for a panel of ~7,500 patients. To date, we have completed a training cycle for one team, with 26 members: 10 providers (7 MDs, 2 PAs, and 1 NP), 4 RNs, 5 PCAs, 3 CAs, and 4 residents participating. We are scheduled to complete training of a second team in February 2017, with the other 2 to follow.
DESCRIPTION: We partnered with a parallel NYC H + H effort, enabling a seamless NYU-HRSA/NYC H + H program with increased time allotted. This includes 4 three-hour workshops co-led by NYC H + H and NYU-HRSA faculty. Each workshop blends activating, team-building exercises for teams; mini-lectures on topics like roles and responsibilities, communication skills, huddles, and experiential activities using the team's patient data. This is reinforced with seven, 30-min biweekly meetings to follow up on team-identified topics and facilitate team members' quality improvement projects.
EVALUATION: A 31-item (each item rated 0–3), retrospective pre/post survey was administered to trainees after training, addressing individual skills and attitudes (16 items) and team functioning (15 items). 14 of 26 participants (54%) in team 1 completed the survey, and Team 2 participants will complete the survey in Feb. 2017. Training resulted in increased rating of individual skills $t = 4.86$, $p < .0001$) and team functioning ($t = 4.02$, $p = .003$). Additional metrics, including tracking teams' QI efforts and assessing patient experience (e.g. Unannounced Standardized Patient reports) and administrative and panel level data, are ongoing.
DISCUSSION/REFLECTION/LESSONS LEARNED: Implementation of successful team training in an under-resourced, urban primary care setting is challenging. It demands flexibility, tailoring to participants' concerns; and responding to changing clinical and administrative circumstances. Essential to success was partnering with team members to guide the training.

CREATING DEBRIEFING SESSIONS FOR PERCEIVED MEDICAL ERRORS IN RESIDENCY: A STEP TOWARD WELLNESS Nancy Choi; Jenna McGoldrick; Scott Borgetti. University of Illinois at Chicago, Chicago, IL. (Control ID #2704653)

NEEDS AND OBJECTIVES: Needs: Formal setting to address perceived medical errors amongst residents Objectives of session include: **Recognize that having a perceived error OR grief from an error or loss can lead to depersonalization, depression, guilt, burnout and affect how you interact with patient +/− their family **Establishment of safe discussion space **Cultivate healthy and adaptive coping strategies
SETTING AND PARTICIPANTS: Participants include 9 residents per session, along with 2 co-facilitators including a chief resident and faculty attending.Three residents are selected (generally a resident on an outpatient, consult or research block that has not previously joined) from each PGY class. The setting is a small meeting room located on campus, done during the noon hour. Selected residents are excused from noon conference and receive credit for attendance.
DESCRIPTION: At our academic internal medicine residency previously, there had not been any formal setting to address perceived medical errors amongst residents, nor education on the emotional impact or coping strategies. Thus, as part of our (also new) Wellness Committee, debriefing sessions were created in an attempt to improve overall wellness amongst residents. We aimed to create a safe space and open discussion about perceived errors (avoiding root cause analysis approach), remove stigma from discussing it, share coping strategies,and provide available resources if further help is necessary (e.g., counseling services, psychiatric, etc.). These sessions occur each month. These sessions are also part of a Quality Improvement (QI) project (of chief resident and resident) with these aims: 1) To obtain baseline information regarding resident experience with medical errors/adverse outcomes and assess resident knowledge of coping strategies and resources. 2) To assess the utility of a debriefing session with fellow residents and chief/attending facilitator.

EVALUATION: As part of the QI component, one-page surveys were distributed before and after each session. Pre-surveys elicited resident experience with perceived errors, knowledge of coping strategies, and comfort level with discussion and coping.Questions in the post-survey elicited the utility of session and had the same scaled questions of comfort level of discussion and coping. At this time, only several sessions have occurred, so post-intervention analysis has not been thoroughly been studied yet. This will be done after 6 sessions. However, verbal feedback and preliminary review of the surveys show that these sessions are well-received and beneficial.

DISCUSSION/REFLECTION/LESSONS LEARNED: We recognize that burnout is prevalent both nationally and in our residency. While this is multifactorial, we also recognize that the intrinsic gravity of our work can be a source of stress and burnout. We reflected that medical errors (perceived or actual) or grief from patient outcome was rarely discussed. We are hopeful that creation of these sessions cultivate a safe space for discussion and education on how to better cope and ultimately improve wellness.

CREATING RICE (CRITICAL REFLECTION, INTERPROFESSIONAL EDUCATION, ADVANCED COMMUNICATION SKILLS AND ETHICS) - A CURRICULUM FOR CLINICAL MEDICAL STUDENTS TO ADDRESS THE HIDDEN CURRICULUM Amy Weil. UNC Chapel Hill School of Medicine, Chapel Hill NC, NC. (Control ID #2704264)

NEEDS AND OBJECTIVES: Needs: Concerned about rising burnout among students, Gold Humanism Honor Society (GHHS) inductees performed a service project analyzing themes from deidentified brief writings (Critical Incident Reports/CIRs) done annually by prior students. That session was designed to allow students to discuss areas of uncertainty harking back to topics from a preclinical course in Social Medicine with neutral Advisors. Predominant themes of CIRs included moral distress, lack of empathy, negative role models and communication difficulties. Objectives: GHHS Students urged UNC's curriculum committee to create safe space for students to reflect throughout the year on their clinical experiences, explore moral dilemmas and enhance communication and advocacy skills with patients, families and their teams in order to sustain their sense of purpose and wellness during clinical learning in addition to improving skills.

SETTING AND PARTICIPANTS: 130 clinical medical students return monthly to central campus to participate in a daylong course called Intensive Integration (II).

DESCRIPTION: After a 1 hour keynote experience students meet in small seminar groups co-led by a clinician and social science faculty for a 2 hour session called RICE (critical Reflection, Interprofessional Education, advanced Communication skills and Ethics) designed to enhance their experience as a clinician and team member. Students complete several reflection pieces and short descriptions of ethical dilemmas in advance of class and are invited to practice clinical skills (including shared decision making, motivational interviewing, delivery of and follow up of bad news, difficult conversations w patients, families and colleagues, public narrative) between sessions. Optional readings are offered to enhance discussions but case discussions and skill practice, creating smaller communities of support are priorities. Interprofessional peers joined our groups for museum based, interactive theater and online virtual patient care sessions. One hour preparation sessions are held with faculty after each session. Seminars in Population Health and Foundational Science are also offered during the II day.

EVALUATION: Students completed the Maslach Burnout Scale and Jefferson Empathy Scales prior to beginning their Application (clinical) year and will redo these in February 2017 at the completion of the year. We will compare pre and post results. In addition we will compile and report on course evaluations which have been collected 3 times during the year and run and report on a focus group.

DISCUSSION/REFLECTION/LESSONS LEARNED: Preliminary results suggest that students have benefitted from the RICE portion of the II course. Logistic challenges exist in creating and implementing a course at a central location during dispersed clinical learning but are manageable. Faculty are enthusiastic about teaching a course revealing and working on the hidden curriculum. We will integrate feedback from students and faculty to continue to improve the course.

CTRL-ALT-DELETE: RESETTING EHR TEACHING Veena Lingam[2]; Samita Mohanasundaram[1]; Dann Rocco[2]; Lillian Valdez[2]; Mathew Tharakan[2, 3]. [1]Stony Brook University, stony Brook, NY; [2]Stony Brook Univeristy, Stony Brook, NY; [3]Stony Brook University, Stony Brook, NY. (Control ID #2706198)

NEEDS AND OBJECTIVES: Despite widespread mandated use of Eelectronic Hhealth Rrecords (EHR), many residency programs struggle to find the best strategy to conduct EHR training. Traditional EHR training sessions are typically led by non-clinical IT staff and are often structured around software functionalities rather than clinical workflow. Furthermore, EHR training is not often customized to the needs of the different clinical specialty areas. The aim of this study is to create, implement and evaluate the effectiveness of a physician led; specialty focused EHR training through the use of clinical vignettes.

SETTING AND PARTICIPANTS: The study took place at Stony Brook University Hospital which is an academic and tertiary care center. Our participants included the incoming 146 residents and fellows for the academic year.

DESCRIPTION: A series of live EHR training sessions were offered to incoming interns and fellows from all departments during orientation. All participants were grouped according to clinical specialty; each group consisted of an average of 10–20 participants. All trainees were given a curriculum of online pre-training video modules to prepare for the live training sessions. The video modules were specially created to emphasize real-world workflow for each specialty and covered the core aspects of EHR use and highlighted common pitfalls. During the live training sessions, trainees were expected to conduct clinical demos with the utilization of a mock patient profile within the training domain of the EHR. Trainees were specifically supposed to complete a mock admission, medicine reconciliation a discharge process and order entry related to their clinical specialty area and workflow.

EVALUATION: All trainees completed a post training satisfaction survey at the end of the final training session.

DISCUSSION/REFLECTION/LESSONS LEARNED: A total of 206 trainees participated in the study. We surveyed a total of 146 residents and fellows who went through the training completed the survey (response rate of 70%). 77% of the participants strongly agreed' or 'agreed' that the EHR workflow based vignettes were effective in enhancing their training. Our study suggests that EHR training should minimize computer based, passive didactic on software functionalities and focus on case-based clinical vignettes that are tailored to each clinical subspecialty area to accommodate the different types of

workflow. An EHR training model centered on a specialty based workflow approach can be used as an important training technique to teach residents core principles of EHR use.

DESIGN AND IMPLEMENTATION OF A WELLNESS CURRICULUM FOR INTERNAL MEDICINE RESIDENTS Sarah Rimar[2]; Rupel Dedhia[1]. [1]Rush University Med Center, Chicago, IL; [2]Rush University Medical Center, Chicago, IL. (Control ID #2697198)

NEEDS AND OBJECTIVES: The burnout rate among medical residents has reached an all-time high. This poses dire consequences to patient care, safety, and the health care system as a whole. The American College of Graduate Medical Education has become increasingly aware of this problem, but research on the efficacy of existing interventions is limited. The internal medicine program at Rush University Medical Center has lost multiple residents to suicide within the last decade. These events have ignited a mission within the residency program to incorporate wellness into the curriculum. July 2016 marked the beginning of an intern wellness pilot program. The objective of this program was to develop a community where interns feel engaged and empowered while exploring tools designed to build resiliency skills.

SETTING AND PARTICIPANTS: Eleven interns self-selected to participate in the yearlong curriculum composed of monthly small group sessions. Once the group began, no additional interns were allowed to join. To ensure a safe environment, the group members were asked to keep information shared by any group member in confidence at all times.

DESCRIPTION: Each session was one-hour in length and occurred during lunch on days when noon conference was cancelled, which guaranteed that attendees did not miss any educational material. Senior residents were asked to hold the intern pagers during these sessions to allow for uninterrupted participation. A chief resident and an internal medicine attending, both trained by the Center for Mind Body Medicine, led each session.

EVALUATION: At the end of each session, participants were given a brief anonymous survey. All data from these surveys have been compiled and averaged to date. The first question asked whether the session helped them gain new insights into residency experiences thus far; 89 percent responded yes. The second question asked whether the session helped them recognize and address personal or psychological issues affecting professional performance; 95 percent responded yes. Lastly, they were asked to rate each session as outstanding, good, fair, or poor. 75 percent found the sessions to be outstanding, and the rest rated as good.

DISCUSSION/REFLECTION/LESSONS LEARNED: Although a small sample size, our results suggest that our interns have benefit from small-group wellness-focused initiatives. Despite the overall positive evaluations thus far, the implementation of the intern wellness program has met challenges. First, scheduling issues and patient emergencies prohibited interns from attending some sessions. Even when interns were present, they were often carrying pagers and dealing with work-related matters during the sessions. Interns were reluctant to ask their seniors to cover their pagers, in part due to concern that some seniors did not understand the purpose of the wellness sessions. These are a few of the many barriers to designing a wellness curriculum at the graduate medical education level. Review of the literature suggests that these interventions may meet fewer challenges at a medical school level.

DEVELOPING A HUMANISTIC TOOLKIT FOR AN INTERPROFESSIONAL TRAINING PROGRAM Carole Warde[1]; Michael Soh[1]; Andrew Shaner[2]; Emilie Sohl[1]; Meredith Magner-Perlin[2]; Lillian Gelberg[2]. [1]Greater Los Angeles VA Health System, North Hills, CA; [2]Greater Los Angeles VA Health System, Los Angeles, CA. (Control ID #2706993)

NEEDS AND OBJECTIVES: Delivering *team-based* humanistic care to a *complex and marginalized population* requires a shift in how humanism is learned, taught, and acculturated. Because teaching humanism is challenging to implement for interprofessional (IP) teams, the Humanism Pocket Tool' (HPT) was designed to provide trainees and faculty with a standardized and translatable curriculum for IP collaboration. The HPT includes tools not only aimed at increasing humanistic behaviors *but* minimizing de-humanizing responses such as contempt, disgust, fear, and anger. We describe the HPT, how we developed it, and lessons learned.

SETTING AND PARTICIPANTS: The practice/training site is in a large VA clinic for homeless Veterans, organized as a PCMH. The clinic provides primary and mental health care, housing, and psychosocial resources. In July 2016, trainees began the program with trainees from 5 health professions disciplines. The HPT was developed during weekly IP leadership meetings and in conjunction with a consulting faculty member with expertise in the evolution of human emotion.

DESCRIPTION: The HPT emphasizes explicit techniques pulled from the realms of appreciative inquiry, storytelling, active listening, and mindfulness. The HPT comprises seven tools for use with patients and colleagues: 1) self-talk, 2) active listening, 3) physical touch, 4) vivid vignettes, and 5) checking-in. Self-talk describes the phrases said to oneself to enter a humanistic frame of mind. Active listening refers to open-ended interviewing centered on minimal encouragements to continue talking, open-ended questions, restatements, and empathic remarks. Physical touch entails the use of touch with a patient in safe, appropriate, and authentic contexts. Vivid vignettes explore a patient's aspirations and obstacles in an effort to better understand their background, and enable practitioners to refer to patients in a humanizing way in progress notes and IP discussions. And lastly, checking-in with colleagues hones in on getting to know the IP team as people and developing a level of trust needed for humanistic patient care.

EVALUATION: We initiated a pilot assessment of the HPT using a checklist designed for faculty and trainees. We assessed how, when, and where HPT teaching/learning takes place and how we can better assess the impact of the HPT on patient care. The checklist entails both quantitative and qualitative features. Future assessments will include faculty/trainee observations, interviews and focus groups, and patient experience surveys.

DISCUSSION/REFLECTION/LESSONS LEARNED: The development of the HPT has been a collaborative and interdisciplinary effort. We learned that the robustness of the HPT was a result of engagement of the leadership within our IP framework. This allowed for open and safe communication, sharing of ideas and existing best practices from various disciplines, and constructive feedback. This dynamic input from the IP team evolved the HPT into a tool exemplifying the humanism needed to thrive in our team-based patient care model.

DEVELOPMENT AND IMPLEMENTATION OF A CURRICULUM FOR INTERNAL MEDICINE RESIDENTS IN OPTIMAL PRIMARY CARE OF PATIENTS WHO IDENTIFY AS LESBIAN, BISEXUAL, GAY OR TRANSGENDER Eloho Ufomata[2]; Kristen Eckstrand[3]; Peggy B. Hasley[1];

Kwonho Jeong[1]; Doris Rubio[1]; Carla Spagnoletti[1]. [1]University of Pittsburgh, Pittsburgh, PA; [2]University of Pittsburgh Medical Center, Pittsburgh, PA; [3]Western Psychiatric Institute and Clinic, Pittsburgh, PA. (Control ID #2701966)

NEEDS AND OBJECTIVES: There is a paucity of curricula specific to lesbian, gay, bisexual and transgender (LGBT) care. A survey of all 176 medical schools in the US and Canada found that only 24.2% had discrete modules to teach LGBT-related content. In our Internal Medicine (IM) residency, 70% of residents and 90% of faculty reported having less than 2 hours of LGBT curricular content. No research has evaluated LGBT content education in IM residencies, however the American College of Physicians recommends that residency programs should incorporate LGBT health in their curricula. Our goal was to create a comprehensive LGBT curriculum for IM residents with the objective of improving faculty and residents' knowledge and attitudes of LGBT primary care.

SETTING AND PARTICIPANTS: Participants were 153 residents at an IM residency program, and 35 faculty preceptors. The curriculum was mandatory and part of the "pre-clinic" ambulatory conference. Structurally, it was divided into four 45-min sessions on LGBT topics in a case-based interactive small group discussion format.

DESCRIPTION: The curriculum, informed by the AAMC publication on educational competencies in LGBT care and the Fenway Guide, was developed by a group of IM residents, an associate program director for ambulatory training, and an expert on LGBT health. It was piloted by a group of IM education fellows for ease of teaching and content. The four sessions were gender and sexuality framework; cultural competency with sensitive history taking/physical exam; health promotion and disease prevention; and mental health and societal factors.

EVALUATION: Pre- and post-surveys assessed knowledge with multiple choice questions, and attitudes with 5 point Likert-type scales. The response rate on the pre-survey was 65% for residents and 78% for faculty, with 33 and 52% completing at least ¼ post surveys. Residents felt that LGBT topics were important at baseline and after the curriculum (pre-mean 3.98 ± 0.93, post-mean 4.17 ± 0.80; $p = 0.079$). Resident confidence increased significantly in ability to provide resources for community engagement; discuss unique health risks; institute gender affirming practices in clinic; discuss safe sex practices with women who have sex with women; and briefly discuss options for biologic parenthood (all $p < 0.05$). Faculty felt the materials prepared them to teach (mean 4.36 ± 0.45) and residents agreed that the faculty were prepared and knowledgeable (mean 4.27 ± 0.68). A majority, 83.8% of residents and 93.3% of faculty, felt that the curriculum increased their understanding of the challenges faced by patients who identify as LGBT when interacting with the healthcare system.

DISCUSSION/REFLECTION/LESSONS LEARNED: This curriculum pilot was successful in increasing knowledge and confidence for LGBT related topics among residents. It was easily taught by faculty with little to no prior experience in LGBT-specific education. Since the curriculum covers a broad range of topics salient to the care of LGBT patients, it has potential to be utilized by a broader audience of medical providers.

DEVELOPMENT OF A CURRICULUM IN INTERPROFESSIONAL TEAM WORK FOR PRIMARY CARE AND MENTAL HEALTH TRAINEES IN A VA HOMELESS PATIENT CENTERED MEDICAL HOME Carole Warde[1]; Kerri Schutz[2]; Shinobu Seragaki[2]; Elise Hulsebos[1]. [1]Greater Los Angeles VA Health System, North Hills, CA; [2]Greater Los Angeles VA Health System, Los Angeles, CA. (Control ID #2706463)

NEEDS AND OBJECTIVES: A well-functioning interprofessional (IP) team is essential in a patient-centered medical home (PCMH). Training PCMH teams together improves their teamwork. Studies suggest that homeless patients with complex medical and mental health care needs, benefit from a team of integrated primary care and mental health professionals. We felt that IP team training had to be adapted to these special circumstances. We developed an IP teamwork (IPTW) curriculum including competencies and practice-based learning experiences.

SETTING AND PARTICIPANTS: The West Los Angeles VA Homeless Clinic is a PCMH that provides primary and specialty mental health care, housing, and psychosocial resources. In July 2016, trainees from 5 disciplines began a new IP training program in this clinic. The trainees function as a distinct team embedded in an existing team of faculty clinicians. In October 2015, the clinical faculty began planning an IPTW curriculum.

DESCRIPTION: We adapted three conceptual frameworks to guide our work: teamwork in a PCMH, curriculum development, and educational evaluation. To develop the curriculum, faculty participated in 3 retreats and weekly 2-hour meetings. An IPTW committee met every other week and guided curriculum development activities. Following a literature review and concensus process, the faculty identified competencies in 3 domains: Task Work, Team Communication, and Team Processes. Next, we identified 8 relevant learning experiences and evaluation methods for each competency. A continuous process of reflection and improvement by faculty and trainees is being used to continually refine the curriculum and make it clinically relevant.

EVALUATION: We will evaluate TW reactions, knowledge, behaviors and outcomes. Utility and effectiveness of each session will be assessed after each sessions. Trainee attitudes toward teamwork will be evaluated using qualitative and quantitative measures at the beginning and end of year 1. Trainee teamwork skills and care outcomes will be measured at 6 and 12 months, using previously validated measures. For IPTW behaviors, we will use a 360-degree assessment and a checklist of relevant team communication behaviors. Team care outcomes to be measured include: patient experience, team function, quality of care measures, team practice culture and worklife measures.

DISCUSSION/REFLECTION/LESSONS LEARNED: Reflection by faculty on their own teamwork practices has been key to building our curriculum. As we worked together, our relationships deepened, we became more honest in our communication, and more creative in our curriculum development work. The process took much longer than we had anticipated due to the number of faculty and trainees involved. Since the trainees are together most often during patient care hours, we developed learning activities that were primarily practice based and reflective. Explicit modeling of the respectful relationships between faculty members, other teams, and leadership is critical to teaching effective team function.

DEVELOPMENT OF A NATIONAL PERIOPERATIVE MEDICINE CURRICULUM: RESULTS FROM A MULTICENTER WORK GROUP FROM LEADERS IN PERIOPERATIVE MEDICINE. michele fang[5]; Avital O'Glasser[2]; Sunil K. Sahai[6]; Kay Johnson[4]; Kurt J. Pfeifer[1]; Ethan Kuperman[3]. [1]Medical College of Wisconsin, Milwaukee, WI; [2]OHSU, Portland, OR; [3]University of Iowa Carver College of

Medicine, Iowa City, IA; [4]VA Puget Sound Health Care System, Seattle, WA; [5]university of pennsylvania, Wynnewood, PA; [6]MD Anderson, Houston, TX. (Control ID #2706582)

NEEDS AND OBJECTIVES: The Accreditation Council for Graduate Medical Education (ACGME) and Alliance for Academic Internal Medicine have defined competencies for internal medicine residents. Two of these competencies focus on perioperative medicine: (1) Provide perioperative assessment and care and (2) Provide general internal medicine consultation to nonmedical specialties. Despite this, there are no standard curricula or assessment tools to teach and assess resident competence in perioperative medicine.

SETTING AND PARTICIPANTS: Leaders in perioperative medicine from 6 large, academic US health centers developed core objectives and a standard curriculum to teach perioperative medicine to internal medicine residents. Leaders independently submitted their thoughts on core objectives, core learning modules, pre-test and post-test questions. Finalized objectives, modules and test questions were determined by consensus.

DESCRIPTION: The Society for Hospital Medicine provided the foundation of the curriculum, based on open-access to SHMConsults.com self-study modules that were evidence-based and peer-reviewed. Core objectives and modules included: application of basic principles of perioperative medication management, assessment and optimization of preoperative cardiac risk and pulmonary risk, risk stratification of venous thromboembolism risk in surgical patients, perioperative management of diabetes mellitus and common postoperative problems (e.g. fever).

EVALUATION: Assessment of perioperative medicine knowledge is based on the resident demonstrating competence in the 9 objectives and predefined curricular milestones in patient care, medical knowledge, practice-based learning and improvement, interpersonal and communication skills, professionalism, and systems based practice. Residents are evaluated by direct observation, chart audit, and written examination with a standardized post-test, CEX of preoperative evaluation, and feedback on written consults. Residents and faculty implementing the curriculum provide feedback via an anonymous post-rotation survey.

DISCUSSION/REFLECTION/LESSONS LEARNED: It was relatively easy to have consensus on core objectives, modules, and test questions. It will be harder to implement the curriculum without buy-in from the residency program on the importance of perioperative medicine to their residents.

DEVELOPMENT OF A NOVEL SKILLS-BASED RESIDENT CURRICULUM TO REDUCE BURNOUT

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NEEDS AND OBJECTIVES: Depression and burnout among residents and physicians leads to medical errors, motor vehicle accidents, and suicides. Despite increased attention to these issues, few programs have implemented and studied new initiatives focused on resident education. Therefore, we conducted a needs assessment regarding resident wellness and studied the feasibility of a novel skills-based curriculum addressing burnout.

SETTING AND PARTICIPANTS: Interns, junior residents, and senior residents in the Brigham and Women's Hospital Internal Medicine Residency Program

DESCRIPTION: Based on a needs assessment of residents, we developed a skills-based wellness curriculum highlighting the literature supporting healthy behaviors and providing experiential education focused on fostering healthy behaviors in residency. The curriculum consisted of three independent one-hour sessions on mindfulness meditation, yoga, and healthy eating. Each session was led by a faculty leader and a resident interested in medical education; the sessions took place during dedicated noon-time teaching conferences for all internal medicine residents.

EVALUATION: Residents completed an initial survey via e-mail with the goals of 1) identifying the early-year prevalence of burnout and depressive symptoms, 2) characterizing the frequency of healthy behavior practices among residents, and 3) conducting a needs assessment for the skills-based curriculum to follow. Validated instruments for burnout (Maslach Burnout Inventory) and depression and anxiety (PHQ-4) were used. In addition, residents completed a previously published 16-item survey of healthy behaviors. At the end of each curricular session, residents provided quantitative feedback using standard effectiveness scales to rate the learning experience, as well as free-text opportunities to give qualitative feedback. Participation in the study was voluntary and anonymous, and participation in the study was not required for participation in the skills training sessions. The study was exempt from IRB review.

DISCUSSION/REFLECTION/LESSONS LEARNED: Approximately 50% of residents endorsed psychological distress, and free-text responses brought to life the mental and emotional challenges of residency. Many residents supported our efforts to increase healthy behaviors. The skills-based wellness sessions were both feasible and widely appreciated by residents.

DEVELOPMENT OF AN ADVANCED COMMUNICATION AND INTERVIEWING CURRICULUM FOR INTERNAL MEDICINE RESIDENTS

Mark J. Simone[1, 2]; Pat Moyer[1, 2]; Beth A. Lown[1, 2]. [1]Mount Auburn Hospital, Cambridge, MA; [2]Harvard Medical School, Boston, MA. (Control ID #2706538)

NEEDS AND OBJECTIVES: Internal medicine residents require advanced training in patient-centered communication in order to facilitate understanding of the patient as a person and support patients' understanding of health-related information. The purpose of this educational research project is to assess whether a targeted communication skills program will improve residents' skills with communication in actual clinic-based interactions.

SETTING AND PARTICIPANTS: Internal medicine residents participated in this curriculum during their 4-week Ambulatory Rotation during each year of residency.

DESCRIPTION: We developed a formal communications curriculum that includes learner-centered online modules, direct observation of interview skills, and timely formative feedback, as outlined below: 1. Resident identifies two skills to work on in clinic during the Ambulatory Rotation based on feedback from communications MiniCEX by continuity clinic preceptor 2. Resident completes two educational modules based on those two skills 3. With patient consent, the resident records a patient interview in continuity clinic

demonstrating their learned skills 4. Resident completes two self-reflection worksheets that correspond to the educational modules 5. Each resident takes a turn during the 4 weeks of Ambulatory Conference to share their video with 2 faculty and the 4–6 peers also on Ambulatory Rotation. The group provides feedback, and the faculty complete a second MiniCEX based on their observations of the video.

EVALUATION: Residents completed self-reflection worksheets and end-of-rotation surveys. Data is presented from the 38 residents (47 sessions) who provided consent to participate in the study. At the end of the rotation, when asked to rate confidence in using the communication skills discussed in this curriculum, 100% reported feeling moderately to very confident (62 and 38%, respectively) When asked to rate change in ability to use the skills, 100% reported moderate to significant improvement (72 and 28%, respectively). 29 residents turned in the self-reflections worksheets, and when asked to report how well they did accomplishing the behaviors and implementing the skills, on a scale of 1–5, residents reported an average of 3.3 for both ($n = 29$). Rotation evaluation comments are overall quite positive.

DISCUSSION/REFLECTION/LESSONS LEARNED: Residents report improved confidence and ability to use advanced communication skills after participation in a novel curriculum.

DISCHARGE SUMMARY WORKSHOP FOR FOURTH YEAR MEDICAL STUDENTS Marianne Bauer1; Radha Govindraj[1]; Ryan Chippendale[2, 1]. [1]Boston Medical Center, Boston, MA; [2]Boston University, Boston, MA. (Control ID #2706975)

NEEDS AND OBJECTIVES: Sub-optimal transitions of care can lead to patient harm and system inefficiencies in a variety of ways including medication discrepancies, inadequate communication of outstanding issues, and unnecessary repeat testing. Although warm handoffs are preferred, there are many barriers to achieving this in the current medical system making discharge summaries essential documents. A needs assessment survey of 26 Internal Medicine (IM) interns was conducted in August 2015 to guide curriculum development. Only 1 intern reported receiving formal discharge summary training prior to residency while 15 (58%) interns reported a desire for formal training. Given the identified curricular gap, an interactive workshop was developed to train 4th year medical students in using discharge summaries as an effective means of communication.

SETTING AND PARTICIPANTS: An hour-long interactive workshop was incorporated into Boston University School of Medicine's Advanced IM fourth year medical student clerkship. The workshop was given once per rotation for a total of 7 sessions (approximately 8 students per session). 4 of the sessions were at the beginning of the 4th year ($n = 29$ students, the majority of whom had not completed a subinternship) while 3 of the sessions ($n = 26$ students) were at the end of the year.

DESCRIPTION: The workshop begins with a case followed by a facilitated discussion on the essential components of discharge summaries. Students are then divided into small groups to analyze a sub-optimally written discharge summary. Subsequently, the facilitator leads a large group debrief and students systematically critique the discharge summary.

EVALUATION: A study key linked, paper-based survey was administered at the start (pre) and end (post) of the workshop. Using the McNemar's test, a statistically significant number of participants reported a shift (from pre to post testing) to "completely confident" with regards to their ability to write a succinct and effective discharge summary ($p = 0.005$) and in their ability to use a discharge summary to communicate outstanding issues ($p = 0.002$). Additionally, there was a statistically significant increase in perceived importance of receiving formal training on discharge summaries during medical school when pre-post cohort data was analyzed using the Wilcoxon Signed-Rank test ($p = 0.006$).

DISCUSSION/REFLECTION/LESSONS LEARNED: Based on the needs assessment survey, a lack of standardized instruction on writing effective discharge summaries was identified in current medical school curricula. The students responded well to an interactive workshop as a method to teach essential aspects of discharge summaries as evidenced by an increase in self-reported confidence levels. Given the critical nature of this document, medical students should be taught how to write accurate and efficient discharge summaries prior to entering residency.

DOCTOR KNOW THYSELF: IMPROVING PATIENT COMMUNICATION THROUGH MODELING AND SELF-ANALYSIS Kathleen G. Anderson; Michelle Milic. Medstar Georgetown University Hospital, Washington, DC. (Control ID #2706196)

NEEDS AND OBJECTIVES: Communication is a core clinical competency integral to building trusting patient-physician relationships and improving patient outcomes. Most communication education is at bedside, through observation of model physicians. Yet to solidify observation into clinical skill, learners must formally analyze what they have seen - an essential piece often missing in training programs. We present a novel communication intervention that focuses on critical analysis of model physicians as a tool for teaching self-reflection skills. The primary objective is to improve medical trainees' self-awareness of their verbal and non-verbal communication skills. The secondary objective is to train physicians to thoughtfully use these skills to build the patient-physician relationship.

SETTING AND PARTICIPANTS: Participants are medical students and internal medicine residents at Georgetown University Hospital on the Palliative Care rotation. Attending physicians chosen as models are critical care physicians and hospitalists.

DESCRIPTION: Our curriculum is a one hour small group session. First, trainees analyze a respected attending's communication techniques, specifically focusing on how they convey competence and patient-centeredness. Learners reflect on eloquence, poise, tone, pace, and body language - and how models use their individuality to best effect. These observations are a template for non-judgmental self-analysis of their own personal approach. They create strength-focused written analyses which are shared with the attending physician and, with permission, their supervisor.

EVALUATION: We are prospectively evaluating the efficacy of this intervention with quantitative and qualitative methods via learner survey at 1 and 3 months post intervention. Assessments include changes in awareness of personal communication techniques, behavior change, and insights gained. We also capture responses from model physicians assessing reaction to reports and changes in use of bedside teaching opportunities.

DISCUSSION/REFLECTION/LESSONS LEARNED: Trainees find this intervention has improved self-awareness and been an opportunity to share their own strengths in a safe, positive, and constructive forum. Attendings have become more conscious of trainees' perceptions of their skills. We propose that by raising awareness of modeling behavior, teaching

physicians may harness previously missed teaching opportunities and modify their own approach. Our method is easily replicated in other institutions by physicians or non-physicians trained in communication with learners of any level who have experience in patient care and a developing voice. In addition, sharing the analyses with model physicians promotes a culture of 360 degree learning and collegiality. The written analyses can aid trainee evaluation and board recertification.

EDUCATING AND ENCOURAGING MEDICAL RESIDENTS TO ADDRESS ADVANCED CARE PLANNING IN A PRIMARY CARE SETTING

Debbie J. Goodman; Heather Viola; Krishna A. Chokshi; Farid Gholitabar; Joseph Sassine; Wen Zhang; Shawn Lee; Ashish Correa; Timothy Mathews; Dipal R. Patel; Tamara Goldberg. Mount Sinai St. Luke's-West, New York, NY. (Control ID #2704787)

NEEDS AND OBJECTIVES: Advanced care planning has become increasingly important given our aging population. Although 90% of adults would prefer doctors to discuss end of life care, only 27% of those aged 65 and older have had such discussions[2] . Unfortunately, medical residents often feel unprepared to approach these discussions, as fewer than 18% of students and residents have received any formal end-of-life care education[1]. To address this, we aimed to assess resident attitude and knowledge about advanced care directives in the outpatient setting before and after administration of a brief educational handout.

SETTING AND PARTICIPANTS: 50 Internal Medicine residents in an urban primary care clinic.

DESCRIPTION: A four question survey, assessing knowledge of advanced directives was issued to residents. Then, focused educational material was dispersed to the residents, and one month later, a post-survey was issued to the same residents.

EVALUATION: A total of 21 residents completed the survey. At baseline, 62% of residents had never initiated a goals of care discussion in the clinic. After the intervention, 90% of residents felt more confident discussing advanced directives and 90% of residents responding to the post-test survey could distinguish the difference between a health care proxy, a living will, a surrogate, and a power of attorney, compared to 52% of residents in the pre-test survey. Post-intervention, 95% of residents could describe the terms of a "Medical Orders for Life-Sustaining Treatment" form. In addition, 100% of post-test respondents knew that a patient could change their advanced directive at any point in time compared to 52% pre-intervention.

DISCUSSION/REFLECTION/LESSONS LEARNED: With an increasingly aging population, goals of care discussions have become integral to medical practice. Our survey data support the idea that succinct educational material can address a knowledge deficit among residents and lead to improved confidence in having goals of care discussions. As a result, residents will be more prepared to engage in advanced care discussions.

EDUCATING RESIDENT PHYSICIANS: IMPLEMENTING AND EVALUATING A BEHAVIORAL MEDICINE PROGRAM IN INTERNAL MEDICINE

Jennifer Harsh; Tyler Lawrence. University of Nebraska Medical Center, Omaha, NE. (Control ID #2702020)

NEEDS AND OBJECTIVES: Psychosocial problems are commonly seen in primary care, result in higher medical cost, and the prevalence of patients with these problems is expected to increase. Internal medicine does not have a requirement for integrating behavioral medicine education into resident training. This may be contributing to gaps in resident psychosocial knowledge and skills. One way to fill this gap is to implement a behavioral medicine education program during residency. Aims: 1. Outline an approach to implementing and modifying a behavioral medicine education program for internal medicine residents. 2. Describe evidence supporting the benefits of including behavioral medicine education in an internal medicine residency.

SETTING AND PARTICIPANTS: The participants for this study were 1st, 2nd, and 3rd year internal medicine residents who attended behavioral medicine video review seminars and behavioral medicine didactic noon conferences.

DESCRIPTION: Residents participated in hour-long behavioral medicine noon conferences, monthly, in which they learned about psychosocial aspects of patient care and best practices for enhancing the quality of patient-provider interactions. Residents also participated in behavioral medicine seminars, twice yearly, in which two to three residents joined behavioral medicine faculty to view video recorded patient encounters that residents deemed "difficult", due to either psychosocial patient complaints and/or difficulties in establishing an optimal patient-provider relationship. To evaluate the impact of the curriculum, we developed a method for assessing curriculum utility as well as determining which psychosocial skills residents perceived as most beneficial and which skills residents would still like to learn.

EVALUATION: Following each component of the behaivoral medicine curriculum, both noon conferences and seminars residents were asked to complete a brief survey. Surveys were designed to provide a basis for understanding the strengths of the noon conferences and seminars and areas that needed improvement to better meet residents' needs and contained three open ended questions and one Likert scale response. Researchers utilized thematic analysis to study responses from open-ended survey questions. Data were coded and subsequently themes and sub-themes were developed, based on these codes. Descriptive statistics were used to analyze the frequency of themes and sub themes in addition to Likert scale response scores.

DISCUSSION/REFLECTION/LESSONS LEARNED: Residents valued the knowledge and skills learned through the noon conference and behavioral medicine seminars, and reported that each of these components were useful. Strategies for enhacing patient-provier communcation, facilitating difficult interactions, goal setting, structing the encounter, and self-care were mentioned as particularly useful topics for their practice. Resident feedback suggests expanding behavioral medicine curriculum to include patient motivation enhancement, engaging patient social support, and mental health assessment would be beneficial.

EFFECT OF CLINIC SETTING ON RESIDENT PERCEPTION OF QUALITY, JOB SATISFACTION, AND CAREER CHOICE

Matthew H. Zegarek2, 1; Yogesh Khanal[2]; Theodore Long[2]; Frank Buono[1]; Brent A. Moore[3]; Rebecca Brienza[1]. [1]VA Connecticut Healthcare System, West Haven, CT; [2]Yale University School of Medicine, West Haven, CT; [3]Yale University School of Medicine, New Haven, CT. (Control ID #2689345)

NEEDS AND OBJECTIVES: There is a significant shortage of primary care providers in the U.S. One proposed explanation for this is that negative

experiences in residency clinics discourage internal medicine residents from choosing to practice primary care. Our goal was to test this hypothesis by surveying residents in different clinic settings on their perception of their clinic's quality of care, their job satisfaction, and career choice.

SETTING AND PARTICIPANTS: Surveyed residents worked in multiple clinic setting, including (1) the West Haven VA Connecticut Healthcare system primary care clinic, in which care is delivered in a patient centered medical home model, (2) the Center of Excellence in Primary Care Education (COEPCE) at the West Haven VA, in which internal medicine residents work and learn in interprofessional teams, and (3) various other Yale-affiliated primary care clinics that serve an urban, generally underserved population. Residents in the COEPCE participate in additional curricula, including such topics as shared decision making, interprofessionalism, and quality improvement.

DESCRIPTION: A survey was sent out to all Yale Internal Medicine residents in 2015. Residents rated their clinic on the characteristics of a patient centered medical home (PCMH) as defined by the National Committee for Quality Assurance. Additional survey questions evaluated their perception of their clinic's teamwork, collaboration, and quality of patient care, and their own sense of job satisfaction, burnout, and planned career choice.

EVALUATION: Residents in the COEPCE clinic reported they were significantly more likely to choose primary care as a career than residents in other clinics ($p = 0.01$). Residents in the COEPCE and non-VA clinics were more likely to report that their clinic had a significant impact on their career choice ($p = 0.01$). However, residents in the COEPCE clinic rated their clinic lower in PCMH domains, and reported lower sense of control, teamwork, collaboration, quality of patient care, job satisfaction, and higher burnout than other residents.

DISCUSSION/REFLECTION/LESSONS LEARNED: It was surprising that COEPCE residents reported greater likelihood to pursue primary care and a greater effect of their clinic experience on their career choice, but rated their clinic lower on PCMH domains and on their own job satisfaction. One explanation we propose is that residents in the COEPCE are exposed to additional curriculum on optimal and innovative primary care practices, and are consequently more critical when evaluating their clinic on PCMH domains.

EFFECTS OF A COMPREHENSIVE WELLNESS PROGRAM ON MEDICINE RESIDENT BURNOUT Carol Faulk; Vinaya Mulkareddy; Amit Bery; Raymond Fohtung; Joshua Saef; Catherine McCarthy; Niall Prendergast; Jacqueline Chen; Andrew Michelson; Rakhee Bhayani. Washington University in St Louis, St Louis, MO. (Control ID #2705879)

NEEDS AND OBJECTIVES: The prevalence of physician burnout among internal medicine residents ranges from 50%-75 and is associated with poorer patient care and higher rates of depression and substance abuse. Both the Accreditation Council for Graduate Medical Education and the American Medical Association have declared this to be a national issue. To combat growing rates of burnout, residencies have implemented various wellness curricula. Most interventions, however, have been studied in isolation. The effects of a comprehensive, multi-faceted program have not been extensively evaluated. The present study was designed to assess the impact of a comprehensive wellness program on resident physician well-being in a large academic hospital.

SETTING AND PARTICIPANTS: At the start of the 2016–2017 academic year, a new wellness program was integrated within the Washington University in St Louis internal medicine residency curriculum at Barnes Jewish Hospital. 142 internal medicine residents at all training levels participated in this curriculum.

DESCRIPTION: A wellness committee, comprised of faculty, chief residents, and resident representatives, was established. Curricula were created for large-group lectures, small-group workshops and team building exercises. Required large-group lectures taught evidence-based cognitive behavioral therapy (CBT) techniques to help residents during times of stress. Small-group sessions were designed to cover a selection of wellness-related topics, including imposter syndrome, defining success, and maintaining compassion. All small group didactics occur during protected time on inpatient rotations and are facilitated by licensed clinical psychologists. Team-building exercises include both organized social outings for the entire residency, as well as monthly competitions between inpatient teams, with awarded group prizes.

EVALUATION: Resident-physician burnout prevalence was assessed at the start of the 2016–2017 academic year using the Maslach Burnout Inventory on a voluntary basis. Final analysis of this initial survey is currently pending. Small-group sessions were anonymously evaluated by participants through a standardized form after each session. We will survey residents using the Maslach Burnout Inventory again at the end of the academic year to look for improvement in burnout prevalence.

DISCUSSION/REFLECTION/LESSONS LEARNED: Burnout is defined as a combination of depersonalization, emotional exhaustion and decreased perceived accomplishment. Trials have shown CBT techniques can reduce compassion fatigue and enhance resilience, while small-group and team-building exercises can increase perceived compensation and accomplishment. By employing modalities to address each element of physician burnout, it is expected that this comprehensive wellness program will improve resident wellbeing.

EFFICACY AND IMPACT OF AN LGBT HEALTH ELECTIVE FOR FIRST- AND SECOND-YEAR MEDICAL STUDENTS Erica Martinez[2]; Thien Le[2]; Louis Fitch[2]; Matthew Minturn[2]; Rita Lee[1]. [1]University of Colorado, Aurora, CO; [2]University of Colorado Denver, Aurora, CO. (Control ID #2706159)

NEEDS AND OBJECTIVES: An ever-growing body of research conducted over the past decade or more suggests that individuals who identify as lesbian, gay, bisexual, or transgender (LGBT) face significant health disparities. Despite growing awareness, most medical students receive very little exposure to the special health needs of LGBT individuals or to the barriers that these individuals face in accessing care.

SETTING AND PARTICIPANTS: We implemented a 10-hour LGBT health elective for first- and second-year medical students at the University of Colorado.

DESCRIPTION: The elective consists of five 2-hour sessions that included: LGBT-related terminology and communication skills; health issues and preventive care for LGBT youth and adults; panel discussion with members of the LGBT community; and a practice session with standardized patients.

EVALUATION: Course participants completed global pre- and post-course surveys to assess prior experience in working with this population, self-confidence in caring for this population, and knowledge of LGBT health issues. Responses were summarized using descriptive statistics. Paired Student's t-tests were used to assess pre- and post-course performance.

DISCUSSION/REFLECTION/LESSONS LEARNED: To date, two cohorts of students have completed the course ($n = 28$ students). Students demonstrated an increase in comfort eliciting information about sexual behavior from pre-course (55%) to post-course (96%; $p < 0.001$) and sex anatomy and gender identity (32% to 100%; $p < 0.001$). Students also reported an increase in ability to articulate the special health needs of lesbian, gay, and bisexual (LGB) patients (24% to 100%; $p < 0.001$) and of transgender patients (10% to 100%; $p < 0.001$), to summarize primary care recommendations for LGB patients (21% to 100%; $p < 0.001$) and for transgender patients (from 3% to 100%; $p < 0.001$), to identify resources in the community for LGBT patients (from 24% to 96%; $p < 0.001$). Knowledge of LGBT health issues increased during the course—from 42% correct pre-course, to 58% following course completion ($p < 0.01$). Our results suggest that the course is effective in meeting course objectives, but our small, self-selected sample size limits generalizability.

EMPOWERING RESIDENTS IN INTERPROFESSIONAL PRACTICE THROUGH 10-MINUTE MOBILE LEARNING MODULES So-Young Oh1; Jennifer Adams[1]; Sherry A. Greenberg[3]; Nina Blachman[1]; Sondra Zabar[1]; Lisa Altshuler[1]; Tara Cortes[2]. [1]NYU School of Medicine, New York, NY; [2]New York University, New York, NY; [3]New York University College of Nursing, Scotch Plains, NJ. (Control ID #2705588)

NEEDS AND OBJECTIVES: To address the need for sustainable, efficient interprofessional education and practice (IPEP) at the graduate level health professions education (GHPE), the NYU School of Medicine (SoM) and NYU Rory Meyers College of Nursing (NYU Meyers) designed IPEP, a mobile learning solution. We aimed to: ● Provide learners with applicable interprofessional (IP) practice skills ● Encourage reflection on IP care planning ● Develop an accessible and sustainable IP geriatric education curriculum for GHPE ● Collect residents' reflection on IP practice for future curriculum design
SETTING AND PARTICIPANTS: IPEP was housed on the NYU SOM learning management system. Since 2014, about 3500 learners from Health Professions schools across the U.S. have completed the 6 I.E. modules.
DESCRIPTION: Approach/Methods To overcome barriers (e.g. limited learning space, lack of faculty, heterogeneous curricula) NYU SoM and NYU Meyers developed a series of 10-min e-learning materials including didactic modules and virtual geriatric primary care patient (VP) cases. These are based on the undergraduate online IP modules, NYU3T: Teaching, Technology, and Teamwork. The modules address: ● IP teams/responsibility ● Effective healthcare teams ● Teamwork skills ● Communication skills Conflict resolution ● IP care planning 4 VP cases include IP assessment and management of older adults with chronic conditions. Reflective questions are integrated into modules and VP cases to stimulate critical thinking and attitude shift. In order to facilitate use, online modules and VP cases are designed in bite-size 10-min modules without heavy multimedia components. Thus, residents, nurse practitioners, and other graduate level providers can complete the modules via phone, tablets, or computers.
EVALUATION: Users rated modules very positively (4.2 out of 5). More than 80% of users responded the length of the modules were "just right"; about 90% agreed to "recommend the modules to others". About 500 learners completed four VP cases this last year. According to the validated questionnaire measuring attitudes toward IP teams, there was a significant change toward team value ($p = .006$) but no significant changes around team efficiency or physician's shared role on team.
DISCUSSION/REFLECTION/LESSONS LEARNED: Scheduling of IP activities, with joint clinical experiences and OSCEs, takes time, effort, and coordination of multiple schedules. The IPEP e-modules help smoother dissemination of IPE knowledge and skills to busy trainees. IP learners have found these a valuable resource. More VP cases for different populations may increase the application of IPE skills.
ONLINE RESOURCE URL (OPTIONAL): Online Resource URL: http://compass.iime.cloud/activity/196/Free iTunes eBooks: https://itunes.apple.com/us/author/sherry-a.-greenberg-phd-rn/id1150512189?mt=11

ENGAGING PGY2 AND PGY3 INTERNAL MEDICINE AND FAMILY MEDICINE RESIDENTS IN A HOSPITAL MEDICINE ELECTIVE Michele A. Sundar. Emory University, Atlanta, GA. (Control ID #2700696)

NEEDS AND OBJECTIVES: First year hospitalists are often unfamiliar with billing, coding, quality improvement, and have limited understanding of the key role of hospitalists in the larger hospital community. This elective aims to introduce residents to the non-clinical side of a career in Hospital Medicine, anticipating that their interest in this field will increase. The residents will also be given the opportunity to gain practical knowledge on billing, coding, and other relevant core topics. The elective addresses gaps in their traditional residency training, and therefore helps new graduates enter the field of Hospital Medicine with a higher level of functioning and an enhanced understanding of their role.
SETTING AND PARTICIPANTS: The elective occurs at Emory Saint Joseph's Hospital, a community hospital with academic affiliation. Upper level residents will be given a course description and can then choose to enroll. We expect 1–3 residents annually.
DESCRIPTION: The elective consists of 2 weeks of clinical time supervised by an attending physician. Residents will be managing patients with supervision, and also receive daily feedback regarding management decisions, communication style, and other aspects of care that impact outcomes and patient perceptions. There will also be 2 weeks of non-clinical time, focusing on self-directed learning and participation in various activities. Self-directed learning includes reading assignments and online modules addressing core topics: palliative care, nutrition in hospitalized patients, billing and coding, and prevention of health care associated infections. Residents will have the chance to join in a mock Root Cause Analysis, teach didactics to students, and learn from experts in Clinical Documentation Improvement. They will also be given the chance to learn how quality improvement is approached and structured at Emory Saint Joseph's Hospital. Committee attendance is required for: Utilization Review Committee, Patient Quality and Safety Meeting, and Pharmacy and Therapeutics Committee.
EVALUATION: Our primary goal is to assess how this elective has positively impacted their decision to pursue a career in Hospital Medicine. An oral interview at the end of the rotation will address this question, and also explore what non-clinical area most interests them. Our secondary goal is to measure the educational value of the self-learning activities. To measure our secondary goal, residents will be asked to complete an on-site pre-test and post-test at the immediate start and end of their rotation, which will be structured as a multiple choice test covering the core topics.
DISCUSSION/REFLECTION/LESSONS LEARNED: There are only a few training programs that offer electives in Hospital Medicine. As our goals

suggest, we hope that this elective will encourage more trainees to enter the field, and also provide them with guidance for structuring their career paths as hospitalists.

ENGAGING STUDENTS IN THE EVALUATION OF ASYLUM SEEKERS: BUILDING CAPACITY, TEACHING SERVICE AND RESILIENCE Katherine C. McKenzie[1]; Ranit Mishori[2]; Sonia Tajeda[1]. [1]Yale School of Medicine, New Haven, CT; [2]Georgetown School of Medicine, Washington, DC. (Control ID #2703679)

NEEDS AND OBJECTIVES: According to a report from the United Nations, in 2015 65 million individuals were displaced from their homes due to human rights abuses, torture and persecution and more than 172,000 individuals applied for asylum in the United States. Individuals with physical or psychological scars related to torture or ill-treatment benefit from a medical forensic evaluation when seeking asylum. The process of conducting an asylum evaluation requires specialized clinical skills. Despite training and recruitment efforts there is a reported shortage of providers who can respond to the increasing demand.

SETTING AND PARTICIPANTS: We report on two models of medical student engagement: 1) At Georgetown University, medical students working with a faculty advisor and with Physicians for Human Rights have created a program to train health care professionals, residents and students to perform medical evaluations for individuals seeking asylum in the United States. An associated curriculum was developed and focuses on refugee and asylee health topics, including torture, FGM, and trauma-informed care, among other topics; 2) At Yale University, trainees are offered opportunities to observe evaluations of asylum seekers behind a one-way mirror. Introductory literature about asylum medicine and a redacted affidavit from the client as well as pre- and post-evaluation counseling and discussion are provided to all participants. Trainees interested in more advanced involvement can perform evaluations and prepare a medico-legal affidavit after further training alongside a supervising physician.

DESCRIPTION: Both of these programs offer trainees instruction about the legal and historical precedents of asylum law. They receive instruction regarding empathetic interviewing of asylum seekers who are victims of trauma and scar recognition related to torture. Trainees are taught how to write a medico-legal affidavit documenting their findings. This knowledge in turn can be beneficial for all physicians who provide care to those who have experienced trauma, regardless of their immigration status. Both programs emphasize not only the clients' trauma and resilience, but also the potential for caregiver vicarious trauma and how to address it.

EVALUATION: Impact evaluation of both programs is in its early stage of instrument development, and process evaluation is ongoing. Assessments will include trainee response to the importance of human rights in medicine, satisfaction with different models and experiences of vicarious trauma.

DISCUSSION/REFLECTION/LESSONS LEARNED: Many medical students are interested in human rights, and specifically in caring for refugees and asylum seekers. We describe two educational programs and will reflect on: 1) opportunities to create similar program in other institutions, 2) lessons learned, challenges and barriers. Additionally, we will address the role of exploration of vicarious trauma and vicarious resilience.

ONLINE RESOURCE URL (OPTIONAL): http://medicine.yale.edu/intmed/genmed/asylum http://phrgeorgetown.org/new-page-1/

ENHANCING DIVERSITY IN INTERNAL MEDICINE (IM) TRAINING: IMPLICIT BIAS TRAINING FOR RESIDENCY ADMISSIONS COMMITTEES Sarah Schaeffer; Katherine Lupton. University of California, San Francisco, San Francisco, CA. (Control ID #2706971)

NEEDS AND OBJECTIVES: Implicit racial bias is known to impact hiring decisions in multiple venues. It follows that implicit bias may impact how admissions committees evaluate and select candidates for residency admission. At the University of California San Francisco (UCSF), 30% of medical students identify as underrepresented in medicine (UIM), yet only 15% of IM residents are UIM. As part of a multi-pronged strategy to address IM resident diversity, we developed mandatory implicit bias training for intern selection committee members with the following goals: 1. Familiarize committee members with the concept of implicit bias and its impact on hiring 2. Empower committee members to identify their personal biases 3. Introduce strategies to minimize the impact of bias in residency admissions 4. Increase the number of UIM interns in UCSF IM residency in 2017-18

SETTING AND PARTICIPANTS: The UCSF IM residency program interviews 250 intern applicants and admits 62 interns each year. Forty IM faculty serve on the intern selection committee.

DESCRIPTION: We developed a 90-min training on implicit bias and its impact on hiring and admissions. Intern selection committee members were required to attend an in-person training or review an online module. Attendees completed Implicit Association Tests prior to the training. We began with a review of implicit racial bias and its role in hiring decisions. Attendees reflected on their personal biases and discussed experiences with bias in past intern selection. We presented evidence-based strategies for minimizing the impact of bias and discussed bias-reducing practices for the current cycle. At the end, participants submitted written commitments to use one or more strategies.

EVALUATION: Twenty-five committee members attended an in-person training. Attendees completed pre and post-training surveys. Prior to the training, 15% of attendees strongly agreed that implicit bias impacts their evaluation of applicants, compared with 39% after. At baseline 7% of faculty strongly agreed they could identify strategies to reduce bias, compared with 67% after. One hundred percent were "likely" or "very likely" to implement their written commitment.

DISCUSSION/REFLECTION/LESSONS LEARNED: IM residency admissions committees are not immune from implicit bias. A one-time implicit bias training raises committee members' awareness of personal biases and provides actionable strategies for combatting bias in residency admissions. Our intern selection committee is large; we were unable to reach all members with in person training. In future years we plan to offer multiple training opportunities during the year, and will develop admissions bias cases to stimulate advanced discussion.

ENHANCING RESIDENT PROFESSIONALISM: REWARDING CITIZENSHIP CHANGES BEHAVIOR Eric Green; Aasim Mohammed; Dhruvan Patel; Beth Silver-Cummons. Mercy Catholic Medical Center, Darby, PA. (Control ID #2701427)

NEEDS AND OBJECTIVES: In our residency program we noted decreased adherence by residents to administrative tasks. Residents required frequent

reminders by both GME staff and program directors to complete duty hours, required health screenings, and clinical documentation. Attendance at noon conference was low despite multiple reminders and efforts to improve lecture quality. In order to improve adherence to these tasks we created a resident “citizenship score” that was used to distribute sick (“jeopardy”) coverage.

SETTING AND PARTICIPANTS: Our program is a 67 person internal medicine residency based in 2 community teaching hospitals. Residents are assigned jeopardy coverage in blocks of 4 consecutive days during electives. Traditionally blocks were distributed evenly to residents throughout the academic year.

DESCRIPTION: In AY 2016–2017 we instituted a global citizenship score that included credit for timely duty hour entry, completion of medical records, compliance with administrative requests, and noon conference attendance. For each of these tasks, residents needed to reach a specific threshold in order to receive credit. For example, residents needed to have fewer than 5 pending discharge summaries to receive credit for completion of medical records, and attend > 70% conference to receive credit for noon conference while on a floor rotation. Duty hour entry and attendance were tracked through our web-based learning management system. Medical record completion was monitored by medical records staff. GME staff and chief residents compiled this data to form a composite “citizenship score” every 4 weeks.

EVALUATION: In the first 4 months AY2015-16, 67 residents attended 2381 hours of conference. In the same period in AY 2016–17, 67 residents attended 2840 hours of conference ($p < .001$ for difference). After 6 months of implementation 100% of residents entered duty hours without reminders; while in AY2015-16 multiple email and in-person reminders were required. After implementation, no residents had > 5 discharge summaries pending or any records > 28 days old, and 4% of residents had any evaluations incomplete after > 90 days.

DISCUSSION/REFLECTION/LESSONS LEARNED: Encouraging adherence to administrative tasks is challenging. By reframing completion of these tasks as professionalism and linking less professional behavior to a minor penalty - additional jeopardy call - we increased compliance. Although compiling the citizenship score required some time by GME support staff and chief residents, this time was partially offset by decreased time spend in reminders.

ENHANCING TRAINEE RESILIENCE, CONNECTEDNESS, HUMANISM, AND TEAMWORK- IF YOU BUILD IT, THEY WILL COME! Abby Spencer; Jennifer Ramsey. Cleveland Clinic, Chagrin Falls, OH. (Control ID #2706588)

NEEDS AND OBJECTIVES: Residency training is a particularly vulnerable time for burnout given. The goal of our FRAME curriculum is to enhance resilience, connectedness, teamwork skills, and emotional intelligence(EI) among medical trainees via small-group, interactive, facilitated reflective exercises and discussions. Each module has its own set of associated learning objectives. Residents will be able to: List critical components of resiliency Identify and describe the “most resilient” person they know Reflect on personal strengths and list those strengths to a thinking partner Describe a time when it was challenging to maintain the appropriate balance between humanism and objectivity Describe the benefits to patients and to self of maintaining your humanity Demonstrate professional and polite dissention during a role play Respond to a fellow team member’s emotion and provide empathy and validation Demonstrate using curiosity and empathy using role-play to de-escalate a team conflict Identify his/her own “work cycle preference” and describe what value it brings to the team

SETTING AND PARTICIPANTS: FRAME was implemented in 1/16 and involves five small groups of IM trainees that meet every five weeks for 2-hours. Residents remain in the same FRAME for all 3 years of training.

DESCRIPTION: We created an interactive educational series of small-group, facilitated discussions about strategies to increase resilience, empathy, EI, team-work, and communication skills. Residents share and reflect on these topics by reviewing related articles, essays and other media. Our highly interactive sessions teach through reflection, instruction, and asset-based discussions that foster connectedness and resilience. Facilitators encourage relationship development among residents by leading reflection exercises, listening with empathy and curiosity, keeping residents in dialogue, responding to emotion, and highlighting key teaching points.

EVALUATION: We collected: Immediate written feedback after each session (what worked, what didn’t, biggest “aha moment”) Resident reflective essays re:changes in attitudes, behaviors, resilience techniques, relationships with residents/faculty,connectedness, management of burnout/isolation Resident interviews and focus groups

DISCUSSION/REFLECTION/LESSONS LEARNED: Our pilot demonstrated that residents felt validated and better connected to each other and faculty to know that they struggle with the same issues and have found strategies to find the joy in their jobs again and again. Key outcome measures include enhancing the self-reported resilience and connectedness of trainees. Residents reported that they were surprised by how much they share regarding experiences, perspectives and feelings. Thanks to FRAME sessions, residents have begun to realize that the powerful physician experience affects us all similarly, and this realization strengthens trust and encourages openness among them in meaningful ways. FRAME builds awareness about how lonely or isolated some of the residents feel at times and gave them new ways to connect.

ENTRUSTABLE PROFESSIONAL ACTIVITIES: CAN SIMULATION BE USED TO ASSESS COMPETENCY IN MEDICAL STUDENTS? Katherine A. Gielissen; Tiffany Moadel; Ambrose Wong. Yale-New Haven Hospital, New Haven, CT. (Control ID #2689713)

NEEDS AND OBJECTIVES: Communication is critical for delivering safe and effective healthcare; however, it is difficult to assess these skills in real clinical settings. Entrustable professional activities (EPAs) address such challenges, as they help supervisors make competency-based decisions on a trainee’s ability to perform clinical work without supervision. Simulation offers an unique opportunity for competency-based EPA assessment in medical students by providing a controlled and replicable environment to objectively measure skills without any potential threat to patient safety. The goal of our study is to determine if EPAs can be effectively observed in a simulated setting and to develop assessment tools for entrustment decisions in oral presentation and handoff skills.

SETTING AND PARTICIPANTS: Our study focuses on EPA 6 and 8 of the AAMC’s Core EPAs for Entering Residency. We developed two emergency medicine cases (acute appendicitis and traumatic subdural hematoma) that elicit the skills of EPA 6 and 8. The competencies for these activities were mapped to ACGME milestone descriptors. We also developed EPA assessment

instruments to evaluate individuals participating in these cases on an entrustment scale. Data collection begins January 2017. We expect to recruit 140 trainees (20 MS1, 80 MS3, 20 MS4/MS5, and 20 PGY1) over 6 months. Performance on our EPA tools will be compared to previously established asessment tools for oral presentations and handoffs.

DESCRIPTION: The goal of our study is to determine if EPAs can be effectively observed in a simulated setting, and to develop instruments to assess competency in EPAs using simulation. This mixed-methods study encompasses the following specific aims: 1) Develop simulation cases to assess EPA competencies 6 and 8. 2) Validate assessment instruments for these EPAs to be used in simulated settings. 3) Determine if simulation-based EPA assessments reliably reflect bedside performance in learners across levels of training.

EVALUATION: Quantitative data will consist of 1) EPA performance in simulation settings on an entrustment scale, 2) EPA performance in real clinical environments, and 3) performance on previously described handoff and oral presentation tools. Qualitative data will be obtained in post-assessment encounters focusing on 1) trainee's perceptions of their own performance and 2) assessors' narrative description of entrustability for EPA 6 and EPA 8.

DISCUSSION/REFLECTION/LESSONS LEARNED: Preliminary data and lessons learned from our investigation will be presented at the SGIM National Meeting. Results of our work should address the feasibility of using a simulation-based EPA assessment tool, and should demonstrate its use in ad hoc assessment of trainee ability. Furthermore, the results of our study could have a more important impact in formative assessment of medical students and help inform other studies attempting to develop similar EPA assessment tools and inform trainee-specific learning plans on performance of essential communicaiton skills.

ONLINE RESOURCE URL (OPTIONAL): https://medicine.yale.edu/emergencymed/simulation/

EVALUATION OF A LONGITUDINAL FACULTY DEVELOPMENT PROGRAM USING A QUALITATIVE DESIGN WITH MATCHED-CONTROLS Mary Ann Gilligan[2]; Deborah Simpson[1]; Karen Marcdante[2]; Linda Meurer[2]; Jeffrey Morzinski[2]. [1]Aurora Health Care, Milwaukee, WI; [2]Medical College of Wisconsin, Milwaukee, WI. (Control ID #2708754)

NEEDS AND OBJECTIVES: Ongoing faculty development is an expectation for clinician educators. Because faculty development requires significant investment of resources, effective evaluation is a priority. Steinert, et al. (2016) performed a systematic review of faculty development programs and reported gaps in study designs and outcomes; they called for qualitative and mixed methods studies to develop a better understanding of career changes and sustainability of new skills in the workplace. In our study, we sought to evaluate our longitudinal faculty development program using a qualitative approach.

SETTING AND PARTICIPANTS: Clinical faculty from three primary care clinical departments at a large, Midwestern medical school who completed our faculty development program (10 completers/year 2013–16) and their matched controls.

DESCRIPTION: We chose a qualitative approach using matched controls given the longitudinal nature of our program and the likelihood that career advancement would be expected in the time since completion of the program. Simpson & Marcdante's (2015) model for career development guidance for clinician educators was used to develop our "career and workplace impact" interview protocol. Key elements of the model include the fit between faculty interests and workplace needs, responsibility for career growth, and connecting with an academic community. A rigorous pilot study was conducted which included an interview performed by each study team member with an experienced, non-study eligible medical educator. Data were collected using a structured form. The team planned how to secure matched controls for each randomly selected faculty member who had completed our program, following a published model for selecting controls using criteria of 1) years in academic career, 2) medical specialty, 3) gender, and 4) interest in faculty development.

EVALUATION: Our qualitative study design, including a true pilot study, presented challenges in how to efficiently engage the IRB. Use of matched controls required unanticipated recruitment support. Preliminary data analysis has raised questions regarding treatment of outliers, fitting the data back to our career/workplace model, and organization of the written, narrative-focused report.

DISCUSSION/REFLECTION/LESSONS LEARNED: : Strengths of our method include the use of an evidence-based, model-driven evaluation approach and the skills and experience of our study team. The use of matched controls, while challenging to administer, is a best practice in evaluation that promotes greater meaning of outcomes and validity of findings.

EVALUATION OF A WORKSHOP INTERVENTION TO REDUCE RACIAL BIAS IN INTERNAL MEDICINE RESIDENTS' CLINICAL DECISION-MAKING Anne Stahr[1, 3]; Anna Kaatz[1]; Lacey Alexander[1, 3]; Amarette Filut[1]; Youhang Her[1]; Tyson Pankey[1]; Molly Carnes[2, 1]; Christine J. Kolehmainen[4, 1]. [1]University of Wisconsin, Madison, WI; [2]University of Wisconsin-Madison, Madison, WI; [3]VA, Madison, WI; [4]William S Middleton Memorial VA Hospital, Madison, WI. (Control ID #2702661)

NEEDS AND OBJECTIVES: Despite evidence implicating the role of implicit bias in the perpetuation of health disparities and hindrance of workplace diversity and equity, existing approaches to bias reduction demonstrate little success. Failing to provide physicians with the knowledge, language, and strategies to support meaningful behavior change may thwart progress towards a more culturally responsive healthcare system. The "Breaking the Bias Habit" workshop is a behaviorally-informed approach to reducing implicit bias for internal medicine (IM) residents. The purpose of this study is to evaluate the extent to which workshop intervention can reduce race bias in IM residents' clinical decision making. Towards this, we have 1) adapted and piloted an evidence based gender bias habit-breaking workshop to address race and other stereotype-based bias, and target IM residents; and 2) we have developed case vignettes and survey questions to assess the extent to which the workshop reduces race bias and increases knowledge and awareness of content presented in the workshop.

SETTING AND PARTICIPANTS: The workshop will be offered to January and February 2017 as part of the standard curriculum at the University of Wisconsin-Madison IM Residency Program. We will ask for volunteers to complete clinical vignettes and a questionnaire probing racial bias before the workshop, immediately after and at one additional distal time point.

DESCRIPTION: The bias habit-breaking workshop is composed of an introduction and three modules. Each module incorporates content and interactive elements that come from research on cognitive and behavioral change, and adult education.

EVALUATION: Clinical vignettes have been used as a surrogate for clinical interactions in multiple studies with mixed results in their ability to detect bias in clinical decision-making. For this study we created new vignettes and established their content validity with a modified Delphi procedure with seven experts on stereotype-based bias, including two internists. Following vignettes, participants complete four sets of measures probing: 1) how they would treat/care for the patient; 2) feelings and behavior they might direct towards vignette patients, measured with psychometric "should/would" scales (previously used to show discrepancy between what a person thinks they should do and what they would do—with a larger discrepancy indicating greater bias; construct validity has been established for these scales, and will use results from both studies to test reliability); 3) proximal measures of behavioral change evaluating awareness, motivation, self-efficacy, outcome expectation and actions; and 4) explicit racial bias temperature scales.

DISCUSSION/REFLECTION/LESSONS LEARNED: We expect our results to show some degree of bias in internal medicine residents and hypothesize our workshop will reduce bias in clinical decision making to some degree. Some preliminary data will be available after February 2017.

FACILITATING PATIENT-CENTERED LEARNING THROUGH A LONGITUDINAL PATIENT-PARTNERED CLINICAL EXPERIENCE

Joyce W. Tang[2]; Anshu Verma[1]; Grace Berry[1]; Venkatesan R. Krishnamoorthi[1]; Nicole M. Gier[1]; Anitra Thomas[1]; Lauren Wiklund[1]; David Meltzer[2]; Vineet M. Arora[3]; Jeanne M. Farnan[1]; Mari Egan[2]. [1]The University of Chicago, Chicago, IL; [2]University of Chicago, Chicago, IL; [3]University of Chicago Medical Center, Chicago, IL. (Control ID #2706804)

NEEDS AND OBJECTIVES: Patient-centered care is widely supported as an aspirational aim for health systems, with evidence to support improved patient satisfaction, treatment adherence, and clinical outcomes. Unfortunately, traditional educational models are not designed to prepare students to deliver such care, with few opportunities to experience care from the perspective of a patient or to engage longitudinally in their patients' care.

SETTING AND PARTICIPANTS: The Patient Centered Longitudinal Experience was created as a special track within a required first year clinical preceptorship course. Sixteen first year medical students were selected for participation based on interest in the program and consideration of a primary care career. Patient partners were recruited from the Comprehensive Care Program, which offers outpatient and inpatient continuity for patients at high risk of hospitalization.

DESCRIPTION: The goal of the program was to develop an understanding of patients' experiences with medical illness and patients' interactions with the healthcare system. Students were paired with two patient partners and an interprofessional team (physician, nurse, social worker, clinic coordinator) to co-navigate their patients' interactions with the healthcare system. Over 6 months, students accompanied patients to clinic appointments; visited patients during inpatient admissions; completed a home visit; contacted patients by phone; and met with a faculty preceptor monthly. Accompanying classroom-based sessions focused on skills with goal setting and making a home visit.

EVALUATION: Students submitted patient encounter logs ($n = 16$) and evaluation forms ($n = 14$); 14 patients responded to a phone survey. Over 6 months, students had a mean of 4.2 contacts (range 1–11) with each of their patient partners; logistical barriers (canceled visits) precluded more frequent contact. Seventy-two percent of students made a personal connection with patients; 100% had an improved understanding of challenges patients face in navigating the healthcare system; 57% reported increased interest in a primary care career; 21% reported they were an important part of the healthcare team. From the qualitative data, students emphasized gaining insights into the patient perspective (challenges in managing illness and navigating the healthcare system), and learning the value of a trusting relationship between care providers and patients. Patients appreciated their students' attentiveness and enjoyed their role as teachers to their students.

DISCUSSION/REFLECTION/LESSONS LEARNED: This pilot test of a novel patient-centered longitudinal experience suggests the program's potential to foster patient-centered perspectives by exposing students to both the challenges that patients face in managing their medical illnesses and navigating the healthcare system, as well as the value of longitudinal doctor-patient relationships. The program can be enhanced by addressing logistical barriers and more clearly defining an active role for students.

FLIPPING THE SCRIPT - A CONTROLLED TRIAL OF A FLIPPED-CLASSROOM AND BLENDED-LEARNING MODULE IN GRADUATE MEDICAL EDUCATION

Geoffrey V. Stetson[1, 4]; Varun Saxena[1, 2]; Elizabeth Harleman[1, 3]. [1]University of California, San Francisco, San Francisco, CA; [2]Kaiser Permanente, San Francisco, CA; [3]Zuckerberg San Francisco General Hospital, San Francisco, CA; [4]Veterans Affairs Medical Center, San Francisco, CA. (Control ID #2706166)

NEEDS AND OBJECTIVES: The "flipped classroom" is an educational approach that uses out-of-class time for learners to absorb content, and in-class time to apply that new knowledge. "Blended learning" is a combination of online and in-person education. Currently, the majority of didactic content in our residency program is delivered via in-person lectures. Scheduling conflicts make it difficult for residents to attend all lectures. We created a flipped classroom and blended learning module with the following objectives: − Ensure access to curricular materials for all learners - Maintain or improve learning outcomes - Maintain or improve learner satisfaction.

SETTING AND PARTICIPANTS: The University of California, San Francisco (UCSF) Internal Medicine Residency Program (IMRP) Intern Core Curriculum (ICC) includes all 68 UCSF internal medicine interns from the 2016–2017 academic year.

DESCRIPTION: The entire class was offered an online pre-test consisting of 11 questions related to the diagnosis and management of acute liver failure (ALF). Next, the class was split into two groups. The control group received the current standard: a one-hour in-person lecture on ALF. The intervention group watched online didactic videos using the same lecturer and content as the control group. After completing this pre-work, the intervention group worked in teams on ALF case-based activities and discussed their answers with the lecturer. The total learning time for the control and intervention groups were 60 and 70 min, respectively. Both groups completed a post-test and a survey (Likert-style + free-response) about their learning experience.

EVALUATION: Compared to the pre-test results, both groups performed better on their post-tests with five questions showing statistically significant improvement ($P < 0.05$). When comparing the post-test results of the intervention and control groups, the intervention group seemed to have performed better, however none of the differences reached statistical significance. There was no difference in satisfaction between the two groups. Free-response

sections of the survey showed that many residents enjoy the ability to learn at their own preferred speed via the videos, and the concept-reinforcing activity.
DISCUSSION/REFLECTION/LESSONS LEARNED: While no measureable differences between the two groups was revealed, benefits of the flipped classroom and blended learning should be noted. Specifically, given the discontinuous nature of residents' schedules, alternative learning modalities such as these offer flexible didactic learning opportunities. Furthermore, video lectures can serve as a useful adjunct resource for other learners, as well as content for faculty to easily disseminate. Our study was limited by a small sample size and high variance, which may have limited our abilities to detect a difference between the two groups.

FOURTH YEAR TEACHERS IN THIRD YEAR INTERNAL MEDICINE CLERKSHIP Judah Gruen[1]; Kathleen Waybill[2]; Lindsey Hall[2]; Steven Bishop[2]. [1]Washington University In St. Louis School of Medicine, Saint Louis, MO; [2]Virginia Commonwealth University School of Medicine, Richmond, VA. (Control ID #2705558)

NEEDS AND OBJECTIVES: The utility of fourth-year (M4) medical students teaching third-years (M3) may anecdotally be beneficial for both levels of students, but no studies exist to show its efficacy as a structured part of the M3 Internal Medicine Clerkship. The objective of this teaching pilot is to ascertain whether M4 teachers can create and lead clinical case-based sessions that increase M3 confidence in internal medicine topics.
SETTING AND PARTICIPANTS: Participation was voluntary, free from participant evaluation, and offered to all M3s at Virginia Commonwealth University School of Medicine (VCUSOM) in one four-week medicine clerkship block. An M4 student created learning objectives and clinical cases for each topic that were reviewed by a faculty mentor. An hour-long session was held weekly to discuss the case with a focus on stepwise clinical reasoning in a relaxed, non-graded setting.
DESCRIPTION: An M4 developed cases for four common problems seen on internal medicine wards that were not covered by the standard curriculum: cirrhosis, leukocytosis, acute kidney injury (AKI) and thrombocytopenia. The M4 led a weekly hour-long session to discuss the case with a focus on achieving the learning objectives. At the end of the clerkship, participating M3s completed a retrospective survey assessing their confidence with the learning objectives before and after the discussions. They scaled their confidence assessments using a Likert-type scale. Results were analyzed the Kruskal-Wallis test to determine if there was significant improvement in confidence for each learning objective.
EVALUATION: Students reported a statistically significant increase in confidence after the M4-led AKI ($n = 10$), thrombocytopenia ($n = 8$) and cirrhosis lectures ($n = 7$). For the AKI session, all six objectives achieved statistically significance with 5–20% of students expressing pre-session confidence and 25–50% with post-session confidence. For the thrombocytopenia session, two out of three objectives showed significant improvement with 12.5–18.8% pre-session confidence and 37.5–43.8% post session confidence. For the cirrhosis session, two out of three objectives were statistically significant with 7.1–14.3% pre-session confidence and 21.4–50% post-session confidence. None of the four learning objectives from the leukocytosis session ($n = 6$) were reported as having yielded statistically significant improvements in confidence. Qualitative comments did not give any indication as to the reason.
DISCUSSION/REFLECTION/LESSONS LEARNED: This pilot program shows the potential benefit of an M4 teaching elective that can build M3 confidence in important material and provide an early opportunity for M4s to be clinical educators. The reason for the lack of significantly improved confidence in objectives from the leukocytosis session is unclear but may be due to broad learning objectives for a complex topic, incompletely formulated cases, or teaching variability.

FUNNY BONES: DEVELOPMENT OF PHYSICIAN TRAINEE COMMUNICATION SKILLS USING IMPROVISATIONAL THEATER TECHNIQUES Carolyn Chan2; Brook Watts[1, 3]. [1]Louis Stokes Cleveland VAMC, Cleveland, OH; [2]University Hospitals Cleveland Medical Center, Cleveland, OH; [3]Case Western University School of Medicine, Cleveland, OH. (Control ID #2703111)

NEEDS AND OBJECTIVES: Physician trainees experience responsibilities that require communication skills to deal with the ambiguity, unpredictability, and nuances of health care conversations. We report on a novel pilot project using improvisational comedy to enhance physician trainee awareness and comfort in all aspects of communication.
SETTING AND PARTICIPANTS: All 38, first year categorical and medicine/pediatrics physician trainees in a large academic hospital Internal Medicine Residency program were split into 3 separate groups of 10–13 students for one-4-h workshop on medical improvisation techniques.
DESCRIPTION: A curriculum was designed with the following objectives which were adapted from prior medical improv curriculums: 1) develop familiarity with the art and theory of improvisation, 2) discover the connections between improvisation and communicating with patients, 3) encourage reflection on own communicating processes, and 4) apply specific improvisation techniques to enhance communication skills. Residents participated once in the workshop and it was delivered 3 times so far. This provided for three quality improvement cycles using evaluation surveys given after each session. Initial activities included role playing scenarios, improv exercises, and feedback discussions.
EVALUATION: Thirty-five of 38 trainees ($n = 35$; 92%) completed the workshop and evaluation. Three trainees had conflicts (e.g., clinical duties) that precluded full participation. An existing survey on connections between improvisational theater and medicine for medical students was adapted to 19 questions with a Likert scale (1–5) response format (1 'strongly disagree' and 5 'strongly agree'. Curriculum changes were made after reviewing evaluation results for each workshop. Incomplete/blank surveys ($n = 1$) were excluded. Results from the first workshop indicated less than half agreed "Studying improv could make me a better doctor" (40%; $n = 4$). Accordingly, the medical role playing scenarios were removed and the other activities/exercises were reframed as techniques to use with challenging patient encounters to increase relevance. For the next workshop session, 100% ($n = 12$) agreed that studying improv could make them a better doctor. Qualitative feedback suggested removing exercises participants did not find useful for skill building, e.g. practice improv exercises only targeting listening. For the third presentation, 100% ($n = 13$) agreed studying improv could make them a better doctor.
DISCUSSION/REFLECTION/LESSONS LEARNED: Three cycles of feedback helped to develop a workshop that was perceived as highly valuable for communication skills building. It also provided participants a "toolkit" to

use during difficult professional encounters. Next steps include continuing the program with new trainees and using validated surveys to evaluate change in skill-sets. Other workshop formats are planned to target self-identified weaknesses.

HIV PREVENTION WITH PREP/PEP AND SEXUAL HEALTH IN MEDICAL RESIDENCY: A NOVEL CURRICULUM Connie Park[2]; Rabea Khedimi[2]; Barry Zingman[2]; Jake Tinsley[3]; Joanna L. Starrels[1]. [1]Albert Einstein College of Medicine & Montefiore Medical Center, Bronx, NY; [2]Montefiore Medical Center and Albert Einstein College of Medicine, Bronx, NY; [3]AIDS Center, Bronx, NY. (Control ID #2697308)

NEEDS AND OBJECTIVES: A curriculum focused on HIV pre and post exposure prophylaxis (PrEP/PEP) has not previously been described. After completion, learners should be able to identify candidates who are eligible for PrEP/PEP and monitoring parameters once prescribed as well as perform appropriate sexually transmitted infections (STI) screening on at-risk patients and list current treatments for common STIs.

SETTING AND PARTICIPANTS: The Oval Center is a satellite health center of an urban academic medical center that focuses on PrEP/PEP and STI care. Participant learners are medical trainees including internal medicine residents and infectious disease fellows who choose the Oval Center as a two week clinical elective and/or as an additional continuity site.

DESCRIPTION: A formal curriculum in PrEP/PEP and STIs was developed and implemented at the Oval Center in July 2015 after informal discussions among medical trainees and faculty uncovered a large interest administering PrEP/PEP and STI care but lack of knowledge and training opportunities in their current practice settings. The curriculum is composed of three core components: 1) patient care, 2) didactic seminars, and 3) directed readings. Patient care ranges from 2–5 patients per session with a mean of 18.75 sessions per learner. Patients are seen by walk-in or appointment basis. Common reasons for visits include risk-based STI screening, symptomatic STI treatment, PrEP/PEP recommendation and initiation on eligible patients and appropriate follow up. Directed readings include current prevention and treatment guidelines and seminal papers from peer-reviewed literature. Two 30-min didactic sessions focused on evidence for current guidelines and best practices in disease prevention and management.

EVALUATION: In the first 18 months of the curriculum's initiation there were a total of 4 learners: 2 fellows and 2 residents. Participants were invited to complete a confidential paper questionnaire after at least 4 weeks following completion of their initial rotation to examine confidence in PrEP/PEP and STIs. Post intervention analysis found confidence was highest in recommending and monitoring patients on PrEP (mean of 4.8) on a 5-point Likert scale. It was also high in taking a comprehensive sexual history (mean 4.6), sexual risk reduction counseling (mean 4.6), conducting STI screening (mean 4.6) and treating common STIs (mean 4.6).

DISCUSSION/REFLECTION/LESSONS LEARNED: This pilot demonstrates that a training program focused on HIV prevention and sexual health was feasible and after completion, learners had high confidence prescribing PrEP/PEP and treating common STIs. The curriculum has been well-received by trainees and faculty and enrollment has nearly doubled in the last three months. Next steps include further examining the impact of the curriculum using pre-post analysis of learners' knowledge and behavior and change in PrEP/PEP prescribing rates, and expanding the curriculum throughout the health system, including integration into primary care training sites.

HOME BASED PRIMARY CARE CURRICULUM FOR PHARMACY RESIDENTS

Melissa Morgan-Gouveia; Pooja Dogra. Christiana Care Health System, Wilmington, DE. (Control ID #2707506)

NEEDS AND OBJECTIVES: Numerous studies have evaluated the impact of pharmacist home visits after discharge from the hospital on adverse drug reactions, emergency room visits, and hospital readmissions. Despite many pharmacy residency programs having home based primary care experiences, there is a lack of curricula on pharmacist training in home visits in the literature. We sought to develop, implement, and evaluate a home based primary care curriculum for pharmacy residents.

SETTING AND PARTICIPANTS: Eight post-graduate year 1 pharmacy residents at a single community-based teaching hospital participated in a home based primary curriculum from July 2014 - June 2016.

DESCRIPTION: We developed a 12 week longitudinal rotation where pharmacy residents spent one half day per week conducting home visits with a geriatrician. A Clinical Pharmacy Specialist accompanied on the first visit for orientation. Residents reviewed patient medication lists prior to the visit, performed medication reconciliation during the visit, reviewed findings with the physician during visit, and documented their findings and recommendations after the visit in the electronic medical record. Time in the car traveling between patients was used to reflect on visits, discuss patient care issues, and cover important teaching topics including polypharmacy, safe medication use in older adults, and transitions of care. Clinical documentation was reviewed and feedback given by a Clinical Pharmacy Specialist. Residents made follow-up phone calls to patients 1 week after the visit to assess impact of their intervention and logged their interventions in a clinical database.

EVALUATION: All residents completed a post-survey evaluation of the rotation and all rated "consistently true" that the rotation met the learning objectives and provided opportunities to provide patient-centered care. A total of 124 visits for 93 unique patients were logged in the database. An average of 3.09 (SD = 2.08) interventions were made per patient. The most common interventions were patient education ($n = 54$), adding ($n = 52$) or discontinuing ($n = 51$) a medication, and providing adverse drug interaction to provider ($n = 37$).

DISCUSSION/REFLECTION/LESSONS LEARNED: Home visits are a unique educational setting where pharmacy residents can learn complex medication management in a population with multiple comorbidities and identify barriers to medication compliance that may not be identified in the inpatient or office setting. Through this interdisciplinary collaboration, pharmacists were also able to educate physicians and make interventions with potential to improve patient outcomes.

I'M NO SUPERMAN: FOSTERING RESIDENT RESILIENCE THROUGH GUIDED GROUP DISCUSSION OF SCRUBS Arthur Holtzclaw; Jack Ellis; Meredith Hays; Christopher Colombo. Dwight D. Eisenhower AMC, Evans, GA. (Control ID #2704601)

NEEDS AND OBJECTIVES: Provider resiliency and burn out are recognized issues within the medical community, with increasing focus being placed

on residents. The Accreditation Council on Graduate Medical Education (ACGME) has made resident wellness a priority with recommendations to create programs or curriculums designed at addressing this essential topic at such a critical junction of their careers. We sought to stimulate open dialogue about these key topics with our residents by incorporating episodes from *Scrubs*, a popular medical television series.

SETTING AND PARTICIPANTS: Episodes were shown during protected academic time for internal medicine residents.

DESCRIPTION: Episode guides for six episodes from the TV series *Scrubs* have been created. Each episode is 22 min with each session lasting a total of 45 min to allow for discussion of topics such as physician burn-out, depression, fear, relationships, and dealing with death and medical errors. The episode guides summarize the episode and provide detail outlining the planned discussion objectives with open-ended questions occurring at pre-determined stopping points. These sessions are designed to be fluid and adaptable based on the needs of the residents and their current concerns with the intent to generate open communication, allowing for interruptions at any time for questions and providing shared understanding of the key objectives. Additionally, using existing episode guides as a template, participants in the program are encouraged to create their own guided discussion of episodes, expanding the program and ensuring its relevance for its target audience.

EVALUATION: We have established the baseline levels of burnout, depersonalization and satisfaction in the house staff by administering the abbreviated Maslach Burnout Inventory (aMBI). We will subsequently utilize the results of the aMBI for evaluation of improvement of resident well-being in addition to obtaining informal feedback to help improve the program.

DISCUSSION/REFLECTION/LESSONS LEARNED: By using television, we believe we have been able to engage the residents in an emotional experience, creating a shared understanding of the stressors inherent to this profession. We found that the element of humor in the episodes helped decrease anxiety over discussion of emotional/personal topics, allowing a much more informal, open setting than we have been able to obtain with more traditional formats. This openness has helped to destigmatize the personal struggles that all medical professional face, helping develop an esprit d' corps and bolstering a sense of belonging among the residents and staff.

IMPACT OF A NOVEL COMMUNICATION WORKSHOP ON SELF-REPORTED ATTITUDES AND PRACTICES IN TRAINEES WORKING WITH CANCER PATIENTS Rushad Patell; Alejandra Gutierrez; Katie Neuendorf. Cleveland Clinic Foundation, Cleveland, OH. (Control ID #2706428)

NEEDS AND OBJECTIVES: Patient communication, a cornerstone to effective health care delivery, has been shown to influence physicians' stress, job satisfaction and burnout. Communication in oncology is challenging as patients often ask emotional questions. Answering these questions without understanding the reason for asking can lead to patient and clinician dissatisfaction. Fostering competence in communication and professionalism is a well-recognized focus in medical training today. We aimed to assess the impact of a mini communication workshop focusing on the 'ask more and summarize technique' (AMST) on residents' attitudes and practices during an inpatient oncology rotation.

SETTING AND PARTICIPANTS: Residents assigned to an inpatient oncology rotation attended a mandatory workshop on clinician-patient communication, focused on AMST, led by a recognized expert.

DESCRIPTION: a difficult, emotionally charged or sensitive question. It involves asking a patient/family member to elaborate on what prompted the question and for the clinician to summarize back what was understood. This step allows the clinician to better understand the underlying motivation to the question, facilitates an empathic environment and thus allows time to prepare an appropriate answer. The workshop involved a short didactic followed by skills practice. A survey (S1) was administered to the residents upon completion of the workshop to assess their self-reported attitudes and practices as they related to AMST. A link to a follow up survey (S2) was sent at the end of the rotation via email to assess the usefulness of AMST, to identify the specific situations in which it was useful and barriers to use.

EVALUATION: Of participants ($N=21$) that completed S1, 71% were 25–30 years, 57% male and 67% PGY1. For S2 ($N=12$); 58% were 25–30 years, 58% male and 90% PGY1. Although there was no difference in reported frequency of 'Asking more information of patients questions' between the surveys ($P=0.73$), there was a reported increased frequency of 'Summarizing Back' between surveys ($P=0.01$). 62% reported the workshop was very useful. 95% felt AMST would be used at least daily. Addressing fear and anxiety (75%) and angry/upset patients (66%) were the situations AMST was found to be the most useful. 54% felt they could have used AMST more. Barriers included lack of autonomy and comfort with technique.

DISCUSSION/REFLECTION/LESSONS LEARNED: A structured communication workshop for house staff during an inpatient oncology rotation was well received. AMST is a novel technique that assists residents in challenges in the care of oncology patients, especially when addressing patients' fear, anxiety and anger. Communication and interpersonal skills training are prioritized in resident education and novel strategies to foster competency can improve patient care as well as improve resident experience.

IMPACT OF BEDSIDE ULTRASOUND COURSE FOR INTERNAL MEDICINE RESIDENTS Timothy Sterrenberg; Lucinda Fingado. Manatee Memorial Hospital, Bradenton, FL. (Control ID #2707463)

NEEDS AND OBJECTIVES: Demonstrate basic understanding of ultrasound technique, machine and terminology. Demonstrate improvement of knowledge from pre- test to post- test results. Learn to obtain quality views for cardiac ultrasound; including parasternal long axis, parasternal short axis, apical four chambers, and subxiphoid. Learn how to properly assess intravascular volume utilizing ultrasound. Learn how to differentiate between pleural and pericardial effusions in a rapid, efficient manner. Be able to incorporate this into daily patient visits.

SETTING AND PARTICIPANTS: Internal Medicine residency setting. Participants are the internal medicine residents, all three years.

DESCRIPTION: Residents are required to watch an instructional video prior to meeting with educators. They then take a 20 question pre- test. Once the test has been taken, review the answers with educators. After this they receive a lecture about cardiac ultrasound. Once completed they will then participate in mastering the fundamental echocardiography views including; parasternal long axis, parasternal short axis (aortic, mitral and papillary), apical four chamber, subxiphoid. In addition, they will learn intravascular volume assessment. They will do this on Vimedix Simulation Ultrasound. Once appropriate demonstration of skills shown pathology is incorporated as can be done with Simulation

Ultrasound. This will include thrombus identification, pericardial effusion, and pleural effusion to name a few.

EVALUATION: Evaluation to be done via the post test which they take after the initial course. There is also a follow up simulation ultrasound evaluation similar to initial evaluation by educators 3 months later.

DISCUSSION/REFLECTION/LESSONS LEARNED: Residents had positive feedback. They found this course very enjoyable. They also found the benefit of their new knowledge when seeing patients for the first time and for rapid responses. At my institution we are moving towards portable ultrasound which will provide them with immediate increased diagnostic abilities given their ultrasound skills acquired via this course.

IMPACT OF DEBRIEFING SESSIONS ON RESIDENT PHYSICIAN BURNOUT AND RESILIENCE Myung S. Ko[1]; Sam Brondfield[1]; Denah Joseph[1]; Larissa Thomas[2]; Jennifer Babik[1]. [1]UCSF, San Francisco, CA; [2]University of California, San Francisco, San Francisco, CA. (Control ID #2705474)

NEEDS AND OBJECTIVES: Nearly half of practicing physicians in the US experience burnout at some point in their career. Burnout in resident physicians has been linked to significant consequences including depression, lower work satisfaction, substance misuse, and reduced patient satisfaction. Interventions at targeting resident physician burnout include physician-directed interventions or organization-directed interventions. The objective of this project was to reduce burnout risk among internal medicine trainees, as well as provide evidence based, physician-directed tools for increasing resilience among trainees through implementation of monthly, debriefing sessions.

SETTING AND PARTICIPANTS: The study took place within the Internal Medicine Residency Program at University of California San Francisco (UCSF) during the 2016–2017 academic year. We implemented monthly interdisciplinary sessions, facilitated jointly by a palliative care physician and a chaplain. There were approximately 20 intern learners at each intern session and 12 resident learners at each resident session. Over the course of 12 months, all 62 internal medicine interns and a smaller number of anesthesia, neurology, and OB/GYN interns will participate in the intern sessions that occur while they are rotating at UCSF's Moffitt-Long Hospital, and 119 senior internal medicine residents will participate in the resident sessions that occur while they are rotating at UCSF's Moffitt-Long Hospital.

DESCRIPTION: The focus of the sessions was on support and sharing around difficult clinical situations. At the beginning of each session, the palliative care chaplain taught a 5 min didactic component around acquiring a specific skill or tool that promotes resilience, including mindfulness exercises to increase emotional awareness, as well as routine practice of personal reflection and use of positive psychology principles. The remainder of the hour-long session focused on allowing time for debriefing. During the sessions, house staff pagers were held by other colleagues to minimize interruptions. The curriculum was flexible and modular; there were a number of learning objectives, but the content of each session was determined by the needs of the particular group of attendees in that particular session. Each session included both affective and cognitive components to shift knowledge, skills and attitudes related to burnout and resilience.

EVALUATION: The efficacy of these sessions will be assessed by the distribution of validated pre- and post-intervention surveys assessing burnout and resilience. Qualitative notes were taken during each session.

DISCUSSION/REFLECTION/LESSONS LEARNED: Qualitative data from our sessions revealed that majority of our intern and resident physicians felt a sense of loss of meaning in their work as their work days became more inundated with navigating the complex medical system. Protective measures against loss of this meaning included increasing physical interactions with patients, and feeling empowered to reach out to one another for help.

IMPLEMENTATION OF A DEDICATED GLOBAL HEALTH CURRICULUM FOR INTERNAL MEDICINE RESIDENTS Alanna Stone; Jennifer Bracey; Dominique Cosco. Emory University School of Medicine, Atlanta, GA. (Control ID #2704965)

NEEDS AND OBJECTIVES: The Emory University Internal Medicine Residency first created a Global Health Distinctions Program (GHDP) in 2007. This program has evolved to include clinical rotations at the Indian Health Service (IHS) for PGY2s and in a developing country for PGY3s. On entrance and exit surveys, residents identified a desire for more knowledge of global health (GH) issues and clinical skills to provide care in resource poor settings. However, implementation of a formal curriculum while balancing clinical duties has been challenging. We sought to create a formalized curriculum for the GHDP with the following objectives: (1) establish fundamental understanding of GH, (2) provide defined skillset to be used while rotating abroad, (3) develop career mentorship for GH work.

SETTING AND PARTICIPANTS: Six PGY2 residents were selected to participate in the GHDP 2016–2018 cohort. They attended a new 16 hour curriculum in August 2016. To accommodate this, residency leadership agreed to assign all GHDP residents to a rotation in August that would allow dedicated time for participation.

DESCRIPTION: The curriculum was divided into four equal sessions. The first session provided an introduction to the program and an overview of major global health players and issues. The second session included didactic lectures on diseases in developing countries. The third session provided skills-based workshops on laboratory medicine and bedside ultrasound. The fourth session included a panel on careers in GH and resident presentations on topics of GH advocacy or policy.

EVALUATION: Participants completed an entrance survey identifying in free text individual goals for the GHDP (as referenced above). Additionally, they rated confidence in skills prior to curriculum delivery on a scale of 1–5: basic bedside ultrasound was mean 2.1, and basic laboratory skills was mean 2.9, indicating substantial opportunity for education in these areas. Content evaluations for the first two sessions were high with a mean 4.6/5 for both sessions. Free text comments suggested more case discussion would be helpful. Verbally, residents expressed greatest satisfaction with the interactive sessions and the career panel.

DISCUSSION/REFLECTION/LESSONS LEARNED: After identifying resident interests and needs, we were able to successfully implement a new 16 hour curriculum for residents in the GHDP. This curriculum was well-received and included faculty from public health, pathology, radiology and internal medicine. However, there is opportunity for fewer didactic sessions by moving certain topics to preexisting online curricula and, in return, implementing more interactive discussion and skills workshops. We also plan to establish a longitudinal scholarly project with our partner sites that can be continued through different resident cohorts.

IMPLEMENTING A QUALITY IMPROVEMENT CURRICULUM IN THE 4 + 1 SCHEDULE - LESSONS LEARNED AFTER 18 MONTHS

Carmen Vesbianu; Martina Jelley; Kristin Rodriguez. University of Oklahoma School of Community Medicine, Tulsa, OK. (Control ID #2706717)

NEEDS AND OBJECTIVES: Over the last decade residency programs have begun to teach quality improvement in an effort to comply with ACGME requirements and to optimize patient care. We created a didactic and experiential quality improvement curriculum with minimal faculty and clinical resources and integrated it in our 4 + 1 resident schedule.

SETTING AND PARTICIPANTS: Participants included all PGY-1, 2, and 3 Internal Medicine residents ($n = 32$) rotating through the one week ambulatory block at the OU School of Community Medicine Schusterman Center Clinic in Tulsa. The QI curriculum was delivered during one hour-long noon session each ambulatory block. Most sessions were led by one faculty leader and the research coordinator for the department.

DESCRIPTION: We introduced the curriculum in July 2015. The IHI Model for Improvement was the framework for this curriculum and included two key components: didactic and experiential. The brief didactic portion (20 min) focused on teaching residents the tools necessary to conduct a QI project and included: setting an aim, measurement tools, PDSA cycles, run charts, etc. Each didactic session was followed by a workshop (40 min) where residents had the opportunity to apply the knowledge acquired during the didactic session to their own longitudinal projects. Each firm ($n = 5$), comprised of 7–8 residents assigned to the same ambulatory block, designed and implemented one project that was completed by the end of the academic year.

EVALUATION: Evaluation included three elements: Resident knowledge using the Quality Improvement Knowledge Application Tool, residents' satisfaction with the curriculum with emphasis on self -perception of QI skills, and the success of the projects measured by presentations at medical meetings. All residents completed the questionnaires in year two. After curriculum implementation, residents showed a significant improvement in the QI knowledge (pre-QIKAT score 7.68 vs post-QIKAT 9.90, $p < 0.05$). There was a statistically significant difference in the resident self-assessment of QI skills (pre-course 16.3 vs post-course 19.3, $p < 0.001$).

DISCUSSION/REFLECTION/LESSONS LEARNED: This project demonstrates that a didactic-experiential quality improvement curriculum can be implemented successfully in a 4 + 1 schedule. The ambulatory week provides the perfect setting to deliver the longitudinal experience required for improvement cycles. The sequence of the didactic session followed by the hands-on session proved to be successful, as trainees learn better by doing. A great challenge for continuing the curriculum was obtaining "buy-in" from the residents. We realized that by facilitating opportunities for residents to present their projects we could increase their interest in the QI curriculum. A second lesson learned is that including clinic staff feedback and input is vital for the success of the project. Additionally, we learned that it is important to identify people with quality improvement knowledge and experience and invite them to participate in the curriculum delivery and mentor the residents.

IMPLEMENTING A WEB-BASED CASE DISCUSSION TO SUPPLEMENT THE SUB-INTERNSHIP EXPERIENCE: THE VIRTUAL 4TH YEAR TEAM

Irsk Anderson[3]; Oliver Hulland[1]; Jeanne M. Farnan[1]; Diane Altkorn[1]; Todd Stern[3]; Wei Wei Lee[1]; Vineet M. Arora[2]. [1]University of Chicago, Chicago, IL; [2]University of Chicago Medical Center, Chicago, IL; [3]University of Chicago Medicine, Chicago, IL. (Control ID #2701873)

NEEDS AND OBJECTIVES: The traditional subintern (SubI) experience is often experiential. The Clerkship Directors in Internal Medicine (CDIM) has identified a need for curricular reform. Patient variety is limited by patient populations, clinical site, duty hour restrictions and competing responsibilities. We have shown only 19% of SubI exposures to the 17 CDIM case scenarios came via personal experience. We hypothesize that a social media (SoMe) platform can increase exposure to patient pathology and augment discussion and learning. Our objectives were as follows: 1. Utilize SoMe to increase students' exposure to CDIM SubI curriculum. 2. Provide attending-moderated, student-level case discussions and identify salient learning objectives. 3. Foster a learning network for subI students at geographically disparate sites.

SETTING AND PARTICIPANTS: University of Chicago Medicine: Five Core Faculty members and all internal medicine subI's July 2014-June 2016

DESCRIPTION: *Social Media platform* Yammer® is a secure, private SoMe platform. Students were invited to a private group, UC4. Yammer® allows for the group's individuals to begin a conversation (thread), around a specific topic, tag those threads with supplementary files or images, and indexes the conversations in a searchable manner. Students attended a 30 minute training session on Yammer use, de-identifying PHI and following HIPPA guidelines..*Student-initiated case discussion* Students were required to submit 4 posts during their sub-internship, which could represent a patient case, teaching pearl, joural article etc. Students were required to participate in an additional 4 discussion threads. *Faculty facilitators* Faculty reinforced key topics/teaching points made during the discussions, corrected errors and monitored for HIPPA compliance.

EVALUATION: 47 fourth year medical students rotated on a medicine subinternship from 2014–2016. Within the first 3 months of the project, 100% of the CDIM training problems had been discussed. 89% of students were average to very satisfied with the Yammer® experience. 87% found it easy to use. 47% of sub-interns rated the Yammer® educational experience as above average to excellent. 77% felt the faculty participation prompt and helpful. 51% of students met their 4 post quota. 40% of students created 5–10 unique posts (i.e. more than required). Only 6% of participants noted privacy concerns. Positive feedback included: "liked the little pearls and discussing cases", "many students will really enjoy this forum" and "more enjoyable part of my Sub-I". Criticisms included: "not enough participants", "forced effort" and "burdensome".

DISCUSSION/REFLECTION/LESSONS LEARNED: Yammer® was a well-received addition to the traditional subinternship experience. Supplementing the required clinical experiences with a social media platform was feasible and the majority of students found it easy to use.

IMPLEMENTING STRUCTURED BEDSIDE US CURRICULUM FOR INTERNAL MEDICINE AND MED-PEDS RESIDENT EDUCATION: A SINGLE CENTER EXPERIENCE

Bilal A. Unar; Martin K. Reriani; jayanth G. vedre. Marshfield Clinic, Marshfield, WI. (Control ID #2706716)

NEEDS AND OBJECTIVES: The quality of resident education in point-of-care ultrasound (POCUS) is becoming increasingly important to residency programs. ACGME requires having facilities available for ultrasonography

but there is no formal training requirement and guidelines for Internal Medicine (IM) residencies. With the lack of trained IM faculty, we started the POCUS curriculum with trained specialists for PGY2 IM residents.

SETTING AND PARTICIPANTS: Nine PGY2 IM residents and two Med-Peds residents at Marshfield Clinic are participating in an established POCUS training course in academic year 2016–2017. The course is conducted at Marshfield Clinic Sim Lab. Residents will also take part in pre and posttest US knowledge and (audio-video recorded) skills test.

DESCRIPTION: Fourteen hour structured POCUS training course is conducted in seven - two hour - biweekly sessions at Marshfield Clinic Sim Lab. Each biweekly session is a live lecture followed by Hands-on practice on volunteer human models. The course consists of lectures on Basics of POCUS, Cardiac, Pulmonary, Abdominal, Musculoskeletal and Procedural US. Our ICU Intensivists, Rheumatologist and Emergency Medicine physician conduct these lectures. Half way to the completion of the course, there was a make-up/review session making a total of eight - two hour (16 hours) didactics on POCUS. Two pocket-US devices are readily available for IM residents on wards and ambulatory clinics.

EVALUATION: Since the implementation of formal ultrasound education for IM residents, in over two years, 18 Internal Medicine and 4 Med-Peds residents have had the opportunity to train and enhance their skills; as a result there is a ubiquitous use of POCUS on medical floors and clinics. Residents have started documenting their US findings and have also heightened their procedural efficiency. We have successfully conducted a pretest knowledge and US skills test for our current group of PGY2 IM residents and a formal IM oriented structured US education curriculum is currently being studied

DISCUSSION/REFLECTION/LESSONS LEARNED: We are among a small group of IM residency programs nationwide who are in the process of developing a structured US curriculum. We believe that a structured bi-weekly US training curriculum and 24/7 availability of pocket-US devices would aid in retention of resident's skills and knowledge. With the increasing positive feedback and interest in enhancing US skills, we are also planning to incorporate simulation based US skills training starting at the beginning of intern year with the intention of enhancing hands-on US training. Our ultimate goal is to set POCUS proficiency expectations for IM residents prior to their graduation.

IMPROVING INTERNAL MEDICINE RESIDENT EDUCATION IN LONG-ACTING REVERSIBLE CONTRACEPTION COUNSELING

Alexandra Bachorik; Michelle Jose-Kampfner; Holly Gooding; Grace Chen; Cristina B. Alexander; Rebecca Berman; Lydia E. Pace. Brigham and Women's Hospital, Boston, MA. (Control ID #2705868)

NEEDS AND OBJECTIVES: Internists often care for women with chronic diseases who may be at increased risk for maternal and fetal complications in the event of unintended pregnancy. Long-acting reversible contraceptive (LARC) methods are the most effective reversible contraceptive methods, safe in most chronic diseases, and thus are important preventive health interventions. However, training in contraception (including LARC) in internal medicine residencies is often limited and evidence suggests that internists have inadequate comfort with contraceptive counseling. Our objective was to implement a curriculum to increase internal medicine residents' knowledge of and comfort with counseling on contraception, with a focus on LARC.

SETTING AND PARTICIPANTS: This project was initiated and developed by a second year internal medicine resident and a chief medical resident with faculty support. It consisted of a 2.5 h didactic and interactive training session as part of the mandatory ambulatory medicine curriculum for all first and second year internal medicine residents at Brigham and Women's Hospital in 2016–2017.

DESCRIPTION: The first hour of the training consisted of a lecture with an overview of LARC, including efficacy, indications and contraindications and counseling strategies. The second section entailed 1.5 h of small group counseling role plays using cases, with mentorship from general internist and OB-GYN faculty. We have held a pilot session and 2 of 4 planned trainings.

EVALUATION: We administered immediate pre and post-tests to residents, collecting responses anonymously. We assessed changes in knowledge using McNemar's tests. Of 34 participants, 56% were interns and 18% were planning primary care careers. At baseline, most (82%) residents described comfort counseling about LARC; however, one-half had not referred any patients for LARC in the past year. After the training, residents demonstrated significantly improved understanding that LARC methods are appropriate for obese (74% vs 97%, $p = 0.02$) and breastfeeding women (74% vs 94%, $p = 0.04$), as well as improved understanding of IUDs' risks (77% vs 97%, $p = 0.02$); they demonstrated non-significant improvements in other knowledge domains. All residents noted that the training had improved their comfort counseling patients about LARC either somewhat (56%) or a lot (44%).

DISCUSSION/REFLECTION/LESSONS LEARNED: Preliminary results suggest that this curriculum is valuable in increasing internal medicine residents' knowledge and comfort counseling patients about LARC. We plan to refine the materials based on resident feedback and will incorporate it as a standard component of the BWH ambulatory curriculum.

IMPROVING MEDICAL RESIDENTS' ABILITY TO IDENTIFY AND ADDRESS SOCIAL DETERMINANTS OF HEALTH (SDH) IN THE AMBULATORY SETTING

Iman F. Hassan[3]; Mayce Mansour[2]; Lalit Narayan[5]; Casey Browder[3]; Viraj V. Patel[1]; Lauren Shapiro[4]; Darlene LeFrancois[4]. [1]Albert Einstein College of Medicine, Bronx, NY; [2]Icahn School of Medicine at Mount Sinai, Brooklyn, NY; [3]Montefiore Medical Center, Bronx, NY; [4]Montefiore Medical Center, Bronx, NY, NY; [5]George Washington Medical Center, Washington, DC. (Control ID #2706598)

NEEDS AND OBJECTIVES: Describe the link between SDH and health outcomes Identify SDH among clinic patients Provide targeted interventions using clinic and community resources for the following SDH: no/underinsurance, food insecurity, suboptimal housing, transportation barriers, need for supplemental income

SETTING AND PARTICIPANTS: Participants were 38 PGY2 IM categorical residents at Montefiore Medical Center, a tertiary academic center in Bronx, NY. The curriculum was administered during ambulatory blocks from 9/2015 to 5/2016.

DESCRIPTION: The curriculum included 3 didactic sessions on SDH, immigration and incarceration; an interactive workshop; a session reflecting on SDH in residents' own patients and a journal club session. In the workshop, students used sample cases to identify SDH and community and clinic resources to address them, building skills they then applied to their clinic patients. Faculty participated in a session on precepting SDH in clinic and were given evidence based teaching points. Resource sheets and a community resource website were available online for residents and faculty.

EVALUATION: Identical pre- and post-intervention surveys were administered to residents. The survey had 13 questions on demographics, prior experience, perceived barriers to addressing SDH in clinic, confidence levels identifying and intervening on SDH, and current rates of addressing SDH in the clinic. Confidence levels were measured via a likert scale from least confident (1) to most confident (5) and rates of addressing SDH in clinic were measured on a scale of 1–6 ranging from 0% to >20% of time spent. The survey also included 30 validated knowledge questions on healthcare access, SDH and health disparities and 3 questions on incarceration. Residents identified time and lack of knowledge as the most significant barriers to addressing SDH in clinic. Post intervention, knowledge as a barrier was reported significantly less (35.6% vs 62.1%, $p = .001$). Residents reported a significant increase in overall confidence in their ability to both identify patients' SDH (3.20 vs 2.77, $p = .002$) and create a plan to address SDH (3.09 vs 2.68, $p = .002$). Residents showed a significant increase in overall knowledge (59.5% vs 49.3%, $p = .000$). They also reported a significant increase in the overall proportion of patient encounters in the last 3 ambulatory blocks during which some time was spent identifying/addressing SDH (3.34 vs 2.96, $p = .049$). 90% of residents recommended the curriculum for future residents.
DISCUSSION/REFLECTION/LESSONS LEARNED: IM residents demonstrated improvements in knowledge, attitudes and self-reported behavior after receiving a SDH curriculum that emphasized clinic based interventions. Residents felt the curriculum was worthwhile. To further evaluate the curriculum, survey results from residents who received the curriculum will be compared with those from a historical control cohort of residents who did not receive it. Future steps include comparing referral rates to clinic resources both pre- and post-intervention and between intervention and control groups.

IMPROVING PATIENT-PROVIDER COMMUNICATION Taimur Safder; Robert G. Badgett. University of Kansas School of Medicine-Wichita, Wichita, KS. (Control ID #2706940)

NEEDS AND OBJECTIVES: A key challenge facing medical professionals today is to communicate effectively with their patients while dealing with the increasing demands on their daily schedules. Additional barriers are implementation of electronic health records (EHRs) and increasing pressure to improve documentation to support quality of care and billing. Our objective is to improve patients' ratings of communication skills of residents.
SETTING AND PARTICIPANTS: Patients and residents at the Internal Medicine clinic at the University of Kansas School of Medicine-Wichita (KUSM-W).
DESCRIPTION: *Surveys*: From the CAHPS 12 Month Adult English Survey, we used the six items regarding communication skills. All patients seen at the clinic were asked to fill out a paper-based baseline survey during five weeks spanning January and February, 2015. Follow-up survey was done during five weeks of January and February of 2016. *Intervention*: Each resident received their baseline scores in comparison to the program average as well as the national 90th percentile score at their 6-month evaluation. For each item that fell below 90th percentile of the national score, the resident was given a short evidence-based recommendation on how to improve. The evaluation was made available to the program directors of the residency for use during the biannual feedback sessions with the residents. *Outcome*: After the intervention, the same six items from the CAHPS survey was administered to patients. In addition, an online survey of residents measured their satisfaction with the feedback process and their intention to change communication practice after viewing feedback report.
EVALUATION: Our clinic's mean overall satisfaction with communication across the six items ranged between the 75th and 90th percentile nationally. There were no significant changes after the intervention. 66% of residents responded to the survey. 86% of residents agreed or strongly agreed the survey should be done regularly. 57% of residents agreed or strongly agreed in harboring intent to change practice in response to survey results.
DISCUSSION/REFLECTION/LESSONS LEARNED: This first improvement cycle using our intervention did not measurably affect communication skills as reported by our patients. The lack of improvement occurred in spite of residents' rating the quality of the project as a typical educational experience and half the residents reporting intent to improve communication skills. In addition, positive reception by our institution is suggested by the request of the residency program directors for our project to replace the prior surveys of patients. Our project demonstrates that the CAHPS tool can be implemented with minimum resources and serve as a low cost and customizable alternative to contracting with commercial services such as Press-Ganey. Future plans include acknowledge of high performing residents to their peers and better integration of the feedback with the overall biannual feedback provided to the residents by the residency program.
ONLINE RESOURCE URL (OPTIONAL): http://cahps.github.io/

INCORPORATING HIGH VALUE CARE EDUCATION INTO THE INPATIENT MEDICINE EXPERIENCE Jacqueline M. Schulman[1]; Sonali Palchaudhuri[1, 3]; Paul O'Rourke[2]. [1]Johns Hopkins Bayview Medical Center, Baltimore, MD; [2]Johns Hopkins University, Baltimore, MD; [3]PRO (Providers for Responsible Ordering), Baltimore, MD. (Control ID #2698380)

NEEDS AND OBJECTIVES: There is a need to educate medical trainees about high value care (HVC). In particular, there is limited guidance about how to effectively incorporate HVC education at the point of care. In order to augment HVC education in the clinical setting, we developed a curriculum for internal medicine house staff and medical students that aims to teach and practice HVC on the inpatient medicine wards. After participation in the curriculum, we hope to enhance knowledge, attitudes, and practice patterns pertaining to HVC.
SETTING AND PARTICIPANTS: Our study population consists of residents, interns, and medical students at Johns Hopkins Bayview Medical Center who are randomly assigned to the HVC inpatient medicine ward team for two weeks. We expect approximately 30–50 participants in our study over the next six months.
DESCRIPTION: One of the four medical ward teams has been designated the HVC team. Prior to the start of the rotation, the attending physician and upper-level resident are sent the curricular objectives, with encouragement to incorporate HVC into daily discussions and patient care. Core components of the new HVC curriculum are two collaborative educational sessions organized on the team's non-admitting days. These sessions are facilitated by members of our HVC training team and emphasize the importance and impact of HVC on patients and the health care system, while providing the trainees with the tools to practice HVC and incorporate it into patient care. Learners are introduced to Bayesian thinking and are encouraged to incorporate pre-test probabilities into their patient rounding discussions. The team members learn about resources

that provide information on costs, harms, and benefits of medical tests and therapies. They also learn how to assess and counsel patients about financial burden, with the expectation that they will practice this skill at the bedside. In the second session, the team is guided through shared reflection of the care they provided during the rotation and is encouraged to evaluate whether Bayesian thinking and HVC principles were applied. They also review an itemized hospital bill for one of their patients. The bill review allows the team to assess whether and how the tests and treatments ordered impacted the care of the patient, and to propose alternative approaches for future patients.

EVALUATION: We are measuring impact by having learners complete pre- and post-rotation online surveys that include multiple choice and short answer questions. The surveys measure change in knowledge of HVC and attitudes toward HVC. They also assess the degree to which HVC principles were incorporated into patient care throughout the rotation.

DISCUSSION/REFLECTION/LESSONS LEARNED: Our goal with this HVC curriculum is to infuse HVC education directly into the care setting by ensuring that the material taught is directly related to the care being provided by the team. Rather than teaching concepts that are separated from the clinical work, we explicitly aimed to introduce material that can be utilized at the point of care.

INNOVATIVE MODEL TO TEACH JUDICIOUS OPIOID PRESCRIBING: A RESIDENT TEACHING PRACTICE SPECIALTY SESSION

Laila Khalid[2]; Serena L. Roth[2]; Ginger Wey[4]; Gianni Carrozzi[3]; Joanna L. Starrels[1]. [1]Albert Einstein College of Medicine & Montefiore Medical Center, Bronx, NY; [2]Montefiore Medical Center, Bronx, NY; [3]montefiore medical center, Bronx, NY; [4]Montefiore Medical Center, New York, NY. (Control ID #2706501)

NEEDS AND OBJECTIVES: Internal Medicine (IM) residents report low confidence and satisfaction in treating patients with chronic pain on opioids, in large part due to inadequate knowledge and preparation. To address dual aims of providing guideline-adherent patient care and training residents about judicious opioid prescribing, we developed an innovative resident teaching practice (RTP) specialty session for patients with chronic pain on opioids: Power Over Pain (POP) Clinic.

SETTING AND PARTICIPANTS: The POP Clinic is a weekly session at a large urban IM teaching practice that serves publically insured patients in Bronx, NY. The practice cares for approximately 300 patients on chronic opioid therapy (COT). Prior to the POP Clinic, there were no mandatory policies regarding care or precepting for COT patients.

DESCRIPTION: Since 9/2016, all patients on COT (>3 opioid prescriptions in 6 months) are required to be seen in POP Clinic at least yearly. The POP Clinic is staffed by PGYII-III IM residents who rotate thrice yearly. Residents see 1–3 patients per session and are precepted by any of three IM attendings with expertise in opioid prescribing. We developed a structured visit template to assess patient goals, pain/treatment history, current opioid regimen, side effects, functional status, mental health, substance use history, and opioid misuse. Precepting includes summarizing risks and benefits of opioid therapy, optimizing current medication regimen, and providing specialty referrals, joint injections, naloxone prescriptions, or referral to an on-call social worker. We emphasize patient education and nonjudgmental communication; preceptors accompany residents to observe their delivery, and feedback is given. We developed a focused didactic curriculum on pain and opioid management; half hour seminars precede each POP Clinic. Topics include safety and efficacy of opioids, multimodal pain care, opioid use disorder, tapering opioids, and interpreting urine drug tests.

EVALUATION: We are conducting a pre-post study using a questionnaire administered to residents prior to their first POP session and at the end of academic year. The questionnaire assesses residents' knowledge and attitudes about chronic pain and opioid management, and their experiences in POP Clinic. Using an ongoing registry of COT patients, we will examine outcomes such as change in opioid dose, pain and function, and patient satisfaction.

DISCUSSION/REFLECTION/LESSONS LEARNED: We have successfully developed and implemented an RTP specialty session for patients on COT within a large urban teaching practice. Though other educational interventions exist for teaching residents about care of patients on COT, such as online courses or didactic presentations, ours is among the first experiential interventions that uses designated sessions in which IM residents are precepted while providing a comprehensive pain assessment. We believe our innovative clinic can serve as a model for delivering guideline-adherent care and increasing resident confidence and knowledge in managing patients on COT.

INNOVATIVE TEAMS IN A LARGE ACADEMIC HOSPITAL RESIDENT CLINIC

mary fishman[2]; Ania Wajnberg[1]; Andrew Coyle[1]; Juan Wisnivesky[3]. [1]Icahn School of Medicine at Mount Sinai, New York, NY; [2]Icahn School of Medicine at Mount Sinai, NY, NY; [3]Mount Sinai School of Medicine, New York, NY. (Control ID #2704017)

NEEDS AND OBJECTIVES: Increase continuity for clinic patients cared by residents Expand faculty oversight of clinical care Improve resident outpatient education and feedback Encourage outpatient handoffs decreasing fragmentation and improving quality of care

SETTING AND PARTICIPANTS: Urban academic hospital clinic with 132 residents and 18 preceptors

DESCRIPTION: Historically, academic resident clinics care for underserved populations. Literature has shown that many of these clinics struggle with continuity, patient ownership and team-based care. The Mount Sinai Hospital Internal Medicine Residency Program has 132 residents who provide outpatient care in one large clinic. Previously, residents had an average of a 2 week outpatient block every 10 weeks with unpredictable schedules and supervision by as many as 8 preceptors each block. There was poor patient-resident continuity and little long-term oversight by a faculty member. In July 2016, the clinic was re-designed so that 15 residents were assigned to 2 faculty preceptors. Groups of 3 resident rotate together for two weeks at a time and are assigned coverage duties for their full team. They hand off to the incoming team any pending studies and active issues. Each team is only precepted by their assigned faculty preceptors who get to know their patients through continuous supervision. Teams are assigned 1000 patients to their panels.

EVALUATION: Surveys assessing residents' views on continuity, supervision, education and panel management were distributed In April-June 2016 and will be re-distributed in the spring of 2017. The response rate was 70%. In the pre-redesign assessment, just 28% of residents responded that they agree or strongly agree to the question "The current clinic scheduling allows me to work with a few preceptors most of the time." In response to the question: "My patients are consistently able to get appointments to see me" only 25% responded agree or strongly agree. In assessing the quality of feedback given, only 35% responded agree or strongly agree to the question "My preceptors

give constructive feedback." Finally, in response to the question: "When I am not on block the team model enables my patients to receive care from other providers they know and who know them" only 16% responded agree or strongly agree.

DISCUSSION/REFLECTION/LESSONS LEARNED: Residents prior to the re-design had poor continuity with their patients and with the faculty preceptors. Limiting supervision to 2 faculty members for all of the ambulatory care experience should improve resident oversight, feedback and efficiency. A tight team structure with handoffs should also improve continuity of care and satisfaction. To assess for improvement in these metrics a follow up survey is planed for the end of the academic year. Long-term follow-up will allow us to assess if these changes also lead to improved clinical outcomes.

INTEGRATING BASIC SCIENCES INTO INTERNAL MEDICINE RESIDENCY CURRICULUM THROUGH THE CASE METHOD PEDAGOGY Michael McShane1; Priyank Jain[2]. [1]Cambridge Health Alliance, Somerville, MA; [2]Cambridge Health Alliance, Cambridge, MA. (Control ID #2700374)

NEEDS AND OBJECTIVES: Cooke and colleagues claim that strong foundation in basic science "…developed and expanded during a lifetime of practice permits the intellectual flexibility on which adaptive expertise depends. (Cooke 2010)". Formal curriculum in basic sciences typically fades at the GME level. We are trying to counter that trend by implementing a resident taught curriculum that integrates basic sciences and clinical cases. The major objectives of this curriculum are to: 1) Create a learning experience for residents to explore basic science concepts in a case based format 2) Explore the pathophysiologic basis of commonly encountered disease processes 3) Recognize the relevance of basic science concepts on daily clinical practice

SETTING AND PARTICIPANTS: All PGY2 residents present a 75-min session once during our academic half-day. The session is attended by 15–20 internal medicine residents from PGY1-3.

DESCRIPTION: In the beginning of academic year a workshop is held on how to design a case method session. Each PGY2 is assigned a date for the case, a subspecialty faculty advisor, a pathology faculty advisor and pedagogy advisors. The subspecialty advisor helps identify a case and important clinical learning objectives, the pathology faculty helps with identifying and teaching the relevant basic science concepts, and the pedagogy advisors help put together a case method session.

EVALUATION: Each session is evaluated by a survey of learners at the end of the session that identifies learner engagement and satisfaction. To evaluate how the curriculum explores pathophysiologic concepts related to clinical care, we are collecting learning objectives created by residents during the session. To evaluate impact of curriculum on attitudes towards basic sciences, we are administering a questionnaire to PGY1 class and to all PGY2 residents that have participated in the curriculum, adapted from a basic sciences attitudinal scale by West and colleagues (1982).

DISCUSSION/REFLECTION/LESSONS LEARNED: We are yet to deploy the questionnaire focused on the attitudinal assessment of residents involved in this curriculum. To date we have had a robust case series, which involved the following basic science topics: 1) Anatomic and pathophysiologic explanation of portal hypertension and TIPS procedure 2) Correlating the laboratory data with biochemical nature of catecholamines and their derivatives in pheochromocytoma 3) Pathologic basis of classification of vasculitis and implications for clinical presentation One major challenge has been to coordinate with the various subspecialty services and to establish specific roles and expectations. Faculty investment has been critical and necessary, both from a content and coordination perspective.

INTEGRATION OF PHYSICAL THERAPY INTO AN INTERPROFESSIONAL PRIMARY CARE TRAINING CLINIC: CROSS BENEFITS FOR PROVIDERS AND PATIENTS Jennifer Walker[1]; Frank D. Buono[2]; Destiny M. Printz[2]; Brent A. Moore[2, 1]; Carly Croteau[1]; Rebecca Brienza[1, 2]. [1]VA Connecticut Healthcare System, West Haven, CT; [2]Yale University School of Medicine, New Haven, CT. (Control ID #2707486)

NEEDS AND OBJECTIVES: Musculoskeletal (MS) complaints are common in ambulatory primary care clinics. Interest in integrating physical therapy (PT) into primary care (PC) has increased. PT's knowledge of neuromusculoskeletal conditions may benefit PC providers and patients, who often have limited training and exposure to this area, as well as time in PC visits. Integration of PT providers into primary care training sites may increase PCP's knowledge of MS complaints, improve understanding of PT's role as well as improve patient satisfaction by providing warm handoffs to PT providers and starting patients on home exercise programs early. Our goal was to evaluate the integration of PT into an interprofessional PC training ambulatory clinic by measuring patient satisfaction, PCP referrals to PT, and patient adherence to PC PT referrals.

SETTING AND PARTICIPANTS: The Veteran Affairs Connecticut Healthcare System (VACHS) is part of the largest integrated healthcare system in the U.S. Within VACHS, the Center of Excellence in Primary Care Education (CoEPCE) is an integrated interprofessional ambulatory PC training program. The participant sample consisted of PC Veteran patients with referrals to PT within all PC clinics at the main campus. CoEPCE patients and providers participated in qualitative interviews.

DESCRIPTION: A satisfaction survey was given to CoEPCE patients who attended a PC visit with a physical therapist asked to come in to evaluate the patient as part of a warm handoff and then was referred for further PT. Data was collected from for PC patients who had referrals to PT in 2015–2016 to evaluate PT adherence and number of PC provider referrals between all PC clinics and year of referral. Additional qualitative data was collected from CoEPCE providers and patients.

EVALUATION: A Pearson correlation yielded significance in the number of referrals between PC clinics ($p = .001$). Satisfaction survey showed high means (4.71/5.00) for patient satisfaction and likelihood of future visits across three months. Qualitative data showed positive feedback from PC providers and patients: "I would say it's so helpful to have PT directly embedded in primary care. I have learned from having my physical exam findings confirmed or refined by PT and I think patients clearly benefit from starting their treatment on presentation rather than needing to wait for a follow up appointment".

DISCUSSION/REFLECTION/LESSONS LEARNED: CoEPCE's model of interprofessional training and care has provided an opportunity for workplace learning and to evaluate the integration of PT into PC and preliminary results reinforce the benefits of integration. The innovative usage of PT within a collaborative PC environment has provided PCP trainees unique support while demonstrating an efficient use of resources within the PC visit.

INTERN CRASH COURSE IN RESILIENCE BUILDING– AN INNOVATIVE EXERCISE IN CONNECTEDNESS AND VULNERABILITY DURING INTERN ORIENTATION! Abby Spencer[1]; Jennifer Ramsey[2]. [1]Cleveland Clinic, Chagrin Falls, OH; [2]cleveland clinic, Cleveland, OH. (Control ID #2707662)

NEEDS AND OBJECTIVES: Residency training is a particularly vulnerable time given for burnout. Our new program focuses on building resilience, fostering meaningful connections and reflections, and challenging assumptions that "it's just me". By end of session, residents will be able to: List critical components of resiliency List the benefits to self and patients of admitting/acknowledging when help is needed Describe 3 effective strategies for reaching out when in need of help

SETTING AND PARTICIPANTS: IM interns during intern orientation.

DESCRIPTION: We created an interactive educational series of small-group, facilitated discussions about strategies to increase resilience, connectedness, and ability/willingness to ask for help. In small groups each with its own faculty facilitator, interns reflected on the challenges and benefits of admitting what you don't know, impact on patients when you do and don't ask for help, how it feels to believe you're the only person who doesn't know the answer or what to do, managing vulnerability, managing isolation, managing uncertainty. Interns read short stories written by the prior year's interns about how alone they felt when they thought they were the only ones who didn't know how to manage certain clinical situations, and how they learned to ask for help. Interns then shared strategies with each other of mutual support, framing questions in a patient-centered way, and how to stay connected with each other.

EVALUATION: 100% Interns reported after the session that they were more likely to ask questions and speak up when they don't know the answer, felt more comfortable asking questions after the role-plays and discussions, felt more connected to their colleagues knowing they had similar fears, felt less anxious about intern year, and felt like they would be a better team mate.

DISCUSSION/REFLECTION/LESSONS LEARNED: Interns unanimously reported feeling more confident and comfortable asking for help, felt validated that they were not the only ones feeling scared, unsure, or incapable, and felt more connected to each other prior to even starting internship. While numerous studies have described the high rates of burnout, few have offered robust solutions at the training level to provide residents with the necessary skills to build resilience, enhance their connections to others, and to contribute to an emotional culture of support and teamwork. We believe we our interns started out on the right foot not only bonding socially, but already having deep facilitated discussions to enhance more meaningful connections.

INTERNAL MEDICINE RESIDENT ENGAGEMENT WITH A LABORATORY UTILIZATION DASHBOARD: MIXED METHODS EVALUATION OF A NOVEL TOOL FOR PRACTICE-BASED LEARNING Gregory Kurtzman; C J. Dine; Andrew Epstein; Yevgeniy Gitelman; Damien Leri; Mitesh Patel; Kira L. Ryskina. University of Pennsylvania, Philadelphia, PA. (Control ID #2697526)

NEEDS AND OBJECTIVES: The widespread adoption of electronic medical record (EMR) software enables the design of interventions that provide feedback to physicians via practice dashboards. However, little is known about trainee engagement with dashboards aimed to improve cost-effective care. To inform future efforts in using social comparison feedback to teach cost-effective care in residency, we measured internal medicine resident engagement with a dashboard providing feedback on their use of routine laboratory tests in comparison to service averages.

SETTING AND PARTICIPANTS: From January to June 2016, we tracked utilization of the dashboard during randomly selected 99 resident-blocks on six general medicine teams at the Hospital of the University of Pennsylvania (clinicaltrials.gov #NCT02330289).

DESCRIPTION: The dashboard reported resident-specific rates of routine lab orders (e.g. complete blood count). The data were presented in a web-based dashboard that interfaced with the EMR allowing users to drill down to individual patient records. Residents who were cluster-randomized to the intervention arm were emailed a snapshot of the personalized dashboard, a link to the online dashboard, and text containing resident and service utilization averages. We measured engagement with the dashboard using email read-receipts and a web-based tracking platform. Following completion of the intervention, three hour-long focus groups were conducted with residents about dashboard use. Using grounded theory approach, the transcripts were analyzed for common themes focusing on barriers and facilitators of dashboard use for practice based learning.

EVALUATION: Eighty unique residents participated in the intervention: 74% opened the email and 21% opened the link to the dashboard (Figure 1). The average elapsed time from receiving the initial email to logging into the dashboard was 28.5 hours (SD = 25.7). Participants who deviated from the medicine service average by one standard deviation of labs per patient-day (reported in body of email) had higher odds of opening the link to the dashboard (Odds Ratio [OR]: 1.48; 95% CI: 1.01, 2.17; $P = 0.047$). Focus group participants appreciated receiving individualized feedback delivered in real time that could be reviewed quickly. However, they raised concerns about a lack of adjustment for patient complexity and small sample size. Suggestions for inclusion in future iterations included patient satisfaction, timing of discharges, readmission rates, and utilization of consulting services, among others.

DISCUSSION/REFLECTION/LESSONS LEARNED: Overall, the engagement rates of internal medicine residents with the online dashboard were low. However, residents who deviated further from the mean were more motivated to access the dashboard. Residents in the focus groups were enthusiastic about receiving information regarding their personal laboratory ordering, both in terms of preventing iatrogenic harm and waste of resources. However, they raised important concerns and suggestions for improvements to increase the educational utility of such feedback.

INTERPROFESSIONAL HEALTH COACHING AT A SAFETY-NET HOSPITAL: A PROGRAM TO FOSTER TEAM-BASED CARE AMONG LEARNERS Jamie Yao[2]; Sandeepa Sriram[3]; Agnes Lau[3]; Tamara Lenhoff[3]; Jing-Yu Pan[4]; Pamela Bellefeuille[3]; Pallabi Sanyal-Dey[1]; Kelly B. Han[1]; Rita Nguyen[1]. [1]UCSF/SFGH, South San Francisco, CA; [2]University of California San Francisco, San Francisco, CA; [3]University of California, San Francisco, San Francisco, CA; [4]Albert Einstein, New York, NY. (Control ID #2687807)

NEEDS AND OBJECTIVES: The Society of Hospital Medicine has designed core competencies for both medical students and residents. One of these competencies includes systems-based practices, which involve

interprofessional teamwork. Given the complexity of managing chronic diseases, which are increasing in prevalence as the general population ages, there has been a renewed interest in multidisciplinary management of patients via patient-centered health coaching. Medical students, however, have minimal exposure to interprofessional environments until clinical rotations. Programs that incorporate communication skills from health coaching models in multidisciplinary teams can promote health professional students' knowledge and attitudes around interprofessionalism. To address the lack of early, clinically-based, interprofessional educational opportunities along with a need for patient-centered care in the hospital, we have established an inpatient, interprofessional health coaching program for health professional students called Word on the Wards (WOW).

SETTING AND PARTICIPANTS: First and second year students from the Schools of Medicine, Pharmacy, Nursing and Physical Therapy enrolled in an interprofessional health coaching program at an urban safety net hospital for elective credits. Faculty members representing each discipline trained students to deliver health coaching regarding hypertension, diabetes, substance use, and HIV care.

DESCRIPTION: Learners worked in interprofessional pairs to provide health coaching to hospitalized patients. Each session ended with learners reporting back to inpatient teams and primary care providers, sharing relevant information uncovered and questions raised during the visit. In addition, preceptors spanning the four health professions met with learners during each session to facilitate learning, reflect on their experience, and emphasize the different viewpoints that various providers can bring to a patient's care.

EVALUATION: Since October 2014, Word on the Wards has provided health coaching to over 200 inpatient encounters via 111 student health coaches. Feedback from learners has been overwhelmingly positive. Learners have expressed appreciation for and increased understanding of the knowledge base and training of other health professionals. Learners have found preceptor sessions to be particularly worthwhile in better understanding the perspectives of various providers to a patient's care.

DISCUSSION/REFLECTION/LESSONS LEARNED: Based on positive student responses, we have continued to expand the program's capacity and offerings. Overall, experiential learning via an inpatient health coaching program can serve as a novel and effective model for interprofessional education. Inpatient health coaching can provide valuable learning in the areas of health coaching skills and engaging underserved patient populations.

INTERPROFESSIONAL MASTER OF SCIENCE IN PALLIATIVE CARE: BRIDGING THE GAP BETWEEN PRIMARY AND TERTIARY PALLIATIVE CARE Amos Bailey[1, 2]; Regina Fink[4]; Shaun Gleason[3]. [1]Univierstiy of Colorado Denver, Denver, CO; [2]Birmingham VAMC, Birmingam, AL; [3]University of Colorado Skaggs School of Pharmacy and Pharmaceutical Sciences, Aurora, CO; [4]University of Colorado, Aurora, CO. (Control ID #2702414)

NEEDS AND OBJECTIVES: 1. Summarize need for more interprofessional Palliative Care healthcare providers and our programmatic response. 2. Demonstrate case-based woven curriculum designed for interprofessional adult PC learners. 3. Review initial student-self-assessment evaluations and learning outcomes of the curriculum with programmatic response.

SETTING AND PARTICIPANTS: Current workforce pipeline for PC providers is dramatically inadequate to meet the national need - many potential providers develop their interest later in their careers when it is difficult to relocate for the limited available opportunities for training. In response to this need, we developed an interprofessional Master of Science in Palliative Care (MSPC) at the University of Colorado Anschutz Medical Campus. The MSPC is a hybrid program offered primarily online with on-campus weekend intensives. Faculty and course content are sourced from nursing, medicine, pharmacy, bioethics, social work, spiritual care, psychology, and communication disciplines. The inaugural cohort (2016–17) consists of nurses, pharmacists, physician assistants, and physicians (16 students) and will be expanded to include social workers, chaplains, psychologists, and counselors.

DESCRIPTION: MSPC longitudinal curriculum spans 6 semesters of two three credit hour course; total of 36 credits. The online curriculum begins with 5–10 min patient/family/provider dialogue representing scenarios on the illness trajectory to demonstrate communication skills and illustrate learning points. Followed by two learning modules: biomedically-focused topic and related psycho-social-spiritual-ethics topic developed/presented by content experts from the interprofessional faculty. Content presented by pedagogical methods including readings, videos, Quizlets, knowledge checks, and narrated lectures. Student assignments vary from reflection/discussion to interprofessional case-based integration of topic materials. On-campus intensive focus on communication skills training and acquisition. Communication skills learned online are reinforced with videostaped standardized patients interaction with immediate feedback. Other topics include: working as an interprofessional team using simulated tasks common in PC clinical care, and self-care strategies. Demonstration of the curricular elements provided during presentation.

EVALUATION: Program evaluation is accomplished through a mixed method process including: learner self-assessments on 39 PC skills/tasks before, during, and after the program's formal training; self-reports on type/amount of PC in their practice; and standard course evaluations and scored communication skills exercises with standardized patients, semi-structured interviews and other methods.

DISCUSSION/REFLECTION/LESSONS LEARNED: Interprofessional master's program in PC, designed/delivered by nterprofessional faculty, fills a gap in the national PC workforce pipeline. Programs of this nature are scalable and meet the needs for PC training of mid-career providers who wish to transition into PC practice.

ONLINE RESOURCE URL (OPTIONAL): www.ucdenver.edu/MSPC

INTRODUCTION OF A NOVEL "GAMING" PLATFORM IN THE INTRODUCTION TO CLINICAL MEDICINE CURRICULUM TO ENHANCE LEARNING Ashley Hudson; F. Stanford Massie; Gaurav Jain; Erin Contratto; Lauren Walter; Frank Seghatol-Eslami; Michael Lyerly; Todd Peterson; James H. Willig; Victor Sung. University of Alabama at Birmingham, Birmingham, AL. (Control ID #2707438)

NEEDS AND OBJECTIVES: To date, student knowledge acquisition in the Introduction to Clinical Medicine (ICM) course has been assessed by quarterly quizzes. However, course evaluations noted discontent among students and faculty due to a perceived disconnect between the content tested on the quizzes and material presented during ICM sessions. We implemented a curricular innovation to enhance student learning of key concepts from assigned readings and content for ICM small group meetings (SGMs).

SETTING AND PARTICIPANTS: All medical students in the matriculating Class of 2015 at the University of Alabama at Birmingham ($n = 192$). The Clinical Skills Scholar (CSS) program is a group of 32 core clinical faculty members who teach and develop clinical skills of first and second year medical students during ICM.

DESCRIPTION: In July 2015, a novel gaming activity "Kaizen weekly ICM quiz game" was introduced into the ICM curriculum, replacing all quizzes in the ICM1 course. The web based platform administered 3–4 new multiple choice questions per weekly SGM. Upon completion of each question, students received the correct answer, a rationale, and the reference source of the question. Students were grouped into teams according to their ICM group (6 students and a faculty preceptor).Performance was tracked and reported on the Kaizen weekly leaderboard and awards given to top performing teams. Participation in the game made up ICM grade (8%).

EVALUATION: We evaluated satisfaction with the learning platform during annual course evaluations. 68% of students ($n = 186$) on the end of year course evaluation agreed (53.76%) or strongly agreed (13.98%) with the statement that "The weekly Kaizen questions enhanced my understanding and retention of key concepts from assigned readings and small group meetings." Representative statements from students include: "(Kaizen) motivates me to prepare for small group meetings", "(Kaizen) was a great way for ICM members to bond with each other and their preceptor", "The immediate feedback that Kaizen provides solidifies concepts and is helpful in review".

DISCUSSION/REFLECTION/LESSONS LEARNED: 'Gamification' in medical education has proven effective, and the Kaizen quiz-style game has been used successfully in GME. We incorporated a similar strategy to improve ICM engagement and promote healthy competition while learning valuable clinical skills in the first two years of medical school. Linking the content of weekly questions to individual ICM sessions made them practically applicable to SGMs, thereby reinforcing student understanding of the material while removing the burden of graded "quizzes".

ONLINE RESOURCE URL (OPTIONAL): None

INVESTING IN RESEARCH STAFF: STRATEGIC TEAMWORK FOR EFFECTIVE PRACTICE -MENTOR DEVELOPMENT PROGRAM (STEP-MDP) Christine M. Denicola; Lisa Altshuler; Sondra Zabar. NYU School of Medicine, New York, NY. (Control ID #2702391)

NEEDS AND OBJECTIVES: Skillful research staff members are critical to productive translational research teams and yet their ongoing professional development is rarely formally addressed. Through the Strategic Teamwork for Effective Practice-Mentor Development Program (STEP-MDP), we aimed to both create a community of practice (COP) for research staff and build the skills needed to enhance research team performance.

SETTING AND PARTICIPANTS: We selected 16 participants of 32 staff-level applicants from among the NYU Schools of Medicine, Social Work and Nursing for the first STEP-MDP cohort. Participants included research assistants, coordinators, managers and directors.

DESCRIPTION: We delivered 3, two-hour workshops, scheduled 3 weeks apart, focused on team communication, identifying team areas for improvement, and mentorship/coaching skills. Peer-Coaching Teams (PCTs) were created by paring participants at the same position level, and PCTs worked together at each session to explore and practice learned skills. Sessions featured brief didactics, group learning and exercises based on participants' real issues. A variety of active learning techniques such as brainstorming, role-playing, problem solving, and peer coaching were used. Practical core readings, worksheets and summary cards were provided. PCTs met between sessions to practice coaching skills, and troubleshoot problems.

EVALUATION: Participants ($N = 16$) completed a 37-item (4 point scale) retrospective pre/post self-assessment of team behaviors and skills, and a STEP-MDP evaluation survey at the end. We saw pre-post improvements in each of 5 self-assessment domains: Communication (4 items, Pre-mean 2.66, Post mean 3.36, $p = <.001$), Leadership (8 items, Pre-mean 2.76, Post mean 3.55, $p = <.001$), Empowerment and Motivation (12 items, Pre-mean 2.86, Post mean 3.51, $p = <.001$), Coaching (6 items, Pre-mean 2.40, Post mean 3.58, $p = <.001$), and Community (3 items, Pre-mean 2.33, Post mean 3.76, $p = <.001$). On average, PCTs met twice (range 2–4 times) between workshop sessions. One commented on the value of working with peers in PCTs, having no one in a similar position within his immediate work environment. Participants' written comments strongly endorsed the value of the workshops for their work, with the coaching skills session seen as the most valuable. Some participants worry that skills will decrease over time without continued reinforcement. All but one participant reported that they planned to continue with the PCT.

DISCUSSION/REFLECTION/LESSONS LEARNED: The number of applicants to our program suggests a need and motivation for staff to participate in the STEP-MDP. Participants' reported improved skills and sense of community. To maintain the COP and address worry about degradation of skills we are planning to remind PCTs to meet once a month and will follow up with them 3 and 6 months post intervention to evaluate their continued development.This spring we will enroll a 2nd cohort. We believe developing these core teamwork skills will lead to more collaborative, efficient, and innovative research.

IT'S ALL ABOUT RISK: AN INNOVATIVE PILOT CURRICULUM TO TEACH INTERNAL MEDICINE RESIDENTS ABOUT RISK COMMUNICATION AND DECISION AIDS Jen Rusiecki[1]; Jane Schell[2]; Carla Spagnoletti[2]. [1]University of Chicago, Chicago, IL; [2]University of Pittsburgh, Pittsburgh, PA. (Control ID #2703946)

NEEDS AND OBJECTIVES: Decision aids (DA) and risk scores (RS) are tools that bridge the gap in communicating clinical risk to patients and promote shared decision making (SDM). Little is known about residents' training in DA and risk communication. In 2015 a SDM curriculum began within University of Pittsburgh medicine residency. Residents improved their use of SDM skills but room for growth in the areas of communicating risk and use of DA remained. To address these deficiencies we enhanced our original SDM curriculum to include these additional foci. The objectives of this enhanced resident curriculum are: identify key components of risk communication, demonstrate risk communication skills by using DA both in simulation and clinical practice, identify facilitators and barriers to the use of DA.

SETTING AND PARTICIPANTS: The SDM/risk communication curriculum took place on 2 half-days monthly as part of the medicine and med-ped resident ambulatory rotation. Groups of 4–6 residents rotated through the curriculum each month for 6 months.

DESCRIPTION: This primary care-based SDM curriculum utilized didactics, standardized patient (SP) practice and reflection on clinical use of a DA. The

1st session, introduced the 7-steps of SDM (ID, equipoise, pros/cons, patient's values, understanding, negotiate a decision, and review) with discussion on how risk communication overlaps with these steps. Each resident had the opportunity to practice SDM skills, including using a DA, with an SP in one of two cases (starting a statin with an ASCVD risk of 8 and anticoagulation in a patient with new A. Fib.). Residents received real-time feedback from the facilitator, SP, and peers. Residents were asked to use a DA in clinic over the next 2 weeks and complete a reflective worksheet. During the 2nd session, the group debriefed their clinical experiences with using SDM skills and DA.

EVALUATION: A total of 25 residents participated. They were surveyed (response rate 56%) at the completion of the curriculum to assess their attitudes toward SDM, risk communication and use of DA. The most commonly cited benefit of using a DA was the visual display of risk (86% residents) and challenge was time limits (86% residents). Residents ranked their level of comfort and perceived importance of SDM on a 4-point Likert scale (1 = not important/comfortable, 4 = very important/comfortable). The mean total comfort score was 3.45 and importance was 3.03. Residents were asked to estimate their use of DA and RS prior to the curriculum and predict their use going forward. The majority reported that they used DA monthly prior and weekly after (43 and 50% residents respectively, $p < 0.01$). Residents reported discussing RS weekly with patients prior and daily after (50 and 57% residents respectively, $p = 0.03$).

DISCUSSION/REFLECTION/LESSONS LEARNED: Our risk communication/DA curriculum demonstrated that with training, residents can integrate these tools into practice to support their use of SDM. While our data is limited by self-report and small sample there was improvement in resident reported use of DA and RS.

LEADERSHIP EXCELLENCE EDUCATION- RESIDENTS/ FELLOWS (LEED-R): A NOVEL INTERDISCIPLINARY GME LEADERSHIP ELECTIVE Sneha S. Daya[1]; Allen Friedland[2]; Himani Divatia[2]; Shannon Barrow[2]; Barbara A. Monegan[2]. [1]University of California, San Francisco, San Francisco, CA; [2]Christiana Care Health System, Newark, DE. (Control ID #2702699)

NEEDS AND OBJECTIVES: To develop leadership skills/behaviors earlier in the careers of residents/fellows, to expose resident/fellow leaders to system-level thinking, to recruit and retain future physician leaders, and to provide a resident/fellow "voice" to senior leadership.

SETTING AND PARTICIPANTS: There are up to 25 select participants per cohort each year since 2013 (98 participants total) from 15 ACGME/non-ACGME accredited programs across two institutions (Christiana Care Health System and A.I. duPont Hospital for Children). Examples of specialties include Internal Medicine, Med/Peds, Podiatry, OB/GYN, Cardiology, Radiology, and Emergency Medicine.

DESCRIPTION: This course is designed as a two-week clinical-free elective, off-site from clinical campuses. Teaching modalities from local and national experts include classroom, e-learning, small group sessions, learning games, case studies, journaling, and networking with system leadership (LEED-Rship Café). Participants also complete a leadership project. Content is derived from evidence- based competencies from the National Center for Healthcare Leadership and Christiana Care Leadership Behaviors: promoting self-awareness, enabling learning and innovation, developing people and creating high performance teams, leading and promoting change, collaborating and building relationships, and creating value. These competencies translate into sessions on emotional intelligence, communications/presentations skills, negotiation, health care transformation, cultural competence, health care finance, and team management.

EVALUATION: Overall elective rating is 4.8 {1 (poor) to 5 (excellent)} since inception. The LEED-Rship Cafe is rated in the top five sessions each year. On average, 75% of graduates utilize a new skill within the first week of the elective. Representative comments include: "Very satisfied with this elective. It has changed my career for the better" and "The leadership elective is an unbelievable resource and opportunity for the enrolled residents. Furthermore, I hope the elective has a trickle-down effect on improving clinical, educational, and even personal interactions between all residents/colleagues."

DISCUSSION/REFLECTION/LESSONS LEARNED: Leaders in medicine are traditionally "accidental leaders," those with clinical expertise who may not have had formal training in leadership. This course aims to create "intentional leaders," with the skills for career advancement and leading change, developed at an earlier career stage. Up to 10% of the content is adjusted each year based on the most recent graduates' feedback and the learning needs of the upcoming participants, which can be challenging. The LEED-Rship Cafe is well-received, likely because participants interact with leaders from multiple disciplines, allowing for fruitful discussion.

LEARNING THROUGH SERVICE: 'SHIFA HOMES' A PROJECT OF SHIFA COLLEGE OF MEDICINE FOR REHABILITATION OF FLOOD VICTIMS. Shifa Umar[1]; Obaid Ashraf[1]; Mati ur Rahman[2]; Syed S. Shah[2]. [1]Allegheny Health Network, Pittsburgh, PA; [2]Shifa College of Medicine, Islamabad, Pakistan. (Control ID #2706918)

NEEDS AND OBJECTIVES: Learning through service is defined as an experiential learning opportunity that combines clear educational goals with service to the community. It has been broadly recognized as an effective method to engage medical students in active learning while providing needed health services to underserved populations. Community-based volunteerism is much needed especially in time of a natural disaster like the floods that affected Pakistan in 2010. Students and faculty of Shifa College of Medicine (SCM) initiated a project called 'Shifa homes' for rehabilitation of flood victims.

SETTING AND PARTICIPANTS: Community health sciences department and medical students of Shifa College of Medicine, Pakistan.

DESCRIPTION: 'Shifa Homes' is a capstone project of students of SCM to rehabilitate a flood-affected community in an underserved region of Pakistan. Phase one of the project involved raising funds for reconstruction of houses. As a part of integrating community based medical education, phase two involved performing a health needs assessment and implementing a health education campaign in the community. A team of student volunteers under faculty guidance designed a campaign focusing on personal hygiene, maternal and child health care and diarrheal and malarial diseases prevention. The team then annually visited the community for three years to implement the campaign.

EVALUATION: 46 houses have been built so far, forming a community of almost 200 people. Over a period of 3 years, 56 volunteer medical students have been involved in the project. Focused group sessions were conducted with volunteers annually to reflect on the experience. Volunteers reported that working for 'Shifa Homes' instilled social awareness and empathy. Provided

an opportunity to work as a team, helped with confidence building and developing management skills.

DISCUSSION/REFLECTION/LESSONS LEARNED: Experience in the community setting fosters social awareness, sensitize the students to community health needs and inculcates civic responsibility, hence setting the stage for a lifetime of service.

LETTERS-TO-THE-EDITOR: A NOVEL SCHOLARLY ACTIVITY IN RESIDENCY Konstantinos Lontos[1]; Daniela M. Hurtado[1, 3]; Anam A. Waheed1; Peter D. Bulova[1]; Natalia Morone[1]; Kathleen M. McTigue[2]. [1]UPMC, Pittsburgh, PA; [2]University of Pittsburgh, Pittsburgh, PA; [3]Mayo Clinic, Rochester, MN. (Control ID #2706375)

NEEDS AND OBJECTIVES: In this era of vast numbers of published studies, residency programs often seek methods to enhance residents' critical literature appraisal skills and ability to practice evidence-based medicine. Letters-to-the-editor are a method of post-publication review, which complements the pre-publication peer-review process.Residents may be well-positioned to engage in letter-writing.

SETTING AND PARTICIPANTS: The UPMC Internal Medicine Residency Program has two specialized tracks designed to prepare residents for a career in academic medicine and research, the Clinical Research Track and International Scholars Track. Starting in academic year 2014–2015, the program leadership incorporated letters-to-the-editor writing into the seminar's curriculum.This pilot project was implemented for second-year residents of the track

DESCRIPTION: During the first half of the academic year, the longitudinal research seminar was reorganized to include sessions describing the new scholarly activity's objectives, the potential scientific benefits of writing letters to the editor, and practical tips on how to work with a mentor to develop a publishable letter. Residents were instructed to work with a faculty mentor to identify a recently published manuscript, write comments about it, and submit their letters for publication. Subsequently, participating residents presented their letters and described their experience throughout the process.

EVALUATION: During the academic years 2014–2015 and 2015–2016, eighteen second-year residents were asked to write a letter-to-the-editor. At the beginning of the academic year 2016–2017, these residents were asked to complete an anonymous online survey through Qualtrics. The survey was completed by all participating residents (100%).

DISCUSSION/REFLECTION/LESSONS LEARNED: In summary, the results of the survey were quite encouraging for this innovation. The publication rate was high (44%) and the publications were in predominantly high-impact journals (average impact factor 16.9). Residents gained experience in scientific writing (59%), improved their critical appraisal skills (53%), engaged in scientific dialogue (53%) and enhanced their knowledge through the literature review (41%). Common barriers were limited timeline allowable at the journals (65%), lack of experience with prior letter-writing (41%), limited expertise on the topic of interest (41%), mentor's time limitations (35%) and limited free time because of residency training (35%). The majority of our residents wrote a letter to encourage dialogue and debate about a topic (44%), to add new information (28%) and to state an alternative point of view (28%). Most of our residents stated that probably they will write again a letter in the future (50%), while a few of them considered it a possibility (39%). Our curriculum evaluation team is encouraged by the high publication rate and multiple benefits of letter writing that were identified by track participants, which suggest that formal training in letter writing can foster skills in public scientific discourse.

LOOKING AT THE FUTURE OF MEDICAL EDUCATION THROUGH MICROSOFT HOLOLENS Lu Dai; Anne Song; Neil Mehta. Case Western Reserve University, Cleveland Heights, OH. (Control ID #2706450)

NEEDS AND OBJECTIVES: Microsoft HoloLens is an augmented reality headset that integrates three-dimensional holograms with reality. Until recently, the field of augmented reality in medical education has been limited to devices still constrained by two dimensions (e.g., computers, mobile devices). This study aimed to determine: 1) whether HoloLens adds value to the teaching of cardiac anatomy and physiology; and 2) the optimal strategy to implement it in the curriculum.

SETTING AND PARTICIPANTS: Thirty-two first-year medical students at Cleveland Clinic Lerner College of Medicine of Case Western Reserve University participated in the study.

DESCRIPTION: Two HoloLens modules were developed for the first and last weeks of the 7-week Year 1 Cardiology block. During week 1, students individually explored the first module, designed for self-study. During week 7, students explored the second module as a group under faculty guidance. Surveys after each session asked students to rank HoloLens compared with traditional parts of the curriculum in terms of their cognitive load, efficiency, helpfulness, and enjoyment.

EVALUATION: We received 14 and 28 responses for the first and second survey, respectively. Overall, the majority of students (64%) agreed that HoloLens would enhance the way cardiology is currently taught. In comparing the two sessions, students felt HoloLens contributed more to their learning during the second (faculty-led) session ($p = 0.024$) compared to the first (self-study) session. There were also trends towards the second session being more enjoyable ($p = 0.081$) and decreasing cognitive load ($p = 0.096$). Students stated they preferred the faculty-led session because it was more organized and also because they felt more comfortable operating the HoloLens the second time around.

DISCUSSION/REFLECTION/LESSONS LEARNED: Our study revealed that students believe the addition of HoloLens would be valuable to the medical school curriculum. They also prefer faculty guidance during learning sessions over individual exploration, which affects how HoloLens may be implemented into the curriculum in the future. It also appears that familiarity with HoloLens increases its perceived educational value. Thus, learning sessions would ideally be carried out as a faculty-led group, particularly with initial HoloLens use. If faculty guidance is not available, sessions could benefit from a detailed orientation on how to navigate the device along with a guide of particular views that are most informative for understanding certain concepts.

MAKING THE EX-PERT EX-PLICIT: ADDITION OF A CLINICAL REASONING MODERATOR TO THE CLINICAL PROBLEM SOLVING CONFERENCE Deborah DiNardo[3]; Sarah A. Tilstra[4]; Thomas Painter[1]; Melissa McNeil[2]. [1]University of Pittsburgh, Pittsburgh, PA; [2]University of Pittsburgh Medical Center, Pittsburgh, PA; [3]University of Pittsburgh School of Medicine, Pittsburgh, PA; [4]University of Pittsburgh

School of Medicine/Medical Center, Pittsburgh, PA. (Control ID #2705369)

NEEDS AND OBJECTIVES: In a 2015 report, the Institute of Medicine highlighted key issues that must be addressed as part of efforts to reduce diagnostic error, and called for better training in decision-making at all levels of training and across all disciplines. While components of clinical reasoning are infused into standard residency education, explicit instruction regarding these principles is often lacking. Furthermore, the quality of clinical reasoning education can be highly variable when a common language for discussion of clinical reasoning principles does not exist, and when clinical teachers lack the skills to make their reasoning processes explicit. One approach to this educational challenge has been pursued in the medical literature: various journals publish clinical problem solving exercises that include an expert's approach to an unknown case paired with explicit discussion of relevant clinical reasoning principles. Following this model, we developed an interactive case-based conference with a focus on discussion of clinical reasoning principles, including cognitive bias.
SETTING AND PARTICIPANTS: Our interactive "Clinical Reasoning Case Conference" is delivered on a monthly basis at each of the three training sites for the University of Pittsburgh Internal Medicine Residency training program. Participants include faculty, residents, and medical students in Internal Medicine.
DESCRIPTION: Our monthly "Clinical Reasoning Case Conference" includes sequential delivery of clinical information from a real patient case to an expert discussant, who in turn describes their approach to the unknown case in a "think-out-loud" format. The conference is facilitated by a clinical reasoning expert faculty member, who probes the discussant and the audience about the clinical reasoning processes being used and provides explicit commentary regarding clinical reasoning concepts and cognitive biases that could impact the case.
EVALUATION: Our conference series has become a favorite of faculty and trainees alike; trainees seem to, in particular, value the role modeling of the approach to diagnostic uncertainty by experienced faculty. Faculty interest in serving as the expert discussant has increased steadily, as has trainee participation in clinical reasoning discussions. In addition, we have observed increased levels of familiarity with core clinical reasoning concepts and vocabulary by both faculty and residents.
DISCUSSION/REFLECTION/LESSONS LEARNED: Traditional unknown case conferences tend to focus on the ability of an expert discussant to reach a difficult or unusual diagnosis, often without an explicit focus on clinical reasoning principles that can be applied more broadly by learners. We have found that the addition of a clinical reasoning moderator to the "clinical problem solving conference" format has contributed to the development of a shared clinical reasoning vocabulary within our program and to the dissemination of clinical reasoning skills for application in the clinical setting for patient care and teaching.

MITIGATING UNCONSCIOUS BIAS IN RESIDENT APPLICANT INTERVIEWS Johanna Martinez1; Karen Friedman[1]; Kyle Katona[2]; Kelly Spielmann[1]; Yonathan Litwok[1]. [1]Northwell Health, Lake Success, NY; [2]Northwell Health, Manhasset, NY. (Control ID #2706665)

NEEDS AND OBJECTIVES: Racial, ethnic, and gender diversity helps ensure a more comprehensive research agenda, improves patient care, and is an institutional driver of excellence. Juxtaposed to this notion, physician workforce diversity remains a challenge. It has been hypothesized that unconscious bias may be a contributor to the lack of physician diversity, given it is known that unconscious bias can impact the evaluation and selection of applicants. Yet less is known about what strategies exist to mitigate this possible bias. Our objectives were to 1) measure baseline self-perceived bias in faculty members that interview medical school applicants for incoming residency positons, and 2) to train these faculty members on the AAMC's suggested "Best Practices for Conducting Residency Program Interviews", with the aim of mitigating unconscious bias during the interview process.
SETTING AND PARTICIPANTS: All Internal Medicine faculty members at Northwell Health's main campus who conduct residency applicant interviews completed the faculty development training on interviewing best practices.
DESCRIPTION: Faculty members competed a 60 min training which included a brief didactic on the AAMC suggested best interviewing practices, content on behavioral interviewing techniques, specifically focused on the STAR acronym (situation/task, action, results) and published data on unconscious bias. A video with role-plays highlighting examples of "good" and "bad" behavioral interviewing responses was then watched. In order to apply knowledge, faculty members then scored the role-plays using a structured rubric. After completing the scoring rubric individuals were asked to reflect and share with the larger group why and how they selected their answer and scored each role-play. The discussion included probing questions about the possibility of unconscious bias impacting individual's scoring.
EVALUATION: A pre-post survey was completed by faculty members completing the training to assess their knowledge of the STAR acronym, prior training on structured interviewing techniques and self-perceived bias. Approximately 90 participants completed the training and 84 completed the pre-survey. Post survey data is pending and currently being collected. At baseline, only 36% of participants reported using behavioral questioning in their prior interviews and 20% could correctly answer what the STAR acronym signified. The majority (56%) acknowledged that unconscious bias plays a role in how they score applicants.
DISCUSSION/REFLECTION/LESSONS LEARNED: The overarching goal is to demonstrate a positive impact on bias and diversity. This training is a first step toward that goal, given it provided faculty members with knowledge of the AAMC recommendations, awareness of the impact of unconscious bias and skills around structured interviewing. Next steps include a more robust assessment of interviewing skills and measurements of bias via enhanced training with the use of standardized applicants.

MOUNT AUBURN HOSPITAL INTERPROFESSIONAL LEADERSHIP ACADEMY (IPLA) Stephanie Page; Patrick L. Gordan; Rebecca Logiudice. Mount Auburn Hospital, Cambridge, MA. (Control ID #2706672)

NEEDS AND OBJECTIVES: Collaborative leadership is needed at all levels and between disciplines in a healthcare organization. Literature supports the idea that interprofessional education improves patient outcomes and work efficiency. We identified a need for interprofessional leadership development within our community. Although leaders have differing responsibilities, we believe there is a core set of leadership skills that is broadly relevant. There is value in leaders from different healthcare fields learning to approach management and leadership challenges together. IPLA aims to enhance the leadership

skills of a diverse group of clinical and non-clinical professionals who already have or aspire to leadership roles. The program helps participants understand themselves as leaders, recognize the broader healthcare environment, become change agents and learn how to lead their teams to provide high quality patient centered care.

SETTING AND PARTICIPANTS: IPLA is open to all staff members, clinical and non-clinical, at Mount Auburn Hospital in Cambridge, MA (a Harvard teaching hospital). It is targeted to individuals early in their leadership role. Sessions occur twice a month at the hospital.

DESCRIPTION: IPLA is a 9-month program offered annually to 15–20 leaders at Mount Auburn Hospital to help develop their leadership skills. They hold diverse roles: physicians, nurses, therapists, chaplains, information technologists, environmental services engineers, finance professionals, etc. IPLA is composed of a series of seminars and a group project. An invited expert leads a discussion at each session about an important leadership skill such as emotional intelligence, wellness, team building, conflict resolution, and leading change. There is a didactic component and the opportunity to practice applying new skills. Speakers are from the Boston area, with over half from our own institution. In the second part of the year group projects are launched which require the application of leadership skills and interprofessional team building as learned throughout IPLA. These projects are presented to hospital leadership at the year's end. IPLA started in August 2015. The cost per participant is $350, which includes speaker fees, books, and case studies.

EVALUATION: Each cohort takes a pre- and post survey to assess changes in leadership skills. Data from the first year have been collected and analysis soon to begin. Each session has an evaluation form, allowing participants to give feedback to improve IPLA for future cohorts.

DISCUSSION/REFLECTION/LESSONS LEARNED: In our community hospital we recognized a need for an interprofessional leadership development program to help prepare junior leaders for success. The participants learn new skills and gain opportunities to discuss work challenges and share solutions, as well as forging a stronger interprofessional network. This model for an interprofessional leadership academy is one that can be replicated in other healthcare institutions.

MOVING BEYOND FACE TO FACE VISITS: A MODEL OF PROTECTED TIME FOR COACHED POPULATION HEALTH AND LONGITUDINAL CARE

Andrew A. Chang[1, 2]; Melissa S. Lee[1, 2]; Moses Lee[1, 2]; Nikita Barai[1, 2]; David Stevens[1, 2]. [1]Health + Hospitals Kings County, Brooklyn, NY; [2]SUNY Downstate, Brooklyn, NY. (Control ID #2703877)

NEEDS AND OBJECTIVES: To foster a culture of comprehensive care beyond face to face clinic visits To teach residents how to manage their patient panels through chronic disease registries To improve safe and timely follow-up for tests ordered on residents' patients

SETTING AND PARTICIPANTS: 36 internal medicine residents practicing primary care in a large urban academic ambulatory care center caring for an underserved population with high rates of multiple chronic diseases.

DESCRIPTION: A curriculum was developed to coach residents on telephonic outreach to engage high risk patients and discuss abnormal results. They used hypertension and diabetes registries to identify at risk patients. During outpatient blocks, residents were given 1–2 h of protected time per week carry out interventions under attending supervision.

EVALUATION: Residents were surveyed before and after the intervention. Residents tracked all interventions outside of clinic visits.

DISCUSSION/REFLECTION/LESSONS LEARNED: Traditionally primary care teaching is focused on individual face to face visits with patients, yet payment models are shifting towards pay for performance and population based metrics. Many practices expect providers to perform these functions on their own time, adding to a growing list of uncompensated yet high-value care. Most attendings lack formal training in population health management. Our hypothesis is that if we create a dedicated, coached, resident-preceptor session to review chronic disease measures and individual patient results, we will improve resident attitudes (adding value to the primary care continuity experience through deeper connections with patients) and behavior (ownership of patients outside of clinic visits) towards their primary care patients. This will improve resident readiness for the growing demands in population management. Prior to the intervention, 63% of residents stated they did not check in with their at-risk patients in between clinic visits. 60% of residents did not review or act upon data from chronic disease registries. Interventions focused on relationship building prevent burnout and add to patient and provider satisfaction. In addition, patient satisfaction is improved through added convenience, while expanding patient access and resident productivity. Patients appreciated that their doctors reached out to them. Residents became more selective in testing since they were responsible for follow-up. Residents reported added comfort with handling issues over the phone. For faculty, improved resident follow up on abnormal results decreased burdens on preceptors.

MOVING THE NEEDLE: IMPLEMENTING HOLISTIC REVIEW IN INTERNAL MEDICINE (IM) RESIDENCY ADMISSIONS

Katherine Lupton[2]; Sarah Schaeffer[3]; Sharad Jain[1]; Katherine Julian[1]. [1]UCSF, San Francisco, CA; [2]University of California San Francisco, San Francisco, CA; [3]University of California, San Francisco, San Francisco, CA. (Control ID #2707080)

NEEDS AND OBJECTIVES: Championed by the AAMC as key to promoting diversity in undergraduate medical education, holistic review is an individualized approach to admissions evaluation that equally considers an applicant's personal experiences, attributes, and academic metrics. The University of California San Francisco School of Medicine (UCSF) has made great strides in achieving student diversity: in 2016 30% of UCSF students identified as underrepresented in medicine (UIM). The use of holistic review in medical school admissions has played a vital role in this success. Unfortunately, these institutional successes do not extend to all levels of training at UCSF: only 15% of UCSF IM residents are UIM. As part of a multi-pronged strategy to address IM resident diversity, we formed a residency admissions task force with the following goals: 1. Implement holistic review during the initial screening of intern applicants 2. Increase the number of highly qualified UIM intern applicants interviewing for residency 3. Increase the number of UIM interns in UCSF IM residency in 2017-18

SETTING AND PARTICIPANTS: The UCSF IM residency program receives almost 2000 intern applications and admits 62 interns each year. Our task force was made up of 2 junior and 2 senior faculty with previous admissions experience.

DESCRIPTION: Using the AAMC rubric of experiences, attributes and metrics, we reviewed the applications of all 300 UIM IM residency applicants. After reviewing and ranking the UIM applicants, pairs of junior and senior task force members discussed applicants individually before making interview invitation recommendations to the Residency Program Director.

EVALUATION: Consistent with past years, for the 2016–17 UCSF IM intern class, 15% of applicants, interviewees and incoming medicine interns were UIM. For 2017–18, while UIM intern applications remained stable at 16%, after implementing holistic screening 28% of applicants invited to interview were UIM.

DISCUSSION/REFLECTION/LESSONS LEARNED: Holistic review allows a fuller understanding of applicants and their potential contributions to the learning environment and medical profession. It is a time-intensive process and is challenging to implement in a large residency program. By selectively using holistic review during the initial application screening stage, we identified many highly qualified UIM applicants who would have been overlooked using academic metrics alone as screening and almost doubled the number of UIM applicants interviewed. Holistic review holds promise to increase trainee racial and ethnic diversity at the graduate medical education level.

MULTIDISCIPLINARY IN-SITU MOCK CODES AUGMENT TEAM PERFORMANCE IN ADVANCED CARDIAC LIFE SUPPORT (ACLS). Richard Cartabuke; Adam J. Kichler. Cleveland Clinic, Painesville, OH. (Control ID #2706031)

NEEDS AND OBJECTIVES: Healthcare workers at large tertiary-care institutions have a paradoxical deficiency in preparedness to perform cardiopulmonary resuscitation (CPR) and advance life support measures immediately prior to and during cardiac arrest. The average survival rate following a cardiac arrest in the hospital is approximately 10%. Deterioration in skills is likely multifactorial and could possibly be attributed to continuous nursing and PCNA turnover in large institutions; large staff sizes limiting individual exposure to infrequent events; and the development of rapid response teams that can potentially take over the role of code leader and prevent the need to run a full code from start to finish. The use of simulation for repeated practice is one means to improve performance. The following objectives for the project are outlined as follows: Improve internal medicine trainee performance in advanced cardiac life support measures Enhance confidence in leading multi-disciplinary teams in critical situations. Augment collaboration between physician and non-physician members of the health care team. Improve patient outcomes secondary to enhanced multi-disciplinary "code" team performance.

SETTING AND PARTICIPANTS: Mock code simulations are performed on our general internal medicine floors with residents rotating through our general medicine services.

DESCRIPTION: We designed a multidisciplinary *Code Curriculum* for both physician and non-physician members of our health care team with primary focus on improving performance and collaboration in critical events. Through this curriculum, teams consistent of resident and staff physicians as well as nurses, rapid responders, respiratory therapists, and medical assistants were systematically exposed to mock codes. These on-site mock codes have occurred in a bi-weekly fashion following this project's conception, and have been implemented with the support of Medicine Institute Leadership as well as stake holders in the life support training department.

EVALUATION: Baseline data examined: the number of codes a resident has participated in during training; current PGY level; confidence level in running an arrest situation without assistance; their confidence in their colleague's ability to perform adequately during an arrest situation; the future post-graduate position and the number of mock codes they had participated in. Additionally, we began tracking participation in codes in our procedure tracking system. The post-data is being collected currently.

DISCUSSION/REFLECTION/LESSONS LEARNED: The original focus was to provide a comprehensive approach to an adult code based on simulations created by the Mock Code leadership team. The residents who participated felt that they were not receiving adequate instruction and feedback as a result of limited face-time as the code leader. As such, we began utilizing groups of 4 residents at a time and increasing the frequency that we held such sessions. This has proved to be instrumental in learner satisfaction but also has improved the learning climate.

MUSCULOSKELETAL ULTRASOUND TRAINING FOR THE INTERNAL MEDICINE RESIDENT: DEVELOPMENT AND ASSESSMENT OF A TEACHING CURRICULUM FOR ELECTIVE ROTATION Bryan Coniglio; Sean Drake; Alireza Meysami. Henry Ford Hospital, Detroit, MI. (Control ID #2702532)

NEEDS AND OBJECTIVES: Ultrasound has become increasingly utilized throughout internal medicine and its subspecialties. Musculoskeletal ultrasound is a vital tool for assessing patients with tendon and joint abnormalities, and is employed for diagnostic as well as therapeutic purposes. Internal medicine residents would benefit from using musculoskeletal ultrasound as musculoskeletal problems are among the most frequently encountered complaints in ambulatory clinic. Formal training in musculoskeletal ultrasound is largely absent from internal medicine residency programs. We sought to establish an elective rotation in musculoskeletal ultrasound for the internal medicine resident, and develop an effective teaching curriculum that could be easily implemented at other internal medicine residencies.

SETTING AND PARTICIPANTS: The course took place as part of a month-long elective rotation at an outpatient rheumatology musculoskeletal ultrasound clinic. A senior staff rheumatologist who was board certified in musculoskeletal ultrasound by the American College of Rheumatology assisted with curriculum development and led the course. Internal medicine residents from a large academic teaching hospital and from all training levels took part, including some interested in pursuing rheumatology fellowship training.

DESCRIPTION: Goals and objectives were created to reflect the six core competencies for residents in graduate medical education. A structured curriculum was developed using units with modules that incorporated book chapters, online videos, and hands-on workshops with the ultrasound, which were broken down by joint system. Residents spent time reading, observing, and practicing with the ultrasound before performing supervised examinations and interventions on their own.

EVALUATION: A pre- and post-test was administered to the residents. It consisted of multiple choice questions and ultrasound-captured images covering principles of ultrasound as well as basic musculoskeletal anatomy and pathology. An opportunity to provide course feedback was given on the post-test evaluation.

DISCUSSION/REFLECTION/LESSONS LEARNED: Feedback was very positive from the six internal medicine residents who took part in the course, and pre- to post-test scores improved by over fifty percent. Residents felt the course was a good learning experience and that its strengths were a clear curriculum, the amount of teaching and the opportunity to become comfortable using ultrasound to both understand musculoskeletal anatomy and pathology

as well as perform joint aspirations and injections. Overall, everyone indicated that the course had very good utility for the internal medicine resident. Based on our positive results and feedback, we felt the course and its curriculum were an effective means to teach musculoskeletal ultrasound to internal medicine residents.

NIGHTHAWK: MAKING NIGHTFLOAT EDUCATION AND PATIENT SAFETY SOAR Brett W. Sadowski; Hector A. Medina; William Shimeall. Walter Reed National Military Medical Center, Bethesda, MD. (Control ID #2703753)

NEEDS AND OBJECTIVES: − Demonstrate impact of evidence-based interventions designed to enhance night medicine education - Demonstrate improved patient safety as an outcome of these interventions - Address challenges with change management for residents

SETTING AND PARTICIPANTS: Internal medicine residency program at a tertiary care teaching hospital.

DESCRIPTION: Programs nationwide responded to the ACGME duty hour restrictions by implementing night medicine rotations. The patient safety impact this change has had as a result of additional provider sign-outs has been a topic of discussion that has eclipsed the discussion of the need for formal night medicine curricula. Models of night medicine education and supervision vary, often resulting in an educational void and raising potential patient safety issues. We addressed these issues by: 1. Implementing an evidence-based must-call list, in which certain clinical events prompted mandatory attending physician notification. 2. Doubling night teams from a single team (one PGY-2 or 3 resident and two PGY-1 interns) to two teams: An Admissions Team (One PGY2 or PGY3 resident and one PGY1 intern) and a Nighthawk Team (One PGY3 resident and two PGY1 interns) 3. Separating Cross-Cover duties (assigned to The Nighhawk) and ne wadmission and consult duties (assigned tot he Admissions Team) 4. Re-branding additional nightfloat rotation as “The Nighthawk”, who is accountable for the care of all admitted patients while acting in a supervisory and teaching role for the interns by running night-time educational seminars, thus enhancing intern education and resident experience and skill as teachers.

EVALUATION: The impact of the Nighthawk senior resident was estimated by daily tracking of the number of intern plans reviewed, the number of hands-on patient evaluations, and the number of educational topics discussed overnight. Over 5 months, the Nighthawk reviewed 1007 intern plans that before would have been unsupervised (approximately 15 plans per night, range 6–36) and The Nighhawk performed 200 hands on evaluations (averaging over 3 per night, range 0–12). There was a >35% increase in utilization of online nightfloat curriculum materials and an 80% increase of unique users.

DISCUSSION/REFLECTION/LESSONS LEARNED: It is commonly felt that autonomy during night medicine rotations is a powerful tool to enhance housestaff development. However, the striking numbers of Nighthawk involvement suggests a level of uncertainty that if left unsupervised, can result in adverse patient events as trainees are left to make clinical decisions without proper supervision. The variety of skill levels in trainees warrants the availability of supervision, measured assignment of autonomy, and continued educational exposure overnight. By adding a well branded supervisory role to a senior trainee, providing educational directives, and increasing the level of indirect supervision with a “must call list”, we enhanced patient safety, educational value, and housestaff commitment and enthusiasm to night medicine rotations.

NO IFS, ANDS, OR BUTTS: LEVERAGING POPULATION HEALTH TO FOCUS ON THE CARE OF PATIENTS WHO SMOKE

Jenny K. Cohen. UCSF, San Francisco, CA; Highland Hospital, Oakland, CA. (Control ID #2706265)

NEEDS AND OBJECTIVES: Smoking contributes to patient morbidity and mortality and disproportionately affects vulnerable populations. The ACGME also requires Medicine residents to learn about population health-based approaches. To address both needs, we created a multidisciplinary curriculum on smoking cessation. Objectives for our residents included practicing motivational interviewing (MI), correctly prescribing therapeutic augmentation of nicotine replacement therapy (NRT), and utilizing panel management skills. For our patients we aimed to reduce smoking rates, increase pneumococcal vaccination rates, and increase abdominal aortic aneurysm (AAA) screening. Clinic-wide we aimed to improve Behavioral Health Team (BHT) referrals and engage with our pharmacist to create a multidisciplinary curriculum.

SETTING AND PARTICIPANTS: Our intervention took place in a county primary care clinic. A pharmacist, attending physicians, and BHT created a curriculum for 1st, 2nd, and 3rd year residents.

DESCRIPTION: We worked with our pharmacist to update the pre-clinic didactic session on smoking cessation. The curriculum was reviewed with residents who were then given lists of patients in their panels flagged as smokers in the electronic medical record (EMR). Residents called their patients, confirmed smoking status, and engaged in MI. If appropriate, the residents created cessation plans including NRT, pharmacologic augmentation, and BHT referrals.

EVALUATION: Residents completed a pre/post surveys about confidence with smoking cessation counseling and clinical knowledge. Data were obtained for one clinic team prior to the initiation of the intervention: 303 patients were listed as active smokers, only one out of the 21 eligible patients had AAA screen, 13% (23/303) patients had received the Pneumovax, and 15% (23/303) were on NRT or other pharmacologic smoking cessation aid. Pre- and post-intervention data will be compared.

DISCUSSION/REFLECTION/LESSONS LEARNED: Based on our preliminary data, many patients in our practice who smoke are in need of preventative health services. Factors like limited time and provider discomfort in prescribing and getting NRT reimbursed often further stymie primary care-based smoking cessation efforts. However, we learned from our pharmacy colleagues that prescribing NRT and other therapies is straightforward and often paid for by a variety of private and public payers.

PCMH EPA’S AND THE INTERPROFESSIONAL TEAM MEETING: RESULTS FROM 5 yearS OF A NOVEL INTERNAL MEDICINE RESIDENT TRAINING EXPERIENCE Elisha L. Brownfield; Elizabeth B. Kirkland. MUSC, Charleston, SC. (Control ID #2706590)

NEEDS AND OBJECTIVES: The Internal Medicine (IM) residency community widely agrees on the need to transform resident ambulatory training ideally within highly functional ambulatory care settings incorporating

interprofessional teams. Practicing within such settings may mitigate professional burnout. The Patient Centered Medical Home (PCMH) provides a unique opportunity for such training to occur. Interprofessional, case-based team meetings focused on patient care may address the non-traditional knowledge, skills and attitudes required for successful PCMH practice and for trainee success in modern healthcare systems.

SETTING AND PARTICIPANTS: In 2012, our medium-sized Categorical IM residency training program separated inpatient and ambulatory activities using a block format. The single practice site for all ambulatory training is a hospital-based, National Committee for Quality Assurance (NCQA) certified Level 3 PCMH staffed by an interprofessional team including nursing, PharmD's, social worker and administrative support. The practice is supported by an electronic medical record and serves approximately 11,000 patients.

DESCRIPTION: Beginning January 2012, clinic faculty have led brief (40 min) weekly, case-based interprofessional team meetings utilizing the effective behaviors of team leadership as described by Salas and colleagues. Attendance by all categorical residents is required. Resident patient panels, including measures of chronic disease control, are distributed and discussed at least quarterly. Team meeting content generally falls into three categories: case review, practice process review, or resident panel review. Interprofessional teams generate implementable solutions utilizing a rapid sequence improvement process. Results have been documented since inception.

EVALUATION: The 2011 Society of General Internal Medicine PCMH Education Summit defined 25 IM resident PCMH entrustable professional activities (EPA's) using the NCQA standards as an organizing framework. Independent reviews of our Team Meeting content areas from January 2012 - December 2016 show that subject matter spanned all of the PCMH standards and the majority of EPA's. 107 separate topics were discussed over this time period.

DISCUSSION/REFLECTION/LESSONS LEARNED: Brief interprofessional team meetings are feasible in an IM resident clinic and cover all PCMH EPA's. Resident experience with each ranged from knowledge acquisition to skill demonstration. Participation from all team roles, a structured rapid sequence improvement process and tracking of results are key components of continued success.

PEER-LED LEARNER-CENTERED REFLECTION SESSIONS TO PROMOTE INTERN WELL-BEING

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NEEDS AND OBJECTIVES: Residency is the prime time in professional development to learn skills to promote well-being. Reflection sessions facilitated by peers rather than faculty are uncommon and rarely encountered in the literature. To address the need to create an open, non-judgmental venue for developing skills for resident well-being, we created peer-led, learner-centered reflection sessions focused on reflective writing and discussion.

SETTING AND PARTICIPANTS: Two PGY-2 residents created a structured, writing-and-discussion-based curriculum. One hour sessions were held during dedicated educational time. Participants included internal medicine interns at a large urban teaching hospital. Attendance was recommended but not required.

DESCRIPTION: Peer facilitators conceived, coordinated, and facilitated all sessions. There were seven to twelve intern participants per session. Faculty were not present. Each session began by describing goals and ground rules to protect confidentiality and promote acceptance. Facilitators gave a prompt and read a short writing sample before inviting interns to write for ten min. Themes related to well-being, personal expectations of residency, and burnout. After the writing exercise, peer facilitators invited participants to share their writing and/or thoughts, though this was optional. Interns completed an anonymous program evaluation at the end of each session.

EVALUATION: To date, we have conducted three sessions with a total of 29 interns. Analysis of program evaluations ($N = 29$) reveal that although only 55% of respondents had previous experience in creative writing and the mean self-assessed writing ability was 5 (1 to 10 scale; 1 = no ability; 10 = exceptional ability), 62% of participants found writing to be a meaningful way to reflect on their experiences as a doctor. 86% reported that sharing their thoughts and/or writing was a meaningful method to build a general sense of well-being. 62% reported that group discussion validated their feelings and normalized their experiences.

DISCUSSION/REFLECTION/LESSONS LEARNED: There are few published descriptions of curricula aimed at promoting resident well-being, and even fewer describing peer-led interventions. Though participants for these sessions varied with regard to writing ability and prior interest in writing, the majority found it to be a powerful means of promoting reflection. We believe the peer-led nature of the sessions normalized participants' difficult emotions and maximized sharing. The program was well evaluated. These sessions offer a structured, low cost, potentially reproducible method for promoting resident wellness that could be expanded to other programs.

PHASE III CLINICAL PRECEPTORSHIP: PERSPECTIVES FROM KEY STAKEHOLDERS

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NEEDS AND OBJECTIVES: The Foundations of Doctoring Program (FDC) is a three-year longitudinal clinical skills program that includes preceptorship. Pre-clinical preceptorship improves students' comfort and confidence with patients, enhances clinical skills, and allows application of medical knowledge. Longitudinal preceptor relationships positively influence career choice. While pre-clinical preceptorship is common in most medical schools, extension into third year is uncommon. We sought to understand the benefits and drawbacks of continuing the preceptorship program longitudinally into the third year (P3).

SETTING AND PARTICIPANTS: Information collected by survey from key stakeholders including students, clinical block directors, departmental leaders, and preceptors at the University of Colorado School of Medicine.

DESCRIPTION: To assess the value of P3 preceptorship, we sought to understand: 1. Student perception of preceptorship in the setting of concurrent traditional clinical blocks 2. The impact on students/preceptors/concurrent traditional clinical blocks 3. The best design to capitalize benefits and minimize burdens

EVALUATION: Students perceive benefit of P3 preceptorship in terms of: career exploration, mentorship, clinical and professional skill development ● 85% agreed/strongly agreed that P3 preceptorship allowed for career

exploration ● 39% chose preceptors in specialties that students are unable to explore prior to P3 ● 63% agreed/strongly agreed that P3 preceptorship allowed them to learn information not covered in clinical blocks Clinical block directors reported a positive impact of P3 preceptorship on career exploration, mentorship, advising, and student recruitment to their specialty ● 79% responded that P3 preceptorship uniquely contributed to student career exploration and mentorship

DISCUSSION/REFLECTION/LESSONS LEARNED: Survey and course evaluation data demonstrates that P3 preceptorship plays a unique role in career exploration, mentorship and advising. Students perceive benefits in clinical skills development, professional development, and self-directed learning. Students took advantage of career exploration, with 30% electing preceptors aligned with their career interests. Course redesign focused on student flexibility and identification of outcomes important to the individual student. End-of-year evaluations will be reviewed for stakeholder satisfaction and ability to accomplish program and individual objectives.

PHYSICIAN WELLNESS: BUILDING AN INITIATIVE FROM THE GROUND UP. AnneMarie Laurri[2]; Zeba Faroqui[2]; Regina Makdissi[1]. [1]State University of New York at Buffalo, Buffalo, NY; [2]University at Buffalo, Buffalo, NY. (Control ID #2703591)

NEEDS AND OBJECTIVES: Burnout among residents has become a growing concern across professional education. The prevalence within our program became apparent in an ACGME survey in 2016. It is imperative that academic medical centers have a toolkit to battle burnout and promote a culture of Wellness; one that fits the needs of their housestaff. This work is to design and build a Wellness Initiative that focuses on replicable and sustained interventions to build resilience within our housestaff. The objective is to show measurable improvement in areas of burnout as evaluated in an annual survey.

SETTING AND PARTICIPANTS: University at Buffalo Internal Medicine Residency, a program of 101 residents rotating at three clinical sites. Residents participated on a voluntary basis by completing on online survey. Of those, 59% were male and the majority between the ages of 25–30. 45% identified as Indian/Southeast Asian, 34% as Asian.

DESCRIPTION: The initial needs assessment was performed in April 2016 using the Stanford Housestaff Wellness Survey. This showed residents were lacking in both professional satisfaction and camaraderie. Many felt overwhelmed and unappreciated. Focusing here, the Wellness Initiative began in July 2016. Interventions included a 'big sib/little sib' program between interns and seniors, access to healthcare, faculty as 'Wellness Champions' at each clinical site, monthly team building events, seminars regarding time management, mindfulness, and burnout, and motivational speakers. A follow up with specific questions from the initial survey was administered with the same online tool six months after interventions began.

EVALUATION: At 6 month follow up, 58% note they can 'reach out to co-residents in difficult times' from an initial 34%. 66% feel others pitch in to help when they are overwhelmed from a previous 41%. Further, 32% reported 'a sense of dread' when thinking about work with an improvement to 23%. Similarly, 10.5% of residents felt 'callous'; now decreased to 5% - a marker of depersonalization. However, still only 11% of residents respond that 'housestaff are highly valued'.

DISCUSSION/REFLECTION/LESSONS LEARNED: In a short time, our Wellness Initiative demonstrates an impact with measurable improvement. The largest improvement was in feelings of camaraderie, influenced by the teambuilding events and the 'sibling' mentorship program. In that lies the building blocks of resilience from within. The positive change in professional satisfaction and feelings of callousness are important markers of burnout as well. This is likely related to more positive events outside the hospital, motivational speakers, and increased mentorship. More work is needed here, particularly in terms of access to mental health. Unfortunately, residents still feel undervalued - a difficult area we will need to focus on going forward, possibly related to the nature of having three distinct sites that can seem disconnected. We were able to build 'from the ground up' with accomplishable and timely interventions from very few persons.

PITTSBURGH NARRATIVES: A MULTIDISCIPLINARY WORKSHOP IN NARRATIVE MEDICINE Zachary G. Jacobs[1]; Gaetan Sgro[2, 1]. [1]University of Pittsburgh Medical Center, Pittsburgh, PA; [2]VA Pittsburgh Healthcare System, Pittsburgh, PA. (Control ID #2672546)

NEEDS AND OBJECTIVES: Narrative medicine is defined as the practice of clinical medicine using narrative competence: the skillset necessary to effectively "listen to, absorb, and be moved by the stories of illness". Training healthcare professionals in the study of narrative and literature - teaching skills such as close reading, writing, and reflection - has been shown to have benefits for both providers and patients alike, including reducing clinician burnout and increasing empathic tendencies, as well as improving patient satisfaction and clinical outcomes. The goal of this project is to develop a sustainable, multidisciplinary, collaborative workshop in narrative medicine which, through the study of literature, the practice of narrative skills, and the sharing of, and listening actively to, the stories of illness, acts to cultivate empathy and promote well-being amongst healthcare professionals.

SETTING AND PARTICIPANTS: The workshop is open to healthcare professionals of all disciplines at the University of Pittsburgh Medical Center (UPMC). Current participants include medical students, residents (both Internal Medicine and Pediatrics), and faculty members in the Department of Medicine. We are also actively recruiting members of the UPMC General Internal Medicine nursing staff to participate.

DESCRIPTION: The workshop takes place over the course of eight, hour-long, monthly sessions throughout 2016, which focus on developing a variety of narrative skills, including 1) reflective writing/storytelling; 2) close reading of literature/poetry; and 3) interpretation of film, art, and photography. The curriculum was designed to cover such themes as bearing witness to suffering, coming to terms with dying, living with chronic illness, and the isolating nature of disease, among others. Between monthly sessions, participants continue to collaborate via an online forum, where workshop leaders periodically post excerpts of prose or poetry for guided discussion, as well as prompts for reflective writing.

EVALUATION: Three validated surveys were administered to all participants prior to the first workshop session: the Toronto Empathy Questionnaire (TEQ), Abbreviated Maslach Burnout Index (MBI), and Interpersonal Reactivity Index (IRI). The same surveys will be administered at the conclusion of the series to determine whether participation in the workshop impacted tendencies toward empathy, sympathy, and burnout.

DISCUSSION/REFLECTION/LESSONS LEARNED: Early feedback from participants has been overwhelmingly positive. Preliminary data ($N = 9$) from the pre-intervention surveys suggest high baseline tendencies toward empathy (mean: 52/64), perspective taking (mean: 21/28), and empathic concern (mean: 23/28), while scores for depersonalization (mean: 2.4/18) and emotional exhaustion (mean: 6.3/18) were both low. The outcome of the workshop is yet to be determined, but the hope is to demonstrate that our curriculum improves participant empathy and sympathy while reducing burnout.

ONLINE RESOURCE URL (OPTIONAL): Syllabus - https://drive.google.com/open?id=1B0Te>2ukhtR3GcNUHXwqXPdx0s1

PRE-MEDICAL STUDENT HEALTH COACHING: A FEASIBLE AND INNOVATIVE PRIMARY CARE TEAM LEARNING OPPORTUNITY

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NEEDS AND OBJECTIVES: The U.S. faces a critical shortage of primary care physicians (PCPs) to treat a growing population with multiple chronic conditions. Yet primary care residency programs, especially those serving low-income patients, face recruitment difficulties. We describe a project that places pre-medical students into primary care residency teams as outpatient health coaches (HCs) in an effort to develop a new generation of future PCPs with a positive experience in team-based primary care. This educational model employs physician-HC teams to engage patients in self-management skills, improve student and resident perceptions of primary care, and familiarize residents with utilizing health coaching during the clinic visit.

SETTING AND PARTICIPANTS: Our resident clinic is located in Alameda Health System's Highland Hospital, an Oakland, California public hospital serving a culturally diverse and predominantly low-income Medicaid and county-insured population. Premedical student volunteers are recruited from local colleges and trained in motivational interviewing and self-management support. Students are then teamed with two to three primary care medicine residents and/or one to two attending PCPs under the supervision of a behavioral and addiction medicine psychiatrist. The HCs were 77% minorities (Asian/Pacific Islander, African-American or Latin-American), and they ranged in age from 21 to 46 (with a median age of 25).

DESCRIPTION: We enhance the primary care team at the point of care through the addition of health coaching. The HCs spend five hours weekly in the clinic, where they: 1) observe the doctor-patient interview, 2) provide on-site health coaching to patients, and 3) engage patients in telephone follow-ups. On average, 250 patients were coached during each academic year.

EVALUATION: Anonymous surveys and feedback discussions were used to assess the impact of this educational model on 22 pre-med health coaches, their resident partners, and attendings. Of respondents, 83% of the coaches who entered with an interest in primary care remained interested in primary care. Of those who did not initially indicate primary care as an interest, 55% indicated it as a practice interest after participation. HCs reported a more realistic view of primary care medicine and felt that the experience better defined their reasons for entering medicine. They felt it was especially useful to learn from their underserved patients about the many health behavior barriers they face.

DISCUSSION/REFLECTION/LESSONS LEARNED: With the goal of creating a pipeline into primary care careers, we have found a model that may help to achieve this objective. Most students who participated in this project were positively influenced towards primary care and the underserved. In addition, residents valued partnering with HCs and gained experience participating in a modern healthcare team. Future directions include continued tracking of participants' career paths and patients' health metrics to determine the impact of HCs on clinical outcomes.

ONLINE RESOURCE URL (OPTIONAL): http://www.premedhealthcoach.com/Home.html

PRECEPTING AN INTERPROFESSIONAL CLINICAL TEAM

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NEEDS AND OBJECTIVES: Few formal educational programs prepare trainees to work together in interprofessional (IP) patient-centered practices; even fewer programs train faculty on how to precept these IP teams. A faculty focused two hour educational session was created to: 1) describe IP team dynamics, 2) allow faculty preceptors to complete an IP observed structured teaching evaluation (OSTE), and 3) receive formal feedback using IP precepting best practices.

SETTING AND PARTICIPANTS: Project IMPACcT (Improving Patient Access, Care and cost through Training) is a five-year HRSA funded program to enhance primary care training. All faculty preceptors completed this educational session ($n = 27$), representing the professions of medicine (18), pharmacy (4), psychology (1), physician's assistants (1) and program administrators/educators (3).

DESCRIPTION: The session included several interactive and experiential learning components. First, a "think-pair-share" exercise was conducted to contrast traditional and IP precepting. Next, a brief didactic session reviewed the evidence-based core skills of IP precepting. Finally, faculty members completed an IP OSTE with standardized learners from each of the professions. After completing the OSTE, the preceptor shared a self-assessment of their IP precepting skills and received feedback from the IP standardized learners in the group, as well as from an independent observer that utilized a structured rating rubric. The preceptor then re-practiced skills that needed improvement. The session concluded with a qualitative reflective evaluation.

EVALUATION: Participants completed 20 anonymous reflections in the learning session. Content analysis grouped responses according to 1) lessons learned, 2) remaining challenges, and 3) skill application. The comments described practical IP precepting skills learned from the session (e.g. "[I learned to draw out] the silent learners" and "learners according to his/her professional area of expertise"). IP precepting barriers identified included time pressures, organizing flow of case presentations and managing team dynamics. Observer checklist analysis revealed that preceptors often redirected their attention to the learner concordant to their profession. This was most notable among physicians, where internal medicine preceptors focused more on the medicine resident than the non-physician learners.

DISCUSSION/REFLECTION/LESSONS LEARNED: As primary care transitions to IP teams, faculty preceptors need to successfully teach and model IP teamwork for learners. Specific findings suggest continued faculty

development needs to occur to address preceptors' preferential attention to their profession-concordant learners, given an effective preceptor demands attention to all learners. Being a skilled IP preceptor is not an innate ability and takes training and continued practice.

PREPARING A PATIENT CENTERED PRIMARY CARE WORKFORCE THROUGH DIRECT OBSERVATION AND FEEDBACK: AN INTERPROFESSIONAL APPROACH Heather A. Thompson Buum[1]; Keri D. Hager[2]; Mary Dierich[1]. [1]University of Minnesota, Minneapolis, MN; [2]University of Minnesota, Duluth, MN. (Control ID #2691815)

NEEDS AND OBJECTIVES: Internal Medicine, Pharmacy, and Doctor of Nursing Practice trainees need to learn how to effectively communicate during the brief outpatient office visit. Direct observation of the patient encounter coupled with immediate feedback is necessary to improve these skills. We proposed to improve the training our learners in patient centered communication according to the IHI Triple Aim using the validated tool, the Patient Centered Observation Form (PCOF).

SETTING AND PARTICIPANTS: 1. Internal Medicine Residency: 22 residents, 8 IM faculty, 1 Primary Care Clinic at the University of Minnesota Physicians 2. Ambulatory Care Pharmacy Residency: 4 PharmD residents, 5 PharmD faculty, 3 Family Medicine teaching clinics 3. Doctor of Nursing Practice Training: 14 NP students, 14 NP faculty, 14 Primary Care Clinics

DESCRIPTION: 1. All IM, NP, and PharmD faculty were trained in the use of the PCOF via faculty development or online training. All learners were introduced to the PCOF at an interprofessional workshop. Training included a review of the tool and practice with either role play or video. 2. Direct observation of learner/patient interactions using the PCOF occured twice in 2016. The forms were then collected and collated for future reference. 3. An online survey was developed and sent to both preceptors and learners after each set of observations.

EVALUATION: Both preceptor ($N = 13$) and trainee survey results ($N = 40$) indicate that the majority (61.5%) felt the PCOF increased time in direct observation and allowed them to witness behaviors or receive feedback in areas not otherwise discussed (72.5%). Preceptors indicate increased confidence in providing feedback on communication skills (76.9%) and organizing the visit (69.2%). The majority of trainees (55%) reported increased confidence levels in agenda setting and co-creating a plan. We also analyzed the data by training program and PGY level. Statistically significant differences were noted in 1) receiving feedback not routinely discussed, 2) communicating with patients, 3) closing the visit, and 4) immediate verbal feedback. Comparing the three programs, a much lower percent agreement was noted in nursing compared to pharmacy and medicine. There were statistically significant differences in PGY level in 1) communicating with patients and 2) co-creating a plan, with the PGY1 trainees having a higher level of agreement in each item compared to PGY2 or PGY3.

DISCUSSION/REFLECTION/LESSONS LEARNED: The PCOF appears to be an effective tool to assist preceptors in direct observation and feedback of trainees regarding patient centered communication during an ambulatory visit. Survey results suggest an interprofessional collaboration around implementation can be effective for all participants, however differences in training programs and PGY level should be taken into account. Pooling together faculty and learners across programs leveraged resources and accomplished the additional goal of better understanding each other's training and expertise, as well as their role on the team for future practice.

PREPARING LEARNERS TO ADDRESS GENDER AND SEXUAL MINORITY STIGMA AND DISCRIMINATION IN GLOBAL HEALTH EXPERIENCES Jill Raufman; Viraj V. Patel; Martha S. Grayson. Albert Einstein College of Medicine, Bronx, NY. (Control ID #2701471)

NEEDS AND OBJECTIVES: Academic global health (GH) programs have grown in size and number. As students visit other cultures, they may be ill-equipped for beliefs counter to those to which they are accustomed, expressed in human rights abuses and health staff bias towards sexual and gender minority (SGM) populations. This can be dangerous for the student, offensive to the host, and can detract from the learning experience. Despite international laws requiring protection from violence and ensuring equality, there remain human rights crimes based on sexual orientation and gender identity, affecting health care access. The Global Health Center (GHC) formed a post travel session to understand SGM related issues faced by students during their GH stints and develop pre- and post- travel modules. Objectives: 1. Develop and pilot a formal debriefing for GH students witnessing and perceiving discrimination towards SGM populations 2. Provide historical and cultural perspectives on global homo- and transphobia to help ground student experiences 3. Elicit feedback and inform integration of SGM cultural sensitivity into current pre-travel sessions 4. Help learners develop strategies to ethically navigate settings where there is SGM bias

SETTING AND PARTICIPANTS: 90 students travel each year, for 4 weeks to one year, to supervised GH projects. Upon the return of some who witnessed homophobic incidents in clinical settings, the GHC held a 2 hour debriefing session with10 students facilitated by two faculty experienced in global LGBTQI health issues and medical education

DESCRIPTION: The structured session was adapted from a psycho-educational debriefing process and included 8 discussion phases about the traumatic events: 1) intros, 2) review facts about events, raising awareness of local norms and laws impacting SGM individuals, 3) elicit first thoughts, 4) elicit reactions, 5) discuss ethics, cultural humility, and human rights, 6) discuss constructive response tactics, 7) get feedback for pre-travel readiness for future learners, and 8) wrap-up. This session served as a pilot for future debriefing sessions and to facilitate integrating into our current pre-travel trainings, which include cultural humility and health care disparities.

EVALUATION: Post session, we obtained written summary evaluations from students about the structure, perceived effectiveness in helping process the events. They found it to be an effective venue for dealing with their discomfort and that having a pre-travel session would be effective for preparing future students who might face this situation.

DISCUSSION/REFLECTION/LESSONS LEARNED: Members of SGM community can be subject to health care disparities, both here and abroad. It can be very explicit in certain places with different laws regarding homosexuality. Students who are unprepared for this might react in a way that is unsafe both for themselves and their patients. Developing pre-travel programs to prepare and orient students in this area, and post travel programs to debrief can be key to successfully navigating such situations.

PREPARING MEDICAL STUDENTS FOR WORKING WITH LGBTQ PATIENTS THROUGH THE ASSESSMENT OF EDUCATIONAL NEEDS AND THE DEVELOPMENT OF AN LGBTQ HEALTH CURRICULUM IN THE DENVER HEALTH LONGITUDINAL INTEGRATED CLERKSHIP (DH-LIC) Caitlin Felder-Heim[1]; Elizabeth Kvach[2]; Kim Powell[3]; Jennifer Adams[3]. [1]University of Colorado, Denver, CO; [2]Denver Health, Denver, CO; [3]University of Colorado, Aurora, CO. (Control ID #2706585)

NEEDS AND OBJECTIVES: Despite receiving minimal education on LGBTQ health during their pre-clinical years, medical students will inevitably be involved in the care of LGBTQ patients during their clinical clerkships and beyond. A needs assessment of DH- LIC students ($n = 13$) and the faculty ($n = 34$) was conducted. Curricular gaps identified included taking a sexual history from LGBTQ patients and understanding the health care needs of transgender patients. Based on these findings, we developed and implemented a curriculum to target these topics.

SETTING AND PARTICIPANTS: The DH-LIC is a yearlong clerkship for eight University of Colorado third-year students based at an urban safety-net hospital. Students achieve competency in core disciplines simultaneously, while participating in an integrated didactic curriculum that includes the newly developed LGBTQ component.

DESCRIPTION: The LGBTQ session was developed to include an overview of proper terminology and health disparities in LGBTQ patients followed by a series of patient cases requiring students to role play and discuss patient histories. The session also included an interactive training on sexual history-taking skills. Students then watched sample videos and discussed the strengths and weaknesses each provider's sexual history-taking. The session ended with a series of short case scenarios in which the students practiced sexual history-taking in pairs.

EVALUATION: A survey was administered before and after the curriculum session to examine the attitudes towards, comfort with, and knowledge of the care of LGBTQ patients. Student satisfaction with the curriculum was also evaluated. Responses were analyzed using paired t-tests and satisfaction scores were summarized. Baseline data demonstrated that students ($N = 8$) had overall positive attitudes towards LGBTQ patients, mixed comfort in caring for LGBTQ patients, and scored on average 70% on fifteen validated knowledge questions. After the curriculum session, the collective analysis of the most negative initial attitudes demonstrated significantly increased positive attitudes ($p = 0.04$). Nearly all questions regarding skills and comfort with LGBTQ care tended to increase after the intervention, but none were statistically significant. The combined comfort scores for each participant showed significant improvement ($p = 0.01$). Knowledge scores significantly increased by a mean of 8.33% ($p = 0.004$). Students were highly satisfied with the curriculum, reporting overall satisfaction as five out of five (scale ranging 1 (dissatisfied) to 5 (highly satisfied). At the end of the year, we plan to re-administer the knowledge component of the survey to assess long-term retention.

DISCUSSION/REFLECTION/LESSONS LEARNED: An LGBTQ health curriculum within the DH-LIC was reviewed favorably by students and impacted the attitudes towards and comfort with LGBTQ care, particularly among those with least comfort at baseline. The session significantly improved knowledge of LGBTQ health care and thus was an effective intervention to improve student's ability to care for LGBTQ patients.

PRIORITIZING PATIENT SATISFACTION: A PRESS-GANEY SCORE FOR MEDICAL STUDENTS Lauren Block[2]; Judith M. Brenner[1]; Jeffrey Bird[1]. [1]Hofstra NS LIJ SOM, Hempstead, NY; [2]Northwell Health, Lake Success, NY. (Control ID #2702741)

NEEDS AND OBJECTIVES: Driven by the Affordable Care Act, the shift to value-based care is incentivizing providers and hospitals to achieve the three legs of the Triple Aim. Value-based purchasing programs place considerable emphasis on patient satisfaction, with HCAHPS and Press Ganey (PG) remaining the main indicators. It is important that medical educators train medical students to value, assess, and prioritize the patient experience. There is a paucity of curricula available to guide educators on this topic. Our objective was to develop a PG score for medical students using clinical skills assessment data as a teaching tool about the patient experience.

SETTING AND PARTICIPANTS: Ninety seven second year medical students were evaluated at Hofstra Northwell School of Medicine during the 2015–16 academic year.

DESCRIPTION: A core set of 22 clinical skills checklist items in patient care, communication skills, and professionalism was created and refined over a four-year period. Eight of nine items from the PG scale were mapped to at least one checklist item. Questions were mapped separately by two faculty members, and confirmed by a physician expert in PG and another faculty member. The checklist items were used to evaluate MS2 students in a total of 6 clinical skills stations. Checklists were completed by standardized patients (SPs) trained specifically on these measures. For each checklist item, SPs selected one of three behaviorally specific ordinal anchors. Quality control measures to ensure inter-rater reliability included review by SP trainers and quality assurance by a medical director. During the evaluation, 140 data points were generated per student. Results were obtained on the 98% of test takers who consented to participate. The student PG score was generated by calculating the average percent of students receiving full credit on the items mapped to each Press Ganey question. After the aggregate score was generated, individual scores were calculated.

EVALUATION: In the 2016–17 academic year, MS2s will receive their "Student PG Score" with peer comparison as part of a classroom session on value based care. Students will be asked to reflect on their own score and its implications. The primary outcomes of this innovation are two-fold: 1) A "Student PG Score" as a tool reflecting the patient experience, built from a student's own performance data, and 2) Student perception data on the utility of the "Student PG Score".

DISCUSSION/REFLECTION/LESSONS LEARNED: To our knowledge, this is the first description of a "Student PG Score" in the undergraduate medical education literature. The creation of a student PG score provides educators with an innovative tool in patient experience curriculum development. The score is potentially generalizable to other schools using comparable clinical skills measures. We hypothesize that providing students with safe, patient-centered feedback mirroring the type of feedback they will receive throughout their professional careers will be helpful in encouraging self-assessment and guiding professional development.

RAPID FIRE TASTY MORSELS, NAVIGATION OF THE LITERATURE LANDSCAPE Salvatore Savona[2]; James F. Lamb[1]. [1]Ohio State University, Columbus, OH; [2]The Ohio State Wexner Medical Center, Columbus, OH. (Control ID #2706410)

NEEDS AND OBJECTIVES: Provide a framework for "rapid fire" delivery of the highlights from major journals from the preceding months.

SETTING AND PARTICIPANTS: Our session is set in the ambulatory clinic location for residents. We recently expanded our reach to include inpatient teams through the use of Smart Boards.

DESCRIPTION: Each month, our ambulatory clinic hosts a journal club titled "Rapid Fire Tasty Morsels". The session occurs from 12-1pm on the final Friday of each block. The leaders of each session include our outpatient evidenced based medicine (EBM) team lead physician and a chief resident. Each session begins with three separate 6–7 min presentations by residents. Each resident is provided with an article that was published in the prior month. We send the article to the residents 1 week prior to our sessions and ask them to have an accompanying power point presentation. Articles are chosen due to their high impact on the medical literature. The next section is titled "Icing on the Cake". During this section, the ambulatory EBM lead physician and chief resident have 1 min each to summarize articles in a rapid fire exchange. There are typically 6–8 articles reviewed. Every few sessions, a section titled "Icing on Speed" is included. During this section, the titles of the articles included in American College of Phyisicians "journal club" are read, and a 1 line take away point is included. This section is followed by "Whipped Cream", which lists the titles of the articles recently published in 2–4 major journals. The final section highlights images that have been published. We often incorporate next step questions, multiple choice questions, or image interpretation for the participants. Each session typically lasts 45–50 min, and residents are provided a handout with a summary of the articles from "Icing on the Cake" and those presented by residents, as well as a list of the articles included in "Whipped Cream".

EVALUATION: Each session is evaluated by residents who attend either in person or remotely. They are asked a series of 8 questions in each evaluation. Over the past year at least 89% of responses have given us the highest possible evaluation.

DISCUSSION/REFLECTION/LESSONS LEARNED: We have presented a format for "rapid fire" delivery of high points from the recently published medical literature. All too often, trainees feel bogged down with the expansive amount of journals available. This highly interactive forum condenses a month's worth of publications into a short session, and allows for trainees to explore the literature further with a succinct framework for guidance. We feel that this style of delivery is an effective way to discuss EBM topics, as evidenced by high resident ratings of the session.

REDESIGNING THE PRIMARY CARE PRECEPTING ROOM: INTERPROFESSIONAL, REAL-TIME CONSULTATIONS TO ENHANCE COLLABORATIVE PATIENT CARE AND EDUCATION

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NEEDS AND OBJECTIVES: Primary care providers face increasing patient care and administrative responsibilities with time pressures, leading to decreased job satisfaction and higher rates of burnout. One proposed solution is transitioning primary care delivery toward a team-based, interprofessional model. Toward that end, the Seattle VA Center of Excellence in Primary Care Education (CoEPCE) aims to transform primary care education out of silos; with a shared educational curriculum for primary care internal medicine residents and nurse practitioner trainees as well as associated health professionals including pharmacists and psychologists.

SETTING AND PARTICIPANTS: We describe a recent innovation in our CoEPCE in which pharmacy residents, psychology fellows, and dermatology chief residents are now co-located with attending physicians and nurse practitioner preceptors in the Seattle VA Primary Care Clinic precepting room 1–2 half days per week. These interprofessional consultants offer real-time consultative services to internal medicine residents and nurse practitioner trainees seeing clinic patients; with a shared goal of enhancing integrated patient care and expanding trainee interprofessional learning and collaboration.

DESCRIPTION: The IP consultants engage with the primary care IM resident and NP trainees in one or more of the following ways: "Scrubbing:" the IP consultant reviews charts of scheduled patients and communicates recommendations to the trainee prior to the visit. "Staffing:" the IP consultant observes the patient presentation and provides recommendations to the trainee. "Shared appointment:" the IP consultant sees the patient along with or immediately after the trainee.

EVALUATION: Focus group evaluations of both the IM/NP trainee and the IP consultants' perceptions of the redesigned precepting room were highly positive. The psychology fellows observed that nearly half of their consultations were informal 5–10 min "staffing" interactions. They were able to model advanced communication skills and noted increased warm hand-offs for mental health conditions. Pharmacy residents cited examples of positively impacting care of chronic diseases such as hypertension and diabetes. Pharmacy and IM residents noted instances in which "scrubbing" led to improved care, such as identification of a medication error prescribed in another clinic. Dermatology chief residents enjoyed teaching problem-based skin exams and differential diagnosis. The IM residents/NP trainees reported these interactions to be highly educational, and patients voiced appreciation for the real time dermatology consultation.

DISCUSSION/REFLECTION/LESSONS LEARNED: In our experience, IP consultants are a rich addition to the primary care precepting room. Primary care trainees more frequently seek out their colleagues to help manage complex patients; and utilize skills they learn from colleagues, e.g. a pharmacist's approach to insulin titration or a psychologist's approach to motivational interviewing.

REENTRY PROGRAM FOR INACTIVE PHYSICIANS RETURNING TO PRACTICE

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NEEDS AND OBJECTIVES: Physicians may temporarily leave practice for various reasons including career dissatisfaction and burnout, illness, disciplinary action, family issues, or to pursue other career interests. Between 1980 and 2008, the proportion of US physicians categorized as clinically inactive more than doubled from 5.5% to 12.5%. Increasingly, these physicians are being asked to complete a reentry program prior to returning to practice despite limited data about these programs. To add to the limited body of knowledge, we present findings from a survey of physicians who completed the Drexel Medicine ® Physician Refresher/Reentry Program. The objectives of the study were to obtain demographic data, understand participants' perspectives as to

whether the program allowed them to attain their professional goals, and if it removed barriers to reentry.

SETTING AND PARTICIPANTS: The program was developed in response to an increasing need for a structured path for returning physicians. Sixty-six participants completed the program between 2006 and 2013; fifty (76%) returned the study survey. Most were men (64%), between 41–59 years (78%), internists (70%), board-certified (68%) and unemployed (64%).The median number of years away from practice was 7 (0–22 years); women reported a longer median interval of inactivity compared to men (10 vs. 6 years).

DESCRIPTION: This needs-based, customized yet structured accredited CME reentry program is akin to a "mini-residency" where participants are integrated in a clinical setting of their choice amongst other learners (students, residents, fellows) and participate in rounds, clinics, small group didactics, online exercises and assessments all to enhance and evaluate their medical knowledge, communication skills, and clinical reasoning. Prior to their start, physicians identify their primary goal for participating in the program. A post-program survey asked about their perspectives on if and how the program 1) helped achieve their primary goal, 2) addressed reentry challenges, and 3) changed their practice of medicine.

EVALUATION: Overall, 37 physicians (74%) reported that they had achieved their primary goal within 12 months of completing the program. The top three goals were clinical employment, re-licensure., and refreshing skills. The majority also reported that the program prepared them to effectively resolve barriers to reentry by improving their clinical skills, confidence, and medical knowledge. It changed their clinical practice by improving their confidence, communication skills and sensitivity, and use of technology. The program also helped physicians become up-to-date.

DISCUSSION/REFLECTION/LESSONS LEARNED: This CME program provides a unique and successful model for returning inactive physicians to practice. Most achieved their individual professional goals within 12 months following program completion. For overall program improvement we added career counseling and ongoing discussions with stakeholders (boards, employers, credentialing bodies) to facilitate a smooth reentry transition.

REFLECTIVE PRACTICE WITHIN THE DENVER HEALTH LONGITUDINAL INTEGRATED CLERKSHIP (DH-LIC): A CURRICULAR SPACE TO BUILD PROFESSIONAL IDENTITY & RESILIENCE

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NEEDS AND OBJECTIVES: Third year medical students are asked to master vast amounts of clinical knowledge while simultaneously, both implicitly and explicitly, they begin to build the foundation of their professional identity. Reflective practices support learners in exploring "possible selves" and help students identify challenges & rewards of delivering patient care, as well as burnout prevention strategies. Complimenting the clinical and didactic experience of the DH-LIC, we created a reflective practice curriculum to provide committed space to address these important issues.

SETTING AND PARTICIPANTS: Eight third-year medical students from the University of Colorado School of Medicine participate in the DH-LIC each year. The DH-LIC is a year-long immersive program based in an urban safety-net system caring for underserved and vulnerable populations. Students complete clinical core competencies across specialties simultaneously, while also participating in an integrated didactic curriculum that includes this reflective practice component.

DESCRIPTION: The reflective practice curriculum runs throughout the longitudinal experience. Students prepare essays based on four prompts: 1) social determinants of health 2) setting boundaries with patients 3) teams in health care and 4) finding closure in patient relationships. Students submit essays ahead of time to two faculty moderators and receive feedback aimed at deepening students' reflections. The student cohort and faculty moderators then meet for an open, but guided, discussion allowing students to engage with their peers and moderators.

EVALUATION: Students evaluate the reflective writing sessions during focus groups and through written course evaluations. Additionally, we have performed qualitative analysis of the recurrent themes present across essays from two program years.

DISCUSSION/REFLECTION/LESSONS LEARNED: Evaluation of the curriculum has been overwhelmingly positive. When asked how well the reflective curriculum as a whole supported students' personal and professional identity, 71% of students rated it as excellent. The remaining 29% rated it as very good. Qualitative analysis found that themes of professional identity development (80% of students) and strategies for burnout prevention (60%) were written about frequently. Faculty development, refinement of the prompts, and structured feedback to students has been key to move students from a narrative to reflective practice.

RESIDENCY CLINIC REDESIGN AND POPULATION HEALTH

Andrew Coyle[2]; mary fishman[1]. [1]Icahn School of Medicine at Mount Sinai, NY, NY; [2]Icahn School of Medicine at Mount Sinai, New York, NY. (Control ID #2699731)

NEEDS AND OBJECTIVES: Transitioning to a focus on population health can be challenging in academic residency clinics where care teams are constantly shifting. Over the last several years, Mount Sinai's IMA clinic has worked to improve the quality of overall care; however, despite intermittent didactic sessions and quarterly quality reports, relatively little attention was given by residents to the overall health of their patient panel. Our goals were to improve the health of our overall patient population as measured by core quality measures, reduce barriers to panel management among residents, and enable multidisciplinary collaboration for population health management.

SETTING AND PARTICIPANTS: Clinic is located in East Harlem, with 132 residents, 18 preceptors, 9 care coordinators, and 9 social workers. The clinic is divided into 3 Firms.

DESCRIPTION: To facilitate this transformation, the residency transitioned to an ambulatory-focused 8 + 2 model. Each Firm was divided into 3 teams with 2 faculty (with whom the residents always work), 15 residents (3 in clinic each 2-week block), 1 social worker, and 1 care coordinator. The interdisciplinary teams began meeting for an hour every Monday morning before clinic with the 3 residents on block. A standard format for the team meetings was created that included 3 components: 1) Provider review of weekly care gap reports, 2) Discussion of challenging cases by the residents, including review of high-risk patients in their panel, and 3) Case presentations by the social worker. The weekly care gap reports review all the patients who are scheduled for team providers that week and include data on ED/Hospital utilization, appointment no-shows, and whether certain core quality measures have been completed. Providers can also

arrange care coordination services for high-risk patients and can preemptively refer patients to social work when needed.

EVALUATION: A pre-survey was done with housestaff with results highlighting the need for change. Among other results, only 33% of residents strongly agreed or agreed with the statement that they "receive the needed support from social work and care coordination." Residents were also asked about their perception of their current panel, with many residents markedly over-estimating the size. At the end of the academic year, a post-survey will be done with all members of the teams to assess changes in attitudes/behaviors.

DISCUSSION/REFLECTION/LESSONS LEARNED: An initial challenge was getting buy-in from all faculty and ensuring a consistent message in each of the 9 individual team meetings. Transformation leaders initially rotated between different teams to provide oversight. The addition of SW case discussions was effective in helping to highlight social work roles and skills. Given resident concerns, we have also increased reporting frequency of quality data and panel size. Overall, the team meetings have had high levels of engagement from residents and faculty, enabling meaningful discussion of population health and panel management concepts coupled with resources and clinical support.

RESIDENT AMBULATORY PATIENT TRANSITIONS PROJECT Naomi Karlen[2, 3]; Samuel Plost[4]; Kate Hust[1]; M. D. King[2, 3]. [1]Hennepin County Medical Center, Minneapolis, MN; [2]Southeast Louisiana Veterans Healthcare System, New Orleans, LA; [3]Tulane University School of Medicine, New Orleans, LA; [4]Presbyterian Healthcare Services, Albuquerque, NM. (Control ID #2698490)

NEEDS AND OBJECTIVES: Residents are the supervised primary care physicians for hundreds of thousands of patients in academic medical centers across the country. Despite increased focus on handoffs in the inpatient setting, outpatient clinic transitions have garnered less attention. The need to address the safety of these transitions has been documented in the literature. We examined how simple resident driven interventions in the handoff between graduating and incoming internal medicine residents could affect measurable patient care outcomes.

SETTING AND PARTICIPANTS: Tulane Internal Medicine residents have a primary care continuity clinic at the Southeast Louisiana Veterans Health Care System. The average third-year resident carries a panel of 50–60 patients. Residents keep the same patient panel through all of residency, enabling successful continuity of care. Upon graduation, panels are reassigned to incoming first-year residents. This project implemented an outpatient handoff curriculum in an attempt to decrease the amount of patient care failures associated with transitioning care from graduating third-year residents to incoming first-year residents.

DESCRIPTION: Graduating residents were divided into a control group and intervention group. All groups underwent a brief training about the importance of outpatient transitions of care. The intervention group also received a hand-off bundle to use with high-risk patients (identified as having a one-year risk of death or hospitalization greater than 10% based on the Veteran Affairs care assessment need score): templated note, hand-off checklist, and dedicated time to use these items to complete a "cold" hand-off.

EVALUATION: Chart review was used to track and compare data from high risk patients during the first six months of the 2014 academic year. Using chi-squared analyses, we found that the interventions did not significantly affect hospitalization rate [control 17.5% $n=18$, intervention 17.8% $n=19$, p-value 0.957], emergency room or urgent care utilization [control 29.1% $n=30$, intervention 40.1% $n=43$, p-value 0.092], or time to primary care follow-up measured in numbers of weeks after indicated date for follow-up appointment [control 63.1% $n=65$, intervention 52.3% $n=56$, p-value 0.113].

DISCUSSION/REFLECTION/LESSONS LEARNED: Transitions of care has become a popular target for quality improvement research. Most of the literature published consists of observational data or qualitative surveys and has not studied patient outcomes related to targeted interventions. This study adds to the current literature with its unique interventional method and emphasis on patient care outcomes. While our intervention failed to significantly improve any of our measured outcomes, it identified several opportunities for future improvement.

RESIDENT DRIVEN LEAN PROCESS IMPROVEMENT FOR PATIENT CYCLE TIME, IMPROVES CLINIC FLOW AND REDUCES PROVIDER BURNOUT. Moses Lee[1, 2]; Melissa S. Lee[1, 2]; Andrew A. Chang[1, 2]; David Stevens[1, 2]. [1]Health + Hospitals Kings County, New York, NY; [2]SUNY Downstate, Brooklyn, NY. (Control ID #2707586)

NEEDS AND OBJECTIVES: Residents are typically passive participants in the design and operations of continuity practices. They receive no formal training on how to approach and solve problems in clinical flow. We aimed to: − Teach residents Lean thinking. - Engage residents in a daily practice huddle as a forum for process improvement. - Decrease resident clinic cycle time and reduce resident burnout.

SETTING AND PARTICIPANTS: A large hospital-based inner-city academic primary care practice in Central Brooklyn focused on care for the underserved. 36 internal medicine residents rotate through the resident practice in a 4 + 2 model.

DESCRIPTION: We implemented an experiential curriculum in Lean process improvement theory. Certified Lean trainers led two workshops to teach residents the Lean model for problem solving and continuous improvement and the Plan Do Study Act (PDSA) rapid cycle for testing. Residents participate in a daily scheduled interdisciplinary huddle with nurses, medical assistants, clerks, and ambulatory leaders. The prior day's cycle time (patient check in to check out) and volume is discussed and posted on the daily management board. All staff share ideas about what impacted the prior day's cycle time and propose tests of change while reflecting on efficacy of prior experiments using the PDSA method.

EVALUATION: Resident cycle time data decreased from a median of 110 min to 80 min from July to December 2016. 21/24 residents sent the survey returned it. 90% of these residents felt they had learned to use Lean to improve clinic operations. 67% stated that daily cycle time data motivated improvement in clinic flow. 76% noted that daily huddles helped address patient flow issues. Lean thinking enhanced resident satisfaction. 90% residents look forward to their primary care clinic, and 100% would recommend our practice to others as a place to work.

DISCUSSION/REFLECTION/LESSONS LEARNED: We taught Lean process improvement theory in an experiential real world setting. The curriculum succeeded as measured both by resident perception and measurable process improvement. Aided in a 4:2 model with three days per week of primary care clinic, residents and faculty could see clinic operation changes

from day to day. Huddles fostered real time discussion of acute issues. Residents identified gaps such as long wait times for patient registration, late patients, and preceptor traffic jams. Problem solving led to rapid experiments including a patient navigator to filter unappointed patients from the registration line, visual management tools to facilitate equitable patient assignment for each resident and a queue for residents waiting to be precepted.

RESIDENT EXPERIENCE DISCUSSION (RED): RESIDENT-LED DISCUSSION GROUPS TO PROMOTE RESILIENCE

Candace L. Haddox[1]; Alan Kubey[1, 2]; Hannah C. Nordhues[1]; Deanne T. Kashiwagi[1]. [1]Mayo Clinic, Rochester, MN; [2]Thomas Jefferson, Philadelphia, PA. (Control ID #2705911)

NEEDS AND OBJECTIVES: Over 50% of U.S. physicians report burnout and nearly half report dissatisfaction with work-life balance; this may be even higher among resident physicians. Institution-led discussion groups for trainees have not been shown to curb burnout scores. To our knowledge, resident-led initiatives have not been described. We sought to promote resident wellness through a resident-initiated discussion forum outside the formal residency structure.

SETTING AND PARTICIPANTS: Small groups of Mayo Clinic, Rochester Internal Medicine residents voluntarily participate in "Resident Experience Discussion" (RED) forums, hosted monthly at an attending's home.

DESCRIPTION: RED is an open discussion on topics relevant to residency training that are not addressed by formal coursework. Residents share insight, reflection, and mutual understanding of the resident experience and how it impacts life experiences. Pairs of residents and resident-nominated faculty facilitators guide sessions. Topics include difficult patient encounters, work-life balance, burnout, unmet expectations, cynicism, and favorite moments. RED opens with dinner followed by an introduction that emphasizes openness to ideas, the freedom to listen or be heard, confidentiality, and reflection on the resident experience rather than finding solutions. A resident begins with a short personal story. Then, discussion opens to all, unfolding naturally with limited facilitator guidance. After an hour, a facilitator concludes by briefly reflecting on main themes.

EVALUATION: After each RED, we surveyed residents on topic relevance, future topics of interest, positive aspects, areas for improvement (including size and meeting frequency), and nominations for future facilitators.

DISCUSSION/REFLECTION/LESSONS LEARNED: Residents have described RED as "stimulating and thought-provoking," "a truly welcoming/low pressure…frank discussion," that "[provides a] great sense of community." Faculty noted learning from the residents, gleaning understanding of their own experience. Based on resident feedback, we adjusted future topics, formatting, and facilitation accordingly to improve future REDs. Our program is growing and is extending to other Mayo residency programs. The structure and format is reproducible, and we are optimistic that residents nationally can adopt RED's framework to provide a valuable experience for their colleagues.

RESILIENCE SKILLS FOR TEAM LEADERS: A PILOT CURRICULUM FOR SENIOR RESIDENTS

Michelle Martinchek[1]; Amber-Nicole Bird[2]; Amber Pincavage[1]. [1]University of Chicago, Chicago, IL; [2]University of Pennsylvania, Philadelphia, PA. (Control ID #2694140)

NEEDS AND OBJECTIVES: Burnout is experienced by many trainees, and resilience training is one promising method to combat burnout. However, few interventions to enhance resilience in trainees have been described. Following successful implementation of an intern resilience curriculum, we conducted a needs assessment of senior residents that found they experienced difficult clinical events regularly and found them stressful. They preferred to discuss events with their teams, but had not received training on debriefing. Based on these findings, we developed and piloted an advanced resilience skills curriculum for senior residents.

SETTING AND PARTICIPANTS: University of Chicago Internal Medicine Residency Program, Post graduate year two (PGY-2) and PGY-3 residents

DESCRIPTION: The curriculum included a review of resilience skills and training on team leadership, building resilience as a team leader, and debriefing after difficult events. The sessions were led by chief residents during outpatient schedule blocks in 2015–2016. Sessions consisted of 8–15 residents and combined small group discussion, reflection, didactic lecture, and simulated skill-building exercises. Residents were surveyed pre and post-curriculum on resilience, burnout, and difficult events. Resilience was measured with the Connor-Davidson Resilience Scale (CD-RISC 25), which ranges from 0–100 with higher scores indicating higher resilience. Burnout was measured with a validated, non-proprietary single question.

EVALUATION: 62 residents participated, and the survey response rate was 66.1% pre-curriculum and 54.8% post-curriculum. The mean post-curriculum resilience score of 74.06 ± 8.66 (range 53–96) was higher although not significantly different than the mean pre-curriculum score of 70.78 ± 9.45 (range 44–93), $p = 0.12$. There was no change in the proportion of residents who scored positive for burnout before (26.8%) and after (26.5%) the curriculum, $p = 1.00$. After the curriculum, more residents reported the skills necessary to help their team cope with difficult clinical events (82.4% v. 56.1%, $p = 0.025$). 76.5% found the sessions helpful, 58.8% reported using something they learned, and 85.3% said the sessions should be continued. There were also many positive qualitative comments. Residents said they liked the sense of community and support from their peers, and that it normalized their experiences.

DISCUSSION/REFLECTION/LESSONS LEARNED: After this curriculum, residents increasingly reported having skills to help their team cope after difficult clinical events. While this curriculum did not significantly affect burnout or resilience, residents found the sessions helpful and thought they should continue. This curriculum shows promise but more in-depth interventions may be necessary to impact resident wellness.

SAFETY QUEST: A NOVEL WEB-BASED QUALITY IMPROVEMENT AND PATIENT SAFETY EDUCATIONAL GAME

Anuradha Phadke[1]; Lisa Shieh[2]; Kambria Hooper Evans[1]. [1]Stanford Healthcare, Woodside, CA; [2]Stanford Healthcare, Palo Alto, CA. (Control ID #2706822)

NEEDS AND OBJECTIVES: We designed a web-based game to teach patient safety and quality concepts to medical students and physicians. We formed a committee of leaders of medical education and patient safety/quality at our institution. Our group developed specific objectives including 1) increasing knowledge regarding communication tools to promote safety, error disclosure, and prevent healthcare-acquired infections 2) introducing learners to quality improvement and patient safety tools including root cause analysis,

A3 thinking, and error reporting and 3) reviewing high level safety concepts, such as systems engineering, reliability levels, and human factors.

SETTING AND PARTICIPANTS: We developed our game for use across graduate medical education at Stanford University Medical Center and have also made our tool freely available via the web to other institutions. In 2017 it will also be available for fee-based CME.

DESCRIPTION: Our game consists of 20 clinical cases across three levels and a bonus round. Additional resources include a tutorial and glossary. Each case contains a clinical scenario followed by a time challenge in which the learner must employ correct "safety actions" to prevent their patient from falling into harm's way. Once the player selects each of the correct safety actions in a case, they advance to a set of multiple choice questions followed by the case's "quality improvement mode," a time of advanced game play where they learn in detail about a quality improvement or patient safety tool and apply their knowledge with techniques such as matching and drag and drop. Through game play, players earn a score called "future lives saved" and "patient safety tools" to add to a virtual toolkit.

EVALUATION: We piloted our game during internal medicine intern orientation at our institution at the beginning of the 2016 academic year. We divided the incoming intern class into two groups. 19 interns played "Septris" a sepsis-educational game that our group has previously developed while 26 interns played "Safety Quest." Learners from each group participated in pre and post game-play questionnaires. In paired t-test analysis of pre and post-test data, we observed a statistically significant improvement in learner knowledge about patient safety concepts with a p-value of <0.0001 observed in knowledge testing for those interns who played Safety Quest. We did not observe this relationship in patient safety knowledge among those who played Septris.

DISCUSSION/REFLECTION/LESSONS LEARNED: We have developed a novel web-based quality improvement and patient safety game that in pre-post testing of a beta version significantly improved medical intern knowledge regarding patient safety. Developing this game has at times been challenging as the topic does not naturally lend itself to game play in the way that our previous educational game, Septris, did. However, in focus groups, learners advised us that our game was preferable to standard educational approaches.

ONLINE RESOURCE URL (OPTIONAL): http://stanfordqi.studiocypher.com/#/menu

SCHEDULING QUALITY:LEVERAGING 4 + 1 BLOCK SCHEDULING TO TEACH QUALITY AND SAFETY Megan Freeman[1]; Patricia Wathen[1]; Raj Sehgal[1]; Michael Shoffeitt[2]. [1]UTHSCSA, San Antonio, TX; [2]University of Texas Health Science Center San Antonio, San Antonio, TX. (Control ID #2694420)

NEEDS AND OBJECTIVES: Historically, internal medicine residents have rotated through a series of inpatient rotations while attending one half day per week in continuity clinic. Quality improvement and patient safety education suffer in these hurried, combined settings as they require time and attention to make their concepts real to young physicians. Changes to scheduling can be made to reconfigure learning environments while simultaneously engaging residents in hands on QI projects, patient safety, and broader systems of care, preparing them for future employment.

SETTING AND PARTICIPANTS: The internal medicine residency program at University of Texas Health San Antonio reimagined how residents work across all clinical settings, including University Health System, the Audie L. Murphy VA Hospital, and all their affiliated outpatient sites to meet these objectives.

DESCRIPTION: The residents were divided into 5 cohorts on different weeks of a 5 week schedule, 4 weeks of a rotation then 1 week of outpatient experiences. During their week of outpatient, time was protected for residents to receive training in systems of care, facilitated cohort-based longitudinal QI projects, and transitions of care time before starting their next rotation. This change made safety and QI a part of the residents' structured activities every fifth week, not an additional, ambiguous task required of them.

EVALUATION: Systems of care lectures introduced topics useful to practice, for example the Affordable Care Act, Medicare, and Medicaid. Resident cohorts complete 5 QI projects per year, some with sustained impact on clinical practice. As an example, one project decreased renal dosing errors when ordering antibiotics by 75% by creating a creatinine clearance 'pop-up.' Additionally, 98% of residents indicated participation in QI on their annual ACGME survey compared to the national average of 83%. Residents have presented results at institutional conferences and regional meetings and have rated the educational value of the curriculum by survey with a 75% response rate and a positive score of 3.9/5 for systems of care didactics, 3.6/5 for QI sessions, and 4.7/5 for transitions of care. Finally, the perception from graduating residents has been that this curriculum assists them when interviewing for future employment. Early plans are developing to conduct qualitative, structured interviews of graduating residents to evaluate this working knowledge.

DISCUSSION/REFLECTION/LESSONS LEARNED: Block schedules promote an environment ripe for education. Recurring blocks allow residents to learn safety and quality content and engage with cohort-based teams to complete longitudinal projects. Their QI projects can be better studied and implemented due to the large work force of residents in each cohort, teaching shared responsibilities and teamwork and possibly improving reception of this curriculum by learners. This model creates an educational model that gives residents a practical and working understanding of the concepts of quality and safety.

SCRIPTED TEACHING: USING TEACHING SCRIPTS AND AN ONLINE SCRIPT LIBRARY TO ENHANCE RESIDENT TEACHING IN THE CLINICAL SETTING Jennifer R. Lukela[2]; Kristin Collier[3]; Amit Gupta[1]. [1]University of Michigan Health Systems, Ann Arbor, MI; [2]University of Michigan Medical School, Ann Arbor, MI; [3]University of Michigan, Ann Arbor, MI. (Control ID #2704685)

NEEDS AND OBJECTIVES: To develop a teaching script library to improve resident teaching skills in the clinical setting.

SETTING AND PARTICIPANTS: University-based Internal Medicine (IM) and Med-Peds Residency Programs; PGY-2 through 4 residents.

DESCRIPTION: Residents play a key role in the education of medical students. Up to one-third of medical student knowledge comes from interactions with residents. Prior studies suggest students value teaching that is organized with clear take-home points, tailored to learner level, and appropriate to the clinical context. Teaching scripts can be used to facilitate high quality, evidence-based, efficient teaching in the clinical setting. Recently, we piloted a new Resident-as-Teacher (RAT) curriculum in our residency programs. Teaching scripts contain many of the features identified as high-value by learners.

Therefore, our RAT curriculum included two didactic sessions on the development and use of teaching scripts. The first session introduced residents to the importance of preparation for "spontaneous" teaching. They were provided an outline of how to draft and utilize teaching scripts in the clinical setting. Each participant developed their own teaching script. Residents then participated in a "flipped classroom" session where they presented their teaching scripts to peers and faculty facilitators, which allowed for feedback on teaching effectiveness. The flipped classroom session was later modified to include third-year medical students who provided additional feedback from the viewpoint of a learner. To encourage continued use of this model after the RAT program concluded, teaching scripts developed by participants were incorporated into an open-access library availabile to all residents within the training programs. All residents were encouraged to access these prepared teaching scripts to enhance the quality and ease of teaching within the clinical setting.

EVALUATION: Resident feedback on the program was positive.100% of residents ($n = 30$) valued the opportunity to develop and practice presenting a teaching script; 97% of residents indicated that participation in the flipped classroom session made them more likely to use teaching scripts as part of their clinical teaching in the future. Currently, our teaching script library includes 41 scripts covering 11 disciplines within IM. Since the library was launched on September 1, 2016, residents have accessed the library 147 times, making it the second most popular educational resource on our internal website.

DISCUSSION/REFLECTION/LESSONS LEARNED: Based on initial feedback, residents have been extremely satisfied with the teaching scripts sessions. Next steps include surveying residents to assess their impression of the utility and functionality of the teaching script library. We will also analyze resident teaching evaluations to determine whether resident participants in this novel curriculum receive more favorable teaching evaluations in comparsion to peers who did not participate in the RAT curriculum

SELF-REFLECTION AND PEER OBSERVATION: A NOVEL FACULTY DEVELOPMENT TOOL Shanu Gupta; Aliyah Sadaf. Rush University, Chicago, IL. (Control ID #2707592)

NEEDS AND OBJECTIVES: Peer observation has been described in the literature as a valuable tool to assess teaching performance. We describe a novel tool for using peer observation for self-reflection as a form of faculty development.Our objectives: Self-reflect on current teaching practices Create a continuous quality improvement process for junior faculty teaching practices Create a community of teachers through peer mentorship

SETTING AND PARTICIPANTS: Junior faculty in the Division of Hospital Medicine at an academic institution.

DESCRIPTION: In our model,junior faculty are invited to join the Peer Observation project and asked to self-evaluate their teaching practice and identify areas for improvement.They then observe a colleague as they lead their teaching rounds. Following the observed rounds, participants write their observations and engage in a focus group. At the conclusion of the discussion, participants commit to implementing a new strategy to their teaching practice. Four to six weeks later, participants are asked to repeat the cycle of self-reflection and peer observation followed by a focus group.

EVALUATION: Our goals were to provide a self-reflective environment that is conducive to creating a teaching community that serves as a platform for continuous quality improvement for personal teaching practices. As such, we chose not to evaluate teaching practice outcomes. From our initial observations, this model for peer observation has proved successful in creating a non-threatening environment where educators feel valued and have an avenue to voice their needs. All of our participating junior faculty members chose to continue in this project in this academic year. In addition, all participating faculty have become peer mentors for incoming new faculty in an effort to on-board them into their new educational roles.

DISCUSSION/REFLECTION/LESSONS LEARNED: Teaching on the wards not only provides a platform for dissemination of knowledge, but is also an evaluative measure for overall faculty performance. Teaching performance is measured through learner evaluation, and this often also serves as feedback for faculty. Much of the teaching performance development is done through faculty development seminars, workshops and other longitudinal programs. One way to help develop teaching practices is through peer observation. In a 2006 study of General Practitioner teachers showed reluctance in participating in the peer observation process due to time constraints, busy workloads, and fear of scrutiny and criticism. As a result, we devised a program for junior faculty that provides an observation platform coupled with self-reflection. Our success so far lies in creating a community of educators within our division. Our weakness has been time and heterogeneity of experience. However, group discussion with some more senior faculty input has helped foster rich discussion. What we have yet to do is find ways to incorporate participation in teaching self-reflection as a quality metric for academic hospitalists, for example as part of a 360 faculty evaluation.

STRENGTHENING MEDICAL STUDENT SUBSTANCE USE DISORDER (SUD) MANAGEMENT SKILLS THROUGH DEVELOPMENT OF A MULTI-MODAL CURRICULUM WITHIN THE DENVER HEALTH LONGITUDINAL INTEGRATED CLERKSHIP (DH-LIC)

Sarah Axelrath[2]; Jennifer Adams[1, 3]. [1]Denver Health, Denver, CO; [2]University of Colorado School of Medicine, Denver, CO; [3]University of Colorado, Aurora, CO. (Control ID #2702729)

NEEDS AND OBJECTIVES: Overdose deaths have nearly quadrupled since 1999 (CDC) and trained physicians are needed to address this growing health crisis. In a needs assessment of third year medical students and faculty preceptors participating in the DH-LIC, only 27% of students reported a high level of comfort with management of SUD despite 75% of faculty rating this skill as important. Based on these results, an educational innovation was developed with the objectives to increase student knowledge and comfort with management of SUD, improve student attitudes toward patients with SUD, and strengthen student resilience in working with this challenging population.

SETTING AND PARTICIPANTS: The University of Colorado School of Medicine's DH-LIC is a year-long curriculum in which 8 third year medical students complete all core clerkships simultaneously at the only dedicated safety net hospital serving metropolitan Denver. Similar to other urban areas, the average prevalence of SUD for adults in this catchment area is 11.9%, versus 9.0% in the US (SAMSHA).

DESCRIPTION: This innovation consists of a longitudinal, multi-modal curricular thread woven into the DH-LIC, combining team-based learning (TBL), traditional didactics, communication workshops, reflective writing, and clinical experiences in SUD. These components are integrated into the core curriculum, allowing progressive development of student knowledge and skills across medical specialties and settings.

EVALUATION: In pre-curricular surveys assessing student knowledge and attitudes, less than 50% of students correctly answered any question about pharmacotherapy for SUD and no students expressed strong satisfaction in working with SUD patients. At completion of the year-long curriculum, follow-up surveys and student self-assessment of comfort with management of SUD will be used to measure curricular efficacy. To date, 100% of students have reported 5.0/5.0 satisfaction with didactic sessions and TBL cases, and students rated their clinical experience and related reflection as 4.9/5.0 in terms of its positive effect on their attitudes toward patients with SUD.

DISCUSSION/REFLECTION/LESSONS LEARNED: Weaving SUD content into a longitudinal curriculum provides the opportunity for students to reflect on their experiences and attitudes as they develop. Following a clinical experience at a local syringe access program, one student wrote: "I questioned my own beliefs surrounding IV drug users. I don't want them to think that they are a bad person for having an addiction." Exposing trainees to challenging patients and situations is important for building resilience that allows students to advocate for the underserved.

STUDENT/EXPERT AGREEMENT OF USEFULNESS OF FACULTY FEEDBACK Alan L. Hull[1]; Neil Mehta[2]; Amy S. Nowacki[1]. [1]Cleveland Clinic, Cleveland, OH; [2]Cleveland Clinic Lerner College of Medicine, Cleveland, OH. (Control ID #2701433)

NEEDS AND OBJECTIVES: In our competency-based assessment system students must use formative assessments to self-regulate their learning and document competency achievement based on useful narrative feedback from facutly. We have a web-based Clinical Assessment System (CAS) where faculty provide timely formative feedback based on observed encounters. We enhanced CAS so usefulness of the feedback is assessed by students. Our project goal was to refine the usefullness scale to maximize agreement of feedback ratings from 2 physician educator faculty (experts) with student ratings using 2 student cohorts. We achieved the following objectives: 1) In an exploratory study, determine if ratings could be combined into fewer categories and determine the agreement of student ratings with expert ratings. 2) In a second confirmatory study, refine and confirm the findings.

SETTING AND PARTICIPANTS: The IRB-approved study includes students rotating through 9 core clerkships offered in 4 affiliated medical centers. The analysis used 40 blinded randomly-selected forms from those completed by 48 students from 7/2013 to 12/2013 . The confirmatory analysis used 100 blinded randomly-selected forms from those completed by 59 students from 7/2016 to 12/2016.

DESCRIPTION: Students read the faculty assessments on-line; prior to leaving the feedback screen students can respond using a 5-level agree score to: "The form identifies specific behaviors/skills that I did well and/or I can improve upon." Student ratings are not shared with faculty yet.

EVALUATION: The study categorized forms into 3 levels (agree, neutral, and disagree). There was *good* agreement between the 2 experts (Kappa .72, 95% CI = 0.58–0.87). However there was *poor* agreement (.10 and .09) comparing each expert to student ratings. There tended to be more agreement between experts and students when experts rated the feedback as not useful. A confirmatory analysis was conducted to study this trend. There was *moderate* agreement between the 2 experts (.48, 95% CI = 0.35–0.61). The experts developed a consensus rating adjudicating differences. There was *fair* agreement between the consensus ratings and student ratings. Since student ratings were skewed towards useful, we created a 2-point useful/non-useful score. Using this scale students and experts agree 97% when the student rating was useful but 35% when the student rating was not useful.

DISCUSSION/REFLECTION/LESSONS LEARNED: Students and experts have fair agreement when feedback is useful. We conclude that we can use student ratings to recognize faculty. But agreement about what is not-useful is less clear. Disagreement could be due to students rating faculty feedback more favorably (85% of student ratings versus 63% of expert ratings) or that students use other factors (eg concurrent verbal faculty feedback), thus experts may not have the whole picture. Experts agreed with students in 13/15 non-useful ratings (87%), but only in 61/85 useful ratings (72%). Including ratings from students not receiving verbal feedback may increase the proportion of non-useful ratings by students.

STUDENTS AS SYSTEMS ETHNOGRAPHERS: ADDING VALUE TO HEALTH SYSTEMS AND ENHANCING LEARNING IN HEALTH SYSTEMS SCIENCE Jed Gonzalo; Deanna Graaf; Lawrence Kass; Susan Promes; Daniel R. Wolpaw; Daniel R. George. Penn State College of Medicine, Hershey, PA. (Control ID #2702438)

NEEDS AND OBJECTIVES: To better align education with health care transformation, educators have recommended an increased focus on Health Systems Science (HSS), and related higher-order competencies of ethnography and systems thinking. Ethnography is the process of observing and "writing" culture, and systems ethnography refers to the process of observing systems of care to uncover vulnerabilities and leverage points for change that can improve quality. Our objectives were to: (1) Design systems ethnography roles for medical students that add value through the identification of vulnerabilities in care delivery, and, (2) Enhance student learning in HSS.

SETTING AND PARTICIPANTS: In the Fall 2016, we implemented a program for a subset of 1st-year medical students who were educated about ethnography and systems thinking, and linked with patients during admission in the Emergency Department (ED) to observe the patient experience and clinical processes. Experiences were contextualized in a longitudinal HSS course. Student mentors in the ED included nurse managers, care coordinators, and physicians.

DESCRIPTION: Fourteen students participated in the program, spending 12–15 hours in the clinical environment to ethnographically observe and apply a systems thinking lens to patient experiences and processes. Students were linked with patients in the waiting room, through triage, throughout their ED stay and during the discharge process or hospital admission. Students logged their observations and reactions using a structured format. Qualitative methods were used to analyze assignments and notes.

EVALUATION: Students submitted written assignments, participated in a debriefing, and completed an electronic survey regarding educational benefits and perceived value added to the clinical mission using 5-point Likert-scale questions. Students identified one overarching theme - patient's prolonged waiting amidst the hectic ED. Four categories of vulnerabilities were identified: (1) patient experience, (2) communication/collaboration, (3) processes, physical space, and resources, and, (4) professionalism. Students reported improved appreciation for patient challenges (3.92/5), importance of communication (3.92/5), and understanding of the patient experience (3.77/5).

DISCUSSION/REFLECTION/LESSONS LEARNED: Systems ethnography experiences for medical students can provide unique educational opportunities while simultaneously highlighting areas for improvement in the clinical environment. Despite logistical challenges, these authentic, meaningful workplace roles promise to add depth to classroom learning in interprofessional collaboration, value, and population health.

SUBSPECIALTY TRAINING IN A PRIMARY CARE RESIDENCY TRACK Joan Addington-White[2]; Vidthya C. Abraham[1]. [1]University of Wisconsin Hospital and Clinics, Middleton, WI; [2]University of Wisconsin-Madison, Madison, WI. (Control ID #2707271)

NEEDS AND OBJECTIVES: To meet the growing need for primary care physicians, academic medical centers must determine how best to educate residents to practice general internal medicine (GIM). Although there is increasing emphasis on the outpatient setting, subspecialty training during residency largely remains an inpatient experience and is less focused on content a primary care physician will need for practice. We developed a clinic block rotation that incorporates subspecialty clinic training focused on the educational goals of the developing general internist. The objectives of the rotation are to provide residents with skills to manage complicated patients in practice, recognize when subspecialty referral is necessary, and to individualize a resident's training based on future goals.

SETTING AND PARTICIPANTS: All primary care track residents and graduates from the University of Wisconsin- Madison were participants.

DESCRIPTION: Subspecialists with excellent teaching evaluations and a commitment to training residents to become strong general internists were recruited. Working with these physician-educators, core concepts that a general internist would need to master to appropriately diagnose, treat, and refer in each of the subspecialty areas were identified and objectives were jointly formed. The rotation was designed as an 8 week block for PG1s and a 12 week block for PG2s and PG3s. During each week of the rotation, residents spend two half-days in their continuity clinic and seven half-days rotating through different subspecialty clinics. Over the course of three years, each primary care resident experiences a similar foundation of subspecialty clinics, but are also placed in subspecialty clinic experiences unique to their own interests and future goals.

EVALUATION: Over the past 6 years, all primary care residents surveyed prior to graduation (22 to date) rated the primary care block among their top three learning experiences during residency. Since the track's inception, 82% of graduates have pursued careers in academic and community primary care. A recent email survey to the 18 graduates currently practicing in primary care queried their experiences in the subspecialty clinics. Of the 14 who responded, 12 (86%) strongly agreed and two (14%) agreed that "rotating through the subspecialty clinics helped prepare me for practice after residency."

DISCUSSION/REFLECTION/LESSONS LEARNED: Subspecialty training is critical for developing excellent general internists. Since 2008, we have created more than 40 discrete clinical half-day experiences and recruited an equal amount of highly ranked subspecialty faculty educators. Our graduates tend to remain in primary care at averages that exceed those published in the literature. They all report that the subspecialty block rotation has helped prepare them for their careers as general internists. Recruiting strong subspecialists, creating focused objectives for GIM, individualizing the resident experience, and making adjustments based on regular feedback have been key to the success of this rotation.

SWITCHING THE FOCUS FROM KNOWLEDGE TO PRACTICE: IMPROVING RESIDENT PARTICIPATION AND CONFIDENCE IN INTERDISCIPLINARY QI PROJECTS Elena Lebduska[6]; Amar Kohli[1]; Natasha Parekh[3]; Erika L. Hoffman[5]; David C. Demoise[7]; Carla Spagnoletti[2]; Jaishree Hariharan[4]. [1]UPMC, Mars, PA; [2]University of Pittsburgh, Pittsburgh, PA; [3]University of Pittsburgh Medical Center, Denver, CO; [4]University of Pittsburgh Medical center, Pittsburgh, PA; [5]VAPHS/Univeristy of Pittsburgh, Pittsburgh, PA; [6]University of Colorado, Denver, CO; [7]UPMC, Pittsburgh, PA. (Control ID #2706694)

NEEDS AND OBJECTIVES: The ACGME recognizes that internal medicine trainees must achieve competence in systems based practices. With many residency programs going to an inpatient/outpatient "block system", achieving continuity for quality improvement (QI) projects in the outpatient setting becomes a challenge. With this in mind, we implemented an educational QI initiative with a three part aim: 1) Increase resident participation in QI projects in the outpatient setting; 2) Improve patient level chronic disease outcomes measures; 3) Evaluate resident confidence in interdisciplinary QI projects. This abstract will focus on the last aim.

SETTING AND PARTICIPANTS: Participants were the 140 residents affiliated with the University of Pittsburgh Medical Center during two academic years (2014–2016). All residents followed a panel of continuity patients in one of three clinical sites: a university clinic ($n = 52$), a community clinic ($n = 36$) and a VA clinic ($n = 52$).

DESCRIPTION: The focus of our curriculum was on using a longitudinal, multistep, innovative approach to teach QI by focusing on single area patient level outcomes. This stepwise approach included: a brief QI didactic, individual chart reviews, resident-driven team interventions, interdisciplinary QI councils, process evaluation, and consistent data transparency and re-evaluation.

EVALUATION: Curricular evaluation during the pilot year (2014–2015) involved analysis of ACGME resident response data. The national ACGME resident responses from pre-curriculum in spring 2014 were compared to responses in spring 2015. With regard to the questions, "Participated in Quality Improvement" and also "Provided Data about Practice Habits", residency responses increased from 83% to 87%, and 67% to 76% respectively. During the second curricular year (2015–2016) residents were surveyed pre and post curriculum and paired T-tests were used to evaluate responses at the university and community hospital resident clinics. There were 88 total pre-tests, 65 total post-tests, and 56 paired tests. Responses were based on a 5 point Likert scale from not confident to very confident. Post curriculum residents reported improved confidence in: creating a successful QI project, working in an interdisciplinary QI team, applying a PDSA cycle, improving the management of chronic disease patients, and reviewing patient level quality metric data (<0.01).

DISCUSSION/REFLECTION/LESSONS LEARNED: This is a team-based educational initiative to teach residents about QI, utilizing an innovative stepwise approach. To date, the initiative has successfully engaged 140 residents in the QI process, and has fostered collaboration between residents and clinic staff. It has led to improved participation in QI projects, as well as improved resident confidence with QI principles and interdisciplinary care.

Moving forward we plan to evaluate interdisciplinary team members' responses to working with residents on longitudinal QI initiatives.

SYSTEMS ENGINEERING COLLABORATION TO ANALYZE INTERNAL MEDICINE RESIDENCY

James Benneyan[1]; Margo Jacobsen[1]; Awatef Ergai[1]; Ryan Gurney[1]; Sophie Silverstein[1]; Paul Han[2]; Leo B. Waterston[2]; Thomas E. Van der Kloot[2]; Robert Bing-You[2]; Peter W. Bates[2]. [1]Northeastern University, Boston, MA; [2]Maine Medical Center, Portland, ME. (Control ID #2698159)

NEEDS AND OBJECTIVES: Care delivery and graduate medical education (GME) are complex, variable, and intertwined; systems engineering (SE) methods analyze, optimize, and improve complex processes. We proposed a collaboration between SE and GME researchers to improve the interprofessional clinical learning environment (CLE) by using structured SE methods to assess current processes and prioritize CLE education and care improvement opportunities.

SETTING AND PARTICIPANTS: A four month pilot project was conducted by the internal medicine residency program at Maine Medical Center (Portland) and the Healthcare Systems Engineering Institute (Boston). The MMC program has 47 residents and 225 attending physicians.

DESCRIPTION: Starting with stakeholder interviews and process observations, the research team assessed the current state of IM residency via four SE methods used in complex industries such as aviation and manufacturing: (1) Process maps help understand work flows and roles of day-to-day processes. (2) Systems Engineering Initiative for Patient Safety (SEIPS) analyzes the larger context within which these work flows and interactions occur. (3) Failure Mode and Effects Analysis (FMEA) helps identify and prioritize potential process failures. (4) Functional Resonance Analysis Method (FRAM) studies the resiliencies and interdependencies of activities in complex systems.

EVALUATION: These tools combined provided insightful information to guide process redesign. Process maps illustrated the general flow of resident activities and the high variation within and between days. SEIPS analysis identified five primary areas of concern that can lead to burnout or sub-optimal patient care: heavy workloads, lack of communication, lack of reflective learning, training variability, and inefficient information exchange. FMEA identified 18 primary failure modes with 21 effects and 43 causes. More care-related failures than learning-related failures were identified, the former rated also with higher severity. The most severe of these were categorized as communication, schedule, and interruption failures. Finally, FRAM highlighted inter-dependencies between GME functions, potential improvements, and work-as-imagined versus work-as-done differences.

DISCUSSION/REFLECTION/LESSONS LEARNED: SE methods add additional value to GME improvement and redesign activities. Results of this study collectively have helped inform, prioritize, and plan inpatient internal medicine GME redesign activities, provided a structured framework to guide these efforts, and introduced new process analysis methods.

TAKING SGIM'S "TEACHING EDUCATORS ACROSS THE CONTINUUM OF HEALTHCARE" ON THE ROAD - A LOCAL, INTERPROFESSIONAL FACULTY DEVELOPMENT INNOVATION

William G. Weppner[3]; Andrew P. Wilper[5]; India C. King[2]; Melissa (Moe) Hagman[1]; Lisa Inouye[3]; Amber Fisher[1]; Rick Tivis[1]; C. Scott Smith[3]; Christopher Knight[4]. [1]Boise VA Medical Center, Boise, ID; [2]Boise VAMC, Boise, ID; [3]University of Washington, Boise, ID; [4]University of Washington, Seattle, WA; [5]University of Washington School of Medicine, Boise, ID. (Control ID #2706086)

NEEDS AND OBJECTIVES: Interprofessional education is important for health care trainees. In addition, programs desire sustainable faculty development opportunities to improve their quality of teaching. To address these purposes, we implemented a local version of SGIM's national TEACH (Teaching Educators Across the Continuum of Healthcare) at our institution.

SETTING AND PARTICIPANTS: Our institution hosts training programs for Internal Medicine, Family Practice, Psychiatry, Nurse Practitioner, Psychology, Pharmacy, and Nursing; faculty from these programs were invited to attend.

DESCRIPTION: In collaboration with national TEACH faculty, we modified the TEACH certificate program for our interprofessional faculty. Over an academic year, we provided a full-day faculty kick-off, monthly in-person teaching seminars, monthly in-person (or virtual) journal clubs. Participants were required to attend the kick off and 5+ seminars and 5+ journal clubs; complete 6+ peer teaching observations, and a teaching philosophy. Mentorship was organized between professions, while journal club topics were divided up among each profession. Lectures were provided by invited guests that instruct as part of the national TEACH program.

EVALUATION: 35 faculty members attended the day-long retreat, with a stated goal of completing TEACH training; of that, 24 completed the requirements (69%). Faculty represented included internal medicine ($n = 15$, 42.9%) and related subspecialties ($n = 5$, 14.2%); pharmacy ($n = 7$, 20%); nurse practitioner ($n = 3$, 8.6%); psychology ($n = 3$, 8.6%) and psychiatry ($n = 2$, 5.7%). End-of-year survey respondents reported having a mean of 5 observed teaching sessions with faculty feedback (range 0–10, SD 2.5). Self-reported satisfaction indicated greatest improvement in small group settings, followed by large group settings and teaching with the patient present. 86% of survey respondents indicated that TEACH had a moderate or a large impact on their personal development. Trainee ratings of TEACH faculty teaching ratings compared to non-participating faculty was only available for a subset of internal medicine faculty; there were no differences of already high ratings between the year prior and the year of the curriculum. Qualitative data in the form of thematic analysis of 75 statements from a semi-structured end-of-course focus group was performed, with an interclass correlation coefficient of 0.98 after four rounds of review. Of seven classes identified, *feedback* (19% of statements) and *deliberate teaching practice* (21% of statements) were prominently featured as important aspects of the course.

DISCUSSION/REFLECTION/LESSONS LEARNED: This faculty development effort appeared effective and sustainable. Key elements in the adaptation of SGIM's TEACH format include encouraging peer feedback, encouraging deliberate practice regarding teaching strategies, and adapting it for an interprofessional audience.

ONLINE RESOURCE URL (OPTIONAL): http://boisevacoe.org/products/teach/

TEACHING AND LEARNING ROUNDS: DESIGNING A FACULTY DEVELOPMENT COURSE USING ELEMENTS OF THE LEARNING ENVIRONMENT

Michael McShane[1]; Hugo Torres[1]; Priyank Jain[2]. [1]Cambridge Health Alliance, Somerville, MA; [2]Cambridge Health Alliance, Cambridge, MA. (Control ID #2700377)

NEEDS AND OBJECTIVES: The most successful faculty development (FD) programs involve teachers in learning activities similar to ones that they will use with their students: a "learning by doing" strategy. Yet, FD programs in medical education tend to be contradictory to major research and theory behind learning: workshops are rarely longitudinal, they present superficial information, they do not target the needs of teachers, and mainly use didactics (Bransford, 2000; Leslie, 2013). We set out to create a year-long longitudinal FD course for internal medicine teaching attendings at a community teaching hospital, grounded in educational theory. The goal is to create a FD curriculum that is learner-centered, community-centered (Bransford, 2000), and helps our faculty to grow professionally.

SETTING AND PARTICIPANTS: We organized monthly 60-min session with voluntary participation.

DESCRIPTION: We based the course within a constructivist epistemology, creating sessions that are: experiential (Dewey, 1986), social (Vygotsky, 1980), include observation, reflection, and action, and based on preexisting understandings and knowledge (Piaget, 1952). Each session was structured around a clinical learning environment artifact (resident notes, evaluation forms, bedside teaching, etc.). A facilitator guided the participants in describing and analyzing the artifact, sharing of interpreted challenges faced by the creator of the artifact, and sharing solutions. Each session ended with built-in reflection about participants reaction to the exercise. We mapped the artifacts and activities with institutionally predetermined behaviors expected of a teaching attendings.

EVALUATION: Our evaluation focuses on our three main objectives. First was to create a learner-centered course. As a product of an experiential process, the group would explore relevant topics which would be based on their own prior knowledge and expertise and would meet their needs. We recorded these concepts. Second was to create a community-centered course which was evaluated by reviewing "best practices" shared by faculty during the session. Finally, our third objective was to create a course that allowed our faculty to grow professionally, which will be evaluated by an end of course survey about change of practice perceptions.

DISCUSSION/REFLECTION/LESSONS LEARNED: Initial qualitative data indicate that participants acquire three types of content. First, faculty learn and share discrete teaching tips and best practices, which are compiled in a Google document that can be accessed online. Second, the sessions create a sense of community; faculty regard the exercise as a "safe space" to explore best practices at our institution and ways to improve their own teaching. Finally, faculty recognize and explore the critical concepts behind our learning objectives. One participant in our third session noted, "It became apparent to me when I was reflecting on the exercise that I know myself better as a learner…I can train myself to understand how another person learns by asking them to reflect on a learning exercise."

TEACHING ASYLUM MEDICINE: FIVE MODELS FOR ALIGNING DEMAND AND RESOURCES AT YOUR INSTITUTION Katherine C. McKenzie; Dennis Wang. Yale School of Medicine, New Haven, CT. (Control ID #2697892)

NEEDS AND OBJECTIVES: In 2015, 65 million individuals were displaced from their homes due to human rights abuses, torture and persecution and more than 172,000 individuals applied for asylum in the United States. A medical forensic evaluation of asylum seekers who report torture or ill-treatment can increase the likelihood of a successful asylum case. Many clinicians are interested in performing medical evaluations of asylum seekers, however resources and demands at academic institutions vary substantially. Some clinics are sent ample referrals to meet trainee requests and have abundant faculty support for supervisions. Other clinics have few trained supervisors and a small refugee referral network. Using one of the models described, clinics can tailor their approach to their institution's unique needs.

SETTING AND PARTICIPANTS: Asylum clinics receive referrals for medical forensic evaluations from immigration attorneys and human rights groups. Trained faculty provide supervision to clinicians in training.

DESCRIPTION: *Model 1*: *1–2 trainees in the exam room* Benefits: Direct interaction between the trainee and client Limitations: Small number of trainees; increased risk of re-traumatization of the asylum seeker *Model 2*: *Multiple trainees observe from an adjacent room* Benefits: Larger number of trainees can observe; Decreased risk for re-traumatization of the client Limitations: No direct interaction *Model 3*: *Detention facility* Benefits: Direct interaction; exposure to detention facility conditions Limitations: Transit time may be prohibitive; facility may not allow trainees; clinical space not ideal; dependent upon proximity to a detention facility *Model 4*: *Formal medical school course* Benefits: Classroom-sized group; in-depth didactic teaching of the field Limitations: No direct interaction ; requires time in the formal curriculum *Model 5*: Group discussion with applicant who has been granted asylum Benefits: Large group; direct interaction with asylee; asylee can discuss the entire process Limitations: Not a forensic medical exam

EVALUATION: Results from evaluation of model 2 show that participants find it to be a worthwhile learning experience, although many would prefer to be involved in direct evaluation of the asylum seeker. Papers evaluating programs similar to models 1 and 4 demonstrate significant satisfaction from participants. To our knowledge, a quantitative evaluation of the small group and detention model has not yet been performed, nor have studies been done to compare the 5 models.

DISCUSSION/REFLECTION/LESSONS LEARNED: There is not one ideal model that meets the needs of teaching asylum medicine in all clinics. Resources such as faculty support, clinical space and proximity to a detention center vary. Demands for evaluations will be dependent on pool of asylum seekers in the area. Students, institutions, asylum seekers and faculty have different capacity to accommodate and commit to teaching and learning asylum medicine. Awareness of different models from which to choose allows a medical school to find the one that best serves its student's needs.

TEACHING TRAINEES HOW TO PROVIDE TEAM-BASE PRIMARY CARE THROUGH TELEHEALTH MODALITIES Sarai Ambert-Pompey. Boise Veterans Affairs Medical Center, Boise, ID. (Control ID #2706530)

NEEDS AND OBJECTIVES: Team-base primary care to rural and underserved areas is an important goal of health care systems. Clinical Video Telehealth (CVT) can provide care to remote areas but there are limited training opportunities. Our goal is to expose interprofessional (IP) trainees to team-base primary care through CVT.

SETTING AND PARTICIPANTS: The Boise VA Center of Excellence for Primary Care Education is home to IP health care training for Internal Medicine (IM), nurse practitioners (NP), and pharmacy residents, and post-doctoral psychology fellows. The Boise VA is also the Telehealth Hub for the northwest

region, providing care for veterans in the state of Alaska, Washington, Oregon, and Idaho.

DESCRIPTION: CVT has been incorporated into ambulatory care training for IP trainees starting with a half-day introduction class to learn about CVT technology and safety. This includes dedicated time for certification, including a skills test. The trainee has at least another half-day clinic to participate in the clinic's team-base huddle seeing patients with a faculty provider. The IM and NP resident can direct the nursing staff to aid with the physical exam with the equipment, including otoscope, auscultation device, and high definition camera for closer inspection. Psychology fellows use CVT for visual cues and non-verbal communication. Pharmacy residents use CVT in combination with subsequent telephone appointments, and use clinical registries.Virtual warm hand-offs are modeled between professions.

EVALUATION: Since 11/2015 to 12/2016, we had 17 trainees do a telehealth rotation, 9 IM, 2 NP, and 4 pharmacy residents and 2 psychology post-doctoral fellows. A survey was sent to each trainee following completion. 12 out of 17 surveys were completed for 70% response rate. The post-training survey data is limited by small sample size, but the trend suggests CVT skill competence increasing from underdeveloped to competent, with interest in performing CVT increased from neutral to positive. One trainee expressed enough interest to pursue a permanent position in telehealth. All the trainees that completed the survey requested more telehealth training experiences.

DISCUSSION/REFLECTION/LESSONS LEARNED: Team-based telehealth experiences can be provided to IP trainees; it appears this is a welcomed opportunity. Lessons learned include that all the IP trainees have interest in more telehealth experiences. Future considerations include increasing the rotation to a continuity care clinic for the trainees and offering specialty CVT clinic exposure with trainees on the patient side tele-presenting to a specialty provider at a distant site.

TEAM-BASED LEARNING (TBL) IN THE DENVER HEALTH LONGITUDINAL INTEGRATED CLERKSHIP (DH-LIC): AN OPPORTUNITY FOR CROSS-DISCIPLINE INTEGRATED LEARNING AND CURRICULAR FOCUS ON THE UNDERSERVED Mim Ari[3]; Julie Venci[1, 2]; Vishnu Kulasekaran[1, 2]; Jennifer Adams[1, 2]. [1]Denver Health, Denver, CO; [2]University of Colorado, Aurora, CO; [3]Cook County Health and Hospital System, Chicago, IL. (Control ID #2703167)

NEEDS AND OBJECTIVES: TBL is a flipped classroom approach, which moves beyond acquiring facts towards application and synthesis of information. A TBL curriculum is well established at the University of Colorado SOM in the Internal Medicine (IM) clerkship. To more closely mirror our LIC students' clinical training experience—simultaneously meeting clinical core competencies across specialties in an underserved setting—we redesigned and built upon the IM clerkship curriculum to make the topic-based TBL sessions multidisciplinary, longitudinal, and include topics related to caring for a vulnerable patient population.

SETTING AND PARTICIPANTS: The DH-LIC is a yearlong clerkship for eight University of Colorado SOM third-year medical students based at an urban safety-net hospital. Students achieve competency in core disciplines simultaneously, while participating in an integrated didactic curriculum that includes a robust TBL component.

DESCRIPTION: Each topic-based TBL session has a standard structure of pre-work, a team readiness assurance test, and 2–3 application exercises (cases) facilitated by an experienced faculty member. Each team works together to generate differential diagnoses, provide diagnostic work-up, and offer treatment plans. Six sessions from the original IM clerkship were redesigned to meet broader LIC curricular goals: reactive airways, chest pain, altered mental status, anemia, pulmonary infections, and renal disease. Two sessions were developed de novo for the LIC: abdominal pain, and menopause/bone health. Each session had content added to include patients of different ages (adult, pediatric, geriatric, adolescent), take place in different settings (inpatient, outpatient, ED), include different disciplines (IM, pediatrics, OB/GYN, psychiatry, surgery, emergency medicine), and highlight themes related to taking care of vulnerable populations (substance use disorders, access to care).

EVALUATION: Students are asked to evaluate the TBL sessions during periodic focus groups and through standard written course evaluations.

DISCUSSION/REFLECTION/LESSONS LEARNED: TBL has been well received and students demonstrate advanced clinical reasoning during sessions. Multi-disciplinary TBL cases with a focus on underserved care reinforce what is modeled in the DH-LIC curricular activities. General internists, on the front lines of patient care, often encounter undifferentiated presentations. Our redesigned curriculum encourages students to avoid diagnostic anchoring and think broadly. Curricular space to emphasize themes related to underserved care is also important to equip students with strategies to best serve vulnerable patients. Feeling empowered to assist and advocate for patients is likely to support students in the development of the resilience required for a career in primary care serving the underserved. Elements of this curriculum would be easily exportable to other medical education programs with similar curricular goals.

THE AMBULATORY EDUCATION BOARD: AN INNOVATIVE TOOL FOR AMBULATORY CURRICULUM AND FACULTY DEVELOPMENT Rebekah Weil[1]; Elizabeth M. Haney[3]; Katherine A. Iossi[2]. [1]OHSU, Portland, OR; [2]OHSU/PVAMC, Portland, OR; [3]Oregon Health & Science University, Portland, OR. (Control ID #2702052)

NEEDS AND OBJECTIVES: In 2011, Oregon Health and Science University (OHSU) transitioned to a 3 + 1 curriculum and created two half- day ambulatory teaching seminars in place of pre-clinic conferences. With this transition, we saw an opportunity to improve our ambulatory teaching by incorporating more active learning strategies and emphasizing consistent, high-quality, engaging ambulatory didactic sessions. To accomplish this, we redesigned our Ambulatory Editorial Board (AEB) in a way that enables peer review, facilitates faculty development around active learning strategies, and elicit resident input.

SETTING AND PARTICIPANTS: OHSU is a mid-sized, university based program with approximately 30 residents per year. Half-day seminars include: Primary Care Ambulatory Topics (PCAT), Evidence-based Medicine (EBM), Practice-based Learning and Improvement (PBLI) as well as EHR inbasket management time and an "ambulatory report" case conference., Prior to the implementation of the 3 + 1, 2–4 faculty members reviewed each educational packet without input from teaching faculty or residents.

DESCRIPTION: The AEB meets weekly or biweekly and includes residents, standing faculty members and those faculty teaching in the block. In addition to coordinating the calendar and general topic selection, the redesigned AEB also coordinates PCAT topics with PBL and EBM to create block themes. At each

meeting, faculty and residents review proposed content and teaching materials together. Two meetings are allocated for each topic block: the first is meant to review evaluations from prior years and discuss which topics should be covered and what interactive teaching methods could be used. The second meeting allows the faculty and residents in charge of that block to present their materials for review and critique.

EVALUATION: Overall, the feedback from residents and faculty has been positive with regard to their participation in the AEB meetings. Faculty are eager and willing to accept feedback from residents about how and what should be taught. We achieved our goals of having interactive, varied educational activities during the +1 week. Additionally, all of our sessions now include some form of active learning.

DISCUSSION/REFLECTION/LESSONS LEARNED: The AEB at OHSU provides opportunities for faculty to develop skills as educators and encourages them to employ active learning techniques into didactic sessions. Having two separate meetings on each topic block encourages timely development of materials, allowing for peer review prior to session delivery, which optimizes content and teachings strategies.. The AEB format gives residents an opportunity to engage in curriculum design and contribute opinions about what and how they learn regarding ambulatory topics; we have found this contribution invaluable for faculty. Next steps include increasing resident involvement in ambulatory didactic teaching, sustaining faculty commitment, engaging and properly representing all clinical sites, maintaining meeting times against competing demands, and better using automated learning management systems.

THE AMBULATORY PROCEDURES WORKSHOP: A FORMAL, SIMULATED TRAINING SESSION FOR INTERNAL MEDICINE INTERNS Jared W. Klein; Toby I. Sinton; John H. Choe. University of Washington, Seattle, WA. (Control ID #2691842)

NEEDS AND OBJECTIVES: Many internal medicine residents receive formal training on procedures such as central line placement, thoracentesis and paracentesis, but few residency programs provide teaching on procedures more commonly performed in ambulatory settings. As a result, trainees have disparate experiences with minor procedures based on their exposure during medical school, specific residency rotations and the skills of supervising attendings. Our goal is to provide interns with standardized training in performing arthrocentesis, skin biopsy and abscess incision and drainage. We aim to achieve a minimal level of familiarity with these procedures, increase interns' confidence and ultimately improve their satisfaction in practice.

SETTING AND PARTICIPANTS: The University of Washington (UW) internal medicine residency is a large academic program with over 150 residents. During the first 3 months of residency all categorical and primary care internal medicine interns participated in one of three half-day ambulatory procedure workshops at the UW simulation training center.

DESCRIPTION: Interns were encouraged, but not required, to review online resources prior to the workshop. The workshop opened with a review of the principles of informed consent before dividing interns into small groups (3–5 trainees) and rotating through three separate simulation stations to practice knee and shoulder (subacromial) injections, punch biopsies of the skin, and abscess incision and drainage. Simulation models were used: joint injections were performed both on polyethylene models and cadaveric specimens; skin biopsies were accomplished on pigs' feet; and abscess drainage was carried out on models crafted for the workshop. Experienced attending physicians staffed each simulation station, reviewing the key steps in each procedure, and providing real-time feedback.

EVALUATION: During the summer of 2016, fifty-three interns participated in the inaugural series of ambulatory procedure workshops with all interns completing a baseline survey. Before the workshop, interns reported the least confidence in performing subacromial shoulder injection; 94% were "completely" or "somewhat" uncomfortable performing this procedure. The majority of interns were also uncomfortable performing knee injections (72%) and skin biopsies (53%). Very few interns had received prior formal training in any of the procedures (from 7.5% for shoulder injection to 21% for abscess incision & drainage). We will survey interns at the end of the academic year to assess confidence in performing these procedures as well as quantifying the number they have performed, comparing results from this cohort to a prior class of interns who did not receive training.

DISCUSSION/REFLECTION/LESSONS LEARNED: Few internal medicine interns have had formal training in performing common ambulatory procedures and most lack confidence in carrying out these skills. We expect this training will boost confidence in performing selected procedures and increase how many are performed during the first year of residency training.

THE BEDSIDE SWAP: ASSESSING MEDICAL STUDENTS RESPONSE TO PERSPECTIVE-TAKING FOR "DIFFICULT PATIENTS" ON THE WARDS Brianna Rossiter[1]; Melissa McNeil[2]; Gaetan Sgro[3]. [1]UPMC, Pittsburgh, PA; [2]University of Pittsburgh Medical Center, Pittsburgh, PA; [3]VA Pittsburgh Healthcare System, Pittsburgh, PA. (Control ID #2707312)

NEEDS AND OBJECTIVES: There are an increasing number of studies showing the benefits of narrative writing within medical education. Perspective-taking is a cognitive skill defined as "an understanding of other people's mental states" and has been studied as a way to teach empathy. This approach can be most helpful during encounters with so-called "difficult patients" by allowing the trainee to see the world through the patient's eyes. This exercise assessed medical students' response to perspective-taking as a substitute for a traditionally written history and physical exam on an identified "difficult patient".

SETTING AND PARTICIPANTS: Exercises were completed by a group of medical students in their University of Pittsburgh School of Medicine (UPSOM) Internal Medicine Clerkship course. The exercise was reviewed by the Internal Medicine Clerkship Director and the Curriculum Committee of the Medical School. IRB approval was obtained. "Difficult patients" were student-identified after a broad definition was provided during the introductory session.

DESCRIPTION: The following prompt was provided to the students: "Imagine that you are that patient, meeting and interacting with you (the medical student). Please write a first-person account from the patient's perspective of their medical experience." This narrative was substituted for a traditionally written history and physical exam (H&P) and was mandatory. After completing the exercise, students participated in a workshop lead by one of the authors where essays were read and discussed. Each student then completed a Likert survey assessing their response to the exercise. All written material was

collected and reviewed. Students were required to participate in the survey but were given the option to "opt out" of having their data included in analysis.

EVALUATION: Twenty-three students participated in the exercise. Selected quotes from the perspective-taking exercise included: "I only see my doctors a few times a day for a few min, otherwise I'm just waiting for the next thing they're going to do to me. I feel like nobody cares about how I am feeling" and "I look down, I'm in a hospital gone, with the back open, naked…there is no dignity or privacy in this place". The average response on a 1–5 likert scale (1 = strongly disagree, 5 = strongly agree) for the statement, "I found this exercise helpful to better understand the challenges my patient faces" was 4.26 ± 0.75. The average response was 4.26 ± 0.81 for the statement, "I feel more empathetic toward my patients after this exercise". An open-ended, survey comment included: "We don't get to put ourselves in our patients' shoes very often and we should do it more often".

DISCUSSION/REFLECTION/LESSONS LEARNED: Overall, medical students had positive responses to the narrative exercise. Majority of medical student identified the exercise as a way to evoke empathy and self-reflect on interactions with "difficult patients". Perspective-taking in medical school education may play a positive role in professional development, patient care, and physician well being.

THE DEVELOPMENT, IMPLEMENTATION AND ASSESSMENT OF AN INTERNAL MEDICINE HOUSESTAFF RESEARCH PROGRAM Alev Atalay[1]; Kevin Ard[2]; Emily D. Bethea[2]; Maria Yialamas[3]. [1]Brigham and Women's Hospital, Jamaica Plain, MA; [2]Massachusetts General Hospital, Boston, MA; [3]Brigham and Women's Hospital, Somerville, MA. (Control ID #2688386)

NEEDS AND OBJECTIVES: A survey revealed that a majority (88%, $n =$ 67) of our residents were interested in additional research exposure during residency training. A focus group of program directors, teaching faculty, and chief residents discussed possible ways to increase resident exposure to research.

SETTING AND PARTICIPANTS: The Housestaff Research Project (HRP) was designed and implemented as part of the internal medicine residency program at Brigham and Women's Hospital (BWH). All of our residents had the opportunity to participate.

DESCRIPTION: BWH medicine residents were engaged in a new research initiative, the HRP, in which the entire housestaff participated in a yearly research project. Residents submitted clinical research questions by RFA or small group brainstorming sessions. One representative from each group presented the proposal to the entire housestaff, and final projects were selected by resident voting. Funding was provided by the Internal Medicine Residency and the Department of Medicine. In addition, a curriculum which reviewed core research topics was integrated into the conference schedule.

EVALUATION: Two projects have been chosen to date. Evaluation has included housestaff surveys and interviews with the resident project leaders. Ninety-five percent of residents were familiar with the HRP, mostly through noon conference updates on current projects and/or a research-focused noon conference series. Ten percent of residents were directly involved with data collection and the day to day running of the HRPs. The resident project leaders felt that a strength and unique aspect of the HRP, as compared to other research projects, was the collaboration with co-residents. Both projects have been presented as posters at local or national conferences and manuscripts are in preparation.

DISCUSSION/REFLECTION/LESSONS LEARNED: The HRP has broadened the exposure of research concepts to all BWH medicine residents. The resident leaders and those directly involved in the HRP projects experienced the most significant benefits from their involvement, including learning new research skills, developing databases for use in future resident projects, and increased camaraderie with co-residents. Residents are mixed as to whether they prefer to find and lead their own project or join group projects. Our main challenge is maximizing the number of participants while maintaining the integrity of the project and the value of the project for each individual resident.

THE DISCHARGE PROCESS AND UNEXPECTED <30-DAY READMISSIONS: LESSONS LEARNED FROM AN INTERDISCIPLINARY NOVEL CURRICULUM PILOT Lindsey Merrihew[2]; Jennifer S. Myers[3]; Mark T. Upton[1]; Rachel K. Miller[2]. [1]University of Pennsylvania, Philadelphi, PA; [2]University of Pennsylvania, Philadelphia, PA; [3]Perelman School of Medicine, University of Pennsylvania, Philadelphia, PA. (Control ID #2705729)

NEEDS AND OBJECTIVES: With 30 day hospital readmissions a quality and value-based metric, hospitals recognize that safe discharge requires an interprofessional team approach. Additionally, health professions education includes competencies in both transitions of care and interprofessional communication and team work. Objectives:1. To critically evaluate factors leading to unexpected readmissions 2.To recognize roles and responsiblities of interprofessional team members in the discharge process 3.To reflect and strategize on ways that individually, team, or system-wide, we can improve transitions of care

SETTING AND PARTICIPANTS: We created a 2.5 hr session for PGY2 internal medicine residents, pharmacy residents, early-career nurses, nurse practitioner students, and social work masters students. We had 63 participants in 4 sessions from March through May 2016.

DESCRIPTION: −15 min introductory didactic −1 h interprofessional team review of a readmission case utilizing an on-line tool −1 h interprofessional faculty-mentored small group feedback and reflection

EVALUATION: 53 participants filled out the post curriculum evaluation. 50 identified their speciality: 28 PGY2s medicine residents, 4 pharmacy residents, 10 early career nurses, 2 NP students, 6 social work masters students. 82% agreed or strongly agree that the readmission review was useful to their education. 96% agreed or strongly agreed that the group discussion was beneficial. 96% recommended continuing this activity. Participants generally rated their competency in transitions of care as high before the session (4.67 on a 6 point scale), and scores increased after the session (5.06). In response to what participants learned, the most common themes were appreciation and understanding of other discipline's roles; need for patient-centered discharge instructions with good anticipatory guidance and clear language; importance of interdisciplinary communication and cooperation; appreciating the complexity of the discharge process and understanding where gaps are; and, improved understanding and communication with post discharge services and providers.

DISCUSSION/REFLECTION/LESSONS LEARNED: Participants rated their competence in transitions of care higher after this session. Almost all found it useful to their education and felt it should be continued for future participants. They recognized the complexity of discharge and need for improved communication. The biggest lesson learned was greater appreciation and understanding of interprofessional roles in the discharge process.

THE EFFECT OF A SOCIAL JUSTICE INTEREST GROUP ON RESIDENT EXPERIENCE AND CAREER PLANNING Janine Knudsen[4]; Maria D. Garcia-Jimenez[3]; Angela Arbach[2]; Matthew Durstenfeld[3]; Ofole Mgbako[3]; Monica Maalouf[1]. [1]New York University, New York City, NY; [2]New York University, New York, NY; [3]New York University School of Medicine, New York, NY; [4]New york university, New York, NY. (Control ID #2705817)

NEEDS AND OBJECTIVES: Resident physicians, especially those practicing in safety net health systems, must understand social determinants of health to adequately care for vulnerable patients. Few residency programs have a rigorous curriculum for health disparities or opportunities for physician advocacy. To fulfill this need at Bellevue Hospital, NYU residents created the Social Justice Interest Group (SJIG). Over two years, SJIG has developed a community of physician advocates, a forum for education and discussion, and a platform for action to improve patient care.

SETTING AND PARTICIPANTS: SJIG membership includes NYU housestaff across training levels and specialties including Internal Medicine, Emergency Medicine, Psychiatry, and Pediatrics. The interdisciplinary group hosts events aimed at enhancing resident awareness of health disparities and social determinants of health and targets the community of residents, medical students, and faculty. Programming focuses on injustices faced by patients at Bellevue Hospital, the largest safety net hospital in New York, serving the city's underserved populations as well as incarcerated patients through a Department of Corrections ward.

DESCRIPTION: SJIG programming is guided by resident interest and includes a speaker series, community forums, workshops, site visits, and quality improvement projects. Our monthly Physician Advocacy Speaker Series has covered topics such as incarceration, immigration, transgender health, and safety net healthcare systems. Our interdisciplinary Community Forums for residents have served to facilitate dialogue about national events including how the recent election may affect our patient population. Workshops and electives have addressed implicit bias and prison health, and site visits include Rikers Prison and the Bellevue Men's Homeless Shelter. Ongoing projects include an emergency medicine/internal medicine collaboration to create an intake for incarcerated patients that assesses their unique healthcare needs.

EVALUATION: We are evaluating SJIG's impact on resident experience, burnout, and career planning through a survey with both quantitative and qualitative elements. Our survey participants include residents involved in SJIG, residents exposed to SJIG programming, and program faculty. Survey results will be statistically analyzed and qualitative data will be coded to draw out key themes and major areas of impact.

DISCUSSION/REFLECTION/LESSONS LEARNED: SJIG is a novel resident-driven model for delivering a social justice curriculum to residents. The group has fostered discussions of health disparities, built advocacy skills, and deepened knowledge of the needs of safety net populations. Our survey-based assessment aims to support our hypothesis that building a rich advocacy curriculum can improve resident skills, reduce burnout of residents working in safety net systems, and ultimately improve patient care. We will use our evaluation to reflect on SJIG's impact, refine future efforts, and identify elements most translatable to other residency programs

THE IMPACT OF A BOOK CLUB ON CONFIDENCE, SELF-RELIANCE, AND COMMUNITY IN THE DUKE DEPARTMENT OF INTERNAL MEDICINE Laura M. Caputo. Durham VA/Duke University Hospital, Durham, NC. (Control ID #2699260)

NEEDS AND OBJECTIVES: Burnout plays an important role in the lives of medical learners and practitioners. It can decrease work-life satisfaction and quality of care, and increase misconduct. Book clubs have the potential to improve burnout; physician groups have documented participation in book clubs, but impacts have not been directly measured. This project sought to create a book club within the Duke Department of Internal Medicine (DoM), and to determine whether it would impact burnout in participants. It was hypothesized that endpoints would be stabilized or improved in participants compared to those who did not attend.

SETTING AND PARTICIPANTS: Book club events were held on campus every 2–3 months for 1 year. Free books were offered to promote participation. Events consisted of ~90 min of open discussion about selected titles. All members of the DoM and medical students were invited; ~120 DoM faculty and trainees participated in at least 1 event during the year. DoM providers who did not attend events were also surveyed; 91 volunteers comprised the comparison group.

DESCRIPTION: In this quasi-experimental trial, self-reports of burnout and resilience were assessed over time, and results were compared between the two groups. Data were collected anonymously via a 6-question survey designed for this study that addressed perceptions of community support; knowledge of academic resources; work-life satisfaction; self-care; competitiveness; and impact of work on self-confidence. Responses were scored on a 1–10 scale; lower scores implied higher risk for burnout. Surveys were distributed at the start of the study period and after each event. Demographics were collected with each survey.

EVALUATION: Participation in the study was voluntary; subjects were not randomized, but statisticians were blinded. Groups were compared for each question separately using a two-sided, two-group t-test. For all 6 questions, the club participants scored significantly higher on the Likert scale, and responses were reproduced over the study period. The groups differed significantly in some demographics.

DISCUSSION/REFLECTION/LESSONS LEARNED: The results of this study imply that the book club had a positive impact. However, club participants' baseline scores started higher (though not significantly); so self-selection likely caused groups to differ. Additionally, demographic differences limit comparison between groups. Age, years of experience, and number of children were significantly higher in the book club group. Better scores could be attributable to other factors, eg better schedules, clinical confidence, or family support.

THE IMPACT OF A FACE-TO-FACE INTERNAL MEDICINE RESIDENT EDUCATIONAL CURRICULUM ON ELECTRONIC MEDICAL RECORD PATIENT PORTAL USAGE Halle G. Sobel; Sara Roberts. University of Vermont Medical Center, Burlington, VT. (Control ID #2707369)

NEEDS AND OBJECTIVES: Using a medical record-based patient portal can empower patients, increase quick, effective doctor-patient communication, and

help practices achieve National Council for Quality Assurance (NCQA) recognition as Patient Centered Medical Homes. underused, according to studies. The literature shows that a lack of knowledge about the resource, lack of use by physicians, satisfaction with phone-based communication, poor computer literacy, and older age are common reasons for this underuse. Our goal was to evaluate baseline patterns of patient portal use in a resident internal medicine clinic at an academic medical center, provide a brief, in-person educational session to the residents on patient portal usage, and evaluate the effect on resident portal use.

SETTING AND PARTICIPANTS: Participants were 42 internal medicine residents in a continuity clinic affiliated with the University of Vermont Medical Center. The EMR utilized was Epic. The study period spanned two academic years: 2015–2016 and 2016–2017. A subpopulation of 24 residents who overlapped in both academic years was included.

DESCRIPTION: The study split data collection into pre- and post- education implementation periods. Data was mined from the EMR for the pre-implementation period (7/1/15 -6/30/16) to quantify ingoing and outgoing messages by the resident. Brief in-person education was then performed during a required ambulatory conference for five groups of residents (7-8/2016). Teaching was delivered by the Principal Investigator and included demonstrations on initiating MyHealth messages, sharing results, and responding to patient questions. Data was collected in a similar fashion for the post-implementation period (9/1/16-12/1/16, preliminary, and 9/1/16-3/1/17, projected). Three paired t-tests were performed to compare incoming, outgoing, and combined monthly emails per resident. A biostatistician assisted in analysis.

EVALUATION: A total of 151 messages were sent and 255 were received by residents in the year-long pre-intervention period compared to 78 messages sent and 163 mesages received in the preliminary 3-month period post intervention. Five residents had no post data and were excluded from analysis. Each resident averaged 0.74 messages out per month pre-intervention and 1.79 post-intervention, 1.35 outgoing pre and 3.12 post, and total in and out 2.09 pre and 4.71 post. The latter two comparisons were statistically significant

DISCUSSION/REFLECTION/LESSONS LEARNED: Our study demonstrates that a brief in-person educational session for residents increased patient portal use quantifiably in *both* sent and received messages by a factor of two and in a statistically significant way. One barrier to portal use by patients, per surveys, was lack of physician use. This study provides evidence for that survey-based claim and also offers a solution to overcome it.

THE INSULIN TITRATION PROGRAM: A LONGITUDINAL CHRONIC CARE INTERVENTION BENEFITS MEDICAL STUDENTS AND PATIENTS Lani Kroese; Ryan Johnson; Kelsey Savery; Mohan Nadkarni; Ira Helenius. University of Virginia, Charlottesville, VA. (Control ID #2704254)

NEEDS AND OBJECTIVES: The purpose of this study is to evaluate the impact of volunteering for the Insulin Titration Program (ITP), a longitudinal patient care experience, on medical students' overall learning and their attitudes, knowledge, and behaviors related to patients with diabetes.

SETTING AND PARTICIPANTS: The study was conducted at University Medical Associates, an ambulatory internal medicine teaching clinic in the University of Virginia (UVa) Health System. Participants in the study included medical students from UVa School of Medicine who volunteered with the ITP program for at least 3 months. Fifty-one students participated in the program.

DESCRIPTION:Medical students from all classes were recruited by student leaders and voluntarily participated in the program. They underwent 4.5 h of training which included motivational interviewing training, nutrition lectures, and peer mentoring during phone calls. Training also included learning how to properly document in patient charts and a review of the program's protocols. Students were then paired with patients with uncontrolled diabetes who had been referred to the program by their primary care physicians. The student volunteers made weekly phone calls to their patients. During these calls, student and patients discussed trends in blood glucose readings, any hyperglycemic or hypoglycemic episodes, diet, and exercise. The students also adjusted their patient's long acting insulin dose if indicated based on the ITP protocol. Oversight and assistance was provided by attending physicians, pharmacists and diabetes educators at the clinic.

EVALUATION: Upon completion of a student volunteer's involvement, we administered a web-based survey. The survey consisted of five open-ended, reflection-based questions and demographic questions. Seventeen student volunteers completed the online survey (response rate 33%). The final sample included one M1, nine M2, one M3, and six M4 students. Results from the clinical outcome evaluation of the ITP showed that patients who were paired with med students had a statistically significant improvement in their HgbA1c compared to patients not enrolled in the study (−1.4% vs −0.4%).

DISCUSSION/REFLECTION/LESSONS LEARNED: A number of themes emerged from our qualitative survey data. Students noted that they were able to apply preclinical concepts regarding diabetes therapy in the context of their patient's unique struggles. For many, this gave a new found appreciation for barriers to clinical compliance, and more effective ways to address these barriers. Additionally, the structure of the program as a longitudinal intervention allowed volunteers practice with motivational interviewing techniques. The most commonly reported meaningful part of the volunteer experience was the opportunity to develop a personal relationship with their patient and receive positive affirmation either from the patient directly or from the patient's clinical results.

THE INTERPROFESSIONAL STUDENT HOTSPOTTING LEARNING COLLABORATIVE: A THREE-YEAR MULTICENTER EXPERIENCE John Marshall[1, 6]; David Goldstein[2, 6]; Cyrus Mazidi[3, 6]; Jacob Quinton[4, 6]; Rita Kuwahara[1, 6]; Eliza Hutchinson[5, 6]. [1]Emory University, Atlanta, GA; [2]University of California, San Diego, San Diego, CA; [3]Tulane University, New Orleans, LA; [4]Yale University, New Haven, CT; [5]Swedish Medical Center, Seattle, WA; [6]Camden Coalition of Healthcare Providers (CCHP), Camden, NJ. (Control ID #2707109)

NEEDS AND OBJECTIVES: There is currently an urgent need to address the population of high needs high cost (HNHC) patients in America. We feel that part of the solution begins at the student level, by helping teach the background, attitudes, and skills which care teams must adopt to address this unique patient population. Our objectives were to design an immersive interprofessional educational experience with robust curriculum delivered by experts in the care of HNHC patients which can be implemented at health professions schools nationally.

SETTING AND PARTICIPANTS: Now in the program's third year, a total of thirty-four of our major medical institutions have participated in annual student hotspotting cohorts. Participants have included students from nursing, public health, medicine, social work, physical therapy, occupational therapy, business, divinity, and law.

DESCRIPTION: Teams self-assemble and apply for acceptance through a selection process staffed by representatives from the Camden Coalition of Healthcare Providers (CCHP), Primary Care Progress (PCP), and the Association of American Medical Colleges (AAMC). Teams attend a kick-off conference in Camden, NJ with an introduction to HNHC patient work as well as an emphasis on teaming. Over the next six months, teams engage in a formal, open-source curriculum found on a central website consisting of monthly skills labs, monthly local preceptor-led case conferences, and monthly expert-led teleconferences with MacArthur Genius Dr. Jeffrey Brenner of CCHP. This guides teams as they conduct an immersive HNHC patient intervention, starting with patient recruitment, proceeding to home visits and appointment accompaniment, and concluding with patient graduation. Educational topics include trauma-informed care, relationship modeling, motivational interviewing, navigation of complex institutions, and barrier recognition and troubleshooting.

EVALUATION: The ripple effects of such a movement are complex and in need of study. With the current cohort we are conducting semi-structured interviews with students before and after the intervention to analyze the program's effects on learners.

DISCUSSION/REFLECTION/LESSONS LEARNED: The true value of this program is empowering students to be in the field with HNHC patients. The experience can be challenging as students first address barriers to interprofessional education at their local institutions, and then as they step directly into the daily challenges faced by our most medically- and socially-complex patients. Students come to rely on each other and look to guidance from CCHP as they experience true high-touch, trauma-informed, interprofessional care. It is our hope that these young health professionals will move on from this program to continually change culture around them and reshape local health systems to allow HNHC patient care to be carried out more effectively across the nation.

ONLINE RESOURCE URL (OPTIONAL): Program Overview: https://www.camdenhealth.org/programs/student-hotspotting/Program Curriculum: https://www.camdenhealth.org/curriculum/

THE USE OF HOLOLENS TO ENHANCE THE MEDICAL SCHOOL LEARNING EXPERIENCE

Janet Adegboye[2]; Neil Mehta[2]; Dileep Nair[1]. [1]Cleveland Clinic Lerner College of Medicine, Cleveland, OH; [2]Cleveland Clinic Lerner College of Medicine, Columbus, OH. (Control ID #2707457)

NEEDS AND OBJECTIVES: Medical education is an evolving field, especially with the rapidly advancing technology of our society. This project explored the use of augmented reality with Microsoft HoloLens to enhance how anatomy is taught in medical school. We assessed three aspects of the student experience: the amount of knowledge gained, the cognitive load required to learn, and the overall satisfaction with HoloLens.

SETTING AND PARTICIPANTS: The study population consisted of 31 second-year medical students at the Cleveland Clinic Lerner College of Medicine (CCLCM). This was a two-week study that took place during the neurology block. The curriculum at CCLCM includes problem-based learning (PBL) sessions, seminars, and self-study. The PBL sessions consist of eight medical students and a faculty facilitator discussing weekly clinical cases.

DESCRIPTION: We incorporated HoloLens models to teach neuroanatomy in 2 out of the 4 of the PBL groups. The students in those groups were able to use the HoloLens for self-study during the week. The other 2 PBL groups learned the same material, but in the traditional learning format. The groups were reversed after the first week in order to give every student an opportunity to learn with HoloLens. At the end of each week, the students took a quiz to assess their knowledge and a survey to assess their cognitive load and learner satisfaction.

EVALUATION: Both groups had a similar performance on the neuroanatomy knowledge quiz; however, 30% of the students in the HoloLens group felt that it was easy to learn the concepts compared to 11% in the control group. Of the students in the HoloLens group, 80% believed that the addition of HoloLens would enhance how neuroanatomy was currently taught, assuming that the appropriate HoloLens content was available. Furthermore, 67% agreed that they would want to use HoloLens to learn other medical content. Overall, the quiz and survey responses suggested that the students in the HoloLens group had a decreased cognitive load and that most students felt positive about their HoloLens experience.

DISCUSSION/REFLECTION/LESSONS LEARNED: I anticipate that this project is among the first of many that will explore the possibilities of holography in medical education. Although we could see certain trends in the data, we were not able to show significance because I was limited with a small sample size. In the future, I would want to do this project on a larger scale and include more organ systems in addition to neurology. This will provide a deeper understanding of how HoloLens technology could be used to enhance medical education.

THINK LIKE A DOCTOR: AN INNOVATIVE CLINICAL REASONING CURRICULUM FOR CLERKSHIP-LEVEL MEDICAL STUDENTS

Eliana Bonifacino[1]; Deborah DiNardo[3]; Melissa McNeil[2]. [1]UPMC, Pittsburgh, PA; [2]University of Pittsburgh Medical Center, Pittsburgh, PA; [3]University of Pittsburgh School of Medicine, Pittsburgh, PA. (Control ID #2707367)

NEEDS AND OBJECTIVES: In a recent report titled "Improving Diagnosis in Health Care," the Institute of Medicine highlighted the urgent need for better training in decision-making across all medical disciplines. Despite the wide recognition of this need, there is no consensus regarding the best methods to educate third-year medical students about diagnostic reasoning. We introduced a clinical reasoning curriculum with goals of: 1. Familiarizing medical students with the cognitive psychology of decision-making and its implications in medical care 2. Providing a structure for applying clinical reasoning principles to diagnostic reasoning 3. Practicing concepts through the use of skill-specific drills focusing on discreet portions of the decision making process

SETTING AND PARTICIPANTS: All third year medical students at the University of Pittsburgh School of Medicine in their Internal Medicine rotation between January-July 2017 will be eligible to participate. The curriculum was vetted by the Internal Medicine Clerkship Director and approved by the Curriculum Committee of the medical school. IRB approval for evaluation of the curriculum was obtained.

DESCRIPTION: This curriculum includes two components: i) Interactive online modules and ii) A case-based workshop. The online modules utilized in this curriculum were developed by clinician educator faculty with support from a grant to Dr. William Follansbee from the Hearst Foundations. The content in these modules include: cognitive psychology of decision making, introduction of heuristics, summary statements, and cognitive biases. These online modules include expert video about key concepts, contain cases, and are interactive with prompts for learners to answer questions. The workshop creates an opportunity for students to operationalize this knowledge through skill-specific group-based drills in the identification of key clinical findings, use of semantic qualifiers, creation of summary statements, and generation of a differential diagnosis.

EVALUATION: The curriculum will be evaluated through the use of a quiz on core concepts and vocabulary in clinical reasoning, as well as through evaluation of the demonstration of clinical reasoning in each student's History and Physical note documentation during their rotation using a rubric.

DISCUSSION/REFLECTION/LESSONS LEARNED: Explicit clinical reasoning education is gaining increasing awareness as a need for physicians-in-training. This curriculum offers clerkship-level medical students an introduction to the cognitive psychology behind medical decision making and provides an innovative skill-specific approach to reasoning that boils down the complex process of making a diagnosis to individual skills needed to make a diagnostic decision. Introduction of these skills at the beginning of their internal medicine clerkship primes the student with an approach for clinical reasoning in the subsequent weeks of their clerkship. Previous studies have suggested that introduction of clinical reasoning education could even occur at earlier points in undergraduate medical training.

TRAINING FOR ENGAGEMENT AND ADVOCACY FOR COMMUNITY HEALTH: A NOVEL WAY TO TEACH RESIDENTS SKILLS TO ADDRESS KEY ISSUES IN COMMUNITY HEALTH Erica N. Johnson[2]; Stephanie Nothelle[1]; Manasa Ayyala[3]. [1]Johns Hopkins Bayview Medical Center, Baltimore, MD; [2]Johns Hopkins School of Medicine, Baltimore, MD; [3]Johns Hopkins University School of Medicine, Baltimore, MD. (Control ID #2701578)

NEEDS AND OBJECTIVES: Residents often care for patients whose outcomes are heavily influenced by social determinants of health (SDH), yet have little formal education about these determinants. The curricular objectives are: 1) To teach residents to identify and document social factors influencing health and access information about resources 2) To provide an opportunity for team and community based learning in the neighborhoods surrounding our academic medical center.

SETTING AND PARTICIPANTS: Training for Engagement and Advocacy for Community Health is a longitudinal residency curriculum that provides teaching about SDH in a variety of clinical experiences for residents in the Johns Hopkins Bayview Internal Medicine Residency Program.

DESCRIPTION: Despite progress in the management of chronic conditions and health resource availability, significant disparities in disease burden and health outcomes persist. Social factors contribute to many of these health inequalities. Residency programs are well positioned to address health inequalities because residents often care for community members at highest risk for poor health outcomes. Further, the ACGME requires that residency programs address health disparities through quality improvement. Training for Engagement and Advocacy for Community Health is a longitudinal curriculum dedicated to the integration of teaching about SDH in a variety of clinical experiences throughout residency. Starting with internship, residents participate in flipped classroom didactic experiences about SDH and homelessness, community tours and discussions with community groups, and complete an interaction with a standardized patient to improve skills around the discussion of SDH. Throughout the rest of residency, the curriculum focuses on incorporating community health into the resident ambulatory experience. Residents work in teams assigned to neighborhoods served by our medical center and learn about specific SDH in their assigned area. They also work together on solutions to specific health problems unique to their continuity clinic patient population.

EVALUATION: Residents complete objective-based evaluations prior to these experiences and after that measure their knowledge of SDH, skills in assessment of SDH and attitudes towards community-oriented practice. These responses will be compared to residents from prior year groups who have not participated in this curriculum.

DISCUSSION/REFLECTION/LESSONS LEARNED: Despite varying levels of prior training in SDH, there remains a gap among residents in the knowledge and skill to address negative determinants and connect patients with resources in the community to help overcome these. We believe that by providing residents with meaningful community-based interactions, we allow them to develop the skills needed to successfully engage with the community, reducing the impact of negative social determinants of health on health outcomes. Accomplishing this through team-based learning in the resident continuity clinic also allows for the development of skills in collaboration and quality improvement.

TRAINING GAP IN AMBULATORY MEDICINE FOR RESIDENTS: AN APPROACH FROM A PATIENT'S PERSPECTIVE. Peter S. Park[2]; Deepa R. Nandiwada[1]; Jaishree Hariharan[3]. [1]University of Pennsylvania, Philadelphia, PA; [2]University of Pittsburgh Medical Center, Pittsburgh, PA; [3]University of Pittsburgh Medical center, Pittsburgh, PA. (Control ID #2702954)

NEEDS AND OBJECTIVES: Increasingly, residents practice in patient centered medical homes (PCMH) where care is delivered in collaborative and interdisciplinary framework. Knowing their inter-professional teams and understanding the patients' barriers to proper followup are paramount to delivering effective patient care. However, having had relatively little exposure to outpatient system during medical school, new interns find it overwhelming to navigate through the complexities of their PCMH. There is surprising dearth of literature studying experiential curricular models within the context of PCMH. We developed an innovative curriculum involving patient roleplays that is designed to: rapidly orient interns to multiple professions and system norms of their outpatient practice; and augment interns' understanding of patients' challenges in PCMH environment.

SETTING AND PARTICIPANTS: This pilot curriculum included 19 categorical interns of the Internal Medicine program at University of Pittsburgh Medical Center.

DESCRIPTION: Interns were asked to play the role of patients checking out of the clinic, with a patient scenario and checkout paperwork. They made "follow-up appointments" with their interdisciplinary team members to complete a few "after-visit patient tasks". They experienced the challenges patients

may face in navigating the clinic system and reflected on how best to enlist the help of the interdisciplinary team. A debrief followed, where the interns shared their experience as patients, clarified staff roles, reviewed barriers, and committed to practice-changing behaviors.

EVALUATION: The effectiveness of the curriculum is currently being evaluated with pre/post surveys. The questions used a 5-point Likert scale (from "not at all confident" to "very confident") to assess the interns' knowledge about inter-professional team roles, utilization of clinic staff, and the ability to guide patients through the local PCMH. The worksheets the interns filled out are being collected and qualitatively analyzed to identify the types of barriers experienced.

DISCUSSION/REFLECTION/LESSONS LEARNED: Preliminary data from the pre-curriculum surveys showed that only 21% felt confident in their ability to incorporate interdisciplinary team; only 32% replied they routinely utilized their team; and 74% were unsure whether they understood the challenges that patients experience when navigating through their clinic. The post-curriculum surveys are still being collected and the data analysis are pending. A few common themes arose during the post-curriculum debrief - for example, most interns felt that the clinic felt "hectic" and "rushed" from a patient's perspective. Most also expressed being "surprised" by the many resources the interdisciplinary team could offer. At the end of the debrief, the interns brainstormed and committed to individual practice-changing behaviors that they will apply to their daily clinic routine, such as printing out a separate patient instruction sheet at the end of the clinic visit, explaining follow-up tasks in detail.

TRAINING INTERNAL MEDICINE RESIDENTS TO ACT ON SOCIAL DETERMINANTS OF HEALTH USING THE SOCIAL DETERMINANTS OF HEALTH FAST FACTS Etsemaye P. Agonafer[2]; Maggie K. Benson[1, 2]; Thuy Bui[1, 2]. [1]University of Pittsburgh, Pittsburgh, PA; [2]University of Pittsburgh Medical Center, Pittsburgh, PA. (Control ID #2698636)

NEEDS AND OBJECTIVES: *Social determinants of health (SDH) impact the health of individuals but have not traditionally been the focus of physicians, who are trained predominantly to intervene on downstream health effects created by a suboptimal biopsychosocial environment. We developed an introductory curriculum for internal medicine interns using a learning tool titled "Social Determinants of Health Fast Facts" to increase interns' awareness of SDH's impact on health and knowledge of SDH-based interventions.*

SETTING AND PARTICIPANTS: *The curriculum was implemented at the University of Pittsburgh Internal Medicine Residency Program during the 4-week intern ambulatory block. 44 interns participated in the first year.*

DESCRIPTION: *In the first week, interns attended a 1-hour small group session to introduce the framework of SDH, discuss clinical "triggers" that should prompt inquiry into the SDH and brainstorm ways to clinically intervene on the SDH. In weeks 2–4, interns were emailed a total of 12 SDH Fast Facts to review independently. The SDH Fast Facts are brief, clinical vignettes about key SDH topics commonly encountered by clinicians, followed by a multiple-choice question pertaining to SDH. The correct answer to the question is supported by 2–3 key evidence-based learning points. In the fourth week, interns attended a 30-min small group discussion to reflect on how they could apply lessons learned in the SDH Fast Facts to patients they care for in their continuity clinics.*

EVALUATION: *To evaluate the effectiveness of the brief curriculum in 1) changing interns' attitudes, knowledge, behavior about screening and 2) comfort intervening on identified SDH, a pre, post, and delayed post- survey was conducted. This was compared to a historical control of PGY-2 residents who did not receive the curriculum.*

DISCUSSION/REFLECTION/LESSONS LEARNED: *Both interns who received the curriculum and resident controls agreed that the SDH are important determinants of health that physicians should intervene on. Both interns and residents also reported feeling more comfortable addressing and intervening on diseases such as hypertension, diabetes, obesity and substance use than on SDH such as housing instability, low educational attainment or social isolation. Interns who received the curriculum reported feeling more confident in their ability to address social isolation after participation in the curriculum. Interns favored the way SDH Fast Facts taught an evidence-based approach to addressing SDH in clinical practice and recommended the curriculum be continued in future years. Lastly, the evaluation identified a need for further faculty development on prompting trainees to address SDH during preceptor encounters. Overall, this was found to be an effective training tool that scaffolds experiential learning by providing a framework for SDH that empowers trainees to take a proactive role in addressing SDH.*

ONLINE RESOURCE URL (OPTIONAL): SDH Fast Facts http://www.sgim.org/web-only

TRAINING INTERNAL MEDICINE RESIDENTS TO PROVIDE SUBDERMAL CONTRACEPTIVE IMPLANTS AND INTRAUTERINE DEVICES (IUDS) IN A PROCEDURES CLINIC: AN INNOVATIVE MODEL Meghan C. Geary; Christiana Zhang; Mindy Sobota. Brown University, Providence, RI. (Control ID #2706721)

NEEDS AND OBJECTIVES: The American College of Physicians considers contraception a "core competency" in women's health. The most highly effective methods of contraception include contraceptive implants and intrauterine devices (IUDs), which can be 20x more effective than contraceptive pills. Contraceptive implants and IUDs are now considered first line, but are used by only 7.2% of reproductive-age women in the US. One key barrier is the shortage of trained primary care providers, especially pronounced among internists. Our objective was to demonstrate the feasibility of an innovative strategy to integrate contraceptive implant and IUD provision into an internal medicine residents' procedures clinic.

SETTING AND PARTICIPANTS: The Rhode Island Hospital Center for Primary Care (CPC) located in Providence, RI is the main teaching site for the Brown Internal Medicine residency, including all 30 residents in the General Internal Medicine (GIM) program.

DESCRIPTION: Our strategy was to integrate contraceptive implant and IUD provision into an existing musculoskeletal and dermatologic procedure clinic. The faculty supervisor was already trained in contraceptive implants and IUDs. Approximately 2 residents rotate together for 2–3 sessions per month. Residents who elect to provide IUDs (approximately 2 out of 10 GIM residents per year) are offered additional training times. All residents interested in providing the contraceptive implant are offered the FDA-required 1.5 h training held twice yearly.

EVALUATION: Prior to implementation of our strategy, there were no residents at our program who were trained in contraceptive implants or IUDs. The faculty supervising the procedure clinic obtained institutional privileging in October 2015

and since that date we have provided 23 contraceptive implant insertions and/or removals and 21 IUD insertions and/or removals. A total of 14 residents and 8 faculty completed the FDA-required 1.5 h training. There have been a total of 6 out of 30 General Internal Medicine residents who have opted to pursue IUD training, and the 2 who graduate in 2017 will have achieved competence.
DISCUSSION/REFLECTION/LESSONS LEARNED: We succeeded in integrating contraceptive implant and IUD provision into an internal medicine residents' procedures clinic. Although we know of an increasing number of internal medicine residency programs that now offer the FDA-required contraceptive implant training to residents, we know of only one other residency program that integrates contraceptive implant and IUD training into the residency clinic, a handful of others that offer elective training in the faculty practice and none that integrate contraceptive implants and IUDs into a procedures clinic. We believe this innovative model, more common in family medicine than internal medicine, offers residency programs a useful mechanism for teaching core competencies in ambulatory procedures and women's health, both of which can be highly sought after by residency applicants.

TRAINING RESIDENTS IN NAMASTE - NEW ANXIETY MANAGEMENT ALGORITHM STANDARDIZING TREATMENT EXPERIENCE

Amy Weil; Diane Dolan-Soto. UNC Chapel Hill School of Medicine, Chapel Hill NC, NC. (Control ID #2704283)

NEEDS AND OBJECTIVES: While depression care in primary care is well established, anxiety is also common and often comorbid, but evidence based anxiety care algorithms have not been well established. Comorbid depression and anxiety is associated with higher levels of chronicity, increased medical utilization, slower recovery and greater psychosocial disability. Providers are less familiar with anxiety treatment and have had to rely on patients seeking external care. Benzodiazepine overprescribing can increase morbidity and mortality. Objectives: 1. Create an evidence based algorithm for anxiety care along with a medication guide. 2. After vetting with colleagues and experts create and deliver case based didactic sessions designed to equip providers to implement the algorithm. 3. Decrease inappropriate use of benzodiazepines for anxiety management by offering education and effective alternatives.
SETTING AND PARTICIPANTS: Our academic primary care outpatient clinic serves over 12,000 patients as a safety net for the state of North Carolina. Over 100 providers work in our clinic, including physicians, nurses, clinical social workers, clinical pharmacists and resident trainees.
DESCRIPTION: We created a novel training module using case based materials to introduce algorithms to diagnose and treat anxiety using the GAD7 along with a medication guide. This was vetted with colleagues and experts and then delivered twice to our resident trainees.
EVALUATION: After training providers and implementation of the program, we did several quality improvement projects to assess providers' fidelity to algorithmic guided anxiety care and to evaluate patients' treatment response. We have a pre-post survey in progress with our clinicians regarding their knowledge, skills and attitudes and export to report results by February 2017.
DISCUSSION/REFLECTION/LESSONS LEARNED: Already having an IMPACT inspired Depression Diagnosis and Treatment Program in our clinic sensitized us to the need for a similar approach for anxiety. We have seen great qualitative improvements in our trainees' ability to recognize anxiety and formulate approaches to care. Residents have been quick to learn about effective alternatives to benzodiazepines and offer them to patients. Patient care has improved as a result. We look forward to presenting quantitative results when available.

TRAINING TOMORROW'S LEADERS IN PRIMARY CARE: THE LEADERSHIP FOR URBAN PRIMARY CARE EDUCATION AND TRANSFORMATION PROGRAM

Anna Volerman; Michael T. Quinn; Julie Grutzmacher; Deborah L. Burnet. University of Chicago, Chicago, IL. (Control ID #2706779)

NEEDS AND OBJECTIVES: Primary care transformation is needed to effectively deliver high-quality, patient-centered, cost-effective care. Leading such transformation requires a robust understanding of health systems, care models, patient-centered practices, and data-driven population health management. A diverse, well-prepared workforce is needed to care for the increasingly diverse patient populations, and primary care leaders need strong skills for working with multi-disciplinary teams, aligning incentives, leading quality improvement, guiding change, and building collaborative networks. Our objective is to train a diverse primary care workforce and develop effective leaders for primary care transformation in urban communities.
SETTING AND PARTICIPANTS: Residents and faculty in the Departments of Medicine, Pediatrics, and Family Medicine at one urban academic medical center and its affiliated primary care sites.
DESCRIPTION: The Leadership for Urban Primary Care Education and Transformation Program (LUCENT) consists of three key components over one to two years. First, residents have enhanced ambulatory training to strengthen clinical skills specific to primary care. To broaden their experiences, residents have expanded ambulatory clinical training to include both academic and community-based primary care practices and also more than double the ambulatory time compared to other residents. Second, resident and faculty scholars participate in biweekly symposiums to develop knowledge and skills for primary care transformation and leadership. Symposiums include discussions about core topics in primary care transformation, workshops to build leadership skills, and presentations about primary care innovations. Lastly, each scholar leads a practice innovation project in their ambulatory setting with strong faculty mentorship to translate the knowledge directly into practice and impact patients and clinics.
EVALUATION: The first cohort of scholars began the program in July 2016. This group of 12 scholars includes six residents, one fellow, and five faculty. Their projects focus on: chronic pain, mental health, palliative care, pediatric obesity, and social determinants of health. Outcomes are measured annually based on an outcomes-logic model and target scholar, patient, clinic, and program levels. Short-term outcomes include scholars' knowledge and skills of primary care transformation and leadership, patient care access and delivery, disease outcomes, and attitudes about the program. Long-term outcomes include entry into primary care, implementation of transformative initiatives, and attainment of leadership roles.
DISCUSSION/REFLECTION/LESSONS LEARNED: The multidisciplinary program prepares resident and faculty physicians to advance primary care delivery and become leaders in today's ongoing transformation of primary care. Although the patient population and disease entities differ across specialties, the principles of primary care transformation and education are analogous and represent an opportunity for collaborative learning and training.
ONLINE RESOURCE URL (OPTIONAL): www.lucent.uchicago.edu

TRANSITIONS OF CARE: MOVING FROM THE DISCHARGE SUMMARY TO THE TRANSITIONS SUMMARY

Meghan K. Black[1]; Cristin Colford[1]; Benjamin J. Lyles[2]. [1]University of North Carolina Chapel Hill, Chapel Hill, NC; [2]University of North Carolina Chapel HIll, Chapel Hill, NC. (Control ID #2703684)

NEEDS AND OBJECTIVES: Currently there is an increased emphasis on patient safety and transitions of care in medical education. Discharge summaries are the accepted means of communication in the transition from inpatient to ambulatory care. We sought to improve discharge summaries by creating a session for Internal Medicine Residents with the following objectives: 1.Demonstrate knowledge of the components and structure of a thorough, organized discharge summary utilizing a standardized rubric 2.Transition patients effectively across health delivery systems (SBP4 Milestone) by recognizing components of a discharge summary that effectively facilitate safe transition of care 3.Utilize the electronic health record (EHR) to improve and standardize discharge summaries

SETTING AND PARTICIPANTS: The intervention is a one-hour workshop (held during a normally scheduled conference time) for residents responsible for creating discharge summaries.

DESCRIPTION: We created a 50-point scoring rubric using categories outlined by the ACGME PDQI-9 to assess the basic components, hospital course, discharge planning, and overall assessment of a discharge summary. The EHR was utilized to collect summaries from each resident written pre and post intervention and were graded using the rubric by the authors. The intervention is a workshop reviewing the basic components of a discharge summary and its role in transition of care from inpatient to ambulatory settings. In the workshop, residents work in small groups using the rubric to score sample discharge summaries. The scoring informs an interactive discussion of strengths and weaknesses. At the completion of the workshop, a standardized EHR discharge summary note template is reviewed and distributed.

EVALUATION: In a post-workshop survey, 100% of residents reported they learned tools to improve their discharge summaries. Preliminary evaluation of discharge summaries pre ($n = 84$) and 30 days post intervention ($n = 56$) using the rubric had median scores of 37 and 44 respectively ($p < 0.001$). The improvement was maintained at 60 days ($n = 79$) with median score of 44 ($p < 0.001$). Post intervention there was a 46% increase ($p < 0.001$) in use of the standardized EHR template. Analysis is ongoing.

DISCUSSION/REFLECTION/LESSONS LEARNED: This innovation changed our approach to teaching discharge summaries. We found that the interactive session was well received and helped residents understand the importance of the document's role in transition of care and less so for cataloging minute details of the hospital course. We highlighted the importance of a strong summary statement and discussion in a problem based format. In addition, as a transition document, we felt that it was key to add a section for outpatient follow up. In our review of the pre and post intervention discharge summaries, it was clear that the communication to outpatient providers was increased when the template was utilized. We learned that it is challenging to spread best practices such as using the preferred EHR template and that we needed to use a multifaceted approach to increase adoption.

U.S. MINI-MEDICAL SCHOOL CLINICAL CURRICULUM FOR CHINESE MEDICAL STUDENTS

Brian S. Heist[1]; Melissa McNeil[1]; Margaret C. McDonald[2]. [1]University of Pittsburgh Medical Center, Pittsburgh, PA; [2]University of Pittsburgh School of Medicine, Pittsburgh, PA. (Control ID #2695835)

NEEDS AND OBJECTIVES: Externships for international students at U.S. medical schools are often isolated to clinical or laboratory exposure. This neglects opportunity to provide more robust understanding of U.S. medical education to potential future physician leaders in their home countries. We developed and implemented a curriculum to teach Chinese medical students the spectrum of clinical training in our institution. Attention was paid to skills development, relevance to careers in China, and exploring the influence of culture, organization of healthcare, costs, and historical context.

SETTING AND PARTICIPANTS: Twelve students who just completed their clinical clerkships at Xiangya Medical School are participating in a 2 year laboratory based research program at the University of Pittsburgh School of Medicine (UPSOM). The affiliation between the two schools stipulates provision of clinically related activities.

DESCRIPTION: Cumulative 1 month of clinically focused training extracted from UPSOM MS1-MS4 curriculum. Specific activities were conducted in a sequence approximating the UPSOM curriculum and included: 1.Standardized patient interviewing and OSCE 2.Interviewing patients with follow-up case discussions 3.Observing primary care, resident clinic, homeless clinic, and subspecialty clinics 4.Lectures/discussions on history of American medical education and medical system, and health care costs including insurance system and high value care 5.Interviewing non-physician members of care team 6.Participating in inpatient rotations with oral presentation on rounds and writing progress notes

EVALUATION: Pre-, mid-, and post-course questionnaires were administered and small group discussions were conducted addressing: 1.Confidence in clinical skills addressed 2.Value of each activity to career as a clinician and educator in China 3.Aspects of clinical education perceived superior in our institution versus home institution and vice versa. Ultimately success will be measured via interviews with the students after they return to their home institution, and observation of individual practice and curricular changes in their institution.

DISCUSSION/REFLECTION/LESSONS LEARNED: Two sets of lessons were learned. 1. *Students' perceptions of this curriculum and what they learned from it* Themes included enhanced appreciation for: A)Professionalism and patient-centered communication with attention to emotion and honesty B)Learning environment that encourages trainees to express questions and thoughts C)Influence of cost and organization of care on health D)Enhancing clinical training with regular didactic sessions 2. *Challenges to implementing this type of curriculum* Lessons learned included: A)Financial issues such as logistics of funding allocation to participating faculty B)Legal and institutional policy constraints with regard to patient interaction privileges for international students and the impact of the curriculum on UPSOM student education C)Barriers to buy-in from faculty members within our institution D)Misconceptions about baseline language skill and medical knowledge of the participants

UPDATES IN SLOW MEDICINE: HOW A RESIDENT PRIMARY CARE CLINIC DISCUSSION WENT NATIONAL

Michael E. Hochman. Keck School of Medicine, Los Angeles, CA. (Control ID #2695337)

NEEDS AND OBJECTIVES: We define "slow medicine" as an evidence-based, parsimonious, and patient-centric approach to clinical care in which one is

careful in interviewing (and examining) patients, careful to balance benefits and harms of diagnostic and therapeutic interventions, slow to intervene when symptoms are undifferentiated, committed to observation as an important diagnostic and therapeutic strategy, and cautious about adopting new diagnostic tests and therapies until the evidence establishes their value. The primary objective of our educational intervention is to create a free resource to engage residents and trained clinicians in the practice of "slow medicine" by sharing regular concise summaries of the latest medical literature from a generalist "slow medicine" perspective.

SETTING AND PARTICIPANTS: "Updates in Slow Medicine" began several years ago as an informal discussion among resident physicians and attendings at a teaching primary care clinic. Over time, our initial group dispersed around the country, but continued our discussions by email, increasingly refining the "slow medicine" principles. In 2014, our emails became more formalized, and we began writing regular email "updates" on clinical developments that we distributed to trainees from our original residency program. Since then, "Updates in Slow Medicine" has evolved into a twice-a-week literature update to which more than 500 physicians from dozens of institutions across the U.S. and internationally have thus far signed up to receive.

DESCRIPTION: Each week, we send out approximately two concise summaries ranging in length from 250–750 words, which offer commentary on the week's most important clinical research findings from the "slow medicine" perspective. We also publish selected pieces as blogs with MedPage Today and the Center for Health Journalism. Topics we address are broad and range from the overuse of medical services such as antibiotics, screening tests, and imaging studies, to the management of conditions such as obesity, hypertension, and diabetes using lifestyle approaches.

EVALUATION: We have not formally evaluated our initiative. However, our group has grown organically by word-of-mouth to involve over 500 members, and our messages have an open rate of >60% (well above the "industry standard" for this type of group). Moreover, many "Updates" have been published as blogs and discussed in the mainstream media, and one was developed into a perspective piece for *JAMA Internal Medicine*.

DISCUSSION/REFLECTION/LESSONS LEARNED: There is an unmet need, which we have begun to address, to provide busy residents and practicing clinicians with concise, up-to-date summaries of the medical literature from a generalist "slow medicine" perspective. In addition, our intervention has triggered the development of an engaged network of clinicians interested in the "slow medicine" philosophy.

ONLINE RESOURCE URL (OPTIONAL): http://slowmedupdates.com

USING ILLNESS SCRIPTS IN A 1ST YEAR MEDICAL SCHOOL BASIC SCIENCE COURSE Eileen Hennrikus. Penn State College of Medicine, Hershey, PA. (Control ID #2703924)

NEEDS AND OBJECTIVES: 1. To provide a memory anchor for which basic science information can be retained 2. To integrate our 4 pillars of education: Scientific Knowledge, Clinical Practice, Humanities and Health Systems.

SETTING AND PARTICIPANTS: The first medical school course, Scientific Principles of Medicine, a three month course that lays the basic science foundation for the organ system courses. A class of 150 first year medical students.

DESCRIPTION: Each week two PBLs are integrated with the large group sessions. Each Friday, a patient with an illness studied in one of the PBLs is interviewed in front of the class of 150 students. Often spouses, family, and the patient's physician, or nurse-coordinator accompany the patient. The patient is given the opportunity to describe how they were diagnosed, the life adjustments that were required to live with the condition and the issues that arose during treatment. Time is allotted for questions from the student audience. Laptops must remain closed but notes can be taken with pen and paper. The following Sunday, a one page illness script must be downloaded to the assignment drop-box. The illness script is formatted with the textbook version in column 1 and the patient version in column 2. The categories addressed in each version are: predisposition/cause, presentation/complications, how diagnosed and treatments. The patient column has two additional categories: humanistic take-away and health systems issues.

EVALUATION: 95% weekly compliance. Quality write-ups. Student feedback was unanimously positive.

DISCUSSION/REFLECTION/LESSONS LEARNED: Thematic Student Comments: "The patients and illness scripts allow us to put a face to a disease, help to solidify learning and made learning relevant. " Each student discovered their own personal humanistic lesson. For example, "This was a good story for me to hear. I think that at times I am guilty of stereotyping individuals with particular illnesses, because I don't understand their situation. Really knowing the psychological stress of addiction may not ever be possible for me, but at least I can understand the perspective a little better, and hopefully be compassionate and non-judgmental enough to help, rather than hurt, to understand rather than dismiss." Health systems comments included the way patients were informed about illness, attitudes and treatments rendered by medical professionals, errors and missed diagnoses as well as lifelong relationships with medical personnel.

USING PLAIN LANGUAGE WITH PATIENTS: TRAINING RESIDENTS AND FACULTY IN HEALTH LITERACY TO PREVENT PROVIDER BURN-OUT Frances Norlock[1]; Darryl Woods[1]; Sherry Licht[1]; Laura Sadowski[2]. [1]Stroger Hospital of Cook County, Chicago, IL; [2]stroger hospital of cook county, Chicago, IL. (Control ID #2705876)

NEEDS AND OBJECTIVES: Residents had difficulty explaining medical concepts to patients - many who had low health literacy. Training in health literacy was never conducted at our institution and is required for maintenance of patient-centered medical home (PCMH) certification.The objectives were to: 1) train providers in health literacy as a universal precaution; and 2) teach participants the skill of using plain language to improve patient understanding resulting in decreased burn-out among providers.

SETTING AND PARTICIPANTS: Half-day workshops were held Monday through Friday for internal medicine residents and clinic preceptors. Patients were not were not scheduled during these sessions. Preceptors were trained on their role as small group moderators, the exercises and role play during the lunch hour prior to the workshop.

DESCRIPTION: Residents completed a 14-item Health Literacy Screen to assess baseline knowledge followed by a didactic session on health literacy as a universal precaution and using plain language when communicating with patients.

Small groups completed 2 exercises and 1 role play. During Exercise #1 pairs of residents explained osteoporosis, heart failure and anti-inflammatory to each other using plain language. During Exercise #2 small group members created an explanation using plain language for a colonoscopy, atrial fibrillation or hypothyroidism. Members participated in a role play using plain language to describe heart disease and how an angiogram is performed. Small groups debriefed using flip chart notes on how they would use plain language to describe a colonoscopy, atrial fibrillation or hypothyroidism and any challenges they faced furing the exercises.
EVALUATION: Eighty-five residents and 21 faculty participated. Residents' Health Literacy Screen mean score was 10.3 out of 14 and there were no significant differences between training years (PGY1 10.3; PGY2 10.0; PGY3 10.7; p-value 0.40). Qualitative analysis of the flip chart notes revealed most small groups chose to explain a colonoscopy. Common themes included using the word bottom instead of rectum or slang; camera on the end of a tube "like my stethoscope;" why it was important to have a colonoscopy, bowel preparation and need for an escort. Atrial fibrillation small groups used terms such as "heart seizure" and "when the heart beats irregularly a clot can form." Colonoscopy and atrial fibrillation groups used simple drawings to explain conditions. Hypothyroidism small groups used phrases "tells your body how fast or slow to work" and "the gland is working less than normal."
DISCUSSION/REFLECTION/LESSONS LEARNED: Participants appreciated learning how to speak in plain language with patients. International graduates were challenged to think of common words in place of medical terminology as many learned "medical English" not conversational English. Future goals: 1) teach "Teach Back" method Spring, 2017; 2) survey residents on their use of plain language and satisfaction; 3) conduct QI project using plain language intervention; and 4) create 50 item plain language thesaurus.

VIRTUAL REALITY SUPPLEMENTAL TEACHING AT LOW-COST (VRSTL): A MODEL AND REVIEW FOR DEVELOPING LOW-COST VR FOR MEDICAL EDUCATION Patrick Chang[3]; Benjamin Chen[3]; Malhar Parikh[3]; Catherine Jones[1]; Kathryn Bunting[3]; Chayan Chakraborti[2]; Marc J. Kahn[2]. [1]Tulane University SOM, New Orleans, LA; [2]Tulane University School of Medicine, New Orleans, LA; [3]Tulane University: School of Medicine, New Orleans, LA. (Control ID #2670876)

NEEDS AND OBJECTIVES: Currently, there is interest for expanding earlier clinical experiences in medical schools. While virtual reality (VR) has successfully been used for surgical training at the resident level, the high cost, low quality, and limited scalability have previously restricted its widespread use for medical education. The goals of the VRSTL pilot are to propose a model for harnessing low-cost VR film as an adjunct for clinical teaching, review the developmental process to allow for replication and showcase the benefits of VR as an education tool.
SETTING AND PARTICIPANTS: A series of low-cost VR films were developed and shown at the first year medical school level using smartphones and low-cost VR headsets.
DESCRIPTION: Low-cost VR film was integrated into a first-year medical education course that teaches a basic pulmonary exam that allowed learners to look with 360 degrees of freedom during viewing. A systematic review of technologies including, 360 cameras, online VR platforms and smartphones, was done based on criteria of ease of use and compatibility across technology. Three first person virtual reality films that allowed 3D depth perception were subsequently created. Pathological lung sounds, augmented reality diagrams and a multiple choice question were added over the user's field of vision. Ubiquitous smartphone presence on campus was explored as an educational platform by allowing half of learners to successfully view the film on their own smartphones.
EVALUATION: Three levels of low-cost smartphones, cameras and free online platforms were evaluated for ease of implementation and compatibility. Success was measured by integration of a VR film into a real class under budget that showcased VR's ability to add examples of pathology and active learning over the learners' field of vision.
DISCUSSION/REFLECTION/LESSONS LEARNED: Our first and second video demonstrated that low-cost virtual reality could be achieved for $12/student on a $2000 budget. We demonstrated that VR film may enable educators to provide learners with first-person examples of pathology(e.g. crackles, egophony, and wheezes) and education overlays. Animations and multiple-choice active learning through left-right options were further showcased. Learners using this model gain the ability to turn and look in 360 degrees throughout viewing a film. On reflection, the optimal use of this freedom of vision likely includes teaching situations that demand interplay with the environment. Examples may include practice scenarios where residents run codes and are required to interact in a 360 degree environment. While this pilot showed a range of additional teaching tools that VR may offer educators, this group believes VR is not a replacement for real clinical experiences. However, VR film is a versatile teaching adjunct that can be adapted to a multitude of situations. Technology is rapidly progressing, and institutions interested in replication should prioritize ease and compatibility across hardware.

VIRTUAL REALITY SUPPLEMENTAL TEACHING AT LOW-COST (VRSTL): RESULTS OF LOW-COST VR FILM AS TEACHING ADJUNCT FOR CLINICAL TEACHING AT THE MEDICAL STUDENT LEVEL Benjamin Chen[3]; Patrick Chang[3]; Malhar Parikh[3]; Catherine Jones[1]; Kathryn Bunting[3]; Chayan Chakraborti[2]; Marc J. Kahn[2]. [1]Tulane University SOM, New Orleans, LA; [2]Tulane University School of Medicine, New Orleans, LA; [3]Tulane University: School of Medicine, New Orleans, LA. (Control ID #2692643)

NEEDS AND OBJECTIVES: There is a rising call for increasing clinical experiences earlier in medical experience for which simulation may answer. Meta-analyses have suggested that technology-enhanced simulation introduced to surgical training are associated with improved speed and accuracy in outcomes. New advances in technology may now allow for low-cost VR to be used as a teaching adjunct for widespread educational use. However, there is limited literature on audience attitude and response toward this new technology. Herein, we report on results from the Virtual Reality Supplemental Teaching at Low-Cost(VRSTL) pilot. The objective is to explore results of this pilot study in which low-cost VR(virtual reality) film was integrated into a medical school course through subjective response and report on objective post-experience results.
SETTING AND PARTICIPANTS: A total of 183 students were randomized into control and VR groups in a first-year class. Half of students in the experimental group viewed the VR film prior to attending normal class, and half of students in control group did not. Informed consent was obtained from all participants and all participants could opt out at any time.

DESCRIPTION: A low-cost VR video was shown to experimental group from a first person perspective on smartphones. VR film is defined as using video presented from the first-person perspective with 360 degrees of view and depth perception creating an immersive virtual environment. VR film was augmented with pathological clinical sounds and educational overlays in the learners' field of vision.

EVALUATION: After viewing the VR film and/or the current curriculum, an 8 item post-viewing objective test and subjective/demographics survey was administered. All participants completed survey and testing.

DISCUSSION/REFLECTION/LESSONS LEARNED: The VRSTL pilot had a start up cost of $12/learner. Videos are reusable allowing for a scalable, sustainable database of videos to be created. Participants were receptive to this pilot, pending overcoming a initial operator curve. More students stated VR film was an easy transition from current curriculum(81%) and would be useful for review of skills during clinical wards(79%). Students were receptive to using VR film to prepare for in-house clinical exam and/or Step 2 CS review (64%). Demographic survey showed no difference between groups. There was no difference between groups on eight item post-session quiz ($p = 0.239$). A recent comparative study suggests that while addition of augmented reality may not lead to significantly different outcomes, it may serve to decrease the dispersion and variation among learner experiences. This may suggest that a benefit of VR can lead to a more standardized delivery of materials. Key limitations included operator dependence and motion sickness. Furthermore, this was a single-center study with small sample size. For institutions interested in replication, obstacles towards for audience adoption of VR film includes overcoming operator dependence through initial coaching for an optimal learning experience.

WELL-BEING BY DESIGN: USING DESIGN THINKING TO ENGAGE LEARNERS IN THE DEVELOPMENT OF INNOVATIVE WORKPLACE WELL-BEING INTERVENTIONS Larissa Thomas[2]; Rita Nguyen[2]; Elizabeth Harleman[2]; Catherine R. Lucey[1]. [1]UCSF, San Francisco, CA; [2]University of California, San Francisco at Zuckerberg San Francisco General, San Francisco, CA. (Control ID #2707135)

NEEDS AND OBJECTIVES: Physician well-being is a complex challenge requiring a multi-faceted approach to address individual and organizational influences. Design thinking, a strategy to develop human-centered solutions for complex problems, may help to generate new, authentic organizational approaches to enhance well-being. We developed a longitudinal program to engage residents in creating well-being interventions, using a design thinking framework with the following objectives: 1. Apply principles of design thinking to develop resident-driven initiatives that address organizational well-being challenges. 2. Use semi-structured interview techniques to identify and analyze well-being challenges and design interventions. 3. Develop personal empowerment and self-efficacy through the design thinking process.

SETTING AND PARTICIPANTS: 21 resident participants developed interventions for a large internal medicine residency program.

DESCRIPTION: At baseline 80 percent of participants had little/no familiarity with design thinking, and 90 percent had never developed well-being interventions. For eight months, participants attended a two-hour facilitated design session every other month, with independent work between sessions. In Session 1, participants learned design thinking principles and practiced interviewing to identify well-being themes. Each participant then conducted 1–2 interviews with non-participating residents or residents' family/friends. In Session 2, participants worked in teams to identify salient interview themes, including isolation and self-doubt, value of peer/program support for difficulties, and scheduling/time constraints. Teams then applied ideation brainstorming techniques to address the following chosen priorities: creating community, providing individualized and timely reflection opportunities, and strengthening peer support. Each team then selected an idea to test, implemented an experiment between sessions, and used feedback to repeat the design cycle and refine their projects in Session 3. In the final session, teams summarized results and provided recommendations to the program leadership.

EVALUATION: Participants identified themes from their own work during each session, and investigators further analyzed session content. Final evaluation in May 2017 includes a pre/post-survey using the Psychological Empowerment in the Workplace Scale and the Creative Self-Efficacy scale, and semi-structured exit interviews. Burnout will be measured in an annual survey and stratified by participation in the program.

DISCUSSION/REFLECTION/LESSONS LEARNED: Although impact on participants has not yet been evaluated, residents successfully developed and tested four innovations using this process. Though scheduling/time constraints were an important theme, all teams chose to focus on enhancing community and organizational support. While additional strategies should address workload, this result suggests that design thinking's emphasis on human-centeredness may identify new approaches for cultural and organizational well-being challenges.

WELLNESS IN RESIDENCY: TACKLING BURNOUT WITHIN OUR RANKS Ryan Guinness; Kanchi Batra; Evan Calabrese; Leonierose N. Dacuycuy; Jessica Lorenzana; Benjamin Kozak; Jenny Zhang; Deborah A. Chiarucci. Kaiser Permanente San Francisco, San Francisco, CA. (Control ID #2704294)

NEEDS AND OBJECTIVES: Perform a baseline assessment of burnout in an Internal Medicine Residency Program using the Maslach Burnout Inventory that measures three components of burnout: emotional exhaustion, depersonalization, and personal accomplishment. Ask residents to identify leading factors that have contributed to burnout symptoms and potential wellness interventions to help reduce levels of burnout. Implement a series of PDSA cycles for each wellness intervention, and select the most popular intervention(s) to extend to the larger group. Our goal is to decrease levels of emotional exhaustion and/or depersonalization by one tier or increase levels of personal accomplishment by one tier on the Maslach Burnout Inventory among residents by May, 2017.

SETTING AND PARTICIPANTS: Setting: Kaiser Permanente, Internal Medicine Residency Program, San Francisco, CA, USA. Participants: 40 Internal Medicine Residents.

DESCRIPTION: Burnout is very common among health professions, particularly during residency training. The hallmark features of burnout include a combination of emotional exhaustion, depersonalization, and a reduced sense of personal accomplishment. This can lead to negative repercussions for the individual experiencing burnout, the people for whom care is provided, and for the community at large. Incorporating wellness interventions into the graduate medical education curriculum could help trainees to deal more successfully with the stress of training, develop techniques to help his or her career, and potentially prevent physician burnout. Wellness interventions have been

demonstrated to help individuals more effectively manage stress, pain, and other health conditions.

EVALUATION: We will evaluate burnout among Internal Medicine residents at Kaiser Permanente, San Francisco, CA, USA using a codified questionnaire and proceed to implement a series of wellness interventions to reduce levels of burnout on a follow-up questionnaire over a 9-month time period.

DISCUSSION/REFLECTION/LESSONS LEARNED: Our baseline burnout assessment identified several sources of stress among residents that include (1) lack of time for self-care; (2) long work hours; (3) and self-judgement regarding level of competency. Interactions with co-residents was found to be the most protective. We attempted to implement a series of wellness interventions that were requested by residents in an effort to reduce levels of burnout over a 9-month period. These wellness interventions included pet therapy, forums to discuss emotionally difficult patient cases, small group mindfulness activities, meditation sessions, wellness speakers, and incorporating 10-min of protected outdoor time without technology for wards residents during the week.

WHAT DO YOU SAY? USING SCRIPT WRITING AS A TOOL TO TEACH CODE STATUS CONVERSATIONS Kathleen G. Anderson[3]; Meghan Connelly[1]; Kari Esbensen[2]. [1]Medstar Washington Hospital Center, Washington, DC; [2]Emory University Hospital, Atlanta, GA; [3]Medstar Georgetown University Hospital, Washington, DC. (Control ID #2704998)

NEEDS AND OBJECTIVES: Discussing code status preferences is a crucial skill for physicians, and developing appropriate language and ease with these sensitive conversations is challenging. Code status discussions (CSD) are routinely done by residents without training. Research has shown that trainees do not develop these skills through clinical experience alone, and formal training can improve competency. Interventions proposed thus far include online modules, multi-hour workshops, and lectures and have not focused on incorporating such training into one's own authentic voice. We present a novel, versatile method to help trainees develop their own "scripts" for holding CSD with the goal of refining individualized language to improve communication skills.

SETTING AND PARTICIPANTS: We use this teaching method at two academic hospitals (Georgetown University in DC and Emory University in Atlanta) and a large community teaching hospital (Washington Hospital Center in DC). Learners have been medical students and residents and include a substantial number of foreign medical graduates.

DESCRIPTION: Our approach asks learners to write down what they commonly say when having CSD (including pauses, enunciations, and casual phrases to capture one's authentic voice) and share this with the group. They then revise these scripts based on peer feedback and reflection to create a final written product fitting on a note card in their pocket. We use script writing and sharing to identify (by group discussion) key elements of CSD, share best practices or helpful phrases, and build confidence through practice. Different variations of this method have been used at each teaching site thus far.

EVALUATION: We are conducting a qualitative analysis of trainee scripts written before and after peer feedback and are surveying learners at 1 and 3 months post training to assess their frequency of use and comfort with scripts, self-reported skill improvement, and insights gained.

DISCUSSION/REFLECTION/LESSONS LEARNED: We have found script writing to be a powerful tool to help trainees develop content and language for CSD. It is especially valuable for trainees who speak English as a second language. This technique can be used in multiple settings (we have used it in academic and community teaching settings) and has been modified into a short teaching module on the wards or a longer formal communication workshop. The written scripts offer trainees a concrete work-product and may improve frequency of use and retention of skills learned.

WHEN DOCTORS SPEAK ANOTHER LANGUAGE: TEACHING RESIDENTS ABOUT THE LIMITED ENGLISH PROFICIENT EXPERIENCE Amanda Reeck; Christopher Moreland; Keri L. Richardson. UT Health San Antonio, San Antonio, TX. (Control ID #2687484)

NEEDS AND OBJECTIVES: The purpose of the exercise was to help participants identify challenges that patients with limited English proficiency face in navigating the health care system and find ways for them to change their practice.

SETTING AND PARTICIPANTS: Our team consisted of 2 hospitalists and a healthcare interpreter. We conducted our innovative immersion experience in 2 separate 1-hour sessions: one with internal medicine interns, and the other with 2nd/3rd-year residents.

DESCRIPTION: Participants each rotated through 3 stations at 10-min intervals. Each station paralleled a task that patients are often required to perform (filling out forms, learning a step-wise task like wound care, following instructions in sorting medications), all in the presence of a language/literacy barrier. We then facilitated a group debrief about what challenges they faced, comparing their responses to those faced by patients. Participants identified ways to change their practice to help minimize these barriers. We then shared evidence-based data about LEP patients and outcomes, and provided resources they could use during LEP encounters.

EVALUATION: Twenty-three interns participated in the first session, and 13 upper-level residents participated in a 2nd session; all submitted a post-exercise survey. All the PGY2/3 participants (100%) rated the exercise very to extremely helpful, compared to 57% of PGY1s, with 30% of PGY1s rating it somewhat helpful and 13% a little helpful. Most (92%) of PGY2/3s were very to extremely likely to change their practice, compared to 70% of PGY1s, with 22% somewhat likely and 8% a little likely to change. Themes from participants debriefing included frustration with the language/literacy barrier and appreciation how patients must feel. They identified ways they could specifically change their practice, including using interpreters, asking patients to repeat back information to check understanding, and screening for literacy before providing written material. In a follow-up survey 2–3 months later, 85% of respondents said the experience influenced them to change their practice to a moderate/considerable degree, and 65% responded they now used interpreter services very often or every time, as opposed to 41% prior to the exercise.

DISCUSSION/REFLECTION/LESSONS LEARNED: We developed and implemented an innovative LEP immersion experience to help learners understand the challenges faced by LEP patients, and helped them identify ways in which they could implement behavioral changes to improve outcomes. Participant responses suggested this also supported empathetic understanding of the LEP patient experience. Three months after the exercise, participants responded that they increased their use of interpreter services. We implemented

this exercise initially for internal medicine residents, and plan to repeat it with faculty. Our innovation can be generalized to learners at any level with minimal additional resources required for curricular integration.

X + Y: TIME FOR QI Krista M. Johnson[1, 3]; Wendy Fiordellisi[1]; Alexis Wickersham[2]; Carly Kuehn[1, 3]; Ethan Kuperman[1, 3]. [1]University of Iowa Hospitals and Clinics, Iowa City, IA; [2]Thomas Jefferson University Hospital, Philadelphia, PA; [3]Iowa City VA Healthcare System, Iowa City, IA. (Control ID #2706683)

NEEDS AND OBJECTIVES: Our previous IM resident quality improvement (QI) curriculum faced logistical obstacles. Only 28% of our residents reported QI experience and most lacked confidence in QI skills ($N = 75$). We took advantage of our new "x + y" schedule to redesign our QI curriculum with the following objectives: 1) to improve resident's skills and confidence in QI, 2) to actively participate in inter-professional team QI, and 3) to demonstrate scholarship in QI.

SETTING AND PARTICIPANTS: In July 2015, the IM residency program at the University of Iowa transitioned to a "4 + 1" schedule: a 4-week rotation followed by 1 week of outpatient clinic and ambulatory education, which included the new QI curriculum. Participants included all 76 IM categorical residents and 11 volunteer faculty mentors.

DESCRIPTION: Residents were divided into 10 teams based on their schedule and clinic site. Residents participated in an introductory QI workshop, performed their QI work asynchronously during a "QI half day" built into their schedule every 5 weeks, and met in a "QI working session" for brief didactics and team updates every 10 weeks. Assignments were delivered electronically and curricular materials stored on a common web portal. All residents participated in an inter-professional team-based QI project using the Institute for Healthcare Improvement Model for Improvement as a framework. All projects focused on continuity clinic improvements. Resident skills and confidence in QI were assessed using the QIKAT-R and a pre-post survey.

EVALUATION: During the first year, all of our residents participated in inter-professional QI ($N = 76$). Interim analysis of 19 QIKAT-R demonstrated an increase in composite scores from 15.9 ± 4.4 to 20.1 ± 4.2 ($p < 0.001$). Residents reported increased confidence in all QI domains tested and rated the educational value of the curriculum 4.0 out of 5 ($N = 53$). All teams presented their projects orally and 7 teams presented posters at the local Patient Safety and QI Symposium. Several specific team project outcomes have been implemented.

DISCUSSION/REFLECTION/LESSONS LEARNED: Keys to success include dedicated resident QI time, faculty mentors, early inter-professional engagement, and a culture that recognizes residents' contributions to QI. Challenges include maintaining team momentum and communication between working sessions, feasibility of some projects, and systems barriers in each clinic. Future plans include expanding targets to include clinical outcomes and promoting further resident scholarship.

YEAR-LONG NARRATIVE MEDICINE INTERVENTION TO IMPROVE INTERPROFESSIONAL PRACTICE IN THREE PRIMARY CARE PRACTICES Deepthiman Gowda[1]; Dorene Balmer[2]; Apurva Khedagi[3]; Tayla Curran[3]; Michael Mangold[3]; faiz Jiwani[4]; Rita Charon[1]; Urmi Desai[5]. [1]Columbia University College of Physicians and Surgeons, New York, NY; [2]Childrens Hospital of Philadelphia, Philadelphia, PA; [3]Columbia University, New York, NY; [4]University of Florida College of Medicine, Gainesville, FL; [5]Columbia University College of Physicians and Surgeons, New York City, NY. (Control ID #2706637)

NEEDS AND OBJECTIVES: Interprofessional education and practice (IPE/IPP) aims to enhance clinical outcomes, yet many interventions remain outside of clinical settings. Narrative Medicine implemented in clinical settings may be a particularly effective way to enhance IPE/IPP while reducing burnout given its focus on facilitating communication and strengthening relationships.

SETTING AND PARTICIPANTS: We enrolled sixty-five participants, including attending physicians, residents, nurses and other staff from three New York City clinics (family medicine, general medicine, and general pediatrics).

DESCRIPTION: In March 2016, we began a year-long program of monthly 30-min sessions during required team meetings. Sessions are facilitated by a trained expert in Narrative Medicine (DG) and involve discussing a text (e.g. poem, film, painting), writing reflectively, and sharing writing with others from a different discipline. Sessions are designed to develop attention, explore creativity and strengthen relationships.

EVALUATION: Observation notes are taken at each session by a junior researcher. Semi-structured interviews with participants are conducted at start, mid-point, and end of the intervention. Analysis of qualitative data occurs iteratively with data collection. An initial set of codes is developed and applied to qualitative data collected in the first 6 months. To augment qualitative data, we administer 4 pre- and post-intervention instruments to assess burnout (Maslach Burnout Inventory), engagement (Utrecht Work Engagement Scale), empathy (Interpersonal Reactivity Index), and team characteristics (Team Development Measure). We conducted 40 sessions in the first 8 months. The average attendance was 10 participants. Sessions were attended by participants from all major disciplines. Early experience led us to adopt different texts (e.g. spoken word, illustrations) to appeal to all team members and fit within session constraints. Preliminary analysis of 40 observation notes and 22 interview transcripts reveal that team members across the disciplines and levels of educational attainment are open to active participation in sessions. In keeping with tenets of Narrative Medicine, team members speak of strengthening attention, valuing creativity, and enhancing relationships. At baseline, scores for burnout were higher for attending physicians, while scores for other instruments were comparable. Pre-post differences will be available by conference date.

DISCUSSION/REFLECTION/LESSONS LEARNED: Narrative medicine appears to be a feasible and effective intervention for IPE/IPP in clinical settings and may impact burnout. Our preliminary data suggest that interdisciplinary team members gain valuable insights about self, colleagues, and patients while strengthening relationships.

INNOVATIONS IN CLINICAL PRACTICE (ICP) IMPROVING HEPATITIS C SCREENING IN BABY BOOMERS AT ECMC PRIMARY CARE CLINIC: QUALITY IMPROVEMENT PROJECT Tenzin D. Arya[2]; Smita Y. Bakhai[1]. [1]SUNY at BUffalo, Williamsville, NY; [2]University at Buffalo, Buffalo, NY. (Control ID #2691292)

STATEMENT OF PROBLEM OR QUESTION (ONE SENTENCE): 4–5 million people in the US have hepatitis C virus infection and CDC estimated 75% of adults infected with hepatitis C are people born from 1945 through 1965

OBJECTIVES OF PROGRAM/INTERVENTION (NO MORE THAN THREE OBJECTIVES): Our aim was to improve hepatitis C screening rate from 5% baseline to at least 10% within 6 months.

DESCRIPTION OF PROGRAM/INTERVENTION, INCLUDING ORGANIZATIONAL CONTEXT (E.G. INPATIENT VS. OUTPATIENT, PRACTICE OR COMMUNITY CHARACTERISTICS): Hospital based primary care clinic, 40 residents, 2 providers and inner-city patient population.

MEASURES OF SUCCESS (DISCUSS QUALITATIVE AND/OR QUANTITATIVE METRICS WHICH WILL BE USED TO EVALUATE PROGRAM/INTERVENTION): Institute of Medicine's six aims of changing healthcare system, STEEEP (safe, timely, effective, efficient, equitable and patient-centered) was used to design our project. We used Plan Do Study Act (PDSA) model and root-cause analysis using fishbone diagram in a group discussion with preceptors and residents to identify barriers. System barriers included lack of electronic database and EMR alert of high risk patients. Provider barriers included lack of knowledge about the hepatitis C screening criteria, lack of reminders to ask for screening, and extra time needed during patient visits for education and consent. Patient barriers included lack of knowledge about hepatitis C and importance of screening, patient refusal of blood draws, lack of transportation. Our PDSA included provider education using a PowerPoint presentation and small group discussion for 40 residents rotating through ECMC IMC clinic. EMR workflow for nursing documentation of verbal consent of Hepatitis C was also reviewed with the residents. Nursing education was provided to increase documentation of verbal consent in EMR. In order to address barriers such as physician reminder and patient education we posted Hepatitis C screening information in each clinic room and distributed Hepatitis C educational handouts to eligible patients upon discharge from the clinic. Process measure included identifying high risk patients, education and offering hepatitis C screening test. Outcome measure included monthly hepatitis C screening rate. Balance measure included cost of the test and increase in referrals to liver specialist after confirmation of chronic hepatitis. We performed data analysis using monthly run charts.

FINDINGS TO DATE (IT IS NOT SUFFICIENT TO STATE FINDINGS WILL BE DISCUSSED): Data analysis was performed using monthly run charts. Hepatitis C screening increased after the first PDSA cycle that included physician education from a baseline of 3.79% in Oct 2015 to 13.80% in Nov. 2015. We observed decline in Dec.2015, rate of 6.89 and increased to 11.24% in January 2016 after nursing education. Rates were dropped to 6.99% in Feb 2016 but again picked up in March 8.19 and April 11.58%.

KEY LESSONS FOR DISSEMINATION (WHAT CAN OTHERS TAKE AWAY FOR IMPLEMENTATION TO THEIR PRACTICE OR COMMUNITY?): Team based approach is crucial in improving screening rates for hepatitis C.

30-DAY ED VISIT AND READMISSION RATE AFTER A HOSPITAL AT HOME ADMISSION VS TRADITIONAL HOSPITALIZATION

Christian Escobar[1, 1]; Tacara N. Soones[1]; Bruce leff[2]; Janeen Marshall[1]; Gabriel Silversmith[1]; Albert L. Siu[1, 1]; Ania Wajnberg[1, 1]; Linda DeCherrie[1, 1]. [1]Icahn School of Medicine at Mount Sinai, New York, NY; [2]Johns Hopkins University School of Medicine, Baltimore, MD. (Control ID #2699980)

STATEMENT OF PROBLEM OR QUESTION (ONE SENTENCE): Although almost 20 percent of Medicare beneficiaries hospitalized for an acute illness are readmitted within 30 days at an estimated cost of $17.4 billion, data is lacking on the impact of substituting Hospital at Home (HaH) plus HaH transitional services for traditional hospitalization on post-discharge outcomes.

OBJECTIVES OF PROGRAM/INTERVENTION (NO MORE THAN THREE OBJECTIVES): 1. To demonstrate clinical feasibility of a 30-day transitional care period following discharge from a HaH program. 2. To compare 30-day ED visit and readmission rates following discharge from this new HaH program based at Mount Sinai with those of a group of comparable patients discharged from Mount Sinai Hospitals.

DESCRIPTION OF PROGRAM/INTERVENTION, INCLUDING ORGANIZATIONAL CONTEXT (E.G. INPATIENT VS. OUTPATIENT, PRACTICE OR COMMUNITY CHARACTERISTICS): The Icahn School of Medicine at Mount Sinai implemented a HaH program funded by a Health Care Innovation Award from the Centers for Medicare and Medicaid Services' Innovation Center (CMMI), the Mobile Acute Care Team (MACT). The MACT deploys a multidisciplinary team to provide acute-hospital level care in the home as a substitute for traditional inpatient care and provides additional post-acute transitional care services for 30 days after discharge. Transitional services include skilled nursing visits to assist with continuing medical needs; social work support; clinician oversight, telephonic guidance, and urgent visits; and labs and imaging as needed. All patients receive 24-h access to a physician by phone for questions or urgent issues during this 30-day period.

MEASURES OF SUCCESS (DISCUSS QUALITATIVE AND/OR QUANTITATIVE METRICS WHICH WILL BE USED TO EVALUATE PROGRAM/INTERVENTION): The MACT study is a controlled clinical trial of MACT HaH participants with concurrent controls. Patients enrolled as concurrent controls meet MACT HaH admission criteria but either were admitted to the hospital during hours when MACT HaH was not enrolling new patients or refused MACT HaH admission. Key measures include: demographics and hospital diagnosis as well as 30-day ED visit and readmission rates.

FINDINGS TO DATE (IT IS NOT SUFFICIENT TO STATE FINDINGS WILL BE DISCUSSED): Between February 1, 2015 and October 31, 2016, 101 patients were admitted to MACT HaH and consented to research participation, 137 patients were enrolled in the control arm. Demographics for both groups: Age >65 = 79% MACT vs 72% controls; Sex = 79% female MACT vs 62% female for controls; Race = 30% White, 23% Black, 40% Hispanic for MACT vs 30% White, 29% Black, 35% Hispanic for controls. For MACT vs control participants, 30-day ED visit rates post-discharge were 6 (5.9%) vs 14 (10.2%), respectively ($p = 0.34$), and 30-day readmission rates were 8 (7.9%) vs 20 (14.6%), respectively ($p = 0.15$).

KEY LESSONS FOR DISSEMINATION (WHAT CAN OTHERS TAKE AWAY FOR IMPLEMENTATION TO THEIR PRACTICE OR COMMUNITY?): MACT transitional services for 30 days after an acute episode is clinically feasible. In early data, MACT patients experienced fewer readmissions and ED visits within 30 days of discharge than similar, hospitalized patients, though this is not yet powered to reach statistical significance. As compared with hospitalization, providing hospital level care in the home paired with a 30-day post-acute care program may have the potential to reduce hospital readmissions and ED visits within 30 days of an acute illness.

A BRIEF INTERPERSONAL PSYCHOTHERAPY PROTOCOL TO IMPROVE TREATMENT OUTCOMES IN A PRIMARY CARE DEPRESSION CARE PROGRAM.

Lauren Peccoralo[3]; Samantha Herrera[1]; Lizbeth Valencia[1]; Katherine Small[2]. [1]Icahn School of Medicine at Mount

Sinai, New York, NY; [2]Mount Sinai, New York, NY; [3]Mount Sinai School of Medicine, New York, NY. (Control ID #2705497)

STATEMENT OF PROBLEM OR QUESTION (ONE SENTENCE): Patients in our depression care program were not meeting treatment goals and had poor adherence to the program. Needs assessment revealed lack of standardization of psychotherapeutic treatment protocols due to difficulty engaging patients in the traditional Problem Solving Therapy.

OBJECTIVES OF PROGRAM/INTERVENTION (NO MORE THAN THREE OBJECTIVES): To standardize psychotherapeutic treatment protocols using an innovative approach To increase rates of depression improvement and remission, assessed via PHQ-9 scores To achieve greater patient retention

DESCRIPTION OF PROGRAM/INTERVENTION, INCLUDING ORGANIZATIONAL CONTEXT (E.G. INPATIENT VS. OUTPATIENT, PRACTICE OR COMMUNITY CHARACTERISTICS): The Internal Medicine Associates (IMA) Practice at Mount Sinai in New York offers a depression care program for outpatients with PHQ-9 scores of greater than 9. IMA is a large urban academic practice with 140 resident providers, 9 Nurse Practitioners, and 30 faculty, serving approximately 18,000 patients annually. The depression care team consists of two depression care managers (master's level social workers), a social work supervisor, an administrative coordinator, a physician champion and a physician program director. The goal of the program is to improve depression symptoms via education, talk therapy and skill building in a time-limited approach. In response to not meeting treatment goals and high drop out rates, we created a new therapeutic protocol using the principles of interpersonal psychotherapy (IPT). This abbreviated 13-session version of IPT comprised meeting with care managers (weekly, biweekly, then every 3 weeks) and focused on pre-set goals and skill building during sessions.

MEASURES OF SUCCESS (DISCUSS QUALITATIVE AND/OR QUANTITATIVE METRICS WHICH WILL BE USED TO EVALUATE PROGRAM/INTERVENTION): Clinical outcome data following the IPT program (2016) were compared to historical data (2015). Depression improvement rates were defined as the percent of patients 70 days post enrollment with a PHQ-9 score of less than half of their original score or < 10. Remission rates measured how many patients reached the goal PHQ-9 score (<10). Average change in PHQ-9 scores was compared using a two-tailed t-test and proportions were compared using chi-square analysis. The percentage of patients discharged due to no shows was also calculated.

FINDINGS TO DATE (IT IS NOT SUFFICIENT TO STATE FINDINGS WILL BE DISCUSSED): There were 214 patients enrolled in the IPT program and 147 patients from the historical cohort. Depression improvement rates improved steadily from 31% (2015, Q3), to 49% (2016, Q3). The annual remission rate for all patients treated in years 2015 and 2016 was 29 and 42%, respectively ($p = 0.008$). The average decrease in PHQ-9 scores was −3.6 in 2015 and −7.8 in 2016 ($p < 0.005$). Of the discharged patients, 49 (70%) in 2015 and 30 (28%) in 2016 were discharged due to no-shows to appointments.

KEY LESSONS FOR DISSEMINATION (WHAT CAN OTHERS TAKE AWAY FOR IMPLEMENTATION TO THEIR PRACTICE OR COMMUNITY?): An IPT-based therapeutic protocol resulted in higher remission rates and greater improvements in PHQ-9 scores in an urban primary care depression care program. Patients were also more likely to adhere to the program and less likely to be discharged due to no shows. Some limitations of this project include that some patients had difficulty adhering to frequent appointments and the subjective nature of the PHQ-9 as the marker for improvement of depression.

A COLLABORATIVE TELEHEALTH ANTIDEPRESSANT MONITORING PROGRAM INVOLVING PHARMACISTS IN PRIMARY CARE Shubha Bhat; Zeta Chow; Lauren Heath; Sarah Billups; Katy E. Trinkley; Danielle F. Loeb. University of Colorado, Aurora, CO. (Control ID #2706276)

STATEMENT OF PROBLEM OR QUESTION (ONE SENTENCE): Due to suicidality risk and frequent antidepressant self-discontinuation, guidelines recommend monitoring patients within two weeks of antidepressant initiation or uptitration, but limited resources and time constraints in primary care are barriers to systematic follow-up.

OBJECTIVES OF PROGRAM/INTERVENTION (NO MORE THAN THREE OBJECTIVES): Clinical pharmacists and primary care providers (PCP) collaborated at two internal medicine clinics to provide a telehealth monitoring program to improve outcomes of depression therapy and minimize suicide-related medical liabilities.

DESCRIPTION OF PROGRAM/INTERVENTION, INCLUDING ORGANIZATIONAL CONTEXT (E.G. INPATIENT VS. OUTPATIENT, PRACTICE OR COMMUNITY CHARACTERISTICS): Patients 18 years or older diagnosed with depression and instructed by their primary care team to initiate or increase an antidepressant were identified by automated reports and called by the clinics' pharmacists within two weeks. With each call, patients were asked if they made the antidepressant change or accessed specialty care if referred, and screened for adverse effects and suicidal ideation. If applicable, pharmacists assessed patients' reasons for not following providers' instructions. Pharmacists then worked with the care team to identify interventions to optimize patients' care and therapy. All calls were documented in the electronic health record. Patients with multiple antidepressant changes were outreached more than once.

MEASURES OF SUCCESS (DISCUSS QUALITATIVE AND/OR QUANTITATIVE METRICS WHICH WILL BE USED TO EVALUATE PROGRAM/INTERVENTION): Program evaluation metrics included proportion of calls the patient was reached; proportion of patients with non-adherence, adverse effects, and suicidal ideation; and type and frequency of pharmacist interventions.

FINDINGS TO DATE (IT IS NOT SUFFICIENT TO STATE FINDINGS WILL BE DISCUSSED): Of 490 calls attempted between May to October 2016, 298 were successfully completed to 258 unique patients, primarily after antidepressant initiation. Patients reached were predominantly female with moderate-to-severe depression and mean age of 54 years. Patients reported antidepressant non-adherence during 56 (19%) calls, primarily due to adverse effect concerns. Patients reported adverse effects, such as mood instability, sleep disturbances, and nausea/vomiting, during 81 (27%) calls, and expressed suicidal ideation during 13 (4%) calls. One patient expressed new onset ideation after antidepressant change, self-discontinued the antidepressant, and was instructed to follow-up with PCP. Pharmacist interventions included reinforcing initial plan for 60 (20%) calls, recommending new administration time for 9 (3%) calls, and recommending new medication or dosing regimen for 5 (2%) calls. Of 68 scenarios where specialty care was ordered, patients reported not accessing it in 31 (46%) instances, citing transportation, work, and lack of scheduled appointment as main reasons.

KEY LESSONS FOR DISSEMINATION (WHAT CAN OTHERS TAKE AWAY FOR IMPLEMENTATION TO THEIR PRACTICE OR COMMUNITY?): A pharmacist-PCP collaborative telehealth monitoring service can identify patients needing early interventions after changing antidepressants

to optimize adherence, mitigate adverse effects, and minimize suicide risk. Developing specific and sensitive reports for patient identification was time consuming, but critical to the success of this program.

A DIABETES SELF-MANAGEMENT CLASS FOR MEDICALLY COMPLEX COMMUNITY-DWELLING ELDERS Cynthia Schoettler; Elizabeth Stanton; Mary Ann Graham; Jonathan Burns. Cambridge Health Alliance, Cambridge, MA. (Control ID #2698763)

STATEMENT OF PROBLEM OR QUESTION (ONE SENTENCE): Elders with diabetes often have diabetes related knowledge and skill deficits, negatively impacting the management of their diabetes. These elders, especially those with complex medical needs, are rarely offered self-management education, despite evidence to the contrary that this type of intervention can be meaningful.

OBJECTIVES OF PROGRAM/INTERVENTION (NO MORE THAN THREE OBJECTIVES): The objectives of this project were to, 1) Identify diabetes knowledge and skill deficits in elders, 2) Develop a reproducible diabetes self-management class targeted for medically complex elders aimed at filling the identified deficits, and 3) Improve patient self-efficacy, attitudes, and skills in diabetes self-management.

DESCRIPTION OF PROGRAM/INTERVENTION, INCLUDING ORGANIZATIONAL CONTEXT (E.G. INPATIENT VS. OUTPATIENT, PRACTICE OR COMMUNITY CHARACTERISTICS): All participants were active enrollees in a Program of All inclusive Care for the Elderly, or PACE (nursing home eligible community dwelling seniors) in the Boston metro area affiliated with Cambridge Health Alliance, an academic community healthcare system. All participants had a diagnosis of diabetes and no known dementia. A class series of diabetes education for older adults with complex medical needs was developed after focus meetings with providers at the clinic site and conversations with participants. It was identified that participants lacked: a usable definition of diabetes, ability to identify and treat hypoglycemia, what is meant by 'exercise', and adequate nutrition knowledge. A series of six 1-h classes taught once weekly was created to address these deficits. At the end of the series, participants were given a binder with handouts covering the class topics and additional reference information.

MEASURES OF SUCCESS (DISCUSS QUALITATIVE AND/OR QUANTITATIVE METRICS WHICH WILL BE USED TO EVALUATE PROGRAM/INTERVENTION): To assess the impact of this class, traditional quality measures of diabetes (such as A1c, weight, BMI and blood pressures) were recorded before and 3 months after completion of the class. Additionally, a pre-post survey for participants was administered, assessing patient knowledge of diabetes management and confidence in selected diabetes self-care activities.

FINDINGS TO DATE (IT IS NOT SUFFICIENT TO STATE FINDINGS WILL BE DISCUSSED): Participants overwhelmingly reported that they felt the class was interesting and helpful for them. They reported feeling more empowered to care for their diabetes. Class attendance averaged 3–4 of the 6 classes and was limited by logistics as well as comorbidities (2 of the 6 participants were hospitalized for 1 or more of the classes). Overall there was slight improvement in knowledge and confidence in management of diabetes, especially in the ability to identify and treat hypoglycemia. 3 month follow-up of clinical measures is pending at this time.

KEY LESSONS FOR DISSEMINATION (WHAT CAN OTHERS TAKE AWAY FOR IMPLEMENTATION TO THEIR PRACTICE OR COMMUNITY?): A diabetes self-management class targeted for cognitively intact medically complex community-dwelling elders is well accepted by patients and results in improved perceptions of self-efficacy. Classes are inherently patient-centered, and a logical adjunct to complex adults who need ongoing case management.

A MULTIDISCIPLINARY CONTINUUM OF CARE MODEL FOR ALCOHOL USE DISORDER Marlene Martin[1, 2]; Michael Hutchinson[3]; Mira Parwiz[3]; Anjanette Devito[3]; Thomas Ormiston[1, 2]. [1]Santa Clara Valley Medical Center, San Jose, CA; [2]Stanford University School of Medicine, Stanford, CA; [3]Substance Use Treatment Services, Santa Clara, CA. (Control ID #2702157)

STATEMENT OF PROBLEM OR QUESTION (ONE SENTENCE): Validated screening tools for alcohol use disorder (AUD) exist, but have not been routinely used in hospitalized patients, limiting evaluation and treatment of patients with AUD.

OBJECTIVES OF PROGRAM/INTERVENTION (NO MORE THAN THREE OBJECTIVES): 1. Establish a workflow to address AUD that includes universal screening, training social work (SW) in screening, brief intervention, and referral to treatment (SBIRT), and initiation of medication assisted treatment (MAT) in qualifying and amenable patients. 2. Description of demographics, comorbidities, socioeconomics, and referral rates for hospitalized patients with AUD to better target services to these patients. 3. Programmatic evaluation of AUD screening, including referral rates for outpatient treatment, treatment modalities, and identification of barriers to accessing substance use treatment services (SUTS).

DESCRIPTION OF PROGRAM/INTERVENTION, INCLUDING ORGANIZATIONAL CONTEXT (E.G. INPATIENT VS. OUTPATIENT, PRACTICE OR COMMUNITY CHARACTERISTICS): The Alcohol Use Disorders Identification Test C (AUDIT-C), a three-question screening tool, was added to the medicine admission order set. Admitting nurses screen medicine patients for at risk drinking and refer those screening positive to SW. SW further screens patients for AUD and performs SBIRT. High-risk drinkers and those expressing interest in outpatient services or residential treatment are referred to higher levels of care. Medicine teams assess patients expressing interest in MAT for gabapentin and/or vivitrol and offer qualifying patients appropriate medication(s), giving first dose(s) during hospitalization. Patients receiving vivitrol are referred to SUTS and provided outpatient follow-up for continued intervention, assessment for a higher level of care, and continued vivitrol doses.

MEASURES OF SUCCESS (DISCUSS QUALITATIVE AND/OR QUANTITATIVE METRICS WHICH WILL BE USED TO EVALUATE PROGRAM/INTERVENTION): Describe the a) screening rates for AUD b) percentage of patients who screen positive for at risk drinking and receive SW intervention c) percentage of patients with AUD offered treatment d) percentage of patients who qualify for MAT and receive medication at discharge e) percentage of patients who receive vivitrol and follow up for monthly injections and f) pre and post intervention 30 day and 6 month emergency department visits and readmission rates.

FINDINGS TO DATE (IT IS NOT SUFFICIENT TO STATE FINDINGS WILL BE DISCUSSED): In preliminary findings, 1200 patients were

screened for at risk drinking in 4 months. 360 (30%) of these patients screened positive for at risk drinking. 80 (22.2%) patients who screened positive for at risk drinking and had AUD received SBIRT. 35 (43.8%) of the 80 patients with AUD received vivitrol. 17 (48.6%) patients followed up 1 month post discharge for further intervention and vivitrol. Of the patients who received vivitrol, 40% are homeless and 30% have a psychiatric comorbidity.

KEY LESSONS FOR DISSEMINATION (WHAT CAN OTHERS TAKE AWAY FOR IMPLEMENTATION TO THEIR PRACTICE OR COMMUNITY?): Engaging inpatient and outpatient stakeholders who care for patients with AUD has resulted in an inpatient and outpatient workflow to address AUD. By partnering with inpatient pharmacists, nurses, SW, and outpatient SUTS we are attempting to create a model to streamline identification of patients with AUD, and referral of these patients to behavioral and medical interventions.

A NOVEL DECISION AID TO ENCOURAGE SMOKING CESSATION AMONG PATIENTS WITH LOW HEALTH LITERACY Sumit Agarwal; Matthew Kerwin; Jacob Meindertsma; Andrew Wolf. University of Virginia, Charlottesville, VA. (Control ID #2703245)

STATEMENT OF PROBLEM OR QUESTION (ONE SENTENCE): No decision aids that readily individualize the benefits of smoking cessation are available to help physicians engage in a meaningful conversation with their patients, particularly those with low health literacy, in order to explore and encourage a quit attempt.

OBJECTIVES OF PROGRAM/INTERVENTION (NO MORE THAN THREE OBJECTIVES): − Examine patient receptiveness to a unique smoking cessation decision aid - Advance patients' readiness to quit - Increase quit rates and reduce smoking prevalence

DESCRIPTION OF PROGRAM/INTERVENTION, INCLUDING ORGANIZATIONAL CONTEXT (E.G. INPATIENT VS. OUTPATIENT, PRACTICE OR COMMUNITY CHARACTERISTICS): In an outpatient primary care clinic that serves a predominantly underserved patient population, active smokers were randomized to a control arm in which patients received standard of care (i.e. smoking cessation counseling using motivational interviewing techniques) and an intervention arm in which patients received standard of care plus the use of a decision aid. Because it targets a low health literacy population, the decision aid is simple and provocative; it seeks to both personalize and heighten the perceived benefits of quitting by using the poignant image of birthday cakes to display the potential years of life gained by quitting at the patient's current age. The decision aid is readily accessible as a web application and easily adaptable to a mobile platform as well as printable for the patient to take home with them.

MEASURES OF SUCCESS (DISCUSS QUALITATIVE AND/OR QUANTITATIVE METRICS WHICH WILL BE USED TO EVALUATE PROGRAM/INTERVENTION): The Biener and Abrahms Contemplation Ladder (based on Prochaska and DiClemente's Stages of Change), a well validated scale, was used to capture subtle but meaningful changes in thinking that can influence future quit attempts in the future. To determine the effect of the intervention, patients placed themselves on the scale before and after the intervention at pre-specified time intervals.

FINDINGS TO DATE (IT IS NOT SUFFICIENT TO STATE FINDINGS WILL BE DISCUSSED): After two months of recruitment, 63 patients were enrolled in the study, twenty-nine in the control arm and thirty-four in the intervention arm. Fifty-six percent of patients who received the decision aid reported not knowing they could live longer if they quit smoking. Eighty-five percent of patients found the decision aid to be useful, and one-hundred percent found it easy to understand. Among all the enrolled patients, 24% of those in the intervention arm moved up the ladder toward smoking cessation compared to 21% of those in the control arm ($p = 0.81$). Enrollment is ongoing.

KEY LESSONS FOR DISSEMINATION (WHAT CAN OTHERS TAKE AWAY FOR IMPLEMENTATION TO THEIR PRACTICE OR COMMUNITY?): Low-literacy patients are highly receptive to the use of a visual and personalized decision aid that highlights the positive impact of smoking cessation when talking with their physician. More patients must be enrolled, and with long-term follow-up, to determine whether the decision aid has the potential to enhance motivational interviewing and influence readiness to change or quit attempts.

A PILOT MULTIDISCIPLINARY CHRONIC PAIN CONFERENCE FOR COMPLEX, HIGH-UTILIZING PATIENTS Venkatesan R. Krishnamoorthi; Nicole Gier; Joyce W. Tang; David Dickerson; Magdalena Anitescu; Lauren Wiklund; David Meltzer. University of Chicago, Chicago, IL. (Control ID #2706837)

STATEMENT OF PROBLEM OR QUESTION (ONE SENTENCE): Delivering chronic pain care to high-utilizing, socially complex patients is challenging, and care fragmentation contributes to uncoordinated pain management, frustration in the provider-patient relationship, and opioid over-use.

OBJECTIVES OF PROGRAM/INTERVENTION (NO MORE THAN THREE OBJECTIVES): 1)Create a multi-disciplinary conference to discuss the complex factors contributing to patients' chronic pain experiences. 2)Develop multi-modal care plans and review cases longitudinally. 3)Improve collaboration and foster learning across disciplines.

DESCRIPTION OF PROGRAM/INTERVENTION, INCLUDING ORGANIZATIONAL CONTEXT (E.G. INPATIENT VS. OUTPATIENT, PRACTICE OR COMMUNITY CHARACTERISTICS): The conference began in 2015 and was modeled after other disease-specific conferences, such as "tumor boards." Participation hailed from: Primary Care, Pain Medicine, Physical Therapy, Psychology, Social Work, and Pharmacy. Eligible patients were enrolled in the University of Chicago Comprehensive Care Program (CCP), which offers outpatient and inpatient continuity care for high-utilizers. Among CCP patients, 63% report moderate to extreme daily impairment from pain. Three new patients were selected for discussion by primary care physicians at each conference. Subsequently, a comprehensive care plan was developed for each patient, including: 1)testing, 2)medications, emphasizing alternatives to opioids 3)procedures, 4)physical therapy, and 5)behavioral health.

MEASURES OF SUCCESS (DISCUSS QUALITATIVE AND/OR QUANTITATIVE METRICS WHICH WILL BE USED TO EVALUATE PROGRAM/INTERVENTION): Participants in the conference were surveyed at two time points (4 months apart) to assess evolving attitudes in caring for chronic pain patients. Participants rated their skills in caring for chronic pain; satisfaction with resources and support; and perceived barriers in the provider-patient encounter. Participants provided qualitative responses on the impact of the conference on their approach to chronic pain, relationship with patients, and relationships with other conference collaborators.

FINDINGS TO DATE (IT IS NOT SUFFICIENT TO STATE FINDINGS WILL BE DISCUSSED): At baseline, all provider survey respondents ($n =$

12) agreed that chronic pain encounters take longer than other visits. Of note, 50% percent felt frustrated after these encounters; all respondents noted a lack of institutional support with chronic pain management; 50% felt they were a part of an effective team in addressing chronic pain. At four-month follow-up 77% of participants ($n = 11$) felt part of an effective care team addressing chronic pain. From qualitative responses, providers felt more supported in providing chronic pain care and detailed new approaches in their encounters ("I focus more on what type of life the patient wants…"). Many noted a positive impact on their relationship with patients ("less antagonistic"). Lastly, attendees highlighted stronger inter-departmental relationships, improved care coordination, and better understanding of the roles and barriers of various care team members.

KEY LESSONS FOR DISSEMINATION (WHAT CAN OTHERS TAKE AWAY FOR IMPLEMENTATION TO THEIR PRACTICE OR COMMUNITY?): A multi-disciplinary conference for chronic pain patients has improved collaboration across different specialties and has had an early positive impact on providers' relationship with their patients. The potential for increased provider satisfaction to result in improved patient experience will be assessed longitudinally.

A POPULATION-HEALTH BASED APPROACH TO ADVANCE CARE PLANNING Jared Lowe; Azalea Kim; David Chermak; Desmond Cutler; Christine Bates; Jenny Van Kirk; Lawrence A. Mumm; Ashley Hanlon; Laura Miller; Manisha Bhattacharya; Lynn Bowlby; Lawrence Greenblatt. Duke University Health System, Durham, NC. (Control ID #2679017)

STATEMENT OF PROBLEM OR QUESTION (ONE SENTENCE): There lacks a population-health based pathway for advance care planning (ACP) that engages primary care practices.

OBJECTIVES OF PROGRAM/INTERVENTION (NO MORE THAN THREE OBJECTIVES): 1. Assist primary care providers (PCPs) with identifying patients who might benefit from ACP 2. Build functional pathways for PCPs to engage in ACP in the clinic setting

DESCRIPTION OF PROGRAM/INTERVENTION, INCLUDING ORGANIZATIONAL CONTEXT (E.G. INPATIENT VS. OUTPATIENT, PRACTICE OR COMMUNITY CHARACTERISTICS): We modified a published five-year mortality index to develop a predictive tool that identifies patients who would most benefit from ACP based on meeting one of three criteria extracted from the electronic health record (EHR): age 70 or greater; two or more hospitalizations at an affiliated hospital in the last year; three or more chronic co-morbidities based on ICD-9 codes. Patients age 50 or younger were excluded. We implemented this predictive tool at two primary care practices that serve a disproportionate share of underinsured and uninsured patients in Durham, NC. A list of identified patients was sent to a sample of residents selected on a volunteer basis who are the PCPs for those patients. PCPs reviewed their patient lists and marked patients as appropriate for ACP intervention. If deemed inappropriate, PCPs provided a brief justification via email. Patients identified as appropriate will be scheduled for dedicated ACP appointments. The schedulers will be provided a script for conversations with patients and an FAQ sheet to answer questions. For questions not covered, patients will be encouraged to ask their PCP. A trained medical assistant will be present in clinic to assist patients with completion of legal documentation, notarization, and uploading the documents to the EHR.

MEASURES OF SUCCESS (DISCUSS QUALITATIVE AND/OR QUANTITATIVE METRICS WHICH WILL BE USED TO EVALUATE PROGRAM/INTERVENTION): The predictive tool will be evaluated by measuring the percentage of patients identified by the tool that the PCPs agree are appropriate for ACP. The program will be evaluated by measuring among our identified ACP opportunities the rate of scheduling and completion of ACP appointments, presence of ACP documentation in the EHR, and changes in providers' attitudes and perceived barriers to ACP.

FINDINGS TO DATE (IT IS NOT SUFFICIENT TO STATE FINDINGS WILL BE DISCUSSED): A total of 132 patients served by fifteen PCPs were identified. Of those 132 patients, the tool appropriately identified 113 (86%) for ACP intervention. Two patients were flagged by their PCPs as unsuitable based on perceived good health, and 11 had previously engaged in ACP. Of the 19 labeled inappropriate, 11 had not been seen at the clinic in over twelve months and were lost to follow-up, 4 were deceased, and 4 had significant cognitive impairment.

KEY LESSONS FOR DISSEMINATION (WHAT CAN OTHERS TAKE AWAY FOR IMPLEMENTATION TO THEIR PRACTICE OR COMMUNITY?): This program demonstrates that a simple predictive tool capitalizing on the EHR is able to accurately assist PCPs with identifying patients appropriate for ACP. Building functional pathways in the clinic that assist with scheduling patients for ACP appointments and with completion of documentation will be necessary to engage primary care practices in ACP.

A PROPOSED SINGLE-CENTER DELIVERY PROGRAM FOR NALOXONE FOR PATIENTS DISCHARGED FROM ACUTE HOSPITALIZATION AT HIGH RISK FOR OPIATE OVERDOSE Salina Bakshi[1, 2]; Anish Mehta[1, 2]; Sheridan Reiger[1, 2]; Elizabeth Harry[1, 2]; Rajesh Patel[1, 2]. [1]Brigham and Women's Hospital, Boston, MA; [2]Harvard Medical School, Boston, MA. (Control ID #2706121)

STATEMENT OF PROBLEM OR QUESTION (ONE SENTENCE): Healthcare facilities have a responsibility to minimize harm from opiate-related adverse events (ORAE) among patients discharged from the hospital.

OBJECTIVES OF PROGRAM/INTERVENTION (NO MORE THAN THREE OBJECTIVES): (1) Identify high-risk patients discharged from acute hospitals; (2) Deliver naloxone to the bedside of high-risk patients prior to discharge; (3) Train patients and their caregivers on how to use naloxone prior to discharge.

DESCRIPTION OF PROGRAM/INTERVENTION, INCLUDING ORGANIZATIONAL CONTEXT (E.G. INPATIENT VS. OUTPATIENT, PRACTICE OR COMMUNITY CHARACTERISTICS): Opiates pose significant risk for patients, particularly in the outpatient setting. [1] Opiates are one of the major drug causes of emergency department visits. [2] Intranasal or intramuscular naloxone available in the community can reduce harm from ORAE. We seek to systematically deliver naloxone to high-risk patients before their discharge from hospital. High-risk patients are defined as those with opioid prescriptions exceeding 50 daily morphine equivalents, dually-prescribed opiates and benzodiazepines, a history of opiate dependence/abuse, or ORAE as primary reason for hospital admission. Our hospital is a major academic center in Boston, MA with over 46,000 annual discharges. We are working to implement an electronic medical record (EMR) tool that will identify patients at high-risk and notify their provider that the patient is a candidate for bedside naloxone delivery before to their discharge. If the provider agrees, this will prompt the

automated creation of an outpatient naloxone prescription. This prescription will be sent to our outpatient pharmacy, who will deliver naloxone to the patient bedside and educate patients on its use. [1] Ballantyne, Jane C., and Jianren Mao. "Opioid therapy for chronic pain." *New England Journal of Medicine* 349.20 (2003): 1943–1953. [2] Shehab, Nadine, et al. "US emergency department visits for outpatient adverse drug events, 2013–2014." *JAMA* 316.20 (2016): 2115–2125.

MEASURES OF SUCCESS (DISCUSS QUALITATIVE AND/OR QUANTITATIVE METRICS WHICH WILL BE USED TO EVALUATE PROGRAM/INTERVENTION): We will follow patients discharged from the hospital who utilize our program and a control group of patients who are discharged from a similar ward who do not participate in our program. The primary outcome will be the number of high-risk patients with naloxone prescriptions on outpatient medication lists at discharge. The secondary outcomes include the number of hospital visits due to ORAE, number of naloxone teachings performed, in-hospital mortality, and all-cause mortality.

FINDINGS TO DATE (IT IS NOT SUFFICIENT TO STATE FINDINGS WILL BE DISCUSSED): The program is in the process of being implemented in our intervention arm, and findings will be discussed and disseminated as data is acquired.

KEY LESSONS FOR DISSEMINATION (WHAT CAN OTHERS TAKE AWAY FOR IMPLEMENTATION TO THEIR PRACTICE OR COMMUNITY?): We have created a model for collaboration between medical, pharmacy, and nursing staff to minimize harm from ORAE. We have identified how to leverage information in the EMR to identify patients at high-risk of ORAE. If successful, we believe this program is replicable.

A TIERED APPROACH TO TRANSITIONING YOUNG ADULTS WITH MEDICAL COMPLEXITY OR INTELLECTUAL DISABILITY TO ADULT CARE Sophia Jan[1, 2]; Caren Steinway[2]; Adam Greenberg[2]; Dava Szalda[2, 1]; Katherine Wu[2, 1]; Rebecca Kim[1]; Symme W. Trachtenberg[2]. [1]University of Pennsylvania, Philadelphia, PA; [2]Children's Hospital of Philadelphia, Philadelphia, PA. (Control ID #2708169)

STATEMENT OF PROBLEM OR QUESTION (ONE SENTENCE): For young adults with medical complexity and/or intellectual disability (ID), few care models exist to coordinate the transition of primary and specialty care, home health, medical supply, and medical decision-making needs.

OBJECTIVES OF PROGRAM/INTERVENTION (NO MORE THAN THREE OBJECTIVES): To increase the safety and coordination of pediatric to adult healthcare transfers of complex adult patients through a tiered and multi-model population-based intervention.

DESCRIPTION OF PROGRAM/INTERVENTION, INCLUDING ORGANIZATIONAL CONTEXT (E.G. INPATIENT VS. OUTPATIENT, PRACTICE OR COMMUNITY CHARACTERISTICS): Between Oct 2015 and Dec 2016, we partnered with 7 medical and surgical divisions in a free-standing children's hospital and neighboring adult medical system to identify transition champions; pilot EPIC-based clinical decision supports (CDS); develop transition guidelines; identify adult providers; and run psychoeducational workshops for patients and families. Adult patients with 2 or more specialists or ID could be referred to MINT, a multidisciplinary clinical team consisting of Med-Peds trained physician, adult nurse practitioner, social worker, and youth community health worker (Figure 1). We developed an EPIC-based CDS consisting of a Best Practice Alert and Smartset that could include transition coordination in the problem list, transition information in after visit summaries, link to medical record release & transition readiness assessments, consult social work and MINT if eligible.

MEASURES OF SUCCESS (DISCUSS QUALITATIVE AND/OR QUANTITATIVE METRICS WHICH WILL BE USED TO EVALUATE PROGRAM/INTERVENTION): Measures tracked include GotTransition's *Health Care Transition Process Measurement Tool* (*HCTPM*), process measures, feasibility and acceptability measures, transitions completed and healthcare utilization.

FINDINGS TO DATE (IT IS NOT SUFFICIENT TO STATE FINDINGS WILL BE DISCUSSED): At the start of the intervention period, scored low on HCTPM. As of Dec 2016, we identified transition champions in all partner divisions and 6 additional divisons who meet quarterly. Six of the 7 original divisions are using the CDS; 4 new divisions are testing the CDS. Two divisions have final transition policies; 4 have drafted policies. Seven psychoeducational events were held. Identified adult primary and specialty providers increased from 20 to 40. All faculty and trainees working on transition QI could receive MOC credit. Repeat HCTPM are pending. MINT received 63 consults who had a mean age of 21 years (range 17–43), median of 3 specialists (range 1–8), 70% with ID. In the 2 years prior to the MINT consult, referred patients totaled 745 ambulatory visits, 116 ED visits, and 344 hospital days. Time to consult completion ranged from 2 to 30 hours over a course of 2 weeks to 12 months. Patient and provider satisfaction scores are pending.

KEY LESSONS FOR DISSEMINATION (WHAT CAN OTHERS TAKE AWAY FOR IMPLEMENTATION TO THEIR PRACTICE OR COMMUNITY?): A tiered and multi-model population-based intervention is both feasible and acceptable to patients, families, and providers in a large free-standing children's hospitals partnering with adult hospital systems. However, transition of medically complex patients is timeconsuming and requires significant infrastructure and personnal investments.

A WHITEBOARD INITIATIVE - IMPROVING PATIENT AND MULTIDISCIPLINARY COMMUNICATION Shobha L. Rao; Roselyn Cristelle I. Mateo; Lauren Priede; Michael Drunasky. Rush University Medical Center, Chicago, IL. (Control ID #2707496)

STATEMENT OF PROBLEM OR QUESTION (ONE SENTENCE): During a needs assessment with nursing and patients, it was noted that patients are often frustrated by not knowing the goals and plans for the day.

OBJECTIVES OF PROGRAM/INTERVENTION (NO MORE THAN THREE OBJECTIVES): 1. Enhance patient/family-provider communication of patient-centered treatment plans, hospitalization goals, and discharge needs 2. Standardize the use of the whiteboard for the multidisciplinary team, while still individualizing use based on patient needs to achieve the goals of the initiative. 3. Improve HCAPS scores in the areas of nursing and physician communication

DESCRIPTION OF PROGRAM/INTERVENTION, INCLUDING ORGANIZATIONAL CONTEXT (E.G. INPATIENT VS. OUTPATIENT, PRACTICE OR COMMUNITY CHARACTERISTICS): The unit where the whiteboard initiative is being piloted is a general medicine unit, in which there are many patients with chronic illnesses who are at risk for inadequate management of their illnesses, and thus, risk for worsened health outcomes,

and readmissions. Although, physicians attempt to communicate the plan and goals, this communication is less than ideal. Nursing also finds it difficult to reiterate plans if they are not present during morning rounds, as the rounding structure at our institution is not geographical. A needs assessment was done by surveying patients/families about the use the whiteboard, if they find the information useful, if the plan of the day is communicated, do they have an idea of discharge date based on information on the board, and what specific information they would find helpful. The whiteboards were then changed to reflect these changes. Nursing and a healthcare administration student were instrumental in gathering this information. The presurvey results were analyzed at weekly meetings held with nursing, case management, and physician facilitators. Post surveys were done to evaluate the above after the initiation of the intervention, as well as HCAPS scores were reviewed for the time of the pilot.

MEASURES OF SUCCESS (DISCUSS QUALITATIVE AND/OR QUANTITATIVE METRICS WHICH WILL BE USED TO EVALUATE PROGRAM/INTERVENTION): 1. 30, 60, and 90 day audits and post-intervention surveys of patients were done to assess the goals above. 2. HCAPS scores were reviewed for the pilot's time course.

FINDINGS TO DATE (IT IS NOT SUFFICIENT TO STATE FINDINGS WILL BE DISCUSSED): Final results are still pending. However, based on post surveys and audits of the whiteboard, there has been noted improvement in patients' understanding of the plan for the day. HCAHPS scores for the individual floor were also evaluated, as this one of the goals of the initiative and over 90% improvement for the observed time period was noted in doctor communications. Overall, patient satisfaction and nursing communication also significantly improved.

KEY LESSONS FOR DISSEMINATION (WHAT CAN OTHERS TAKE AWAY FOR IMPLEMENTATION TO THEIR PRACTICE OR COMMUNITY?): We have learnt that a multidisciplinary approach is essential to improving overall communication with patient, as well as amongst the different disciplines. There has been perceived improvement in physician-nursing communication and we will be evaluating this in the future. We present here an innovative and simple approach to improving patient understanding of the plan of care and discharge goals by the utilization of a redesigned whiteboard, based on patient needs, as well improving multidisciplinary communication.

ACHIEVING GOAL BLOOD PRESSURES IN PATIENTS WITH HYPERTENSION IN AN ACADEMIC PRACTICE Penali Noticewala; Carrie Gallagher. Cleveland Clinic, Cleveland, OH. (Control ID #2703974)

STATEMENT OF PROBLEM OR QUESTION (ONE SENTENCE): Only about 60% of patients with a diagnosis of hypertension in our outpatient academic practice are at goal (defined as a BP < 140/90).

OBJECTIVES OF PROGRAM/INTERVENTION (NO MORE THAN THREE OBJECTIVES): To increase the number of at-goal hypertensive patients by 5% in 12 months through close follow-up and proactive outreach.

DESCRIPTION OF PROGRAM/INTERVENTION, INCLUDING ORGANIZATIONAL CONTEXT (E.G. INPATIENT VS. OUTPATIENT, PRACTICE OR COMMUNITY CHARACTERISTICS): Our hypertension improvement project was one site in an institute wide hypertension initiative to improve the blood pressure of patients in the outpatient internal medicine and family medicine clinics. The interventions at our academic outpatient clinic focused primarily on close follow-up of patients with an elevated blood pressure reading. We believed that patients who were scheduled close follow-up (seen again within 30 days) were more likely to achieve their goal BP. At the start of this project only about 40% of our patients had a follow-up within 30 days of their elevated BP reading. To help improve our 30 day follow-up, a "Nurse BP Visit Order" was developed. Nursing staff and medical assistants could enter this order at the time of a patient's office visit to serve as a reminder to the provider to address a patient's uncontrolled blood pressure and ensure an appropriate follow-up plan is in place. Another intervention implemented at our site to improve the 30 day follow-up was increasing access for patients to be seen. We increased the number of open slots in our nurse visit schedules, allowed use of the walk-in clinic at our site for follow-up BP checks without an appointment, and utilized our clinical pharmacists to help titrate medications. Lastly, proactive outreach was implemented. Our clinic focused primarily on patients who had an elevated blood pressure reading and no upcoming follow-up. Our nurse champion on this project would reach out to these patients either by phone or send them a message via their personalized health record encouraging them to schedule an appointment.

MEASURES OF SUCCESS (DISCUSS QUALITATIVE AND/OR QUANTITATIVE METRICS WHICH WILL BE USED TO EVALUATE PROGRAM/INTERVENTION): The measures of success we followed included the percentage of patients who had a follow-up within 30 days of an elevated blood pressure reading and the overall percentage of patients with hypertension who were at goal (BP < 140/90).

FINDINGS TO DATE (IT IS NOT SUFFICIENT TO STATE FINDINGS WILL BE DISCUSSED): Our overall blood pressure control in our patients improved from 61.3% in January 2016 to 64.8% in December 2016. We attribute this improvement to the increase in our patients with an elevated BP having a 30 day follow-up (baseline data showed us at 37% in November 2015 and it improved to 52% in October 2016) due to the interventions stated above.

KEY LESSONS FOR DISSEMINATION (WHAT CAN OTHERS TAKE AWAY FOR IMPLEMENTATION TO THEIR PRACTICE OR COMMUNITY?): This hypertension initiative was a multi-disciplinary team effort-including nurses, medical assistants, staff providers, resident providers and pharmacists. It was helpful having bi-weekly automated data provided to follow our improvements and interventions and to further encourage the practice team. Challenges for sustainability include maintaining the energy around the project, dispelling provider preconceptions regarding the need for close follow-up, and aggressive medication management especially in our elderly patients.

ACHIEVING PRODUCTIVITY EXPECTATIONS AMONG GENERAL INTERNAL MEDICINE CLINICIANS AT AN URBAN SAFETY-NET ACADEMIC MEDICAL CENTER Jason M. Worcester; Joanna D'Afflitti; Christine A. Pace; Karen E. Lasser. Boston University School of Medicine, Boston, MA. (Control ID #2705819)

STATEMENT OF PROBLEM OR QUESTION (ONE SENTENCE): Urban safety-net hospitals have not been traditionally considered settings where productivity expectations can be achieved due to patient, clinician, and health systems factors; achieving productivity expectations is essential in our ever-changing health care system and expanding underserved patient population.

OBJECTIVES OF PROGRAM/INTERVENTION (NO MORE THAN THREE OBJECTIVES): To improve clinician relative value unit (RVU)

productivity in a Section of General Internal Medicine serving an urban safety-net academic medical center.

DESCRIPTION OF PROGRAM/INTERVENTION, INCLUDING ORGANIZATIONAL CONTEXT (E.G. INPATIENT VS. OUTPATIENT, PRACTICE OR COMMUNITY CHARACTERISTICS): The intervention targeted 74 physicians and nurse practitioners in a large academic medical group based at Boston Medical Center, the largest safety-net hospital in New England. Providers deliver care in the outpatient, inpatient, or both settings. We implemented several interventions over a five-year period, from 2012–2016. The interventions included 1) clearly outlining productivity expectations; 2) distributing a monthly dashboard with RVU data, expected and actual clinical time, a summary of coding patterns, and clinical patient volume; 3) delivering semi-annual group trainings on maximizing coding; 4) providing audit and feedback of productivity data to underperforming clinicians utilizing a clinician efficiency coach; 5) promoting an overall culture change emphasizing the importance of sustainable productivity and 6) positive and negative incentives including clinical productivity bonuses and salary reductions, respectively.

MEASURES OF SUCCESS (DISCUSS QUALITATIVE AND/OR QUANTITATIVE METRICS WHICH WILL BE USED TO EVALUATE PROGRAM/INTERVENTION): We measured yearly RVU productivity rates by provider, adjusting for numbers of full time equivalents (FTEs) from 2012–2016. We excluded faculty in their first year of practice, clinicians with extended leaves, and trainees (fellows and residents) from the analysis. We also measured faculty retention/numbers of departing faculty.

FINDINGS TO DATE (IT IS NOT SUFFICIENT TO STATE FINDINGS WILL BE DISCUSSED): Clinical faculty had an 11% increase in RVU productivity over the five-year period. In 2012, clinicians produced 3774 RVUs per FTE. This increased to 3844 in 2013, 3853 in 2014, 4004 in 2015, and 4206 in 2016. Multiple severe blizzards resulted in marked reduction of clinical volume in the winter of 2015. In addition, we implemented a new electronic medical record system (EMR) in 2015. Despite these factors, RVUs continued to increase in 2015. Approximately one-third of faculty received a clinical productivity bonus every year. No faculty had a salary reduction over the five-year period. Rates of departing faculty were 7% in 2012, 11% in 2013, 5% in 2014, 3% in 2015 and 3% in 2016.

KEY LESSONS FOR DISSEMINATION (WHAT CAN OTHERS TAKE AWAY FOR IMPLEMENTATION TO THEIR PRACTICE OR COMMUNITY?): These data suggest that the interventions implemented can achieve sustainable productivity in an urban safety-net environment. Productivity increased despite forces of nature and the introduction of a new EMR. There was a transient increase in faculty attrition that could be partially explained by increased productivity pressure. Future work should examine the relationship between productivity and burnout.

ADAPTING, IMPLEMENTING, AND EVALUTATING A HEALTH SYSTEM INTERVENTION FROM KAISER PERMANENTE IN A LARGE, URBAN SAFETY-NET CLINIC.

joi lee[2, 3]; Kirsten Bibbins-Domingo[1]; Purba Chatterjee[1]; Valy Fontil[1]. [1]University of California San Francisco, San Francisco, CA; [2]University of California San Francisco, Aliso viejo, CA; [3]San Francisco State Univeristy, San Francisco, CA. (Control ID #2705890)

STATEMENT OF PROBLEM OR QUESTION (ONE SENTENCE): While an evidence-based treatment implementation intervention has proven sucessful at high-functioning, integrated health systems such as Kaiser Permanente, it is unknown whether these interventions can be adopted in safety-net health systems that may have more limited resources and socio-medically complex popopulations.

OBJECTIVES OF PROGRAM/INTERVENTION (NO MORE THAN THREE OBJECTIVES): In this project, we used rigorous implementation science approaches such as the PRECEDE-PROCEED framework to adapt an evidence-based hypertension treatment algorithm from Kaiser Permanente, implemented it in a large urban safety-net clinic, evaluate it's effect on improving hypertension control, and understand barriers and facilitators to implementation and dissemination.

DESCRIPTION OF PROGRAM/INTERVENTION, INCLUDING ORGANIZATIONAL CONTEXT (E.G. INPATIENT VS. OUTPATIENT, PRACTICE OR COMMUNITY CHARACTERISTICS): We designed a multi-component intervention including an evidence-based treatment algorithm coupled with provider training and education, and standardization of blood pressure measurement at a large primary care safety-net clinic that serve a low-income and racially diverse population in San Francisco.The treatment algorithm was adapted to account for drug formularies and affordability as well as provider preferences.

MEASURES OF SUCCESS (DISCUSS QUALITATIVE AND/OR QUANTITATIVE METRICS WHICH WILL BE USED TO EVALUATE PROGRAM/INTERVENTION): We used linear regression analyses to assess for post-intervention trends in BP control over 24 months. BP control was defined according to 2014 hypertension guidelines and measured monthly based on the most recent office BP measurement. We conducted theory-informed surveys and focus groups of providers to assess provider recpetiveness and adoption of the intervention, and identify barriers and facilitators to continued implementation and dissemination of the intervention. Survey questions also assessed providers' likelihood to recommend use of the evidence-based treatment algorithm to other providers and health systems.

FINDINGS TO DATE (IT IS NOT SUFFICIENT TO STATE FINDINGS WILL BE DISCUSSED): Implementation of the intervention led to significant improvement in BP control from 65 to 72% ($p < 0.01$) at 12 months post-intervention that was sustained at 24 months. Providers were highly receptive to the evidence-based treatment algorithm with 90% reporting frequent use, and more than 70% of them indicating they would highly recommend use of the algorithm to colleauges and other safety-net health systems. Commonly identified facilitators included a simple treatment intensification algorigthm that mimimized difficult decision-making and improved workflow efficiency. Commonly identified barriers included occasional inability to access the algorithm and challenges in using the algorithm in medically complex patients on multiple medications.They suggested easier availability of the algorithm and integrating the algorithm into a decision support tool in the elctronic health record as a strategies for scalability and dissemination.

KEY LESSONS FOR DISSEMINATION (WHAT CAN OTHERS TAKE AWAY FOR IMPLEMENTATION TO THEIR PRACTICE OR COMMUNITY?): Proven hypertension management interventions can be adopted in safety-net clinics. Having a simple, evidence-based treatment algorithms adapted for ease of use based on drug coverage and provider preferences can faciliate their adoption and effectiveness in improving hypertension control in this setting.

ADDRESSING PROVIDER BURNOUT, IMPROVING PROVIDER SATISFACTION, AND INCREASING PATIENT ACCESS THROUGH NURSE PRACTITIONER-PHYSICIAN PRIMARY CARE TEAMS

Joanna D'Afflitti[1]; Jason M. Worcester[2]; Christine A. Pace[2]; Karen E. Lasser[1]. [1]Boston Medical Center, Boston, MA; [2]Boston University School of Medicine, Boston, MA. (Control ID #2706224)

STATEMENT OF PROBLEM OR QUESTION (ONE SENTENCE): Burnout and dissatisfaction are well-documented challenges facing primary care providers (PCPs); team-based care is one potential strategy for addressing burnout, but few data support this approach.

OBJECTIVES OF PROGRAM/INTERVENTION (NO MORE THAN THREE OBJECTIVES): 1) Improve PCP satisfaction and decrease burnout by implementing team-based care involving MD-nurse practitioner (NP) partnerships; 2) Increase patient access to care by decreasing time to next appointment with a member of the care team.

DESCRIPTION OF PROGRAM/INTERVENTION, INCLUDING ORGANIZATIONAL CONTEXT (E.G. INPATIENT VS. OUTPATIENT, PRACTICE OR COMMUNITY CHARACTERISTICS): We implemented MD-NP care teams ("NP Anchor Model") in a primary care practice based at a large urban safety-net hospital, where patients present with complex social and medical issues and rates of MD burnout are higher than national averages. To address MD burnout, we created MD-NP teams using NPs as team "anchors." We used a ratio of 1 NP FTE:1.5 MD FTE per team, resulting in teams of approximately 1 NP:3MDs. Currently, we have nine NP Anchor teams (nine NPs and 28 MDs). 40% of the NP's time is protected to address between-visit care for patients that members of the team have seen. Such care includes follow-up of abnormal results, chronic disease management by phone, and outreach to patients who have complex care needs. This is the work that MDs have traditionally done between sessions and on evenings/weekends. The remaining time (60%) in the NP's schedule is allotted for clinical sessions, seeing patients on the care team for routine healthcare maintenance, chronic disease management, and urgent care visits.

MEASURES OF SUCCESS (DISCUSS QUALITATIVE AND/OR QUANTITATIVE METRICS WHICH WILL BE USED TO EVALUATE PROGRAM/INTERVENTION): Primary outcomes are NP and MD satisfaction measured through anonymous surveys sent to clinicians on NP anchor teams, and access to care measured by time to 3rd next available appointment. In the future we will measure NP and MD burnout, comparing NPs and MDs on an NP Anchor team to those not yet on a team.

FINDINGS TO DATE (IT IS NOT SUFFICIENT TO STATE FINDINGS WILL BE DISCUSSED): Prior to the creation of MD-NP care teams, the average time to 3rd next available appointment for MDs was 26.2 days. With the addition of an NP to the care team, the average time to 3rd next available appointment with a member of the care team (MD or NP) decreased to 6.6 days. 50% of NPs and MDs responded to the satisfaction survey, respectively. 72% of MDs reported that the model was very to extremely helpful in expanding patient access, and 50% reported that the model was very to extremely helpful in decreasing burden of work between visits. MDs commented: "This model provides a resource to assist with phone calls and paperwork, and importantly to provide consistent clinical access with a team member." "I love my NP Anchor and have gotten feedback that my patients do, too!" "I'm very pleased with the NP Anchor Model and feel I can trust my NP with my patients' care." All NPs agreed they had adequate time to communicate with MDs in order to perform their job well.

KEY LESSONS FOR DISSEMINATION (WHAT CAN OTHERS TAKE AWAY FOR IMPLEMENTATION TO THEIR PRACTICE OR COMMUNITY?): Data suggest that NP Anchor teams are effective in meeting patient needs (timely access to care) and in reducing between-visit workload of MDs, a known driver of physician dissatisfaction and burnout.

ADDRESSING THE BURDEN OF HEPATITIS C INFECTION IN PRIMARY CARE Kristen S. Lee[2]; Alexandra Heinz[1]; Glorimar Ruiz[1]; Leandra Battisti[1]; Alexandria Akoumianakis[1]; Karen E. Lasser[2]. [1]Boston Medical Center, Boston, MA; [2]Boston University School of Medicine, Boston, MA. (Control ID #2707828)

STATEMENT OF PROBLEM OR QUESTION (ONE SENTENCE): Achieving sustained virologic response (SVR) is possible, yet patients have difficulty accessing treatment services.

OBJECTIVES OF PROGRAM/INTERVENTION (NO MORE THAN THREE OBJECTIVES): To improve access to and retention in hepatitis C (HCV) care by launching an interdisciplinary treatment program in primary care.

DESCRIPTION OF PROGRAM/INTERVENTION, INCLUDING ORGANIZATIONAL CONTEXT (E.G. INPATIENT VS. OUTPATIENT, PRACTICE OR COMMUNITY CHARACTERISTICS): The prevalence of HCV infection among patients at Boston Medical Center (BMC) is approximately sixteen percent. We developed a HCV clinic in Adult Primary Care by training general internists to evaluate and treat HCV and creating a medical case management program. Our program includes a team of nine internists; a clinical pharmacist, a pharmacy technician, and a public health social worker. We identify patients via direct referrals from other providers, laboratory notifications, EMR billing codes, community referrals, and patient self-report. The social worker reviews charts of all identified patients and schedules them for consult with a HCV provider. Patients with co-infection (HIV or hepatitis B), chronic kidney disease, and decompensated cirrhosis are referred to specialty clinics. At the initial appointment, the provider completes a clinical evaluation and refers the patient to the social worker for a bio-psycho-social intake and health education. The social worker develops an individualized case management plan and assists the patient to navigate all HCV-related clinic appointments. If medication is prescribed, the pharmacy technician and pharmacist work on treatment approval via prior authorization and medication teaching. The pharmacist follows the patient throughout treatment to assess for adherence and side effects via phone calls and in-person appointments. The HCV provider sees the patient twelve weeks after treatment completion for determination of SVR. Patients ineligible for treatment are counseled on healthy lifestyles and recommend re-evaluation in 1–2 years.

MEASURES OF SUCCESS (DISCUSS QUALITATIVE AND/OR QUANTITATIVE METRICS WHICH WILL BE USED TO EVALUATE PROGRAM/INTERVENTION): Of the patients referred to the program, we measured the number evaluated, treated, and achieved SVR.

FINDINGS TO DATE (IT IS NOT SUFFICIENT TO STATE FINDINGS WILL BE DISCUSSED): Between March 2015 and December 2016, 522 patients were referred, 257 patients were evaluated; 118 initiated treatment, 92 completed treatment, and 54 patients confirmed SVR. Of the 118 patients who initiated treatment, 36% had advanced fibrosis (F3-F4). All patients received direct-acting antiviral agents. 99% of the patients had public insurance coverage (30% Medicare and 69% Medicaid). Many patients had coexisting psychosocial issues including mental illness, history of incarceration, substance use disorders, and homelessness.

KEY LESSONS FOR DISSEMINATION (WHAT CAN OTHERS TAKE AWAY FOR IMPLEMENTATION TO THEIR PRACTICE OR COMMUNITY?): An interdisciplinary program in Adult Primary Care led to 257 evaluations of patients with HCV and demonstrated the ability to link, engage, and retain patients in HCV care. Training internists with support of case management and pharmacy has the potential to increase the number of patients who access these services. Challenges include ensuring eligible patients complete clinical evaluations and navigating treatment eligibility as insurance coverage changes.

AN ACADEMIC COMMUNITY SCRIBE PROGRAM - PARTNERING FOR A TRIPLE WIN Alyssa Perozich[2]; Patrick Young[2]; Albert Huang[2]; Peter Chin[2]; David Verrier[3]; Maura J. McGuire[1, 2]. [1]Johns Hopkins School of Medicine, Baltimore, MD; [2]Johns Hopkins Community Physicians, Baltimore, MD; [3]Johns Hopkins University, Baltimore, MD. (Control ID #2694515)

STATEMENT OF PROBLEM OR QUESTION (ONE SENTENCE): While electronic health records (EHRs) have potential to improve medical care, physicians often struggle to attend to patients when working with EHRs that require them to accommodate the technical demands of the software in addition to the needs of patient care.

OBJECTIVES OF PROGRAM/INTERVENTION (NO MORE THAN THREE OBJECTIVES): (A) Develop a partnership between a school of medicine (SOM), a premedical advising program (PAP), and an ambulatory medical practice (AMP) to implement a scribe program. (B) Determine whether scribes increased joy of practice and other metrics for primary care physicians in the AMP.

DESCRIPTION OF PROGRAM/INTERVENTION, INCLUDING ORGANIZATIONAL CONTEXT (E.G. INPATIENT VS. OUTPATIENT, PRACTICE OR COMMUNITY CHARACTERISTICS): Our organization is part of an integrated health system that includes a SOM and AMP with more than 200 primary care physicians and 40 practices. After a previous pilot with commercially-trained scribes demonstrated improved workflow and patient satisfaction, our AMP and PAP collaborated to create an academic-community scribe training program to (1) improve joy of practice, (2) increase physician productivity and (3) enhance patient satisfaction in the AMP. A secondary goal was to develop a meaningful experience for premedical graduates planning to enroll in medical school 12–18 months after their graduation date. Physicians from the AMP were selected to participate in the pilot based on results of an interest survey and practice needs. Scribes were selected from the premedical advisee group after review of an application, resume and interview. A 3-week scribe training course was developed in collaboration with the SOM, and scribes were trained through classroom, simulation and self-paced learning.

MEASURES OF SUCCESS (DISCUSS QUALITATIVE AND/OR QUANTITATIVE METRICS WHICH WILL BE USED TO EVALUATE PROGRAM/INTERVENTION): Success was measured via quantitative measures including productivity, workflow, quality, and patient satisfaction. Qualitative measures of success included data from focus groups and surveys of scribes and physicians.

FINDINGS TO DATE (IT IS NOT SUFFICIENT TO STATE FINDINGS WILL BE DISCUSSED): 10 physicians indicated interest in working with a scribe and 6 were selected for the pilot. 128 students completed a scribe interest survey, 29 applied to the program, and 6 were selected and trained. Baseline data was collected and metrics were reviewed after 4 months. Qualitative surveys indicated that "joy of practice" increased among all physicians. With scribes, our physicians averaged 307 patients per month in 2016, and 273 patients without scribes in corresponding months of 2015, a 12.9% increase ($p = 0.0064$). Data from workflow, quality, and patient satisfaction metrics showed no significant change in the first 4 months.

KEY LESSONS FOR DISSEMINATION (WHAT CAN OTHERS TAKE AWAY FOR IMPLEMENTATION TO THEIR PRACTICE OR COMMUNITY?): Our results suggested (1) an academic-community scribe program can be developed with modest effort, and (2) physician productivity and joy of practice increased as a result of the program. We noted substantial interest from premedical students. Based on early success, we are expanding this program.

AN ENCOURAGING STORY - FEASIBILITY AND EARLY RESPONSE TO PATIENTWISDOM FOR INTEGRATING PATIENT AGENDAS AND PREFERENCES INTO CARE Kristina P. Wang; Bradley H. Crotty. Medical College of Wisconsin, Milwaukee, WI. (Control ID #2703747)

STATEMENT OF PROBLEM OR QUESTION (ONE SENTENCE): Although interventions designed to elicit comprehensive patient agendas and facilitate the clinician-patient partnership have been useful, studies have shown that clinicians and organizations often fall short of delivering truly transformative patient-centered care.

OBJECTIVES OF PROGRAM/INTERVENTION (NO MORE THAN THREE OBJECTIVES): At our academic health system, a secure, web-based tool called PatientWisdom (PW) is being piloted at five primary care sites to improve patient-centered care. In the current feasibility phase, we evaluated patient uptake and participation. We also sought to assess the ability to capture novel (not previously documented) concerns.

DESCRIPTION OF PROGRAM/INTERVENTION, INCLUDING ORGANIZATIONAL CONTEXT (E.G. INPATIENT VS. OUTPATIENT, PRACTICE OR COMMUNITY CHARACTERISTICS): PW asks outpatients to share 'stories' about themselves from a health perspective, with emphasis on their individual values, concerns, and treatment preferences. Prior to appointment, clinic staff will send secure messages introducing PW. Patients can update the agenda for each visit, thus generating a dynamic summary for clinicians. Electronic health record integration is underway.

MEASURES OF SUCCESS (DISCUSS QUALITATIVE AND/OR QUANTITATIVE METRICS WHICH WILL BE USED TO EVALUATE PROGRAM/INTERVENTION): To assess participation, we tracked: 1) the rate at which patients responded by creating accounts, and 2) the number of data entries ('stories') that patients provided. We undertook a preliminary analysis, initially focusing on anxiety, to identify if concerns that patients were voicing electronically were addressed in the electronic health record (EHR).

FINDINGS TO DATE (IT IS NOT SUFFICIENT TO STATE FINDINGS WILL BE DISCUSSED): From Aug-Nov 2016, practices sent 3,050 secure messages. Patients opened 1,277 (42%) messages, and 389 patients created accounts. The response rate was estimated at 13% overall (30% if the message was opened). Participating patients submitted a total of 2,883 'stories' about their backgrounds, preferences, and needs. Twenty-three patients shared stories with their care team that included concerns about anxiety. Most had diagnosed

anxiety disorders; two patients (9%), however, voiced concern about anxiety without the record identifying or addressing the problem. For the 21 patients with a prior diagnosis, anxiety was noted in the current problem list or past medical history only 57% of the time.

KEY LESSONS FOR DISSEMINATION (WHAT CAN OTHERS TAKE AWAY FOR IMPLEMENTATION TO THEIR PRACTICE OR COMMUNITY?): The response to this feasibility trial of PatientWisdom is encouraging for a new technology not yet fully integrated into culture and routine use. Several barriers in the current state, including no EHR integration at present, limit the ability to automatically remind and encourage patients and to seamlessly share with clinicians. Nevertheless, over 10% of patients enrolled in the portal with upcoming appointments created new accounts; once creating accounts, patients were keen on sharing data with clinicians. Efforts to make this process as seamless as possible, including EHR and patient portal integration, should boost participation. The tool already appears able to identify patient-concerns that are not in the medical chart, and to provide a more patient-centric source of data to clinicians.

AN INITIATIVE TO PROMOTE ANTIBIOTIC CITIZENSHIP ON AN INTERNAL MEDICINE TEACHING SERVICE Elizabeth Park[3]; Parimal A. Patel[4]; Renuka Gupta[2]; Jennifer I. Lee[1]; Stephanie J. Tang[5]. [1]NYP/WC, New York, NY; [2]NYPH- Weill Cornell Medical Center, NY, NY; [3]New York Presbyterian Hospital, New York, NY; [4]NewYork-Presbyterian, New York, NY; [5]New York Presbyterian Weill Cornell Internal Medicine, New York, NY. (Control ID #2700862)

STATEMENT OF PROBLEM OR QUESTION (ONE SENTENCE): Antibiotic overuse is a major driver of resistance, therefore ingraining the principles of antibiotic stewardship into physicians in training is essential.

OBJECTIVES OF PROGRAM/INTERVENTION (NO MORE THAN THREE OBJECTIVES): 1. Through our interventions, our goal is to reduce unnecessary utilization of selected broad spectrum agents by 15 and ensure that greater than 90% of patients receive antibiotic treatments consistent with institutional guidelines. 2. Through our interventions, our goal is to improve trainee confidence regarding antibiotic management.

DESCRIPTION OF PROGRAM/INTERVENTION, INCLUDING ORGANIZATIONAL CONTEXT (E.G. INPATIENT VS. OUTPATIENT, PRACTICE OR COMMUNITY CHARACTERISTICS): This pilot quality improvement initiative was implemented on three general medicine teaching services. All teams received a pocketcard of institutional antibiotic guidelines and were instructed to utilize a newly developed standardized daily documentation template including antibiotic indication, relevant culture results, length of therapy, and plan for de-escalation. One team also met twice a week with a member of the hospital Antibiotic Stewardship Program to discuss all patients receiving antibiotics. On a second team, a PharmD integrated antibiotic stewardship into daily attending rounds. Trainees were surveyed before and after their rotations to assess the impact of these interventions on their confidence in antibiotic management.

MEASURES OF SUCCESS (DISCUSS QUALITATIVE AND/OR QUANTITATIVE METRICS WHICH WILL BE USED TO EVALUATE PROGRAM/INTERVENTION): Our primary outcome measures included: 1. Antimicrobial utilization rates (defined as days of therapy per 1000 patient days), as compared to historic institutional data 2. Rate of adherence to hospital treatment guidelines for the common disease syndromes of urinary tract infections and pneumonia, as compared to historic institutional data 3. Survey before and after intervention described, focusing on confidence in antimicrobial management and practice

FINDINGS TO DATE (IT IS NOT SUFFICIENT TO STATE FINDINGS WILL BE DISCUSSED): Preliminary survey results indicate a general trend towards improved confidence. Survey scale ranged from 1 = Strongly agree to 4 = Never or 1 = Always to 4 = Never. Confidence in ability to choose an appropriate empiric antibiotic improved from mean 2.05 prior to intervention, to mean 1.82 post-intervention. Similar trends were observed in choosing dosing and interval [2.48 to 2.17], duration of therapy [2.35 to 2.30], and reassessment of antimicrobial therapy [2.10 to 1.53]. Participants' awareness of institutional treatment guidelines increased [76% to 97%] as well as utilization of the guidelines [2.28 to 2.14]. Participants also increasingly felt they had received adequate training on antimicrobial prescribing [2.54 to 2.12]. Moreover, 100% of the participants felt that stewardship rounds improved their antibiotic decision-making.

KEY LESSONS FOR DISSEMINATION (WHAT CAN OTHERS TAKE AWAY FOR IMPLEMENTATION TO THEIR PRACTICE OR COMMUNITY?): Our preliminary data suggest that participation in organized discussions regarding antibiotic practices enhanced daily documentation. Moreover, increased exposure to antibiotic guidelines enhances trainee confidence in antibiotic management. Our project highlights the importance of enlisting trainees as active collaborators in building a culture of antibiotic stewardship, a practice that can then be fostered throughout their careers.

AN INNOVATION TO IMPROVE SAFE OPIOID PRESCRIBING THROUGH THE UTILIZATION OF UNIVERSAL PRECAUTIONS AS A QUALITY METRIC FOR PRIMARY CARE. Donald Medd[1]; Rebecca Hemphill[2]; Kristen Silvia[3]; Gregg Raymond[4]; Christina Holt[5]. [1]Maine Medical Partners, Westbrook, ME; [2]Maine Medical Partners, Falmouth, ME; [3]Maine Medical Partners, Scarborough, ME; [4]Maine Medical Center, Portland, ME; [5]Maine Medical Partners, Portland, ME. (Control ID #2701042)

STATEMENT OF PROBLEM OR QUESTION (ONE SENTENCE): Variability among prescribing practices of narcotics for chronic pain existed across across the spectrum of primary care within our organization.

OBJECTIVES OF PROGRAM/INTERVENTION (NO MORE THAN THREE OBJECTIVES): Our safe opioid prescribing quality metric aimed to decrease physician variability of opiate prescribing and improve the safety of our patients receiving opiates for chronic pain.

DESCRIPTION OF PROGRAM/INTERVENTION, INCLUDING ORGANIZATIONAL CONTEXT (E.G. INPATIENT VS. OUTPATIENT, PRACTICE OR COMMUNITY CHARACTERISTICS): Maine Medical Partners (MMP) is a large multi-specialty group located in and around greater Portland, Maine; a semi-urban area with a population of roughly 250,000. MMP serves a patient population of 78,912. There are 107 physicians, and residents in training, practicing the primary care specialties of general internal medicine, medicine-pediatrics and family practice leading to a need for streamlined, evidence-based practice work flows. A guideline created in 2013 by a workgroup of MMP primary care physicians, established standardized EMR documentation for controlled substance agreements, recommended a yearly check of the state's PMP for each patient, and recommended yearly random urine drug screening. We proposed these universal precautions for all of our

patients on opiates for 90 consecutive days and proposed the precautions as a quality metric for our primary care practices with 3% of physician quality compensation tied to achieving a 10% adoption.

MEASURES OF SUCCESS (DISCUSS QUALITATIVE AND/OR QUANTITATIVE METRICS WHICH WILL BE USED TO EVALUATE PROGRAM/INTERVENTION): A data set defining individual physician patient populations meeting the 90 consecutive day opiate prescription requirement was created and placed on a group quality metric website. In 2015, physician education, data collection and MA refill workflows were piloted in one Internal Medicine practice to confirm tracking and feasibility of the metric. Our preliminary goal meant to achieve fulfillment of the three elements of the universal precautions for the narcotic prescribing bundle in 10% of the patients on opiate pain medications. A monthly retrospective chart review for each of the participating practices was performed and data returned to the individual providers and practices to provide feedback to practice managers, prescribers and the clinical teams.

FINDINGS TO DATE (IT IS NOT SUFFICIENT TO STATE FINDINGS WILL BE DISCUSSED): At the time of initiation of the project (August 2015), 1475 patients were identified as meeting the definition of chronic opiate recipients. 7% of this population met the universal precautions for narcotic prescribing quality metric. One year later (August 2016,) the number of patients receiving opiates chronically was reduced to 1133 with over half (53%) meeting the universal precautions for narcotic prescribing quality metric.

KEY LESSONS FOR DISSEMINATION (WHAT CAN OTHERS TAKE AWAY FOR IMPLEMENTATION TO THEIR PRACTICE OR COMMUNITY?): Clinical protocols for universal precautions for opiate prescribing can achieve high rates of adoption in primary care practices as part of a clinical physician quality metric. In addition, universal precautions may have the effect of reducing the number of patients receiving opiates for chronic pain.

AN INNOVATIVE TEAM-BASED CHRONIC OPIOID MANAGEMENT INITIATIVE FOR PATIENT SAFETY Julie Tishler; Deborah Blazey-Martin; Kristin Huang; Daniel Chandler; Joseph gillis; Julie Gilman. Tufts Medical Center, Newton, MA. (Control ID #2710530)

STATEMENT OF PROBLEM OR QUESTION (ONE SENTENCE): As deaths from prescription opioids have increased to 15,000 in the U.S. in 2015,[1] it has become imperative that primary care practices restructure chronic opioid management using population health strategies for patient safety. [1] Centers for Disease Control and Prevention. Prescription Opioid Overdose Data, 2016. https://www.cdc.gov/drugoverdose/data/overdose.html. Accessed 26 Dec 2016.

OBJECTIVES OF PROGRAM/INTERVENTION (NO MORE THAN THREE OBJECTIVES): 1.Identify key components of a chronic opioid management program. 2.Describe team based algorithms that support clinicians in prescribing opioids safely. 3.Recommend monitoring methods to encourage improvement in population health outcomes.

DESCRIPTION OF PROGRAM/INTERVENTION, INCLUDING ORGANIZATIONAL CONTEXT (E.G. INPATIENT VS. OUTPATIENT, PRACTICE OR COMMUNITY CHARACTERISTICS): We developed outpatient practice guidelines/algorithms for the initiation and monitoring of chronic opioid prescribing, including the use of standardized screening tools to evaluate the risk for abuse. These guidelines included a team-based approach in which high-risk patients receive social work referrals and physician assistants collaborate with primary care physicians. To facilitate these interventions and streamline care, we designed a component in our electronic health record that automates and records required monitoring activities and serves as a repository for opiate management resources.

MEASURES OF SUCCESS (DISCUSS QUALITATIVE AND/OR QUANTITATIVE METRICS WHICH WILL BE USED TO EVALUATE PROGRAM/INTERVENTION): We will measure qualitatively residents' comfort with managing chronic opiates in their patients before and after program initiation. In addition, we will quantitatively track adherence with our standard guidelines for chronic opiate management including yearly contracts, urine toxicology screens and checking the prescription monitoring program.

FINDINGS TO DATE (IT IS NOT SUFFICIENT TO STATE FINDINGS WILL BE DISCUSSED): Internal medicine residents felt more comfortable managing chronic opiates and benzodiazepines in their patients after program implementation, with an average score on a 5-point Likert scale increasing from 2.77 ($n = 44$) before to 3.06 after ($n = 32$). The percentage of patients on chronic opiates who had signed a controlled substances contract in the past year increased from 52% at baseline ($n = 551$) to 70% a year after program implementation ($n = 469$). Similarly, the percentage of patients with a urine drug screen rose from 63% to 92%, while patients who had been checked using the state prescription monitoring program checked in the past year rose from 21% to 98%.

KEY LESSONS FOR DISSEMINATION (WHAT CAN OTHERS TAKE AWAY FOR IMPLEMENTATION TO THEIR PRACTICE OR COMMUNITY?): A team-based chronic opioid management initiative was successful in increasing provider comfort with prescribing and monitoring chronic opioids. This in turn contributed to patient safety by more accurate assessment of risk, increased compliance with monitoring parameters, and improved counseling of patients. This type of comprehensive program can be replicated in other primary care settings and is ever more needed as we respond to our nation's opioid epidemic.

AN INTERDISCIPLINARY CARE COORDINATION INTERVENTION TO DECREASE PNEUMONIA READMISSION RATES IN ADULT PATIENTS IN AN URBAN ACADEMIC HOSPITAL SYSTEM John Stoeckle; Albert G. Crawford; Stephen Sigworth; Therese Narzikul; Richard Jacoby; Alexis Silverio. Thomas Jefferson University, Philadelphia, PA. (Control ID #2705994)

STATEMENT OF PROBLEM OR QUESTION (ONE SENTENCE): Readmission rates for pneumonia are a marker of quality of care, and continuous improvement is essential to avoid penalties by the Centers for Medicare and Medicaid Services Hospital Readmission Reduction Program.

OBJECTIVES OF PROGRAM/INTERVENTION (NO MORE THAN THREE OBJECTIVES): To decrease readmission rates through a structured, interdisciplinary care coordination intervention in adult patients admitted for pneumonia.

DESCRIPTION OF PROGRAM/INTERVENTION, INCLUDING ORGANIZATIONAL CONTEXT (E.G. INPATIENT VS. OUTPATIENT, PRACTICE OR COMMUNITY CHARACTERISTICS): The intervention was developed at an urban, academic, hospital system with approximately 43,000 admissions annually by a multidisciplinary team with stakeholder

involvement over the past six months. Stakeholders included hospitalist and specialty groups, nursing, case management, outpatient care coordination, and hospital administration. After a review of the literature, several evidence-based interventions were selected. Over a 12-month period, an interdisciplinary team composed of a care coordinator, pharmacist, and respiratory therapist will identify all newly admitted patients with pneumonia. Each patient will be risk-stratified using a validated LACE+ risk tool and will receive an inpatient visit from the team, including a comprehensive needs assessment, medication education, and self-management education. Comprehensive discharge planning will be performed, including ensuring the scheduling of appointments and physically providing medications prior to discharge. High risk patients will be enrolled in a novel outpatient care coordination program, where they will be assigned to a longitudinal care coordinator who will develop and update an individualized care plan over time in collaboration with the patient's providers. The highest risk patients will receive a home visit within 48 hours of discharge.

MEASURES OF SUCCESS (DISCUSS QUALITATIVE AND/OR QUANTITATIVE METRICS WHICH WILL BE USED TO EVALUATE PROGRAM/INTERVENTION): Pre- and post-intervention readmission rates will be compared; ED utilization and cost of care will additionally be compared. Specific effects of discrete care coordination actions on outcomes will be examined.

FINDINGS TO DATE (IT IS NOT SUFFICIENT TO STATE FINDINGS WILL BE DISCUSSED): The intervention is scheduled to begin in February 2017 and will run for an estimated 8–12 months; preliminary data will be available.

KEY LESSONS FOR DISSEMINATION (WHAT CAN OTHERS TAKE AWAY FOR IMPLEMENTATION TO THEIR PRACTICE OR COMMUNITY?): As the bar for readmission reduction is continually raised, we will determine whether an interdisciplinary team implementing evidence-based interventions affects readmission rates, ED utilization, and the cost of care for patients with pneumonia.

ASSESSMENT OF CAREGIVER BURDEN WITHIN AN INTEGRATED HOME BASED PRIMARY CARE PRACTICE Elisabeth L. Hill; Bruce Kinosian; Mary Ann Forciea; Olga Achildi. University of Pennsylvania, Philadelphia, PA. (Control ID #2702357)

STATEMENT OF PROBLEM OR QUESTION (ONE SENTENCE): Is there significant caregiver burden despite formal supports?

OBJECTIVES OF PROGRAM/INTERVENTION (NO MORE THAN THREE OBJECTIVES): Determine if there is significant caregiver burden despite home and community based services. Determine if there are indicators associated with an increase in burden. Identify interventions which may be beneficial within this caregiver population.

DESCRIPTION OF PROGRAM/INTERVENTION, INCLUDING ORGANIZATIONAL CONTEXT (E.G. INPATIENT VS. OUTPATIENT, PRACTICE OR COMMUNITY CHARACTERISTICS): Setting: Penn Medicine Geriatric Housecall practice, integrated with HCBS services. Providers identified caregivers appropriate for survey, which was administered during patient visits or by phone. The survey used demographic questions, combined with the validated Caregiver Self-Assessment Questionnaire (CSAQ). Three different dimensions of burden were assessed: the level of stress and burden experienced by the caregivers by the CSAQ, whether or not caregivers reported missing personal medical appointments due to caregiving responsibilities, and whether the caregiver perceived any financial strain associated with caregiving. The CSAQ has 4 different measures for significant burden, which were treated both as a single categorical threshold (any measure) and as an interval measure (number of measures positive). Demographic, diagnostic, and insurance status was determined by chart review. Caregivers were additionally asked for their preferred change to reduce caregiving stress.

MEASURES OF SUCCESS (DISCUSS QUALITATIVE AND/OR QUANTITATIVE METRICS WHICH WILL BE USED TO EVALUATE PROGRAM/INTERVENTION): Number of survey responses, prevalence of perceived burden.

FINDINGS TO DATE (IT IS NOT SUFFICIENT TO STATE FINDINGS WILL BE DISCUSSED): Of 214 patients, 122 were deemed to have caregivers appropriate for the project, of whom 58 completed the survey (47%). The majority of caregivers are middle-aged (between 50 and 64 years old) daughters of the patients. More than half (53%) of caregivers report devoting more than 8 hours/day to their patient's care. 31% of all caregivers are receiving formal community supports. Of caregivers surveyed, 60% scored positive on the CSAQ, 43% reported missing medical appointments, and 47% reported financial strain. There was no difference in burden between those with and without formal supports. Unpaid caregivers were more likely to be burdened on the CSAQ than paid caregivers (71% vs. 40%, $p = 0.02$). There was no statistical difference seen between caregivers of patients with dementia vs. without, although caregivers for patients without dementia were more likely to be positive on 3–4 measures, while caregivers for dementia patients were more likely to be positive on 1 measure. The availability of community supports did not indicate lower levels of burden. Caregivers' responses to a change to relieve stress were in four main themes: more time, more money, more family support, or more information. The project identified some 'quick wins' to improve stress and burden around providing more information for caregivers of dementia patients.

KEY LESSONS FOR DISSEMINATION (WHAT CAN OTHERS TAKE AWAY FOR IMPLEMENTATION TO THEIR PRACTICE OR COMMUNITY?): Caregiver burden for home care geriatric patients is multidimensional (stress/finances/personal health) and prevalent. Regular assessment is important, as providing formal supports can be inadequate. Assessment may yield some "quick wins" and help guide initiatives to relieve burden.

BREAKING THE CYCLE: A SUCCESSFUL INTERVENTION FOR HIGH UTILIZERS ON A GENERAL MEDICINE SERVICE Kirstin Knox; Jessica Schneider; Vicmar Gatmaitan; Todd Hecht; Neha Patel; Jennifer S. Myers. Hospital of the University of Pennsylvania, Philadelphia, PA. (Control ID #2703871)

STATEMENT OF PROBLEM OR QUESTION (ONE SENTENCE): Patients recurrently admitted to the hospital frequently experience fragmentation of care and poor health outcomes, with discontinuity between hospital admissions resulting in unnecessary testing, ineffective or inconsistent treatment plans, patient/provider frustration, and inability to address the underlying medical and psychosocial issues that drive repeat hospitalization.

OBJECTIVES OF PROGRAM/INTERVENTION (NO MORE THAN THREE OBJECTIVES): For patients with the highest inpatient utilization on our general medicine service, our objectives were to 1) increase continuity and care coordination, 2) identify and address the underlying drivers of hospital utilization, and 3) reduce unnecessary health care utilization.

DESCRIPTION OF PROGRAM/INTERVENTION, INCLUDING ORGANIZATIONAL CONTEXT (E.G. INPATIENT VS. OUTPATIENT, PRACTICE OR COMMUNITY CHARACTERISTICS): We designed and implemented a multidisciplinary intervention targeting the highest utilizers on our inpatient general medicine service. For each patient enrolled in the program, we assign an inpatient continuity team, including a hospitalist physician and nurse, to perform an in-depth review of the patient's history and healthcare utilization patterns, solicit input from outpatient providers, and engage with the patient and his/her caregivers. The patient case is then presented to a multidisciplinary high-utilizer care committee (MHUCC), including physicians (hospitalist, emergency medicine, and psychiatry), nurses, and social workers, as well as representatives from a community health worker program, home care, and risk management. Together, the continuity team and MHUCC develop a care plan for the patient that consists of 1) a succinct medical and social history, 2) guidance for future ED, inpatient, and outpatient providers, and 3) a detailed intervention plan targeting the underlying medical and psychosocial drivers of healthcare utilization. The continuity team works with the patient, outpatient providers, and subsequent admitting teams to implement these interventions and to streamline admissions; the care plan is made available to all providers via the EMR and is regularly updated by the continuity team.

MEASURES OF SUCCESS (DISCUSS QUALITATIVE AND/OR QUANTITATIVE METRICS WHICH WILL BE USED TO EVALUATE PROGRAM/INTERVENTION): The program is evaluated using inpatient utilization metrics including overall number of hospital admissions, 30-day readmissions, total hospital days, average length of stay (LOS), and associated hospital costs.

FINDINGS TO DATE (IT IS NOT SUFFICIENT TO STATE FINDINGS WILL BE DISCUSSED): Seventeen patients have been enrolled to date. In a pre/post analysis comparing the six months pre and post intervention, total admissions, 30-day readmissions, and total hospital days were reduced by 46%, 62 and 50%, respectively, with no change in average LOS ($n = 12$); total direct costs were reduced from $2,524,000 to $1,101,000 ($n = 9$). Providers describe improved consistency, decreased frustration, and in some cases, facilitation of previously delayed diagnostic or therapeutic procedures.

KEY LESSONS FOR DISSEMINATION (WHAT CAN OTHERS TAKE AWAY FOR IMPLEMENTATION TO THEIR PRACTICE OR COMMUNITY?): A multidisciplinary and highly individualized approach is essential to developing successful interventions for patients with high hospital utilization. The inclusion of a consistent nurse to support the program and provide extensive care coordination both during and between admissions is a key to success.

BUILDING PCMH MORALE AND TEAMWORK IN THE SAFETY NET DURING EMR ADOPTION

Karen J. Kim; Heather B. Schickedanz. Olive View-UCLA Medical Center, Sylmar, CA. (Control ID #2704326)

STATEMENT OF PROBLEM OR QUESTION (ONE SENTENCE): How does a safety net patient-centered medical home (PCMH) redesign workflows to successfully adapt to the rollout of a new electronic medical record (EMR)?

OBJECTIVES OF PROGRAM/INTERVENTION (NO MORE THAN THREE OBJECTIVES): 1. Apply human-centered design tools to redesign PCMH workflows. 2. Optimize and strengthen team function in the context of new EMR adoption. 3. Improve the patient and PCMH team member experience through workflow redesign.

DESCRIPTION OF PROGRAM/INTERVENTION, INCLUDING ORGANIZATIONAL CONTEXT (E.G. INPATIENT VS. OUTPATIENT, PRACTICE OR COMMUNITY CHARACTERISTICS): We implemented a collaborative, team-based redesign of PCMH workflows in a large urban clinic set in an academic safety net hospital. At baseline there was low morale with nursing staff and providers working in silos. We transformed monthly staff meetings into human-centered design sessions, engaging all team members to brainstorm and engineer a better way of working together. We built empathy and trust through "pairing and sharing" exercises and reverse role plays, used themed ideas boards to spark discussion, and "shout outs" to recognize and appreciate team members. Together we developed a set of "Golden Rules" to promote healthy team interactions. After six months of team-building, we collectively created a Values Statement to serve as the foundation for our daily work.

MEASURES OF SUCCESS (DISCUSS QUALITATIVE AND/OR QUANTITATIVE METRICS WHICH WILL BE USED TO EVALUATE PROGRAM/INTERVENTION): We evaluated the effectiveness of PCMH redesign using an anonymous survey offered online to all clinic providers and staff. The survey was administered in December, 2015 at the start of the PCMH workflow redesign process (shortly after our November 2015 EMR rollout), and again one year later in December, 2016.

FINDINGS TO DATE (IT IS NOT SUFFICIENT TO STATE FINDINGS WILL BE DISCUSSED): Pre- and post-survey results reflected positive change in PCMH team function and morale over a one-year period of redesign. Nearly all providers and staff (95%) reported that the PCMH team works together "quite effectively" or "extremely effectively," compared to 46% before the redesign. The majority (58%) of team members felt clinic workflows and work environment were improving compared to only 31% the year prior. Additionally, 73% of current PCMH team members reported they are satisfied working in our clinic (31% "strongly agree," 42% "agree").

KEY LESSONS FOR DISSEMINATION (WHAT CAN OTHERS TAKE AWAY FOR IMPLEMENTATION TO THEIR PRACTICE OR COMMUNITY?): Our PCMH team used the challenge of EMR adoption as an opportunity to redesign existing inefficient clinic workflows. Applying human-centered design tools, we innovated new ways of working together which helped improve team communication and build morale. Our successful team-building efforts have helped promote primary care transformation and organizational change at our safety net institution. Our approach to PCMH redesign can be used by other organizations seeking to creatively approach operational challenges, improve team function, and promote team member engagement and resilience.

CARE FOR PATIENTS WITH HIGH NEEDS AND HIGH COSTS: THE ROLE OF HOME VISITS

Brian C. Hilgeman; Julie L. Mitchell; Theodore MacKinney. Medical College of Wisconsin, Milwaukee, WI. (Control ID #2700596)

STATEMENT OF PROBLEM OR QUESTION (ONE SENTENCE): Clinics serving patients with high needs and high costs (HNHC) are becoming more common, but the unique role and best practices of home visiting in these programs are not clear.

OBJECTIVES OF PROGRAM/INTERVENTION (NO MORE THAN THREE OBJECTIVES): 1. Implement a structured home visiting program within a HNHC clinic at an academic health center. 2. Measure the effectiveness of a home visit program in improving patient care and lowering ED visits.

DESCRIPTION OF PROGRAM/INTERVENTION, INCLUDING ORGANIZATIONAL CONTEXT (E.G. INPATIENT VS. OUTPATIENT, PRACTICE OR COMMUNITY CHARACTERISTICS): The MCW Enhanced Care Program is a new clinic serving HNHC patients within our internal Medicine clinic. We provide multi-disciplinary, coordinated care (primary care, social work, case management, and behavioral health) for HNHC patients defined by a high risk score. Elements in our risk score include chronic medical and mental health conditions, ED use, admissions, Medicaid enrollment, and age. We currently serve 27 patients and plan to serve 200. Our patients are mostly African American (89%) and female (69%), have an average age of 54 years (range 20–89), and averaged 5 ED visits and 4 hospitalizations over the past year. After at least one clinic appointment, we completed home visits as needed, based on the physician's clinical judgment.

MEASURES OF SUCCESS (DISCUSS QUALITATIVE AND/OR QUANTITATIVE METRICS WHICH WILL BE USED TO EVALUATE PROGRAM/INTERVENTION): We assessed whether or not each home visit allowed for the collection of information that would not otherwise be collected in an office visit. We categorized the information into social needs, physical environment, self-management barriers, and medication reconciliation and adherence topics. We also recorded whether or not the visit prevented an ED visit and whether or not the patient could have made a timely clinic visit instead of the home visit. Qualitative data were tallied based on the independent judgment of two internists.

FINDINGS TO DATE (IT IS NOT SUFFICIENT TO STATE FINDINGS WILL BE DISCUSSED): We completed 12 home visits on 33% of our enrolled patients. Home visits newly identified medication errors (58%), physical environment concerns (92%), self-management barriers (75%), and social needs (67%). Social needs included personal care assistance, insurance, and transportation issues. 50% of the visits occurred when the patients could not visit the clinic, due either to a physical disability or an acute health issue. 25% of the visits prevented an ED visit; all of these were acute visits.

KEY LESSONS FOR DISSEMINATION (WHAT CAN OTHERS TAKE AWAY FOR IMPLEMENTATION TO THEIR PRACTICE OR COMMUNITY?): 1. Home visiting in a HNHC clinic serves an important role and can identify needs that would otherwise not be discovered in the office. 2. Scheduled home visits should be multi-disciplinary (involving social work and medical) and structured to investigate specific needs that may not be apparent in an office visit including medications, physical environment, self-management needs, and social needs. 3. Home visits can help the care management team and patient prioritize future care directions. 4. Acute visits serve a need to prevent emergency room visits but require considerable flexibility on behalf of the providers and clinic. 5. Home visits provide a unique benefit of connecting and assessing competence of home based caregivers and developing trust with our patients.

CLEVELAND CLINIC'S INTERNAL MEDICINE & GERIATRICS QUALITY IMPROVEMENT TRAINING PROGRAM Nirav Vakharia[1,2]; Andrea L. Sikon[2]. [1]Cleveland Clinic, Shaker Hts, OH; [2]Cleveland Clinic, Cleveland, OH. (Control ID #2706911)

STATEMENT OF OF PROBLEM OR QUESTION (**ONE SENTENCE**): The Cleveland Clinic Department of Internal Medicine & Geriatrics is working to engage every caregiver to drive improvements every day. We have found that while our caregivers have great desire to improve the quality of care, frequently they lack key quality improvement (QI) skills and are thus limited in their ability to improve care delivery processes.

OBJECTIVES OF PROGRAM/INTERVENTION (NO MORE THAN THREE OBJECTIVES): 1. Address the *capability* gap for QI in a sustainable manner by combining learning with application to a real clinical problem 2. Address the *capacity* gap for quality improvement by promoting team work and providing a structured curriculum

DESCRIPTION OF PROGRAM/INTERVENTION, INCLUDING ORGANIZATIONAL CONTEXT (E.G. INPATIENT VS. OUTPATIENT, PRACTICE OR COMMUNITY CHARACTERISTICS): Our QI Training Program effectively integrated the academic medicine mission areas of education, scholarship, and clinical care by linking experiential learning and application to a real clinical problem with a resultant project poster. In this program interdisciplinary team members applied quality improvement skills within our Department - a busy primary care practice at the Main Campus, an urban health center in East Cleveland & a consultative Geriatrics Center. During the 12 weekly classroom sessions delivered by a department physician and Continuous Improvement expert, activities, group work and peer coaching were used to illustrate key concepts and tools. Every week teams were assigned homework requiring them to apply the concepts learned in class to their projects with help from coaches. At the end of the 12-week program the teams presented their work to the sponsors and organizational leaders. Program outcomes included not only learning but also improvements in clinical issues such as cognitive screening in the elderly, greater efficiency in communication of test results, greater efficiency in referral scheduling, etc. The program was run five times between January 2013 and December 2015, and successful teams were encouraged to submit their work nationally for poster presentation.

MEASURES OF SUCCESS (DISCUSS QUALITATIVE AND/OR QUANTITATIVE METRICS WHICH WILL BE USED TO EVALUATE PROGRAM/INTERVENTION): Learner: Self-rated comfort with QI skills (pre- and post-rating), QI Knowledge Assessment Test, and overall rating of the program. Projects: % of teams/projects that reported out at the end of the program, % that met goal by the end, % sustained at 1 year

FINDINGS TO DATE (IT IS NOT SUFFICIENT TO STATE FINDINGS WILL BE DISCUSSED): Learner: 62 graduates, 70% completed the pre- and post-course assessments, showing: − 31% improvement in self-rated comfort with QI - 35% improvement in QIKAT scores, − 9.0/10 rating for the program. Projects: − All 18 projects that started reported out at the end of the program - 14 of 18 met their project goal - 12 were successfully sustained at 1 year

KEY LESSONS FOR DISSEMINATION (WHAT CAN OTHERS TAKE AWAY FOR IMPLEMENTATION TO THEIR PRACTICE OR COMMUNITY?): Interdisciplinary approach increases likelihood of success and bypasses traditional hierarchies. Formally orienting leaders to effective project sponsorship promotes team success. A formal report at the end keeps team attention throughout the program. Project scoping and selection critical to get some results by the end. Project coaching: defining and standardizing the coaching approach is an ongoing effort.

CO-MANAGEMENT OF DIABETICS BY GENERAL INTERNISTS WORKING WITH BEHAVIORAL HEALTH COUNSELORS IMPROVES DIABETIC CARE IN A SAFETY NET CLINIC Carolyn F. Pedley[3]; Melanie Martin[2]; Feben Girma[1]; Karen Maynard[2]; Robert Jones[2]; Billie Cole[2]. [1]Wake Forest Baptist Medical Center, Winston-Salem, NC; [2]Wake Forest University, Greensboro, NC; [3]Wake Forest, Winston-Salem, NC. (Control ID #2707021)

STATEMENT OF PROBLEM OR QUESTION (ONE SENTENCE): Diabetes in adults with poor financial resources has a high incidence of depression which impedes the management of this complex disorder

OBJECTIVES OF PROGRAM/INTERVENTION (NO MORE THAN THREE OBJECTIVES): Shared clinic visits with behavioral health counselors and general internists work to address the underlying depression and manage the diabetes to improve medication adherence, control of diabetes and improvement of depression scores in these patients.

DESCRIPTION OF PROGRAM/INTERVENTION, INCLUDING ORGANIZATIONAL CONTEXT (E.G. INPATIENT VS. OUTPATIENT, PRACTICE OR COMMUNITY CHARACTERISTICS): Two behavioral health counselors (BHC) were employed in a general medicine practice which serves as a safety net clinic for those with poor economic resources. A PHQ9 test was performed at the time of intake to define if the patient was suffering from significant depression. If the score was greater than 5 one of the counselors was notified and brought into the visit with the patient. Measures of diabetic control were taken before the intervention by the BHC in patients identified as being diabetic. These patients were tracked and seen in followup by the BHC as deemed necessary. PHQ9 testing was performed at each subsequent visit to track the level of depression and the HgbA1C was tested at regular intervals. Measures of medication adherence were obtained by patient report and refill intervals.

MEASURES OF SUCCESS (DISCUSS QUALITATIVE AND/OR QUANTITATIVE METRICS WHICH WILL BE USED TO EVALUATE PROGRAM/INTERVENTION): 1. Improvements in the PHQ9 scores 2. Improvements in HgbA1C levels 3. Improved medication adherence

FINDINGS TO DATE (IT IS NOT SUFFICIENT TO STATE FINDINGS WILL BE DISCUSSED): The co-management of adult diabetics in a safety net clinic by behavioral health counselors working with internists significantly improved the PHQ9 scores, HgbA1C levels and medication adherence.

KEY LESSONS FOR DISSEMINATION (WHAT CAN OTHERS TAKE AWAY FOR IMPLEMENTATION TO THEIR PRACTICE OR COMMUNITY?): Co-management of diabetics with significant depression by behavioral health counselors and general internists has a greater chance of success in improving parameters for both these conditions. It is important to recognize that underlying mental illness adversely impacts chronic diseases such as diabetes and needs to be directly addressed.

CREATING AN EFFECTIVE SYSTEM TO IDENTIFY AND TREAT ANXIETY IN THE CLINIC Kevin Z. Kinlaw[1]; Diane Dolan-Soto[1]; Sharon Eshet[2]; Amy Weil[1]. [1]University of North Carolina, Chapel Hill NC, NC; [2]UNC Chapel Hill School of Medicine, Chapel Hill, NC. (Control ID #2705765)

STATEMENT OF PROBLEM OR QUESTION (ONE SENTENCE): Does use of the GAD-7 questionnaire in conjunction with an evidence-based treatment algorithm increase identification and successful treatment of anxiety?

OBJECTIVES OF PROGRAM/INTERVENTION (NO MORE THAN THREE OBJECTIVES): Identify patients with anxiety and improve the treatment they receive. Assess adherence to the algorithm and identify areas for improvement. Reduce long-term use of benzodiazepines for anxiety management.

DESCRIPTION OF PROGRAM/INTERVENTION, INCLUDING ORGANIZATIONAL CONTEXT (E.G. INPATIENT VS. OUTPATIENT, PRACTICE OR COMMUNITY CHARACTERISTICS): The program was conducted in an academic, general internal medicine clinic that sees 12,000 complex patients from across North Carolina annually. An evidence-based treatment algorithm and suggested medication list were created and vetted with providers via departmental meetings and disseminated to providers via two case-based resident education sessions. Copies of the GAD-7, the treatment algorithm and the medication list were available online and placed in the physician workrooms. The GAD-7 questionnaire was used as an assessment tool. We performed several iterative PDSA chart reviews of selected patients who scored >9 on the GAD-7 (at least moderate anxiety).

MEASURES OF SUCCESS (DISCUSS QUALITATIVE AND/OR QUANTITATIVE METRICS WHICH WILL BE USED TO EVALUATE PROGRAM/INTERVENTION): To assess adherence to the algorithm, we reviewed charts to determine if newly diagnosed patients, severe anxiety patients (GAD-7 > 14) or patients started on a new medication were asked to follow-up in 4–6 weeks. We considered an improvement in anxiety treatment to be a decrease of at least 5 points on the GAD-7. We also analyzed medication regimens, referrals to counseling, and referrals to psychiatry. To analyze benzodiazepine use, we reviewed patients receiving benzodiazepines for anxiety to see if they were tapered, prescribed only for breakthrough anxiety or prescribed chronically.

FINDINGS TO DATE (IT IS NOT SUFFICIENT TO STATE FINDINGS WILL BE DISCUSSED): The prevalence of anxiety in our clinic population over a 3 month period was approximately 10%–at the low end of national prevalence. In a random subset of 55 patients followed over 11 months, we excluded 10 who had anxiety medications managed by an outside provider. 25 of the remaining 45 patients had more than 1 follow-up appointment. Of those 25 patients, 15 had a decrease of greater than 5 points in their GAD-7. 10/45 patients received benzodiazepines at some point over the 11 months. 4 were weaned off, 3 were only temporary, and for 3 patients they were chronically prescribed. 37/45 had appropriate follow-up time horizons requested. Patients who saw the same provider twice in a row within 3 months were 29% more likely to have anxiety addressed at the follow-up appointment and 53% more likely to have a GAD-7 score documented.

KEY LESSONS FOR DISSEMINATION (WHAT CAN OTHERS TAKE AWAY FOR IMPLEMENTATION TO THEIR PRACTICE OR COMMUNITY?): Through the use of an evidence-based algorithm and medication guide in conjunction with educational sessions for staff, patients with anxiety can be identified and treated. Particularly for patients that have multiple follow-up visits, there can be significant improvement in their anxiety.

CROWDSOURCING OPPORTUNITIES TO IMPLEMENT NUDGES TO IMPROVE THE VALUE OF CARE DELIVERED TO PATIENTS Gregory Kurtzman[2]; Rebecca Kim[2]; Mitesh Patel[1]. [1]University of Pennsylvania, New York, NY; [2]University of Pennsylvania, Philadelphia, PA. (Control ID #2698738)

STATEMENT OF PROBLEM OR QUESTION (ONE SENTENCE): How can we engage members of a health system community to generate actionable ideas for behavioral interventions to improve the value of care delivered to patients?

OBJECTIVES OF PROGRAM/INTERVENTION (NO MORE THAN THREE OBJECTIVES): In this study, we evaluated submissions from a health system-wide innovation tournament launched by the Penn Medicine Nudge Unit to identify opportunities to use nudges, changes in the way choices are presented or framed that can influence medical decision-making, to improve the value of care delivered to patients. Our objective was to identify themes and types of nudges proposed in the submissions.

DESCRIPTION OF PROGRAM/INTERVENTION, INCLUDING ORGANIZATIONAL CONTEXT (E.G. INPATIENT VS. OUTPATIENT, PRACTICE OR COMMUNITY CHARACTERISTICS): During three weeks in May 2016, members of the University of Pennsylvania Health System were invited by email to participate in an innovation tournament to generate ideas to use nudges to improve care delivery or patient outcomes. Individuals could submit a problem, solution, or both. A description of nudge theory and examples of previously implemented nudges were provided. To encourage participation, a drawing for an Apple Watch was offered to respondents, and finalists could select from prizes valued near $100.

MEASURES OF SUCCESS (DISCUSS QUALITATIVE AND/OR QUANTITATIVE METRICS WHICH WILL BE USED TO EVALUATE PROGRAM/INTERVENTION): Respondents identified their submission as reducing low-value care, increasing high-value care, improving care coordination, or other. Submissions were analyzed using grounded theory by two reviewers, which allows themes to arise from the responses themselves, and kappa scores were calculated for inter-rater reliability. Proposed solutions were coded by nudge method using the Nuffield Intervention Ladder.

FINDINGS TO DATE (IT IS NOT SUFFICIENT TO STATE FINDINGS WILL BE DISCUSSED): There were 225 submissions identified as improving care coordination (46%), increasing high-value care (29%), reducing low-value care (12%), and other opportunities (13%). The most common themes identified from grounded theory are as follows: improving employee or patient satisfaction (32.9%), increasing usage of technology (29.3%), and optimizing transitions of care (28.4%). The mean of the kappa scores was 0.65 (SD: 0.11; range 0.48 - 0.78). There were 204 individuals who included a potential solution with their submission, and 77% of them stated interest in helping with implementation. The following is the distribution of potential solutions by nudge method: provide information (36%), enable choice (27%), change defaults (23%), provide incentives (7%), provide disincentives (1%), restrict choice (2%), and eliminate choice (4%).

KEY LESSONS FOR DISSEMINATION (WHAT CAN OTHERS TAKE AWAY FOR IMPLEMENTATION TO THEIR PRACTICE OR COMMUNITY?): Our findings demonstrate the potential to use innovations tournaments to identify opportunities to implement interventions to improve health care value. A diverse array of areas to address were identified by members of the health system. While more than 90% of submissions included potential solutions, many of them were lower on the intervention ladder, such as providing reminders or alerts. Nudges higher on the ladder could be more effective and cause less disruption to workflow. This finding indicates that while the tournament could be used to identify ideas, additional guidance from behavioral scientists may be needed for appropriate intervention design.

DEMONSTRATING GRIT FOR IMPLEMENTING HEALTH COACHING IN A LOW RESOURCE ACADEMIC PRIMARY CARE CENTER THROUGH THE USE OF MEDICAL STUDENT VOLUNTEERS: MEDICAL STUDENT EXPERIENCES PROVIDING TELEPHONE HEALTH COACHING FOR WEIGHT LOSS PROVIDES EDUCATIONAL BENEFIT WHILE SUPPORTING PATIENT SELF-MANAGEMENT SKILLS Stacie Schmidt. Emory University, Atlanta, GA. (Control ID #2671706)

STATEMENT OF PROBLEM OR QUESTION (ONE SENTENCE): In an academic primary care setting caring for low-income patients, we wanted to determine whether health coaching for weight loss by medical students could (1) be achieved by interested medical students and (2) be considered a valuable educational experience.

OBJECTIVES OF PROGRAM/INTERVENTION (NO MORE THAN THREE OBJECTIVES): 1. Develop and implement a tool for medical students to conduct telephone health coaching for goal setting and weight loss with low-income, obese patients, in a manner that offloads primary care physicians. 2. Assess medical student experiences and perceptions in performing telephone health coaching on a voluntary basis.

DESCRIPTION OF PROGRAM/INTERVENTION, INCLUDING ORGANIZATIONAL CONTEXT (E.G. INPATIENT VS. OUTPATIENT, PRACTICE OR COMMUNITY CHARACTERISTICS): The Grady Primary Care Center (PCC) is an urban outpatient clinic located in Atlanta, Georgia with ~70,000 visits annually. Most patients have low-literacy and are uninsured. Approximately 60% are obese, and many have multiple related comorbidities. Due to time constraints and lack of provider knowledge, little time is spent empowering patients to make healthy choices related to diet and exercise. Thus, healthy behaviors are taught through weekly classes focused on helping patients set individual goals related to making healthy choices around diet and exercise. Given that many of our patients only attend 1–3 classes, we sought to implement telephone outreach to assess progress towards goals, using online forms cotaining open-ended questions and free text answers.

MEASURES OF SUCCESS (DISCUSS QUALITATIVE AND/OR QUANTITATIVE METRICS WHICH WILL BE USED TO EVALUATE PROGRAM/INTERVENTION): Students provided a one-page written reflection upon completion of their experience, outlining key themes they identified.

FINDINGS TO DATE (IT IS NOT SUFFICIENT TO STATE FINDINGS WILL BE DISCUSSED): Through written and verbal feedback, medical students identified key themes regarding their experience. They identified that telephone health coaching seemed to work well when implemented for patients who had vested interest in weight loss, demonstrated by having attended at least one Healthy Living Group Class at our Primary Care Center. Students also noted that calling the same cohort of patients each week to follow-up on goals provided continuity and rapport for both student and patient. Students found that taking notes on discussion points, even if unrelated to the patient's dietary or exercise goal, also established rapport. Also, keeping the conversation on track and limiting the calls to 5–10 min made the conversation seem less burdensome to patients. All students who participated in the initiative voiced that the experience provided them the opportunity to hone their communication skills with patients, and gave them a greater appreciation for difficulties faced by patients with chronic diseases.

KEY LESSONS FOR DISSEMINATION (WHAT CAN OTHERS TAKE AWAY FOR IMPLEMENTATION TO THEIR PRACTICE OR

COMMUNITY?): In an under-resourced urban outpatient clinic serving low-income, low-literacy patients, telephone health coaching as a volunteer experience by medical students enhances their appreciation of the patient experience while allowing opportunities to practice patient-centered doctor communication as it relates to setting goals for weight loss.

DEPLOYING A REAL-TIME PATIENT FEEDBACK TOOL FOR PRIMARY CARE UNDER POPULATION HEALTH MANAGEMENT

Stella Safo; Natalie Privett; Michael Escosia; Anna Stapleton; Bruno Silva. Mount Sinai Health System, New York, NY. (Control ID #2705004)

STATEMENT OF PROBLEM OR QUESTION (ONE SENTENCE): How can patient feedback be incorporated into practice operations in real-time?

OBJECTIVES OF PROGRAM/INTERVENTION (NO MORE THAN THREE OBJECTIVES): 1. To show an urban primary care practice that patient feedback can be obtained and reported to staff in real-time. 2. To learn the best mechanism for staff engagement around incorporating patient feedback into clinical and operatoinal workflows.

DESCRIPTION OF PROGRAM/INTERVENTION, INCLUDING ORGANIZATIONAL CONTEXT (E.G. INPATIENT VS. OUTPATIENT, PRACTICE OR COMMUNITY CHARACTERISTICS): Population health management requires health systems to approach patient care in a novel manner. Patient feedback is fundamental to improving patient experience, however feedback is often provided to practices a few weeks or months from the time of collection. To address this gap, the multidisciplinary Health System Design (HSD) team at Mount Sinai Health System team used the core competencies of interaction design and process engineering as well as clinician insights to create a "Real-Time Patient Feedback Tool" that will impact practice operations. At a large, urban academic medical center in New York City, the HSD team conducted field observations of four outpatient primary care practices to define the current state of patient feedback, identify user needs of both patients and practice staff related to feedback, and examine current pain points in collecting and utilizing feedback. Insights derived from these observations of patient and staff informed the development of a "Real-Time Patient Feedback Tool." The Feedback Tool was then rapidly prototyped and deployed for testing at a busy, urban primary care practice. Principles of process engineering were used to develop procedures for engaging patients, collecting feedback, and disseminating feedback to the staff in a timely manner.

MEASURES OF SUCCESS (DISCUSS QUALITATIVE AND/OR QUANTITATIVE METRICS WHICH WILL BE USED TO EVALUATE PROGRAM/INTERVENTION): The Feedback Tool is being developed into an application for easy dissemination. Once completed, it will be piloted at an 18,000-member practice and a pre and post test will be administered to evaluate impact. In addition, qualitative interviews will be administered to staff and patients.

FINDINGS TO DATE (IT IS NOT SUFFICIENT TO STATE FINDINGS WILL BE DISCUSSED): Initial field observation and ethnographic interviews revealed five priorities for the Feedback Tool: engaging patients to provide feedback; relaying feedback to practice leadership in real time; making feedback available to all p staff; generating feedback on all points of patient care; and empowering practice leadership to take action in response to feedback. The Tool was designed to meet these five criteria and was developed as a six-question survey completed at check-out. Results were immediately available to the practice administrator, who could then convey these to other staff. Now that the Tool is developed, current iterations will examine how its real-time feature allows for patient insights to be proactively collected and incorporated into short- and long-term strategic and operational decisions of practice leadership.

KEY LESSONS FOR DISSEMINATION (WHAT CAN OTHERS TAKE AWAY FOR IMPLEMENTATION TO THEIR PRACTICE OR COMMUNITY?): 1. Principles of interaction design and process engineering were effective to produce a tool providing real-time feedback to practice staff. 2. Future work is needed to measure the impact of real-time feedback on staff workflows.

DESIGNING DASHBOARDS TO ENHANCE RESIDENT LEARNING AND PRACTICE IN POPULATION HEALTH

Gail Berkenblit. Johns Hopkins, Baltimore, MD. (Control ID #2708312)

STATEMENT OF PROBLEM OR QUESTION (ONE SENTENCE): The ACGME requires "evaluation of performance data for each resident's continuity panel of patients relating to both chronic disease management and preventive health care", yet ambulatory care dashboards, if available at all, fail to meet resident specific training needs.

OBJECTIVES OF PROGRAM/INTERVENTION (NO MORE THAN THREE OBJECTIVES): We sought to design a dashboard to aggregate and display performance measures for resident outpatient care in an instructive and meaningful way for trainees to learn and manage population health.

DESCRIPTION OF PROGRAM/INTERVENTION, INCLUDING ORGANIZATIONAL CONTEXT (E.G. INPATIENT VS. OUTPATIENT, PRACTICE OR COMMUNITY CHARACTERISTICS): We devised two focus groups, one comprised of key clinical faculty and one comprised of residents to determine priorities for dashboard design, metrics, and display. Focus groups were led by an independent IT consultant to identify priorities for each group.

MEASURES OF SUCCESS (DISCUSS QUALITATIVE AND/OR QUANTITATIVE METRICS WHICH WILL BE USED TO EVALUATE PROGRAM/INTERVENTION): In this stage of the project, identification of stakeholder priorities and completion of the dashboard representing a combination of the features desired by faculty and residents is the main outcome. We will demonstrate each of the features as it relates to the input from the focus groups.

FINDINGS TO DATE (IT IS NOT SUFFICIENT TO STATE FINDINGS WILL BE DISCUSSED): Both the faculty and resident focus groups prioritized accessibility, accuracy in attributing patients, appropriate comparator groups, and having metrics be actionable with ability to drill down into individual patient data. Faculty and residents differed in preferences for certain areas. Faculty were more interested in having fewer, selective, evidence based metrics while residents were in favor of having more comprehensive metrics covering more areas of preventive health. While faculty prioritized having comparator groups by clinic site and PGY year in addition to national benchmarks, residents desired comparator data from other residency programs nationwide. Faculty felt strongly that the comparator information within the program should be de-identified, while residents were more ambiguous about anonymity, at least within the focus group setting. Among options for including message boards within the dashboard, faculty wanted to use these for communicating administrative data for the clinic as well as educational links

related to population health. Residents were more interested in using message boards for peer-to-peer discussions. Finally, while faculty saw the dashboard as a catalyst for QI, residents strongly prioritized dashboard features to enhance safety in clinic. This led to the implementation of features such as metrics tracking of orders and referrals and admissions/ED visits. The resident dashboard is now being implemented and future studeies will include resident satisfaction with performance measures as well as change in key perfoamrnce measures.

KEY LESSONS FOR DISSEMINATION (WHAT CAN OTHERS TAKE AWAY FOR IMPLEMENTATION TO THEIR PRACTICE OR COMMUNITY?): This project highlights key aspects of the dashboard design process including stakeholder involvement as well as content and components to consider. Others wil be able to assess and build upon our features to optimize their own resident dashboard.

DEVELOPMENT OF AN ATRIAL FIBRILLATION SHARED DECISION-MAKING TOOL (AFSDM)

Mark H. Eckman; Ruth E. Wise; Alexandru Costea; Mehran Attari; Jitender Munjal; Robert Ireton; Peter Baker; Carol Knochelmann; Matthew L. Flaherty; Anthony C. Leonard; Brett M. Harnett; Dylan Steen; John Kues. University of Cincinnati, Cincinnati, OH. (Control ID #2697099)

STATEMENT OF PROBLEM OR QUESTION (ONE SENTENCE): Appropriate thromboprophylaxis for patients with atrial fibrillation (AF) remains a national challenge characterized by both underutilization and at times inappropriate usage of oral anticoagulant therapy.

OBJECTIVES OF PROGRAM/INTERVENTION (NO MORE THAN THREE OBJECTIVES): 1) develop an AF Shared Decision-Making tool; 2) implement use of this tool within a user friendly decision making process that integrates patient education and informed decision making with well communicated results and treatment recommendations; 3) evaluate the impact of this shared decision making interaction on the quality of decision making and patient knowledge.

DESCRIPTION OF PROGRAM/INTERVENTION, INCLUDING ORGANIZATIONAL CONTEXT (E.G. INPATIENT VS. OUTPATIENT, PRACTICE OR COMMUNITY CHARACTERISTICS): We developed the AFSDM to support cardiologists during a shared decision-making encounter in the outpatient setting of an academic medical center. The tool generates patient-specific recommendations for thromboprophylaxis based upon risk factor profiles for stroke and major bleeding, and an assessment of personal values and preferences for relevant health outcomes. Patients participate in two visits. At the first visit, baseline surveys are administered to evaluate measures of confidence, comfort, and satisfaction with their current treatment decision, and knowledge about their personal risk of AF-related stroke and major bleeding. A second appointment is scheduled within 3 months for a shared decision-making visit. During that visit, patients' utilities for relevant health outcomes are assessed. Preference values along with clinical and laboratory information automatically extracted from an AF datamart in our electronic health record are used by the AFSDM to generate patient-specific predictions of quality-adjusted life expectancy for strategies including: no antithrombotic therapy, aspirin, warfarin, apixaban, dabigatran, rivaroxaban, and edoxaban. The computational engine of the AFSDM is a 29-state Markov decision model. The same surveys are completed following the second visit.

MEASURES OF SUCCESS (DISCUSS QUALITATIVE AND/OR QUANTITATIVE METRICS WHICH WILL BE USED TO EVALUATE PROGRAM/INTERVENTION): Outcome measures include decisional conflict, confidence in decision scale, decision self-efficacy, satisfaction with decision scale, Kim Alliance Scale, desire to participate scale, general knowledge about AF (risks and benefits of therapy), patient-specific knowledge about personal risk profile, and anticoagulant medication adherence.

FINDINGS TO DATE (IT IS NOT SUFFICIENT TO STATE FINDINGS WILL BE DISCUSSED): Planned enrollment is 65 patients. To date, 20 patients have completed the second visit. Qualitative feedback from both patients and physicians has been extremely positive, with robust discussions frequently ensuing. Among these 20 patients average scores for decisional conflict decreased (42 to 11, $p < 0.001$), satisfaction with decision and knowledge both increased (4.0 to 4.6, $p < 0.001$) and (8.6 to 9.5, $p = 0.003$), respectively, following the shared decision-making visit.

KEY LESSONS FOR DISSEMINATION (WHAT CAN OTHERS TAKE AWAY FOR IMPLEMENTATION TO THEIR PRACTICE OR COMMUNITY?): Shared decision-making visits between cardiologists and their AF patients, facilitated by an AFSDM that engages patients and provides personalized recommendations can reduce decisional conflict, increase disease specific knowledge, and increase patient satisfaction with the decision-making process.

DEVELOPMENT OF ELECTRONIC SUPPORT TOOLS TO FACILITATE COUNSELING FOR UNHEALTHY ALCOHOL USE IN AN ACADEMIC GENERAL MEDICINE PRACTICE

Scott W. Rose[2]; Shana Ratner[1]; Colleen Barclay[3]; Bailey Minish[1]; Daniel Jonas[1, 3]. [1]UNC Chapel Hill, Chapel Hill, NC; [2]University of North Carolina, Durham, NC; [3]University of North Carolina at Chapel Hill, Carrboro, NC. (Control ID #2707379)

STATEMENT OF PROBLEM OR QUESTION (ONE SENTENCE): Recommended behavioral interventions for patients with unhealthy alcohol use may not be offered in primary care due to competing demands, provider discomfort, and lack of well-organized support tools to deliver counseling.

OBJECTIVES OF PROGRAM/INTERVENTION (NO MORE THAN THREE OBJECTIVES): We aimed to utilize new EHR capabilities to create structured support tools for providers in the form of templates quickly generated within the EHR by typing quick shortcuts ("documentation tools") to increase rates of evidence-based counseling and improve documentation.

DESCRIPTION OF PROGRAM/INTERVENTION, INCLUDING ORGANIZATIONAL CONTEXT (E.G. INPATIENT VS. OUTPATIENT, PRACTICE OR COMMUNITY CHARACTERISTICS): The UNC Internal Medicine clinic is a large practice with over 90 providers. Our multidisciplinary quality improvement team, including faculty and resident providers, nurses, a patient representative, and a social worker, have been developing standard work protocols for screening and delivering appropriate interventions for unhealthy alcohol use. The clinic previously used paper-based resources. After feedback from providers, we concluded that these resources would preferably be updated and incorporated into the new EHR. Beginning in September 2016, we developed and then disseminated a series of four documentation tools to facilitate multi-visit evidence-based counseling interventions for patients with risky drinking behaviors identified by screening. These include an initial visit tool and 2 follow-up visit tools (following a motivational

interviewing approach and the 5 A's approach: assess, advise, assist, agree, and arrange follow up), and a visit summary documentation tool that includes patient information, resources, and a drinking diary. In the development of the documentation tools we used small tests of change to refine the processes and content, including provider feedback, revisions, and resident training in their use.

MEASURES OF SUCCESS (DISCUSS QUALITATIVE AND/OR QUANTITATIVE METRICS WHICH WILL BE USED TO EVALUATE PROGRAM/INTERVENTION): The main outcome is how often providers use the documentation tools for eligible patients. Other outcomes will include qualitative assessment through surveys of providers to assess comfort with using the tools, barriers to using them, and provider satisfaction.

FINDINGS TO DATE (IT IS NOT SUFFICIENT TO STATE FINDINGS WILL BE DISCUSSED): Among the 88 patients eligible for behavioral counseling over the initial 2 months since releasing the phrases, 5 (5%) were offered counseling by providers documented with the documentation tools. The initial visit tool was used 3 times. Providers used the visit summary tool 2 times. Surveys to assess qualitative measures are in progress.

KEY LESSONS FOR DISSEMINATION (WHAT CAN OTHERS TAKE AWAY FOR IMPLEMENTATION TO THEIR PRACTICE OR COMMUNITY?): EHR tools have the potential to facilitate delivery and documentation of counseling, but uptake of new tools may require additional provider education, which can be challenging in a large clinic. It is important to collect feedback to better tailor tools for providers that will make counseling a more frequent, effective, and efficient process. We found limited use of the EHR tools, but further assessment is needed as they just recently became available.

DOCUMENTING EARLY ALL-STAKEHOLDER EXPERIENCES OF STANFORD'S PRIMARY CARE 2.0: ETHNOGRAPHY AS A TOOL FOR THE LEARNING HEALTH SYSTEM Nadia Safaeinili; Cati Brown-Johnson; Megan Mahoney; Garrett Chan; Jonathan G. Shaw; Marcy Winget. Stanford School of Medicine, Stanford, CA. (Control ID #2707038)

STATEMENT OF PROBLEM OR QUESTION (ONE SENTENCE): When healthcare systems implement large-scale transformation, accessing all stakeholder perspectives infrequently occurs; capturing first-hand experience with ethnography can be instrumental in calibrating clinic practices and establishing a Learning Health System (LHS) culture with early and frequent feedback and partnered interpretation of evaluation results.

OBJECTIVES OF PROGRAM/INTERVENTION (NO MORE THAN THREE OBJECTIVES): In 2016, Stanford launched a team-based primary care redesign, "Primary Care 2.0" (PC 2.0), aiming to radically transform care from the traditional 1:1 provider:patient model to a novel team-based model, in order to address the Quadruple Aim of healthcare: reduce costs; and improve patient outcomes, patient satisfaction, and medical provider and staff experience. As part of an evaluation process, we conducted a small ethnography study to identify initial barriers and facilitators to the model, and to promote participant engagement.

DESCRIPTION OF PROGRAM/INTERVENTION, INCLUDING ORGANIZATIONAL CONTEXT (E.G. INPATIENT VS. OUTPATIENT, PRACTICE OR COMMUNITY CHARACTERISTICS): On Aug. 25, 2016, we began a 3-day ethnography study, which included 27 hours of clinic observation. During this time, 11 patient visits were observed and brief semi-structured interviews were conducted at the implementation clinic with patients, providers, and CCs. At this time, the PC 2.0 Model was mostly implemented, including: team-based care with Care Coordinators (CC) (ie. enhanced Medical Assistants); provider time to coordinate care; onsite extended care (ie. mental health, pharmacy, PT); Lean management/LHS; Telehealth; and health coaching.

MEASURES OF SUCCESS (DISCUSS QUALITATIVE AND/OR QUANTITATIVE METRICS WHICH WILL BE USED TO EVALUATE PROGRAM/INTERVENTION): The site visit was presented as an LHS activity; within this framework, our goal was to uncover best practices, weaknesses in the model, and/or actionable insights. The success factors, therefore, were two-fold: 1) our ability to obtain honest and open feedback from all stakeholders; and 2) for stakeholders to receive our feedback with intent to improve.

FINDINGS TO DATE (IT IS NOT SUFFICIENT TO STATE FINDINGS WILL BE DISCUSSED): Ethnographic observation was an acceptable method for patients (0 refusals) and staff. From a patient perspective, the greatest changes with PC 2.0 centered on CCs, team-based care, and the onsite extended care team. These elements focused more attention on patients, with multiple caregivers (eg. provider, CC, extended care team), and provider:patient face-to-face connection unmediated by computer. Opportunities exist to strengthen model fidelity: video visits were underutilized, and health coaching for patients was not implemented. Feedback on the above was given to clinic staff by the evaluation team; clinic leadership reported staff perceived observations as non-judgmental and feedback as helpful.

KEY LESSONS FOR DISSEMINATION (WHAT CAN OTHERS TAKE AWAY FOR IMPLEMENTATION TO THEIR PRACTICE OR COMMUNITY?): An all-stakeholder perspective facilitated by ethnography can be fruitful in the context of clinical change, producing rich and multi-leveled data, suitable for clinic leadership feedback as well as system or model insights. Talking to all stakeholders is important; each group can provide surprising revelations. In particular, the often-overlooked Medical Assistant perspective is critical in team-centered care models.

ELECTRONIC CONSULTATION (E-CONSULT): AN INNOVATIVE TOOL TO ACCESS SPECIALTY CARE AT VA MEDICAL CENTERS IN NEW ENGLAND Eun Ji Kim[2]; Sumeet S. Pawar[1]; Sarah L. Cutrona[4]; Melissa K. Afable[6]; Jay D. Orlander[5]; Gouri Gupte[7]; Judith Strymish[6]; Steven R. Simon[6]; Varsha Vimalananda[3]. [1]Boston Medical Center, Boston, MA; [2]Boston University, Boston, MA; [3]Center for Health Organization and Implementation Research (CHOIR), Bedford, MA; [4]University of Massachusetts Medical School and Meyers Primary Care Institute, Worcester, MA; [5]VA Boston HealthCare System, West Roxbury, MA; [6]VA Boston Healthcare System, Boston, MA; [7]Cambridge Health Alliance, Somerville, MA. (Control ID #2706531)

STATEMENT OF PROBLEM OR QUESTION (ONE SENTENCE): There exists a significant delay in access to specialty care and barriers in coordinating specialty referral.

OBJECTIVES OF PROGRAM/INTERVENTION (NO MORE THAN THREE OBJECTIVES): To improve access to cardiology specialists' input

DESCRIPTION OF PROGRAM/INTERVENTION, INCLUDING ORGANIZATIONAL CONTEXT (E.G. INPATIENT VS. OUTPATIENT, PRACTICE OR COMMUNITY CHARACTERISTICS): In 2010, an electronic consultation (e-consult) program was implemented by the Veterans

Health Administration (VHA) to improve access to specialty care. E-consults allow healthcare providers to obtain specialty input through asynchronous consultation within a shared electronic medical record, allowing rapid communication between primary care physicians (PCPs) and specialists. E-consults may mitigate the need for some traditional face-to-face visits and improve access to specialty care.

MEASURES OF SUCCESS (DISCUSS QUALITATIVE AND/OR QUANTITATIVE METRICS WHICH WILL BE USED TO EVALUATE PROGRAM/INTERVENTION): We reviewed 408 patient medical charts from 4 VAMCs (Boston, Connecticut, Providence, and Togus). We excluded e-consults requested by non-Medicine specialties. We examined demographic information of patients and requesting providers. We categorized the questions providers asked in e-consults and how cardiologists answered them. We calculated the potential miles avoided by receiving e-consults rather than the face-to-face consult by measuring the distance from the patient's zip code of residence to the cardiology clinic where the e-consult was answered.

FINDINGS TO DATE (IT IS NOT SUFFICIENT TO STATE FINDINGS WILL BE DISCUSSED): Among 408 cardiology e-consults reviewed, medical providers requested 239. E-consults were most commonly used for clinical questions (89%), but 8% were used for administrative purposes and in 3% the reason was unclear. Among clinical e-consults, 37% addressed pre-procedure management; the remainder addressed questions unrelated to pre-procedure care. Among e-consults related to pre-procedure management, general preoperative assessment was the most common topic (47%), followed by anticoagulation management (33%). Among those e-consults unrelated to pre-procedure care, the most common questions addressed diagnostic testing (37%) and therapy (36%). Cardiologists were able to answer a majority (85%) of the e-consult questions asked. Reasons for not answering included lack of sufficient data, such as a recent EKG, absence of comment on presence of cardiac symptoms, or lack of outside medical record. E-consult use allowed patients to avoid travel, on average 37.1 miles (SD = 33.7). One-tenth of the e-consults were recommended by cardiologists to be converted to face-to-face consults.

KEY LESSONS FOR DISSEMINATION (WHAT CAN OTHERS TAKE AWAY FOR IMPLEMENTATION TO THEIR PRACTICE OR COMMUNITY?): Primary care physicians and medical specialists used cardiology e-consults to answer wide-range of clinical questions. Notably, over one-third of the e-consults addressed pre-procedure management. Pre-procedure assessment may represent an area where e-consults could be effectively used for professional education and to promote practice-based learning. Providing guidelines for requesting providers regarding necessary data for consult placement should be explored in the future.

ENGAGEMENT WITH A DIABETES COLLABORATIVE CARE TEAM IN A SAFETY-NET CLINIC: WOMEN AND PATIENTS WITH CHRONIC PAIN LESS LIKELY TO ENGAGE Brittaney M. Belyeu[1]; Lydia Chwastiak[4]; Joan Russo[4]; Meghan M. Kiefer[2]; Kathy Mertens[5]; Lisa Chew[3]; Sara L. Jackson[2]. [1]Kaiser Permanente West Los Angeles, Los Angeles, CA; [2]University of Washington, Seattle, WA; [3]University of Washington - Harborview Medical Center, Seattle, WA; [4]University of Washington School of Medicine, Seattle, WA; [5]Harborview Medical Center, Seattle, WA. (Control ID #2703744)

STATEMENT OF PROBLEM OR QUESTION (ONE SENTENCE): The Collaborative Care Model improves outcomes and cost in populations with complex medical and psychosocial co-morbidity. However, studies of patient factors associated with non-engagement in such programs are limited.

OBJECTIVES OF PROGRAM/INTERVENTION (NO MORE THAN THREE OBJECTIVES): To evaluate patient factors associated with non-engagement in a Diabetes Collaborative Care Team program in an academic urban safety-net clinic.

DESCRIPTION OF PROGRAM/INTERVENTION, INCLUDING ORGANIZATIONAL CONTEXT (E.G. INPATIENT VS. OUTPATIENT, PRACTICE OR COMMUNITY CHARACTERISTICS): We studied the first 18 months of a multi-disciplinary nurse care management team-based program, adapted from an evidence-based collaborative care model for our safety-net population. The program included weekly nutrition, psychiatric and internal medicine consultation and was implemented without external funding. Non-engagement was defined as fewer than two visits with a Diabetes Care Team member during the evaluation period.

MEASURES OF SUCCESS (DISCUSS QUALITATIVE AND/OR QUANTITATIVE METRICS WHICH WILL BE USED TO EVALUATE PROGRAM/INTERVENTION): Patients who did not engage in the program were compared to those who did engage, with respect to demographics, comorbid medical and psychiatric diagnoses, and cardiovascular risk factors, using univariate and multivariate analyses.

FINDINGS TO DATE (IT IS NOT SUFFICIENT TO STATE FINDINGS WILL BE DISCUSSED): Of the 151 patients referred to the DCCT, 68 (45%) were classified as non-engaged. In unadjusted analyses, patients who did not engage were more likely to be female (48.5% of non-engaged vs. 31.3% engaged, $p = 0.04$), and less likely to have major depressive disorder (13.2% non-engaged vs. 28.9% engaged, $p = 0.03$), anxiety disorder (16.2% vs. 38.6%, $p = 0.003$), or any depression diagnosis (including major depressive disorder, dysthymia, depression not specified) (39.7% non-engaged vs. 61.4% engaged, $p = 0.009$), or hyperlipidemia (73.5% non-engaged vs. 88.0% engaged, $p = 0.03$). Female gender and a chronic pain diagnosis were independently associated with non-engagement after multivariate adjustment (for female gender, odds ratio (OR) of non-engagement 2.51 (95% CI 1.21 to 5.21, $p = 0.01$); chronic pain diagnosis, OR 4.63 (95% CI, 1.13 to 18.99, $p = 0.03$)).

KEY LESSONS FOR DISSEMINATION (WHAT CAN OTHERS TAKE AWAY FOR IMPLEMENTATION TO THEIR PRACTICE OR COMMUNITY?): In this study of patients with poorly-controlled diabetes in a large, urban safety-net primary care clinic, female patients and those with chronic pain diagnoses were less likely to engage with the DCCT program. This suggests the need to address barriers for engagement for female patients, and to integrate chronic pain management strategies within multiple condition Collaborative Care Models.

ENGINEERING HIGH RELIABILITY LEARNING LAB (EHRLL): DESIGNING MORE RELIABLE CARE AT CRITICAL JUNCTURES Sara Singer[4, 1]; James Benneyan[5]; Russell Phillips[1]; Gordon D. Schiff[3]; Joe Kimura[8]; Rose M. Kakoza[3]; Matthew Carmody[6]; Jay Berry[7]; Lindsay S. Hunt[1]; Tsega Tamene[2]; Bethany Maylone[2]; Mariam Krikorian[2]. [1]Harvard Medical School, Boston, MA; [2]Harvard T.H. Chan School of Public Health, Boston, MA; [3]Brigham and Women's Hospital, Boston, MA; [4]Harvard School of Public Health, Boston, MA; [5]Northeastern University, Boston, MA; [6]Mount Auburn Hospital, Cambridge, MA; [7]Boston Children's Hospital, Boston, MA; [8]AtriusHealth, Newton, MA. (Control ID #2706509)

STATEMENT OF PROBLEM OR QUESTION (ONE SENTENCE): Progress designing safer healthcare processes is often elusive, especially where coordination challenges exist such as between primary and specialty care. To achieve greater and more generalizable breakthroughs, experimentation with new approaches and collaborations is useful.

OBJECTIVES OF PROGRAM/INTERVENTION (NO MORE THAN THREE OBJECTIVES): (1) Foster a redesign and learning ecosystem that blends systems engineering, organizational, and patient safety methods; (2) Support health systems applying these methods to understand, design, and spread safety innovations; (3) Assess the impact on patient outcomes, engagement, and confidence in their safety.

DESCRIPTION OF PROGRAM/INTERVENTION, INCLUDING ORGANIZATIONAL CONTEXT (E.G. INPATIENT VS. OUTPATIENT, PRACTICE OR COMMUNITY CHARACTERISTICS): EHRLL was established in 2015 under an AHRQ patient safety learning lab program to promote research, learning, and collaboration in new approaches to safety. Four health systems, teams of clinicians, organization experts, and systems engineers applied a common design roadmap to a range of problems (specialty referrals, perioperative care, opioid management, home health care) for which primary-specialty coordination creates safety challenges. The lab uses systems, organizations, and safety theory and methods more successfully used in manufacturing and other highly reliable industries but less so in health care. Teams were supported by weekly faculty coaching, alternating half-day learning sessions and 4-month activity periods, and bimonthly reflection activities and feedback, as well as efforts to study lessons learned about usability, implementation, barriers, and dynamics enabling and limiting these approaches.

MEASURES OF SUCCESS (DISCUSS QUALITATIVE AND/OR QUANTITATIVE METRICS WHICH WILL BE USED TO EVALUATE PROGRAM/INTERVENTION): Program evaluation uses mixed methods, including data analysis, staff surveys, semi-structured interviews, and ethnographic observations during team meetings and learning sessions. Project-specific evaluation is focused on key indicators for each project and utilization, cost, and quality outcomes.

FINDINGS TO DATE (IT IS NOT SUFFICIENT TO STATE FINDINGS WILL BE DISCUSSED): After Year 1, all teams have engaged and are making progress using new methods and collaborating within and across teams. Teams have applied swim lane diagrams, failure mode and effects analysis, risk stratification, and other tools, and begun designing new processes based on problem analysis. Approaches have resulted in care redesigns including: prioritization criteria and standardized close-loop referral processes, direct preoperative collaboration between primary care and anesthesia, risk stratified urine toxicity screening for opiod users, and a template for primary-home health communication. Participant evaluations indicate belief that the learning lab is fostering the structure, clarity, and positive environment to spur within- and across-team creativity. Logistics barriers have included onboarding, data access, personnel bandwidth, and continuity.

KEY LESSONS FOR DISSEMINATION (WHAT CAN OTHERS TAKE AWAY FOR IMPLEMENTATION TO THEIR PRACTICE OR COMMUNITY?): Embedding engineering concepts and methods into safety projects has potential to help drive complex system understanding and breakthrough improvement, but is more specialized, necessitates different mindsets, moves at a different pace, and presents challenges of working across organizations, cultures, and professions.

ENHANCED CARE PROGRAM, A MODEL FOR COMPLEX CARE MANAGEMENT: QUALITY OF CARE OUTCOMES Swati Shroff[4]; Jodie Bryk[2]; Anita B. Lyons[1]; Deborah M. Simak[3]; Gary Fisher[5]; Wishwa N. Kapoor[3]. [1]UPMC, Pittsburgh, PA; [2]University of Pittsburgh, Pittsburgh, PA, PA; [3]University of Pittsburgh Medical Center, Pittsburgh, PA; [4]University of Pittsburgh/VA Hospital, Pittsburgh, PA; [5]University of Pittsburgh, Pittsburgh, PA. (Control ID #2697639)

STATEMENT OF PROBLEM OR QUESTION (ONE SENTENCE): Five percent of the population accounts for over half of healthcare expenditures in the US.

OBJECTIVES OF PROGRAM/INTERVENTION (NO MORE THAN THREE OBJECTIVES): Our innovation is the design and implementation of an Enhanced Care Program (ECP) to meet the needs of complex, high-utilizing individuals. The program aims to: reduce unnecessary healthcare utilization, improve quality of care, and improve the patient experience.

DESCRIPTION OF PROGRAM/INTERVENTION, INCLUDING ORGANIZATIONAL CONTEXT (E.G. INPATIENT VS. OUTPATIENT, PRACTICE OR COMMUNITY CHARACTERISTICS): The ECP is being implemented in the University of Pittsburgh General Internal Medicine practice in Oakland (GIMO) in collaboration with UPMC Health Plan (UPMC-HP). Individuals are invited to participate if they meet the following criteria: 1) > 1 inpatient hospitalization or > 5 ED visits in previous year; 2) ≥ 18 years of age; 3) UPMC-HP member; 4) Receive primary care at GIMO; and 5) Agree to participate. The ECP is embedded within a patient centered medical home primary care practice. The primary ECP team consists of physicians, nurse care managers, and a secretary, with assistance from a pharmacist, psychologist, and psychiatrist. After individualized care plan development, patients have regular follow up with the team, including 24/7 direct telephone access, same day walk-in appointments and home visits.

MEASURES OF SUCCESS (DISCUSS QUALITATIVE AND/OR QUANTITATIVE METRICS WHICH WILL BE USED TO EVALUATE PROGRAM/INTERVENTION): Quality of care outcomes include pre and post-ECP adherence to HgbA1C goals, blood pressure goals, and age-appropriate preventive care services after ≥ 6 months of ECP participation.

FINDINGS TO DATE (IT IS NOT SUFFICIENT TO STATE FINDINGS WILL BE DISCUSSED): From July 2014 to December 2016, 769 patients were screened, and 324 were eligible for the ECP. Of eligible patients, 194 were enrolled and 51 were withdrawn, leaving 143 actively enrolled patients. Of the 194 enrolled, 141 remained in the program for at least 6 months and were included in the quality data analysis if applicable. In hypertensive patients, blood pressure < 140/90 improved from 54 to 68%. For diabetic patients, rates of HgbA1C < 9 improved from 69 to 71%, foot exams 69 to 83%, eye exam 48 to 73%, and blood pressure < 140/90 56 to 66%. Rates of cervical cancer screening improved from 79% to 86%, breast cancer screening 60 to 64%, and colorectal cancer screening 75 to 85%. The rate of patients with mental health illness linked to psychiatric care improved from 53 to 88%, and 20% of patients on chronic opioids were weaned off.

KEY LESSONS FOR DISSEMINATION (WHAT CAN OTHERS TAKE AWAY FOR IMPLEMENTATION TO THEIR PRACTICE OR COMMUNITY?): It has been essential to keep patients engaged through continuous contact, including 24/7 telephone access, flexible appointments, and home visits. Behavioral health resources are important given high rates of mental health illness. Highly coordinated, multidisciplinary care is required for these patients. Staff education on complex patient management is crucial to avoid burnout.

ENHANCING HEPATITIS C AND HIV SCREENING AND LINKAGE TO TREATMENT IN PRIMARY CARE PRACTICE Leah S. Karliner; Brent Kobashi; Chiara Kuryan; Rosemary Lam; Rena K. Fox. UCSF, San Francisco, CA. (Control ID #2706208)

STATEMENT OF PROBLEM OR QUESTION (ONE SENTENCE): In light of new and improving treatments, both the Centers for Disease Control and the US Preventative Services Task Force recommend routine screening for hepatitis C (HCV) and HIV; however, it remains a challenge to achieve high rates of screening and then early linkage to treatment in primary care.

OBJECTIVES OF PROGRAM/INTERVENTION (NO MORE THAN THREE OBJECTIVES): In our urban academic general internal medicine (GIM) practice: 1. To substantially increase routine hepatitis C screening for eligible patients born 1945–1965; 2. To substantially increase routine HIV screening for eligible patients age 18–64; 3. For patients with positive results, to offer linkage to treatment options including experts embedded in our own primary care practice and specialists in hepatology and infectious disease in our academic health system.

DESCRIPTION OF PROGRAM/INTERVENTION, INCLUDING ORGANIZATIONAL CONTEXT (E.G. INPATIENT VS. OUTPATIENT, PRACTICE OR COMMUNITY CHARACTERISTICS): We formed a work-group made up of three GIM faculty members (QI Director, HCV content expert, HIV content expert - both available to see patients in primary care for linkage to treatment), the practice Quality Analyst, and a Linkage to Care Navigator. We divided plans for the year into three categories: *Laying the Foundation*: We hung educational posters in practice waiting areas, disseminated program information to PCPs via email, newsletters, faculty and team meetings, gave information and received feedback at all-staff meetings, programmed data queries, created a tracking database for patients with positive results; and worked with the lab to develop an in-house HCV-ab with reflex to RNA test. *Screening In-reach*: We worked with Primary Care leadership and IT to add routine HCV and HIV screening for the appropriate cohorts to our EMR Health Care Maintenance (HCM) banner, allowing these topics to become part of our regular work-flow during clinical visits. *Screening Out-reach*: we are in planning stages for outreach efforts.

MEASURES OF SUCCESS (DISCUSS QUALITATIVE AND/OR QUANTITATIVE METRICS WHICH WILL BE USED TO EVALUATE PROGRAM/INTERVENTION): We have three main measures of success: 1) number of eligible patients screened for each infection, 2) percentage of eligible patients screened for each infection, 3) timeliness of linkage to an appointment at which treatment was discussed and offered.

FINDINGS TO DATE (IT IS NOT SUFFICIENT TO STATE FINDINGS WILL BE DISCUSSED): In the month after the HCM go-live, HCV screening increased by 30 and HIV screening increased by 56%. Overall since the beginning of the project, the percentage of eligible patients screened for HCV has increased from 60.6% to 65.3%, and for HIV has increased from 46.2 to 48.9%. Our HCV ab positive rate is 3.87% (31/801 tests) and HIV ab positive rate is 0.1% (1/994); of the 10 patients HCV RNA+, 7 have been successfully linked to treatment within 90-days; efforts continue to link the remaining 3 and 1 HIV+ patient.

KEY LESSONS FOR DISSEMINATION (WHAT CAN OTHERS TAKE AWAY FOR IMPLEMENTATION TO THEIR PRACTICE OR COMMUNITY?): Our program has benefitted from a diverse team with distinct roles. Early engagement of the lab, primary care leadership and IT has helped create the necessary infrastructure for larger-scale screening. Integration of screening into regular work-flow is fundamental to in-reach efforts.

ENHANCING PATIENT ACCESS TO A PRIMARY CARE RESIDENT CLINIC- A QUALITY IMPROVEMENT PROJECT Milind Chaudhari[1]; Roberto O. Diaz Del Carpio[2]; Natdanai Punnanithinont[1]. [1]University at Buffalo, Williamsville, NY; [2]University at Buffalo, Buffalo, NY. (Control ID #2705613)

STATEMENT OF PROBLEM OR QUESTION (ONE SENTENCE): A majority of patients experience significant barriers with telephone access to primary care clinic, resulting in increased emergency room visits, and low patient satisfaction.

OBJECTIVES OF PROGRAM/INTERVENTION (NO MORE THAN THREE OBJECTIVES): 1. To improve patient access to clinic by increasing the percent answered calls by 25% by the end of June 2017. 2. To improve patient satisfaction by enhancing timely access to our clinic staff.

DESCRIPTION OF PROGRAM/INTERVENTION, INCLUDING ORGANIZATIONAL CONTEXT (E.G. INPATIENT VS. OUTPATIENT, PRACTICE OR COMMUNITY CHARACTERISTICS): Hertel Elmwood Internal Medicine center is a patient centered medical home serving broad, multicultural and low socioeconomic population in north Buffalo, NY. Based on Institute for Healthcare Improvement model for improvement, we designed a quality improvement (QI) project to identify and address barriers to patient access to our clinic. We first reviewed and analyzed phone triage data to determine current rate of answered calls, average call wait time, and pattern of high volume calls. We shared this data with clinic stakeholders (front desk staff, receptionist, clinical staff) to get their feedback and increase awareness of the problem. Based on initial root cause analysis, we identified front desk staff multitasking, and inadequate staffing as one of the causes for inefficient phone triage. Therefore, our first intervention was to improve call center management by avoiding multitasking and adjusting staffing to meet call volume needs. We also engaged all clinic stakeholders in designing a phone log to identify the reasons for unanswered phone calls. Appointment/scheduling and prescription renewal/refill were among the most common causes for phone calls. We designed patient education program to inform them about the online portal where they can access their data, test results, medications and also contact clinic or physician by email.

MEASURES OF SUCCESS (DISCUSS QUALITATIVE AND/OR QUANTITATIVE METRICS WHICH WILL BE USED TO EVALUATE PROGRAM/INTERVENTION): *Outcome Measures*: 1. Percentage of calls answered, 2. Patient satisfaction on clinic access by phone *Process Measures*: 1. Total number of phone calls, 2. Percentage of abandoned calls, 3. Average call wait time *Balancing Measures*: 1. Clerical staff satisfaction, 2. Number of same day appointment

FINDINGS TO DATE (IT IS NOT SUFFICIENT TO STATE FINDINGS WILL BE DISCUSSED): Initial phone triage data showed that only 50% of the incoming calls were answered by agents, and average call wait time was 7min 07sec. About 80% of our patients reported being dissatisfied when using phone to access our center. Initial analysis of phone logs showed that majority of phone calls are from pharmacies regarding medication refill or renewal. We also noticed that most of the patients were unaware of patient portal and some patient did not know how to use it. Further finding based on our current and subsequent interventions will be discussed.

KEY LESSONS FOR DISSEMINATION (WHAT CAN OTHERS TAKE AWAY FOR IMPLEMENTATION TO THEIR PRACTICE OR COMMUNITY?): Timely access to healthcare is the most common and universal issue cited in patient satisfaction survey. A multifaceted intervention, aligning clinical learning priorities, engaging stakeholders, and using QI methodology is necessary for the success of quality improvement project to improve patient access to the clinic. Timely access increases patient satisfaction, and improve all aspects of care delivery.

ENHANCING SPECIALTY ACCESS TO CARE IN A VA SUBACUTE AND CHRONIC CARE MEDICAL UNIT: AN EVALUATION OF ELECTRONIC CONSULTATIONS (E-CONSULTS) Shivani Jindal[1]; Judith Strymish[4]; Marcus D. Ruopp[2]; Amy W. Baughman[4]; Melissa K. Afable[3]; Jay D. Orlander[3]; Steven R. Simon[5]. [1]Boston VA Health Care System, Brockton, MA; [2]VA Boston, Brockton, MA; [3]VA Boston HealthCare System, West Roxbury, MA; [4]VA Boston Healthcare System, Cambridge, MA; [5]VA Boston Healthcare System, Boston, MA. (Control ID #2707394)

STATEMENT OF PROBLEM OR QUESTION (ONE SENTENCE): Access to specialty care in the Community Living Center (CLC) is logistically challenging for the patients, clinicians and the health system.

OBJECTIVES OF PROGRAM/INTERVENTION (NO MORE THAN THREE OBJECTIVES): Electronic consultations (E-consults) offer referring clinicians specialist input on questions addressable by chart review. E-consults are associated with increased access to subspecialty care, patient satisfaction and clinical efficiency. The landscape of E-consult use in subacute care has not been well characterized.

DESCRIPTION OF PROGRAM/INTERVENTION, INCLUDING ORGANIZATIONAL CONTEXT (E.G. INPATIENT VS. OUTPATIENT, PRACTICE OR COMMUNITY CHARACTERISTICS): The VA Boston Healthcare System is a tertiary care facility consisting of 3 geographically dispersed main campuses and 5 community-based outpatient clinics. The CLC is a 110-bed nursing home that provides transitional (skilled nursing or rehabilitation), palliative/hospice and long-term care. The CLC is located more than 20 miles from the medical/surgical acute care services and most subspecialty clinics. In the current model of care, subspecialists do not consult at the bedside but provide expertise by either scheduled outpatient consults or through E-consults. E-consults can provide clinicians with decision-making support to improve clinical care. The process provides access to specialists that may avoid unnecessary travel, decrease amount of admin time to arrange appointments, and limit the disruption in rehabilitation services for patients for whom in-person evaluation is unnecessary. In an effort to improve access to specialty care, VA nationwide has encouraged the use of E-consults, which are asynchronous provider-provider consults on a shared electronic health record (EHR) platform.

MEASURES OF SUCCESS (DISCUSS QUALITATIVE AND/OR QUANTITATIVE METRICS WHICH WILL BE USED TO EVALUATE PROGRAM/INTERVENTION): E-consults were introduced to the VA Boston CLC in 2011. This study characterizes all E-consults in the VA Boston CLC since 2011 by specialty, type of question and disease type (within each specialty). Type of question was categorized as: Diagnosis, Prognosis, Management, Self-Improvement and Request for Direction.

FINDINGS TO DATE (IT IS NOT SUFFICIENT TO STATE FINDINGS WILL BE DISCUSSED): From 2011 to 2016, 474 E-consults were requested from the following specialties: Infectious Diseases (26%), Endocrinology (13%), Cardiology (12%), Hematology (8%), Renal (5%), Urology (4%), Gastroenterology (4%), Psychiatry (4%), Pulmonary (4%). The annual number of E-consults requested from the CLC grew from 14 in 2011 to 141 in 2016. The median time to response within the top ten requested specialties was between 2.28 and 23.95 h. Majority of requests (67.5%) were focused on management followed by diagnosis/work up (23.5%).

KEY LESSONS FOR DISSEMINATION (WHAT CAN OTHERS TAKE AWAY FOR IMPLEMENTATION TO THEIR PRACTICE OR COMMUNITY?): E-consult use in our subacute facility has seen steady increase since introduction with the majority focused on management issues. E- consults enable the avoidance of significant logistic and administrative burden of in-person consults and rapid clinical decision-making support (time to response less than 24 h). Future evaluation includes type of E-consult converted to live visit, efficacy of patient care and clinician satisfaction. This evaluation shows the increasing use and importance of E-consults for access to specialist care for patients in a subacute setting.

ENHANCING THE PREVENTION OF MICROVASCULAR COMPLICATIONS OF DIABETES TYPE 2: A QI PROJECT. Raed Al Yacoub; Adel Hanna; Roberto O. Diaz Del Carpio. University at Buffalo, Buffalo, NY. (Control ID #2705520)

STATEMENT OF PROBLEM OR QUESTION (ONE SENTENCE): Suboptimal screening rates for DM2 retinopathy and nephropathy in our primary care resident clinic.

OBJECTIVES OF PROGRAM/INTERVENTION (NO MORE THAN THREE OBJECTIVES): Our aim is to improve by 40% the care of patients with DM2 (screening for retinopathy and nephropathy) at HEIMC by July 2017.

DESCRIPTION OF PROGRAM/INTERVENTION, INCLUDING ORGANIZATIONAL CONTEXT (E.G. INPATIENT VS. OUTPATIENT, PRACTICE OR COMMUNITY CHARACTERISTICS): HEIMC, a certified level 3 Patient Centered Medical Home, is an academic internal medicine outpatient center affiliated with the University at Buffalo and part of the Kaleida Health System. We provide primary care for a diverse, mostly low-income, urban population. Our outpatient center has 5 FTE internal medicine attending physicians, 1 nurse practitioner and 31 internal medicine residents that rotate in a 4 + 1 schedule. In our 2015 Physician Quality Review, our DM2 retinopathy and nephropathy screening rates were 28 and 40% respectively. These metrics were suboptimal compared to local, regional and national benchmarks. Based on our root analysis our first intervention combined individual-based-changes by enhancing provider medical knowledge and system-based changes by simplifying the use of our electronic health record (EHR).Our second intervention focused on using reminders and a checklist as part of our organizational change during our morning huddles. Process mapping helped us to simplify our ophthalmology referral process and consult scanning process. Data was analyzed using QI Macros 2015.

MEASURES OF SUCCESS (DISCUSS QUALITATIVE AND/OR QUANTITATIVE METRICS WHICH WILL BE USED TO EVALUATE PROGRAM/INTERVENTION): Outcomes: Percentage of patients with completed screening labs and ophthalmology consults documented in patients with DM2 on weekly basis. Process Percentage of DM2 patients with

ordered nephropathy screening labs and ophthalmology referrals. Balancing: Percentage of uncontrolled DM2 patients (A1C > 9).

FINDINGS TO DATE (IT IS NOT SUFFICIENT TO STATE FINDINGS WILL BE DISCUSSED): As of December 2016, the percentage of DM2 patients that have had a retinopathy and nephropathy screening test increased to 40 and 75% respectively. Similarly, orders placed for ophthalmo and nephropathy screening increased to 60 and 70%. Further analysis showed a nonrandom variation trend during the last weeks, especially with received ophthalmology consults. The proportion of patients with uncontrolled DM2 remained the same, 12%.

KEY LESSONS FOR DISSEMINATION (WHAT CAN OTHERS TAKE AWAY FOR IMPLEMENTATION TO THEIR PRACTICE OR COMMUNITY?): Despite the availability screening tests, their utilization rates were surprisingly low. This was multifactorial problem and required multifaceted solutions. Because of our project alignment with our clinical learning environment improvement priorities we were able to engage key stakeholders since the beginning and have support from our leadership. Our interventions have improved our quality metrics for DM2 but this is still not sustainable. Further interventions will focus on having point of care retinopathy screening.

ESCALATIONS OF CARE TO THE INPATIENT SETTING DURING HOSPITAL AT HOME ADMISSION Gabriel Silversmith1, 1; Tacara Soones[1]; Christian Escobar[1, 1]; Janeen Marshall[1]; Ania Wajnberg[1, 1]; Albert L. Siu[1]; Linda DeCherrie[1, 1]; Bruce leff[2]. [1]Icahn School of Medicine at Mount Sinai, New York, NY; [2]Johns Hopkins University School of Medicine, Baltimore, MD. (Control ID #2706262)

STATEMENT OF PROBLEM OR QUESTION (ONE SENTENCE): Hospital at Home (HaH) programs are a safe alternative to inpatient admission; patient safety sometimes requires that HaH patients are escalated to the hospital.

OBJECTIVES OF PROGRAM/INTERVENTION (NO MORE THAN THREE OBJECTIVES): To examine rates and the causes of care escalations.

DESCRIPTION OF PROGRAM/INTERVENTION, INCLUDING ORGANIZATIONAL CONTEXT (E.G. INPATIENT VS. OUTPATIENT, PRACTICE OR COMMUNITY CHARACTERISTICS): Funded by the Centers for Medicare and Medicaid Services' Innovation Center (CMMI), the Icahn School of Medicine at Mount Sinai implemented a HaH program called the Mobile Acute Care Team (MACT) in 2014. MACT employs a multidisciplinary team to address acute care needs in the home and provides additional post-acute care for 30 days after discharge. Patients are admitted from the Emergency Department (ED) or from home if they meet medical, geographic, and home safety criteria. Patients are visited up to twice daily by a nurse and daily by a medical provider and may receive IV medicines and fluids, oxygen, nebulizer treatments, and wound care. Labs, xrays, ultrasounds, and EKGs can be performed at home, and patients have telephonic access to a MACT physician 24 hours per day.

MEASURES OF SUCCESS (DISCUSS QUALITATIVE AND/OR QUANTITATIVE METRICS WHICH WILL BE USED TO EVALUATE PROGRAM/INTERVENTION): Descriptive analysis of MACT HaH hospital escalation rate overall and by sociodemographic and medical characteristics. A rubric for defining reasons for escalations was derived from a published study on readmissions.

FINDINGS TO DATE (IT IS NOT SUFFICIENT TO STATE FINDINGS WILL BE DISCUSSED): Between November 1, 2014 and October 31, 2016, 198 patients were admitted to MACT HaH. Overall, 8.1% (16/198) of patients were escalated. The probability of escalation, by primary admission diagnosis, was: pneumonia 17% (6/36), dehydration 17% (4/24), COPD 11% (2/18), asthma 10% (1/10), cellulitis 9% (2/22), CHF 4% (1/24), UTI 0% (0/48), other 0% (0/16). Of patients under 75 years old, 11% (11/103) were escalated while 5% (5/95) of those age 75 years and older were escalated. The escalation rate was relatively stable over time. Chart reviews of the 16 escalated cases identified the following factors that appeared to play a role in escalations: inadequate response to therapy in the setting of incomplete initial workup and diagnostic uncertainty (in 8/16 escalations), clinical decisions not consistent with guidelines (8/16), unavailable diagnostic procedures in the home (8/16), unavailable therapeutic procedures (6/16), patient/family anxiety (4/16), poor patient/family adherence to the care plan (3/16), inadequate home support (3/16), clinically high risk on admission (2/16), and IV access difficulty (2/16). Patients or families initiated 31% of escalations without clear evidence that this was medically necessary. Following escalation, 2 patients were discharged from the ED; of those who were admitted, the average length of stay was 7.0 +/− 4.5 days.

KEY LESSONS FOR DISSEMINATION (WHAT CAN OTHERS TAKE AWAY FOR IMPLEMENTATION TO THEIR PRACTICE OR COMMUNITY?): 8% of HaH patients were escalated to hospital care. This is comparable with an escalation rate reported in the HaH literature. HaH programs may benefit from better standardization of care protocols customized to the home setting.

FEASTWORTHY: A DELIVERED PREPARED MEAL PROGRAM FOR FAMILIES IN MOTEL-SHELTERS Avik Chatterjee[1, 2]; Rory Brown[3]. [1]Harvard Medical School, Cambridge, MA; [2]Boston Health Care for the Homeless Program, Boston, MA; [3]Harvard College, Cambridge, MA. (Control ID #2699751)

STATEMENT OF PROBLEM OR QUESTION (ONE SENTENCE): Families experiencing homelessness face many barriers to healthful eating—including poor access to healthy food, its high cost, and no facilities to prepare and store meals—as well as high rates of overweight and obesity but also nutritional deficiencies.

OBJECTIVES OF PROGRAM/INTERVENTION (NO MORE THAN THREE OBJECTIVES): To evaluate whether a delivered, prepared meal program is feasible and improves self-reported nutrition behaviors, food security, and health.

DESCRIPTION OF PROGRAM/INTERVENTION, INCLUDING ORGANIZATIONAL CONTEXT (E.G. INPATIENT VS. OUTPATIENT, PRACTICE OR COMMUNITY CHARACTERISTICS): Our intervention site was a 60-family motel-shelter where our health center has an outreach clinic. A nearby motel-shelter served as a control site. With community partners, we developed a 3-month delivered, prepared meal program consisting of 5 frozen, microwavable meals/person/week made from donated surplus prepared food from nearby colleges. Meals had at least 1 serving of vegetables, lean meat, and whole grains.

MEASURES OF SUCCESS (DISCUSS QUALITATIVE AND/OR QUANTITATIVE METRICS WHICH WILL BE USED TO EVALUATE PROGRAM/INTERVENTION): We used baseline and post-program

surveys with targeted questions about eating behaviors, family demographics and food security. We also used semi-structured interviews to assess families' experiences with the program.

FINDINGS TO DATE (IT IS NOT SUFFICIENT TO STATE FINDINGS WILL BE DISCUSSED): Feastworthy delivered 4875 meals to 129 individuals in 38 families. Twenty-two intervention families agreed to participate in the study, but 9 moved out of the shelter before completing the final survey and 4 were lost to follow-up. Nine families at the control shelter participated, but 4 moved out before completing the final survey. 80% of families had a female primary caregiver, and 61% had at least one family member employed. Half of participants were White, 40% Black, and 45% reported Hispanic or Latino ethnicity. 69% of adults and 34% of children were overweight or obese. 94% reported receiving SNAP, and 85% reported low or very low food security. Mean weekly out-of-pocket food expense was $96. In difference-in-differences analysis, vegetable intake increased by 0.98 servings/day ($P = 0.28$) in intervention adults and 0.76 servings/day (0.19) in children, compared to controls. Fast food meals/week and snack food consumption/day also improved, though changes were not statistically significant. Relative food security score improved (−0.22, $P = 0.95$) and out-of-pocket expense on food decreased (−$55, $P = 0.47$). Families were universally knowledgeable about healthy eating: "Healthy food is…vegetables…fruits, whole wheat, yeah, that's healthy food." Post-program, 100% of families were satisfied with Feastworthy, and many described improved food security: "We've been able to actually maintain our food budget around [Feastworthy meals]." As one parent stated, "Feastworthy is something that gives us a little part of our dignity [as parents] back."

KEY LESSONS FOR DISSEMINATION (WHAT CAN OTHERS TAKE AWAY FOR IMPLEMENTATION TO THEIR PRACTICE OR COMMUNITY?): Participants praised the financial and health benefits of Feastworthy. While outcomes improved for almost all measures—improved nutrition as well as food security—high loss to follow-up made finding statistically significant differences difficult. Replicating Feastworthy's model as a policy intervention could improve access to healthy food for homeless families across the US while decreasing food waste.

FEEDBACK FOR DOCTORS ABOUT THEIR NOTES: A MIXED METHODS STUDY OF PATIENTS AT SAFETY-NET CLINICS

Brittaney Belyeu[3]; Jared Klein[2]; Joann G. Elmore[1]; Lisa Reisch[2]; Sue Peacock[2]; Natalia Oster[2]; Sara L. Jackson2. [1]Univ of WA, Seattle, WA; [2]University of Washington, Seattle, WA; [3]Kaiser Permanente West Los Angeles Medical Center, Los Angeles, CA. (Control ID #2703694)

STATEMENT OF PROBLEM OR QUESTION (ONE SENTENCE): Patients are increasingly offered electronic access to their doctors' clinic notes. While survey data suggests patients perceive benefits from access to their notes, specific feedback from patients about the note content is limited, particularly from patients in safety-net settings.

OBJECTIVES OF PROGRAM/INTERVENTION (NO MORE THAN THREE OBJECTIVES): To increase understanding about safety-net patients perceptions of their doctor's notes, and suggest opportunities for improving communication using the platform of an electronic portal and written notes for this population.

DESCRIPTION OF PROGRAM/INTERVENTION, INCLUDING ORGANIZATIONAL CONTEXT (E.G. INPATIENT VS. OUTPATIENT, PRACTICE OR COMMUNITY CHARACTERISTICS): We conducted four focus groups among patients with poorly controlled diabetes attending one of two urban safety-net primary care clinics (3 groups in a large general medicine teaching clinic, and 1 group from an HIV/AIDS clinic) in Washington state. Before participating in the group discussion, patients read their own clinic note and after visit summary from their last visit to the clinic, completed a brief survey, and engaged in discussion about their experience with the electronic health portal and their perceptions of the clinic note and after visit summary.

MEASURES OF SUCCESS (DISCUSS QUALITATIVE AND/OR QUANTITATIVE METRICS WHICH WILL BE USED TO EVALUATE PROGRAM/INTERVENTION): The pre-discussion group survey collected demographic information and perceptions of their last clinic note, their after visit summary, and their experience using the electronic portal. Focus data were analyzed for themes by three of the study authors.

FINDINGS TO DATE (IT IS NOT SUFFICIENT TO STATE FINDINGS WILL BE DISCUSSED): Twenty-seven patients participated in the four focus groups; 70% were male, 41% were Black, 48% were unemployed or disabled, and 56% reported fair/poor health. Ten had accessed the electronic patient portal. Lack of access or familiarity with technology was the primary reason patients reported for not accessing ($n = 7$). In each focus group one or more portal users were enthusiastically willing to teach others. A minority of patients felt that the notes were not accurate (19%), had too much medical jargon (29%) or were too long (26%), while the majority felt their note content was clear and useful (89%). Themes identified in the discussion included identification of inaccuracies in notes, particularly in heavily templated note fields; reliance on the provider to explain what the patient does not understand; and desire for more detail rather then less.

KEY LESSONS FOR DISSEMINATION (WHAT CAN OTHERS TAKE AWAY FOR IMPLEMENTATION TO THEIR PRACTICE OR COMMUNITY?): The majority of safety-net focus group participants had not accessed the electronic portal, but those who had were motivated to promote the portal benefits and assist others. Patients identified specific opportunities to improve clinic notes and fter visit summaries, yet generally found the content useful.

FIT IN FIVE: A UNIQUE APPROACH TO PREVENTING BURNOUT IN AN INTERNAL MEDICINE RESIDENCY PROGRAM

Lindsey Rearigh[1]; Kristin Olson1; Russell Hamilton[1]; Brian Whyms[1]; Rajveer Sangera[1, 2]; Louise Convery[1]; Daniela Frankova[1]. [1]Mercy Medical Center, Des Moines, IA; [2]Deborah Heart and Lung, Browns Mill, NJ. (Control ID #2706557)

STATEMENT OF PROBLEM OR QUESTION (ONE SENTENCE): As physician burnout rates continue to climb, increasing attention is now focused on burnout in residency training programs, residents experiencing burnout are high-risk to become burned out physicians.

OBJECTIVES OF PROGRAM/INTERVENTION (NO MORE THAN THREE OBJECTIVES): A wellness program termed "Fit in Five" was developed among an Internal Medicine residency consisting of 29 residents. The objectives of the program were to decrease burnout rates among the residency members, improve program communication, and focus on individual self-care.

DESCRIPTION OF PROGRAM/INTERVENTION, INCLUDING ORGANIZATIONAL CONTEXT (E.G. INPATIENT VS. OUTPATIENT,

PRACTICE OR COMMUNITY CHARACTERISTICS): Fit in Five consisted of a five-month competition beginning January 1st and ending May 31st, which combined monthly well-being goals with different team competitions. All residents, attendings, and staff were encouraged to participate, with a total of 28 residents, nine attendings and one staff member joining. Participants were divided into two teams with each team having a captain. Each participant was to submit an individual, measureable goal to their team captain at the beginning of every month; examples included weight loss, nutritional, and exercise goals. At the end of each month, team members were to check in with their captain as to whether or not they have accomplished their monthly goal. Team competitions ranged from dodge ball games to basketball tournaments, with a different competition planned each of the five months. Implementing team activities encouraged teamwork and increased communication skills, while the monthly goals focused on individual health and well-being.

MEASURES OF SUCCESS (DISCUSS QUALITATIVE AND/OR QUANTITATIVE METRICS WHICH WILL BE USED TO EVALUATE PROGRAM/INTERVENTION): An abbreviated Maslach Burnout Inventory (A-MBI) was distributed prior to the beginning of Fit in Five. The A-MBI is an anonymous survey consisting of fifteen questions that were used to determine levels of burnout among individual participants as well as the residency as a whole. Questions assessed three categories including emotional exhaustion, depersonalization and personal accomplishment. Burnout rates were determined based upon a combined score of emotional exhaustion and depersonalization. Participates that scored greater than the 75th percentile fell into the severe burnout category.

FINDINGS TO DATE (IT IS NOT SUFFICIENT TO STATE FINDINGS WILL BE DISCUSSED): A pre-intervention response rate of 51% has been reported with an overall burnout rate of 25%. The highest rate of burnout was recorded among residents in their second and third years of training. Personal accomplishment was high among almost all participants with only 5% scoring low in this category. A post-intervention A-MBI will be distributed following the program completion to allow comparison of pre-intervention and post-intervention burnout rates.

KEY LESSONS FOR DISSEMINATION (WHAT CAN OTHERS TAKE AWAY FOR IMPLEMENTATION TO THEIR PRACTICE OR COMMUNITY?): Consequences of burnout can be quite high with severe burnout affecting job performance and patient care. Increased attention to interventions such as this may help decrease burnout rates among residents and hopefully lead to decreased burnout rates once residents become practicing physicians.

FRESH PRESCRIPTION: IMPROVING NUTRITION EDUCATION AND ACCESS TO FRESH PRODUCE IN DETROIT Jasmine Omar[2]; Danielle L. Heidemann[1]; Barbara Blum-Alexandar[3]; Chinyere Uju-Eke[3]; Zarina Alam[3]; David E. Willens[1]; Kimberlydawn Wisdom[1]. [1]Henry Ford Health System, Detroit, MI; [2]Henry Ford Hospital, Macomb, MI; [3]Henry Ford Hospital, Detroit, MI. (Control ID #2706393)

STATEMENT OF PROBLEM OR QUESTION (ONE SENTENCE): Lack of basic knowledge of nutrition and limited access to fresh produce contribute to difficulty in controlling chronic diseases like obesity, diabetes, and cardiovascular disease among underserved adults in Detroit.

OBJECTIVES OF PROGRAM/INTERVENTION (NO MORE THAN THREE OBJECTIVES): To improve patient's knowledge of nutrition and confidence in their ability to eat healthy. To improve access to fresh produce by 1) providing financial support, 2) introducing patients to new local Detroit farmer's markets.

DESCRIPTION OF PROGRAM/INTERVENTION, INCLUDING ORGANIZATIONAL CONTEXT (E.G. INPATIENT VS. OUTPATIENT, PRACTICE OR COMMUNITY CHARACTERISTICS): Fresh Prescription is a program that serves patients at several different sites in the Detroit area. We implemented Fresh Prescription at our tertiary-care academic institution in the outpatient Internal Medicine clinic. Eligible participants with body mass index >25 and motivation to learn healthy eating habits were enrolled by their primary care physician from July- September 2016. Participants were given a $10 reward on a rechargeable debit card for completing a nutrition educational counseling session, which could include tele-counseling, cooking demonstrations, and other events. They were able to redeem their reward at local farmer's markets or with boxed food deliveries to receive a maximum total of $40 in fresh produce. Patients underwent a total of 4 counseling sessions over 6 weeks and received an additional $20 boxed food delivery for returning for a 12 week follow up.

MEASURES OF SUCCESS (DISCUSS QUALITATIVE AND/OR QUANTITATIVE METRICS WHICH WILL BE USED TO EVALUATE PROGRAM/INTERVENTION): Success was measured through comparison of pre- and post-survey responses.

FINDINGS TO DATE (IT IS NOT SUFFICIENT TO STATE FINDINGS WILL BE DISCUSSED): A total of 149 patients were referred to the program by their primary care physician. 39 of these patients were enrolled, and 28 patients completed the program (72% completion rate). Post-survey responses are available for 27 of the 39 patients enrolled in the program. 96% of participants reported they were better able to manage their health and their chronic conditions. 78% of participants reported an increase in their daily intake for fresh fruits and vegetables, with an average increase of 2 cups/day. 48% of participants reported a decrease in their intake of unhealthy food items, with an average decrease of 1 item/day. There was an increase in measures of knowledge base, which included ability to select, prepare, and store fresh produce. 85% of participants reported better knowledge of where to buy fresh produce. Price, access, and transportation were still noted to be barriers for many participants. Of the 39 patients who completed the program, 16 returned for follow up on biometrics, including weight and blood pressure. 5 of 16 participants had weight loss, and 5 of 16 had improvement in blood pressure.

KEY LESSONS FOR DISSEMINATION (WHAT CAN OTHERS TAKE AWAY FOR IMPLEMENTATION TO THEIR PRACTICE OR COMMUNITY?): Increasing general nutrition knowledge base among participants led to an increase in the amount of fresh produce consumed, a decrease in unhealthy food items consumed, and increase in ability to manage chronic health conditions. Providing financial resources and improving access to fresh produce are important in supporting patients in an underserved population while encouraging healthy eating habits.

FROM FOE TO FRIEND: MAKING THE ELECTRONIC HEALTH RECORD (EHR) WORK FOR YOU Tanvir Hussain[2]; Elizabeth Lyden[1]; Nizar Wehbi[2]; Lynette Smith[2]; Michael Ash[2]. [1]UNMC, Omaha, NE; [2]Unversity of Nebraska Medical Center, Omaha, NE. (Control ID #2707606)

STATEMENT OF PROBLEM OR QUESTION (ONE SENTENCE): Provider groups require practical strategies for Medicare's new Quality Payment Program (QPP) which will use performance data beginning January 2017

on a minimum of six clinical quality measures to determine Part B reimbursement.

OBJECTIVES OF PROGRAM/INTERVENTION (NO MORE THAN THREE OBJECTIVES): To use clinical decision support (CDS) to improve performance on quality measures

DESCRIPTION OF PROGRAM/INTERVENTION, INCLUDING ORGANIZATIONAL CONTEXT (E.G. INPATIENT VS. OUTPATIENT, PRACTICE OR COMMUNITY CHARACTERISTICS): We designed CDS, named quality measure alerts, or QMAs, for the ambulatory EHR, Epic, for 12 quality measures, which were released over three phases (March, June, September of 2016), across 42 primary care and specialty clinics at an academic health system in Omaha, NE. Phase 1 QMAs included obesity screening and counseling (S&C), breast cancer screening, depression S&C, and influenza immunization. Phase 2 included medicine reconciliation, fall risk screening, hemoglobin A1c control, and tobacco use S&C. Phase 3 included blood pressure control, colon cancer screening, pneumonia vaccination for 65+, and aspirin in vascular disease. QMAs follow PQRS measure specifications. QMAs identify open care gaps and provide instructions tailored to the licensed scope of practice of medical assistants and nurses (who routinely room patients), with expanded single click orders or documentation features and patient data relevant for providers. For example, rooming staff are nudged to screen patients for depression so that providers need only to counsel patients who screen positive. Care provided by one team member modifies the QMA action suggested to subsequent team members in real time until the quality gap is closed. QMAs are clinician-driven self-checks, not pop-ups or hard stops.

MEASURES OF SUCCESS (DISCUSS QUALITATIVE AND/OR QUANTITATIVE METRICS WHICH WILL BE USED TO EVALUATE PROGRAM/INTERVENTION): To determine if the trend in monthly performance improved with the implementation of QMAs, we used a generalized estimating equations approach to fit an interrupted time-series model for each of the quality measures. We restricted analysis to the 77,538 patients seen both in 2015 and in 2016 to reduce confounding due to patient factors. We performed sensitivity analyses introducing indicator variables for each QMA phase to test if performance changed as new measures were added and also modeled results including all patient visits.

FINDINGS TO DATE (IT IS NOT SUFFICIENT TO STATE FINDINGS WILL BE DISCUSSED): Trend in monthly performance statistically significant improved following the implementation of the respective CDS for each of the 12 quality measures. Performance improvement was maintained or accelerated with the introduction of new quality measures. Using 2015 national peer benchmarking data, average percentile performance across the twelve measures increased from the 42%-tile in 2015 to 71%-tile in 2016. Findings did not change in sensitivity analyses.

KEY LESSONS FOR DISSEMINATION (WHAT CAN OTHERS TAKE AWAY FOR IMPLEMENTATION TO THEIR PRACTICE OR COMMUNITY?): One physician quality executive and two clinical informaticists, 0.25 FTE each for nine months, were dedicated to this project. Clinician engagement, technical support from the EHR vendor, and change management strategies targeted at physicians were critical to QMA adoption and success.

GETTING WITH THE GUIDELINES: DEINTENSIFICATION OF GLYCEMIC CONTROL AMONG ELDERLY PATIENTS WITH DIABETES ACROSS TWO GENERAL INTERNAL MEDICINE TEACHING PRACTICES

Betsy Varghese[3]; Robertino Garcia-Cortes[3]; John A. Andrilli[2]; Alfred Burger[4]; Joyce Fogel[3]; Daniel I. Steinberg[1]. [1]Beth Israel Medical Center, New York, NY; [2]Mount Sinai Beth Israel, New York, NY; [3]Mount Sinai Beth Israel, Union City, NJ; [4]Mount Sinai Beth Israel, Icahn School of Medicine at Mount Sinai, New York, NY. (Control ID #2708376)

STATEMENT OF PROBLEM OR QUESTION (ONE SENTENCE): One of the American Geriatric Society Choosing Wisely recommendations is to avoid intensive glucose control in elderly patients with type 2 diabetes as it increases the risk of hypoglycemia and medication related side effects without improving clinical outcomes.

OBJECTIVES OF PROGRAM/INTERVENTION (NO MORE THAN THREE OBJECTIVES): 1. Reduce the number of patients seen at 2 teaching clinics with type 2 DM > 75 years old and a hemoglobin A1C less than 7.0% by 15% over one year. 2. Maintain reasonable control with a HgbA1c of less than 9.0% in patients whose regimen is deescalated. 3. Educate faculty and residents on appropriate DM management in the >75 population in accordance with AGS and ADA recommendations.

DESCRIPTION OF PROGRAM/INTERVENTION, INCLUDING ORGANIZATIONAL CONTEXT (E.G. INPATIENT VS. OUTPATIENT, PRACTICE OR COMMUNITY CHARACTERISTICS): Medical residents and faculty practicing at one of two resident primary clinic sites will participate in a one hour interactive, case-based learning session on deintensification of therapy in patients over the age of 75 with type 2 diabetes. Resources will include the AGS Choosing Wisely guideline and the American Diabetes Association's suggested approach to determining the appropriate hemoglobin A1c for older patients. Residents and faculty will learn a standard approach to deintensification of therapy that includes removing or reducing sulfonylurea medications, making maximum safe use of metformin and reducing dosages of insulin. Patients will be identified at their next visit via an electronic alert that will prompt their provider to evaluate them for deintensification. The standard approach taught in the educational session will be posted in exam rooms as well as printed on a laminated pocket card that will be distributed to residents and faculty.

MEASURES OF SUCCESS (DISCUSS QUALITATIVE AND/OR QUANTITATIVE METRICS WHICH WILL BE USED TO EVALUATE PROGRAM/INTERVENTION): After deintensification, a follow-up hemoglobin A1c will be measured 3 months later and then as clinically indicated. The most recent hemoglobin A1c measurement will be counted as the outcome measure for each patient.

FINDINGS TO DATE (IT IS NOT SUFFICIENT TO STATE FINDINGS WILL BE DISCUSSED): A query of our electronic health record revealed 84 patients at Clinic A and 140 patients at Clinic B who are greater than 75 years old and have a hemoglobin A1c of less than 7.0%. Our target of 15% reduction in hemoglobin A1C would positively impact 34 patients.

KEY LESSONS FOR DISSEMINATION (WHAT CAN OTHERS TAKE AWAY FOR IMPLEMENTATION TO THEIR PRACTICE OR COMMUNITY?): By highlighting the prevalence of intensive glucose control in the elderly population and educating primary care physicians on a systematic method for deintensification, we hope to provide a valuable approach for reducing polypharmacy and adverse outcomes related to type 2 diabetes management.

GOALS OF CARE DOCUMENTATION: A STANDARD OF CARE WHICH IS EASIER SAID THAN DONE
Tuyet-Trinh Truong[2]; Julie M. Pearson[2]; Vinh-Tung Nguyen[1]; Beth G. Raucher[3]. [1]Icahn School of Medicine at Mount Sinai, New York, NY; [2]Mount Sinai Hospital, New York, NY; [3]Mount Sinai School of Medicine, New York, NY. (Control ID #2705846)

STATEMENT OF PROBLEM OR QUESTION (ONE SENTENCE): Despite the benefits of GOC discussions inpatient providers frequently fail to have this conversation and/or adequately document it in the electronic medical record (EMR), leading to potential delays in resuscitation efforts or against a patient's wishes, urgent/rushed conversations during critical illness, or serious medical errors.

OBJECTIVES OF PROGRAM/INTERVENTION (NO MORE THAN THREE OBJECTIVES): A physician-lead mortality review workgroup comprised of 30 hospitalists, sub-specialists and internal medicine residents found that advanced planning and GOC documentation was inadequate in nearly 20% of cases reviewed ($N = 126$, Oct 14–Sept 15) and only 30% of cases had a palliative care (PC) consult. A subcommittee was formed to address these deficiencies with the following objectives: 1) improve physician communication skills regarding end of life care, 2) improve GOC documentation in the EMR, and 3) increase PC involvement.

DESCRIPTION OF PROGRAM/INTERVENTION, INCLUDING ORGANIZATIONAL CONTEXT (E.G. INPATIENT VS. OUTPATIENT, PRACTICE OR COMMUNITY CHARACTERISTICS): An online mortality review tool was completed for all mortalities on a medicine inpatient service (teaching and non-teaching). The tool assessed completeness of documentation, adequacy of handoffs and supervision, diagnostic errors/delays, medication or treatment errors, adverse events, and appropriate care escalation. Questions on end of life care include documentation of advanced directives and involvement of PC. The main barriers to adequate GOC documentation were inability of patients to participate, lack of healthcare proxy or surrogate, disagreement between family members (including cases where discussions were had but there was no clear decision made), and death early in the hospitalization. Surprisingly, providers did not identify personal discomfort in having the GOC discussion. A multi-modal approach was used to address these barriers. Educational sessions with residents and hospitalists using case-based examples with inadequate GOC documentation were utilized to facilitate a conversation about barriers and how to overcome them. A standardized EMR tab to document advanced directions was developed and disseminated to attending and housestaff physicians. Hospitalists were also selected to participate in a 6-week Geriatrics Communication Course which included role playing for difficult GOC discussions.

MEASURES OF SUCCESS (DISCUSS QUALITATIVE AND/OR QUANTITATIVE METRICS WHICH WILL BE USED TO EVALUATE PROGRAM/INTERVENTION): The mortality review group continued to assess cases for adequate GOC documentation (measured by completeness of advanced directive EMR aid) and PC involvement (as yes or no question regarding the presence of a PC consult).

FINDINGS TO DATE (IT IS NOT SUFFICIENT TO STATE FINDINGS WILL BE DISCUSSED): Of 122 cases reviewed (Oct 15–Mar 16), only 6% of cases reviewed had inadequate GOC documentation. PC involvement increased to almost 60% in the same timeframe.

KEY LESSONS FOR DISSEMINATION (WHAT CAN OTHERS TAKE AWAY FOR IMPLEMENTATION TO THEIR PRACTICE OR COMMUNITY?): GOC documentation is often inadequate which can lead to confusion and errors when a life threatening event occurs. Compliance with documentation and involvement of PC improved when providers were made aware of the problem and given a template which included all of the required fields to ensure complete documentation.

HENNEPIN HEALTH ACCESS CLINIC: PAYER-PROVIDER PARTNERSHIPS ADDRESSING PSYCHOSOCIAL BARRIERS IN PRIMARY CARE
Kate Hust. Hennepin County Medical Center, Minneapolis, MN. (Control ID #2702849)

STATEMENT OF PROBLEM OR QUESTION (ONE SENTENCE): Does engagement in team-based primary care with payer-specific partnerships increase primary care engagement and decrease utilization of emergency and inpatient services?

OBJECTIVES OF PROGRAM/INTERVENTION (NO MORE THAN THREE OBJECTIVES): Provide services for a population of Hennepin Health members to (1) decrease emergency department utilization, (2) decrease inpatient hospitalizations, and (3) increase engagement in primary care.

DESCRIPTION OF PROGRAM/INTERVENTION, INCLUDING ORGANIZATIONAL CONTEXT (E.G. INPATIENT VS. OUTPATIENT, PRACTICE OR COMMUNITY CHARACTERISTICS): The Hennepin Health Access (HHA) Clinic provides team-based primary care within a safety-net health system in Minneapolis. The clinic aims to address psychosocial barriers to engagement in traditional primary care for single adults covered by a unique Medicaid payer, Hennepin Health (a managed care program partnering with the county departments of public health and human services, the local safety-net hospital, and a local community health center). HHA patients are mostly men and younger than 50 years old. They have high rates of homelessness (78%), chemical dependency (68%), and mental illness (75%). The clinic team includes a psychologist, a chemical dependency counselor, care coordination staff, and medical providers. Utilizing payer-specific resources, the HHA team works closely with community-based providers for mobile case management and housing navigation.

MEASURES OF SUCCESS (DISCUSS QUALITATIVE AND/OR QUANTITATIVE METRICS WHICH WILL BE USED TO EVALUATE PROGRAM/INTERVENTION): Anecdotal evidence suggests there are fewer ED visits and hospitalizations for patients after engagement with HHA. Chart review of the first patients to visit the HHA Clinic compared utilization of ED services and inpatient admissions in the year prior to their first clinic visit with utilization patterns after engagement. Only patients with at least 6 months of post-engagement data available were included, and rates were adjusted to represent average annual utilization. Data were analyzed using paired t-tests. Visits with the HHA team were counted as a marker of primary care engagement.

FINDINGS TO DATE (IT IS NOT SUFFICIENT TO STATE FINDINGS WILL BE DISCUSSED): Chart review of 222 individuals showed downward trend in ED visits and hospitalizations, comparing both average and total occurrences, but no significant difference in pre- and post-engagement utilization ($p = 0.44$ for medical hospitalizations, $p > 0.9$ for psychiatric hospitalizations, urgent care, ED, and psychiatric ED visits). Patients had an average of 12.3 total clinic visits in 12 months: 5.87 medical, 3.45 care coordination, 1.52 chemical dependency, and 1.48 psychology. While there is no statistically significant difference in

utilization based on this chart review, data previously collected by Hennepin Health did show economic impact with total per member per month (PMPM) costs decreasing 36.4% after at least one encounter in the HHA Clinic. ED and inpatient PMPM claims costs decreased 56.8 and 54.2% respectively with a 13.5% increase in outpatient PMPM claims costs.

KEY LESSONS FOR DISSEMINATION (WHAT CAN OTHERS TAKE AWAY FOR IMPLEMENTATION TO THEIR PRACTICE OR COMMUNITY?): Expanding primary care teams to include experts in addressing psychosocial needs may change patients' utilization patterns. It also provides support to primary care providers whose patients' may need stabilization of basic needs prior to successful engagement with a medical regimen.

HIGH-RISK COPD ASYNCHRONOUS SPECIALTY REVIEW Luis Ticona[1]; Susan A. Goldstein[2]; Jessica McCannon[2]; Sandhya K. Rao[1]. [1]Massachusetts General Hospital, Boston, MA; [2]Mass General Hospital, Boston, MA. (Control ID #2705955)

STATEMENT OF PROBLEM OR QUESTION (ONE SENTENCE): Implementation of guideline or evidence based therapies, confirmation of disease diagnosis, and use of interventions such as pulmonary rehab, chronic oxygen therapy, and vaccinations by primary care physicians is uneven.

OBJECTIVES OF PROGRAM/INTERVENTION (NO MORE THAN THREE OBJECTIVES): 1) Develop an algorithm to identify 'high risk' COPD patients using administrative and billing data 2) Complete a pulmonologist COPD chart review to identify gaps in guideline driven therapy 3) Disseminate reports that alert primary care providers to existing gaps of care

DESCRIPTION OF PROGRAM/INTERVENTION, INCLUDING ORGANIZATIONAL CONTEXT (E.G. INPATIENT VS. OUTPATIENT, PRACTICE OR COMMUNITY CHARACTERISTICS): In 2012, approximately 4300 patients had a diagnosis of COPD at MGH. There were 567 COPD-related admissions in this population, with a 30 day readmission rate of 21%. While it is known that this is often a high risk population; the observed to expected admissions ratio using risk adjusted data was 1.18. When compared to a population of similar risk status (age, gender and co-morbidities), the patient population of MGH had a proportionally higher hospital readmission rate. Additionally, there is evidence that readmissions after discharge with COPD were higher in the community health centers affiliated with MGH than in other academic practices, reaching almost 35%. Billing data can be used to design algorithms to identify potentially 'high risk' patients for COPD, using hospital and ED utilization, as well as clinical features such as the number of exacerbations during a year. Based on the algorithm, 70% (50/71) of patients were flagged as potentially "high risk". As care of COPD patients is shared among primary care providers, subspecialty providers in inpatient and outpatient care settings; multidisciplinary partnerships are needed to improve care of patients with COPD. We partnered with a pulmonologist to review the potential high risk cases identified, as described above, to quantify the gaps of care across several guideline driven aspects of COPD care, including appropriate diagnosis, pharmacologic therapy, and vaccinations.

MEASURES OF SUCCESS (DISCUSS QUALITATIVE AND/OR QUANTITATIVE METRICS WHICH WILL BE USED TO EVALUATE PROGRAM/INTERVENTION): 1)Physician assessment of report utility (SURVEY) 2)Count of recommended changes/patient (Chart review database): Proportion of patients with 1 recommended change, 2 recommended changes, >2 recommended changes 3)Count of completed recommendations/patient: At 3 and 6 months. 4)Coung of high Yield recommendations: (Pulmonary rehab, Lung cancer screening, diagnosis of COPD). *Future metrics*: Number of Urgent care visits, ED visits, COPD admissions 6 months post report dissemination.

FINDINGS TO DATE (IT IS NOT SUFFICIENT TO STATE FINDINGS WILL BE DISCUSSED): Pulmonology Chart review findings: (Amongst many other findings) −32% had no record of spirometry −30% needed different or extra medications −46% needed cancer screening −81% needed pulmonary rehabilitation

KEY LESSONS FOR DISSEMINATION (WHAT CAN OTHERS TAKE AWAY FOR IMPLEMENTATION TO THEIR PRACTICE OR COMMUNITY?): −Specialty review of high risk COPD patients is feasible, and relatively easy to do for pulmonology staff using an electronic medical record. -High Risk COPD patients without a pulmonologist have significant gaps in care. -Partnering with specialty providers to asynchronously review high-risk cases can yield valuable clinical information.

HIGH-VALUE CHRONIC KIDNEY DISEASE CARE: DESIGNING A COMPREHENSIVE OUTPATIENT PROGRAM TO TRANSITION PATIENTS TO RENAL REPLACEMENT THERAPY Daniela Iribarne; Sri Lekha Tummalapalli; Alexis Kowalski; Joji Tokita; Lindsay E. Jubelt. Icahn School of Medicine at Mount Sinai, New York, NY. (Control ID #2706320)

STATEMENT OF PROBLEM OR QUESTION (ONE SENTENCE): Sixty percent of patients with end-stage renal disease (ESRD) in our health system start renal replacement therapy (RRT) via unplanned hemodialysis, which is associated with higher use of central venous catheters, higher hospitalization and mortality rates, and higher costs.

OBJECTIVES OF PROGRAM/INTERVENTION (NO MORE THAN THREE OBJECTIVES): 1) Identify patients with chronic kidney disease (CKD) at high risk of progressing to ESRD, 2) educate patients on RRT treatment modality options, and 3) increase the percentage of patients with CKD undergoing a timely and planned transition to RRT.

DESCRIPTION OF PROGRAM/INTERVENTION, INCLUDING ORGANIZATIONAL CONTEXT (E.G. INPATIENT VS. OUTPATIENT, PRACTICE OR COMMUNITY CHARACTERISTICS): Our intervention is a CKD transitions clinic that incorporates automated patient identification, shared decision-making, and standardized care pathways. To inform the clinic design, we conducted semi-structured interviews with supervisors of eight external CKD transitions programs identified by convenience sampling. Based on our findings, we staffed the clinic with a clinical nurse specialist, a care coordinator, and a nephrologist. We developed an algorithm that creates a registry of CKD patients from the electronic health record. Eligible patients had CKD with an estimated glomerular filtration rate (eGFR) $<20mL/min/1.73^2$ and a visit within the health system in the last 18 months. Once referred, a patient has a 1:1 intake evaluation with the nurse to collect key pieces of medical information and identify readiness for the program. Subsequent visits use shared decision-making to help the patient select an RRT modality. The patient then follows a standardized care pathway tailored to the modality choice. The care coordinator oversees the patient's trajectory through the care pathway to ensure timely access and adherence to the treatment plan. The nephrologist and nurse specialist work together to ensure patients are meeting evidence-based CKD quality measures.

MEASURES OF SUCCESS (DISCUSS QUALITATIVE AND/OR QUANTITATIVE METRICS WHICH WILL BE USED TO

EVALUATE PROGRAM/INTERVENTION): Our primary outcome measure is rate of planned outpatient RRT initiation. Secondary outcome measures are rate of RRT initiation with home modalities and rate of central venous catheter use for RRT initiation.

FINDINGS TO DATE (IT IS NOT SUFFICIENT TO STATE FINDINGS WILL BE DISCUSSED): Our automated electronic registry identified 2,436 patients with high-risk CKD. Of these, only 473 (19%) had a recent visit with a nephrologist. Our interviews identified the following themes in CKD transitions care: 1) extended visits for patient education, 2) multidisciplinary involvement including vascular surgery, 3) technology solutions that automate evidence-based medical practices, and 4) operation under alternative reimbursement models.

KEY LESSONS FOR DISSEMINATION (WHAT CAN OTHERS TAKE AWAY FOR IMPLEMENTATION TO THEIR PRACTICE OR COMMUNITY?): The large number of patients in our health system with high-risk CKD who are not yet engaged in nephrology care confirms a strong need for a proactive and coordinated CKD transitions program. Early results from external multidisciplinary CKD programs show a higher utilization of home RRT modalities. More information is needed to better understand patient barriers to planned RRT and cost effectiveness of our intervention.

HIGHLY SUCCESSFUL EFFECTIVENESS OF TOBACCO USE SCREENING AT OUTSET OF ALL INPATIENT ENCOUNTERS, AN INSTITUTION-WIDE INITIATIVE

Alpesh Amin. UC Irvine, Orange, CA. (Control ID #2707726)

STATEMENT OF PROBLEM OR QUESTION (ONE SENTENCE): To analyze the effectiveness of an initiative to screen for tobacco use, screen for willingness to quit, and refer appropriate patients for treatment at the beginning of all inpatient encounters.

OBJECTIVES OF PROGRAM/INTERVENTION (NO MORE THAN THREE OBJECTIVES): Tobacco use is the leading cause of preventable morbidity and mortality in the nation and continues to be a major contributor of excess medical care costs. Despite widespread education about the adverse health effects of cigarette smoking, approximately 40 million adults continue to smoke in the US today. For this reason, tobacco cessation techniques remain a heavily studied preventive medicine topic. This study analyzes (1) the effectiveness of an initiative to screen for tobacco use, (2) screen for willingness to quit, and (3) refer appropriate patients for treatment at the beginning of all inpatient encounters at UC Irvine Medical Center.

DESCRIPTION OF PROGRAM/INTERVENTION, INCLUDING ORGANIZATIONAL CONTEXT (E.G. INPATIENT VS. OUTPATIENT, PRACTICE OR COMMUNITY CHARACTERISTICS): Hospitalist led, institution-wide training and EMR changes were initiated to facilitate screening of all adult hospitalized patients. Novel workflows were created, with RNs/MAs involved with patient intake, were tasked with initiation of screening and referral to tobacco use quit-line. These workflows standardized the process of tobacco use screening, referral, and follow up for all patients. A significant change in our workflows was that the initial assessment of current tobacco use and willingness to quit made by a RN or MA at the beginning of an encounter. Tobacco users with an interest in quitting were automatically referred to a cessation program using a custom designed electronic referral through our EMR system to a hotline 90 miles away. Physicians then reviewed the screening results and were able to provide counseling and/or pharmacologic treatment.

MEASURES OF SUCCESS (DISCUSS QUALITATIVE AND/OR QUANTITATIVE METRICS WHICH WILL BE USED TO EVALUATE PROGRAM/INTERVENTION): This study analyzed the effectiveness of this practice, which differed from other institutions where assessment of tobacco use and willingness to quit was made at a later time than the outset of an encounter or admission, and was most often done by a physician.

FINDINGS TO DATE (IT IS NOT SUFFICIENT TO STATE FINDINGS WILL BE DISCUSSED): All adult patients seen in the hospital were included in this study; no patients were excluded. There was nearly a ten-fold increase institution-wide in total number of patients screened for tobacco use, with greater than 97% of patient's screened. Over a 7 month period, a total of 776 patients were referred to the quit-line, with 367 (47.3%) of those patients being successfully enrolled, surpassing totals at comparison institutions within the same collaborative over the same period of time.

KEY LESSONS FOR DISSEMINATION (WHAT CAN OTHERS TAKE AWAY FOR IMPLEMENTATION TO THEIR PRACTICE OR COMMUNITY?): Initiating tobacco use screening and cessation techniques utilizing a team approach at the beginning of the encounter by non-physician staff is effective compared to physician-initiated screening later in encounter or hospital admission. Our workflows automate the process of tobacco use screening and willingness to quit, are highly effective, and resulted in nearly universal screening of adult inpatient encounters. These efforts helped UC Irvine physicians achieve success in PQRS preventive care measures for tobacco use.

HOW FEASIBLE IS ELECTRONIC PORTAL ACCESS TO INPATIENT DISCHARGE SUMMARIES FOR PATIENTS IN A SAFETY-NET HOSPITAL?

Jacob Stein[1]; Jared W. Klein[2]; Sue Peacock[2]; Natalia Oster[2]; Sara L. Jackson[2]; Thomas Payne[2]; Joann G. Elmore[1]. [1]Univ of WA, Seattle, WA; [2]University of Washington, Seattle, WA. (Control ID #2706733)

STATEMENT OF PROBLEM OR QUESTION (ONE SENTENCE): Patients' access to their outpatient electronic medical records via online portals may increase patient satisfaction and understanding of their health care. However, little is known about the utilization and acceptability of patient access to *inpatient* medical records post-discharge, especially among vulnerable patient populations.

OBJECTIVES OF PROGRAM/INTERVENTION (NO MORE THAN THREE OBJECTIVES): To evaluate the feasibility of electronically communicating inpatient discharge summary records to vulnerable patient populations via a secure online portal.

DESCRIPTION OF PROGRAM/INTERVENTION, INCLUDING ORGANIZATIONAL CONTEXT (E.G. INPATIENT VS. OUTPATIENT, PRACTICE OR COMMUNITY CHARACTERISTICS): Over a 6-week period in 2016, daily admissions to the medicine service of a public safety-net hospital were reviewed by a study physician. Potentially eligible patients were age 18 or older, spoke English, considered mentally and physically competent, with likely discharge to home. Study staff then approached potentially eligible patients to further assess eligibility, and determine if the patient had access to both email and a telephone. All eligible patients who consented to the study were then randomized to receive either 1) an intervention that included a personal training session about using an electronic patient portal or 2) usual discharge planning and care instructions. Patients randomized to the intervention were scheduled to receive two email reminders to log into the patient portal

within one week of being discharged. A follow-up survey was conducted with all patients (intervention and control) two weeks after discharge.

MEASURES OF SUCCESS (DISCUSS QUALITATIVE AND/OR QUANTITATIVE METRICS WHICH WILL BE USED TO EVALUATE PROGRAM/INTERVENTION): A follow-up survey was conducted with all patients (intervention and control) two weeks after discharge, initially by email, and if no response then via telephone, email, and postal mail.

FINDINGS TO DATE (IT IS NOT SUFFICIENT TO STATE FINDINGS WILL BE DISCUSSED): Of the 533 charts reviewed during the study period, 108 (20.3%) were not approachable (e.g., they could not be located or were indisposed each time staff sought them out prior to discharge), 219 (41.1%) were ineligible, and 87 (37.3%) reported having no email and thus would not be able to access the electronic portal. Of the 107 eligible and consented patients, 67 were randomized to the intervention and 40 to the control (usual discharge care). We are currently in the process of conducting follow-up surveys, and thus far have found that patients often provided unusable email and telephone addresses (data collection ongoing).

KEY LESSONS FOR DISSEMINATION (WHAT CAN OTHERS TAKE AWAY FOR IMPLEMENTATION TO THEIR PRACTICE OR COMMUNITY?): At least one third of patients assessed for inclusion in this safety-net hospital population did not have email access; among those who reported having email addresses, many were not usable. These pilot data have implications for better understanding the utilization and effectiveness of electronic communication with vulnerable patient populations with complex medical conditions. Use of peer navigators or post-discharge outreach medical providers could be an effective link for high-risk patients' continuity of care and may improve the potential utility of electronic health information in patient care.

IMPACT OF A HIGH VALUE CARE CHAMPION ON PHYSICIAN ORDERING PRACTICES DURING A 3RD YEAR INTERNAL MEDICINE CLERKSHIP Ryan Nall. University of Florida, Gainseville, FL. (Control ID #2707360)

STATEMENT OF PROBLEM OR QUESTION (ONE SENTENCE): Can a 3rd year medical student serving as a high value care (HVC) champion impact physician ordering practices?

OBJECTIVES OF PROGRAM/INTERVENTION (NO MORE THAN THREE OBJECTIVES): The objectives of this intervention are twofold. First, to evaluate whether by serving as a HVC champion, 3rd year medical students on an inpatient internal medicine teaching service can reduce the ordering of unnecessary tests and procedures by physicians on the team. Second, to assess the effect playing an active role in HVC has on students' attitudes about HVC.

DESCRIPTION OF PROGRAM/INTERVENTION, INCLUDING ORGANIZATIONAL CONTEXT (E.G. INPATIENT VS. OUTPATIENT, PRACTICE OR COMMUNITY CHARACTERISTICS): All students on the internal medicine clerkship at the University of Florida College of Medicine learn about HVC through a series of online self-study modules. This intervention added an additional 15 min orientation for all students on the Society of Hospital Medicine's 5 "Choosing Wisely" Guidelines during the orientation for the rotation. A subgroup of students rotating on two of the internal medicine teams were oriented, to the role of HVC champions through a 15 min presentation on ways they can advocate for the HVC guidelines. They were encouraged to initiate discussion of HVC on rounds and serve as a reminder to the SHM's "Choosing Wisely" Guidelines. How the students decided to implement the role of HVC Champion was up to them, there were no defined expectations. Examples of ways to advocate for HVC included but weren't limited to: − Giving a short presentation on the SHM "Choosing Wisely" Guidelines to the team - Reviewing the team's patient list each day before rounds with the senior resident and identify all patients on telemetry or with a urinary catheter and discuss with the team if these interventions are still needed - Reviewing "daily labs" ordered for the team's patients with interns and resident to determine if chemistry panels and CBCs are still indicated on a daily basis - Asking a question about the value of a particular test or treatment on rounds - Starting a discussion about the indications for red blood cell transfusion All attendings, residents, and interns on the intervention teams will be made aware of this project and the role of the HVC champion through an email at the beginning of rotation.

MEASURES OF SUCCESS (DISCUSS QUALITATIVE AND/OR QUANTITATIVE METRICS WHICH WILL BE USED TO EVALUATE PROGRAM/INTERVENTION): Data on number of CBCs, CMPs, red blood cell transfusions, telemetry days, urinary catheter days, age, gender, admitting diagnosis, and length of stay will be collected for patients cared for on the teams with a high value care champion. The same data will be compared to teams without a student serving in this role. Retrospective data on ordering practices will also be reviewed.

FINDINGS TO DATE (IT IS NOT SUFFICIENT TO STATE FINDINGS WILL BE DISCUSSED): Data is currently under active review and will be available at the time of the conference.

KEY LESSONS FOR DISSEMINATION (WHAT CAN OTHERS TAKE AWAY FOR IMPLEMENTATION TO THEIR PRACTICE OR COMMUNITY?): This intervention demonstrates a unique approach (one other similar project to our knowledge) to both educating students on high value care principals and attempting to impact physician ordering practices and reduce unnecessary tests and procedures. The approach would be easily dissmeninated at other academic medical centers.

IMPLEMENTATION OF A NALOXONE PRESCRIBING TOOLKIT IN AN ACADEMIC PRIMARY CARE CLINIC Benjamin A. Howell[1]; Tamara Malm[2]. [1]Yale School of Medicine, New Haven, CT; [2]University of St. Joseph, West Hartford, CT. (Control ID #2705481)

STATEMENT OF PROBLEM OR QUESTION (ONE SENTENCE): Despite many patients in primary care clinics being at high risk for opiate overdose, the rate of prescribing naloxone in primary care remains low.

OBJECTIVES OF PROGRAM/INTERVENTION (NO MORE THAN THREE OBJECTIVES): To increase knowledge of and comfort with prescribing naloxone among internal medicine residents. To address barriers to prescribing naloxone to patients at high risk of opiate overdose in a primary care clinic.

DESCRIPTION OF PROGRAM/INTERVENTION, INCLUDING ORGANIZATIONAL CONTEXT (E.G. INPATIENT VS. OUTPATIENT, PRACTICE OR COMMUNITY CHARACTERISTICS): It has previously been determined by this group that the naloxone prescribing rate for patients at high risk of opiate overdose in our primary care clinic is ~2%, despite the increased awareness of opioid-related deaths. Internal medicine residents and attendings were surveyed to determine barriers to prescribing naloxone, and it was found that there was a gap in both knowledge of the product and comfort

with prescribing. An interdisciplinary team, including pharmacists and physicians, was assembled to develop and implement a Naloxone Prescribing Toolkit. The toolkit included checklists and other resources for counselling and prescribing naloxone based on the barriers identified by physicians in the survey. These included how to take a thorough history around opioid use, language for discussion of opioid use, signs and symptoms of overdose and how naloxone works, specific diagrams and directions for use of each naloxone formulation, and steps for proper follow-up with patients after naloxone has been prescribed. The toolkit was disseminated via regular educational sessions for medicine residents. Personalized letters to every provider were disseminated, listing names of patients on their patient panel that were eligible for naloxone prescription.

MEASURES OF SUCCESS (DISCUSS QUALITATIVE AND/OR QUANTITATIVE METRICS WHICH WILL BE USED TO EVALUATE PROGRAM/INTERVENTION): After 3 and 6 months of the intervention, we will reassess the rate of naloxone prescribing in our primary care clinic. Additionally, monthly feedback on the accuracy of the patients listed on the personalized letter, and the utility of the educational sessions, and toolkit will be used to further refine the Naloxone Prescribing Toolkit.

FINDINGS TO DATE (IT IS NOT SUFFICIENT TO STATE FINDINGS WILL BE DISCUSSED): Anecdotally, both resident and attending physicians at our Primary Care Center have inquired about naloxone prescribing and asked for guidance in correct naloxone teaching and prescribing since the implementation of the intervention. Feedback from physicians to date has uncovered weaknesses in the report used to generate patient lists for each PCP. Subsequently, different methods for collecting this information from the EMR are being investigated.

KEY LESSONS FOR DISSEMINATION (WHAT CAN OTHERS TAKE AWAY FOR IMPLEMENTATION TO THEIR PRACTICE OR COMMUNITY?): Despite the increased awareness of the opioid epidemic rates of naloxone prescribing in primary care are still low creating barriers to accessing this life-saving medication. Before our intervention many medical residents lacked basic knowledge about assessing risk of opiate overdose and were ill equipped to prescribe naloxone, lacking the necessary tools to discuss different naloxone formulations and comfort prescribing this medication. Physicians and pharmacists can work together to ensure that patients at high risk of overdose receive thorough counseling and access to naloxone.

IMPLEMENTATION OF A PHARMACIST-DELIVERED ASTHMA EDUCATION AND MANAGEMENT PROGRAM IN A COMMUNITY TEACHING PRACTICE Brandon Sucher[4]; Laura Sherman[2]; Nicole Soiseth[2]; Dale Terasaki[2]; Angela Thompson[3]; Elisabeth Ihler[1, 2]. [1]Presbyterian/St. Luke's Medical Center, Denver, CO; [2]University of Colorado, Aurora, CO; [3]University of Colorado School of Pharmacy, Aurora, CO; [4]Regis University School of Pharmacy, Denver, CO. (Control ID #2705302)

STATEMENT OF PROBLEM OR QUESTION (ONE SENTENCE): Poor patient understanding of asthma has been shown to be associated with increased morbidity.

OBJECTIVES OF PROGRAM/INTERVENTION (NO MORE THAN THREE OBJECTIVES): To identify patients with poorly controlled asthma To improve adherence to standard guidelines for asthma care To improve asthma control in these patients

DESCRIPTION OF PROGRAM/INTERVENTION, INCLUDING ORGANIZATIONAL CONTEXT (E.G. INPATIENT VS. OUTPATIENT, PRACTICE OR COMMUNITY CHARACTERISTICS): A comprehensive asthma education and management program (CAEMP) was implemented in a primary care teaching practice. Physicians used the clinic EHR and "warm handoffs" when possible to refer patients to the CAEMP. The CAEMP was free to patients and was delivered by onsite clinical pharmacists. The program includes 3 visits lasting 30 to 60 min 6 to 8 weeks apart. The CAEMP addressed all of the National Asthma Control Initiative's Guidelines Implementation Panel priority messages and included: education on pathophysiology and roles of medications; identifying triggers and comorbidities; controlling environmental triggers; assessing asthma severity and control; demonstrating inhaler technique and inspiratory flow; provision of PEF meters, spacers, and nebulizers if needed; identifying a PEF personal best; developing asthma action plans; referrals for tobacco cessation counseling; and provision of influenza and pneumococcal vaccinations.

MEASURES OF SUCCESS (DISCUSS QUALITATIVE AND/OR QUANTITATIVE METRICS WHICH WILL BE USED TO EVALUATE PROGRAM/INTERVENTION): Percentage of referred patients who completed CAEMP visits Change in ACT (asthma control test) before and after education. (A score of <20 indicates poor asthma control.) Receipt of influenza and pneumococcal vaccination Identification of common errors in inhaler use

FINDINGS TO DATE (IT IS NOT SUFFICIENT TO STATE FINDINGS WILL BE DISCUSSED): Between 12/19/14 and 10/17/16, 45 patients were referred to the CAEMP. Twenty-six patients (57%) attended at least one visit. Eighteen (69%) attended one visit, and only 2 patients completed the full 3 visits. ACT scores at referral of the two groups were similar (mean of 14.75 in the visit group, 15.26 in the non-visit group, NS). Only 3 patients in the non-visit group had a follow up ACT score compared with 15 patients in the visit group (follow-up ACT mean of 17, an increase of 3, $p = 0.1$). Influenza vaccination (2015–16 season): 17 patients in the visit group (65%) and 10 (52%) in the non-visit group. Pneumococcal vaccination: 20 patients (77%) in the visit group and 15 (79%) in the non-visit group. Eighteen of the 26 patients (69%) who had asthma teaching visits had errors with inhaler use. The most common errors: inhaling too fast and failing to actuate the inhaler.

KEY LESSONS FOR DISSEMINATION (WHAT CAN OTHERS TAKE AWAY FOR IMPLEMENTATION TO THEIR PRACTICE OR COMMUNITY?): Referral of patients with uncontrolled asthma to pharmacist-led sessions for education and management identified frequent errors in medication usage, and suggest a trend toward improvement in asthma control after. However, uptake was low and very few patients were willing to attend more than one session. When possible, a "warm handoff" between clinician and educator may result in increased patient uptake.

IMPLEMENTATION OF AN ACADEMIC CLINICAL PARTNERSHIP WITH THE INDIAN HEALTH SERVICE Matthew Tobey; Tom Peteet; Devin Oller; Omar Amir; Katrina Armstrong. Massachusetts General Hospital, Somerville, MA. (Control ID #2705547)

STATEMENT OF PROBLEM OR QUESTION (ONE SENTENCE): Many rural American Indian communities experience severe health disparities and strained health systems; however, few academic health centers provide clinicians to staff Indian Health Service sites.

OBJECTIVES OF PROGRAM/INTERVENTION (NO MORE THAN THREE OBJECTIVES): Chronic understaffing and administrative lapses of Indian Health Service (IHS) sites in the Northern Plains has been the subject of multiple Congressional inquiries. A year ago, a failed Center for Medicare and Medicaid Services (CMS) survey of the sites led to temporary decommissioning of departments at several IHS sites. Therefore, 1) Using the clinical resources of an academic health center, we sought to create a sustainable, long-distance clinical partnership at an IHS site to stabilize care systems. 2) Given the challenges to care delivery within such an IHS site, few innovative or community-based services exist; we sought to facilitate such programs.
DESCRIPTION OF PROGRAM/INTERVENTION, INCLUDING ORGANIZATIONAL CONTEXT (E.G. INPATIENT VS. OUTPATIENT, PRACTICE OR COMMUNITY CHARACTERISTICS): To help meet the needs of an understaffed Indian Health Service site, we have developed a full-time rotating clinical position with academic internists at a rural IHS hospital and clinic. To our knowledge, this constitutes the first such partnership in the United States. Early partnership goals have included effectively sharing a patient panel, enhancing inpatient and outpatient care services at the site, engaging with the community, and participating in efforts to cultivate links between federally-managed care and community initiatives. Our program's providers serve in two-week rotations. One of four academic clinicians is present at all times.
MEASURES OF SUCCESS (DISCUSS QUALITATIVE AND/OR QUANTITATIVE METRICS WHICH WILL BE USED TO EVALUATE PROGRAM/INTERVENTION): 1. Faculty review of the program with qualitative surveys is planned semiannually for the first three years of the partnership. 2. The primary measure of success - per the community - will consist of a stable clinical presence at the site. Missed days or rotations will be reviewed in detail. 3. Qualitative community and patient input is sought monthly as part of monitoring and evaluation
FINDINGS TO DATE (IT IS NOT SUFFICIENT TO STATE FINDINGS WILL BE DISCUSSED): We have successfully established a 365 day/year academic partnership at a challenged IHS site. In the initial phase of implementation we have: −Developed a high-risk patient care system -Streamlined shared clinical responsibilities -Learned lessons regarding clinical process improvement, as below -Learned lessons regarding community engagement, as below
KEY LESSONS FOR DISSEMINATION (WHAT CAN OTHERS TAKE AWAY FOR IMPLEMENTATION TO THEIR PRACTICE OR COMMUNITY?): Category A: IHS-based care 1. Shared panel management is possible with a complex care list, shared notifications, shared notes, and weekly 30-min calls 2. Chronic understaffing of administrative and support positions can limit clinic system redesign 3. Our team have thus far made fewer requests for telemedicine and tele-specialty consultation than anticipated Category B: Community-based care: 1. Clinical work at community activities (basketball games, traditional ceremonies) serves as a helpful scaffold for community partnership 2. Effective clinical care helps develop a positive reputation in the community 3. Productive communication with both IHS and community leaders is possible even in times of relative disagreement between them

IMPLEMENTATION OF DIABETIC RETINAL SCREENINGS AT PRIMARY CARE TRIAGE IMPROVES ACCESS TO CARE WITH MINIMAL BURDEN TO THE PCP Stacie Schmidt; Jada C. Bussey-Jones; Lesley Miller. Emory University, Atlanta, GA. (Control ID #2671834)

STATEMENT OF PROBLEM OR QUESTION (ONE SENTENCE): Can diabetic retinal screening exams be implemented in Primary Care with minimal impact to clinic flow and physician workload?
OBJECTIVES OF PROGRAM/INTERVENTION (NO MORE THAN THREE OBJECTIVES): We aimed to establish diabetic retinal photo services within the Primary Care Center which could: 1. Identify patients eligible for annual diabetic retinal screening exams through the use of Best Practice Advisories (BPAs) 2. Provide easy-to-administer annual diabetic retinal screening exams within our Primary Care Center, with minimal impact to clinic flow or physician workload
DESCRIPTION OF PROGRAM/INTERVENTION, INCLUDING ORGANIZATIONAL CONTEXT (E.G. INPATIENT VS. OUTPATIENT, PRACTICE OR COMMUNITY CHARACTERISTICS): Diabetes is the leading cause of preventable blindness in the United States. Approximately 30% of patients with diabetes have diabetic retinopathy. Despite this knowledge, national diabetic retinal screening rates are currently less than 40%. This is partly related to the fact that annual diabetic eye exams require patients to schedule separate eye appointments rinvolving travel to specialty clinics outside of the primary care office. To overcome these barriers, our clinic partnered with Intelligent Retinal Imaging Systems (IRIS) to provide simple, automated diabetic retinal photos within the Primary Care Center. Screenings by CMAs at triage involve use of an automated fundus camera requiring minimal manipulation, and take less than 5 min to complete. Photo images were uploaded and interpreted offsite by a trained retinal specialist; written diagnoses and recommendations for follow-up were communicated to the ordering provider (via the electronic health record) within 24 hours of image capture.
MEASURES OF SUCCESS (DISCUSS QUALITATIVE AND/OR QUANTITATIVE METRICS WHICH WILL BE USED TO EVALUATE PROGRAM/INTERVENTION): Reports are run on a weekly basis to determine the number of patients being screened, the percentage of pathology identified, and the number of non-readable images. Future reports will determine how well patients are appropariately scheduled for follow-up in the eye clinic, after receiving abnormal results.
FINDINGS TO DATE (IT IS NOT SUFFICIENT TO STATE FINDINGS WILL BE DISCUSSED): Implementation of diabetic retinal eye exams can occur within the primary care setting with minimal burden to physicians, particularly if clinical staff can be identified as champions of implementation. By allowing our CMAs to "own" the process (including administering the test, reviewing written results and establishing follow-up visits accordingly) we created a protocolized process that distributed work to non-physician clinical staff. Of the 625 patients already examined within the Grady Primary Care Center over the first two months of implementation, 2.4% were diagnosed with Proliferative Diabetic Retinopathy (PDR). The significance of this number is that the average incidence of PDR of all IRIS programs implemented over the last year is 1.3%. We suspect this discrepancy is due to the unique population we serve—which are largely uninsured and of low health literacy—and who often have limited access to the health care system.
KEY LESSONS FOR DISSEMINATION (WHAT CAN OTHERS TAKE AWAY FOR IMPLEMENTATION TO THEIR PRACTICE OR COMMUNITY?): Diabetic retinal screening photos can be implemented within primary care, with minimal burden to physicians. It also offers a unique opportunity to study the patient experience after receiving screenings in this setting.

IMPLEMENTATION OF OPEN-ACCESS SCHEDULING IN A PRIMARY CARE PRACTICE

Rui Jiang[1]; Anoop Raman[2]; Lindsay E. Jubelt[1]. [1]Icahn School of Medicine at Mount Sinai, New York, NY; [2]Mount Sinai Health System, New York, NY. (Control ID #2707517)

STATEMENT OF PROBLEM OR QUESTION (ONE SENTENCE): In primary care, traditional scheduling may be associated with practice inefficiency, including a high no show rate and long wait times for appointment availability, which calls for a need for a different kind of scheduling practice.

OBJECTIVES OF PROGRAM/INTERVENTION (NO MORE THAN THREE OBJECTIVES): Open access scheduling, a model that allows patients to schedule non-emergent appointments on the same day, may improve (1) patient access to care, (2) practice efficiency, and 3) provider, staff, and patient satisfaction.

DESCRIPTION OF PROGRAM/INTERVENTION, INCLUDING ORGANIZATIONAL CONTEXT (E.G. INPATIENT VS. OUTPATIENT, PRACTICE OR COMMUNITY CHARACTERISTICS): The study environment was a union-sponsored primary care clinic in Atlantic City, New Jersey. The intervention was a new scheduling model that reserved 70-80% of visit slots to be used for same day appointments while allowing 20-30% of visit slots to be booked in advance. With the new open access model, patients were required to make appointments the day prior to or the day of their appointment request, unless they had any of the following: 1) language difficulties; 2) transportation difficulties; 3) recent hospital discharge; 4) provider requested. There were 3 time periods for transitioning to open-access scheduling: pre-implementation (May to September 2016), implementation period (October to November 2016), and post-implementation (December 2017 and beyond).

MEASURES OF SUCCESS (DISCUSS QUALITATIVE AND/OR QUANTITATIVE METRICS WHICH WILL BE USED TO EVALUATE PROGRAM/INTERVENTION): Access to primary care was measured by time in days until next available appointment and the percent of walk-in patients accommodated the same day. Practice efficiency was measured by number of visits per provider-day and percentage of no show visits per month. Patient satisfaction was evaluated via a survey. Provider and staff perceptions of open access were evaluated by semi-structured interviews.

FINDINGS TO DATE (IT IS NOT SUFFICIENT TO STATE FINDINGS WILL BE DISCUSSED): Since implementation, there was a decrease in time to next available appointment from 6.37 days to 0.33 days in the implementation period. The percentage of walk-in patients accommodated increased from 93 to 96%. Though final data is pending, available data shows the total number of visits per provider-day decreased from an average of 13.6 pre implementation to 11.1 during implementation. The no-show rates for scheduled visits decreased from 20 to 15% during implementation. In the patient satisfaction survey post-implementation, 96% of patients indicated that they would "definitely" (most favorable response) refer their family/friends to the clinic. Data is pending on provider and staff satisfaction.

KEY LESSONS FOR DISSEMINATION (WHAT CAN OTHERS TAKE AWAY FOR IMPLEMENTATION TO THEIR PRACTICE OR COMMUNITY?): Open access scheduling successfully improved patient access and practice efficiency. Patient satisfaction was high post- implementation. The number of visits per provider day decreased, which may also indicate improved clinic efficiency via reducing unnecessary visits. Our data suggest that open access can be implemented in a short time period and leads to positive outcomes for a primary care practice and its patients.

IMPLEMENTATION OF SCREENING AND INTERVENTIONS FOR UNHEALTHY ALCOHOL USE IN AN ACADEMIC GENERAL INTERNAL MEDICINE PRACTICE UTILIZING ELECTRONIC HEALTH RECORD TOOLS

Daniel Jonas1, 1; Colleen Barclay[1]; Bailey Minish[1]; Tamrah J. Watson[2]; Julia G. George[1]; Scott W. Rose[1]; Nancy M. McElveen[1]; eve webster[2]; Shana Ratner[1]. [1]University of North Carolina at Chapel Hill, Chapel Hill, NC; [2]UNC Health Care, Chapel Hill, NC. (Control ID #2706587)

STATEMENT OF PROBLEM OR QUESTION (ONE SENTENCE): After implementing a new electronic health record (EHR), our general internal medicine resident and faculty practice did not have a system to screen for unhealthy alcohol use despite national recommendations to do so.

OBJECTIVES OF PROGRAM/INTERVENTION (NO MORE THAN THREE OBJECTIVES): We aimed to (1) implement and test an evidence-based, systematic approach to screening, (2) train resident and faculty providers in evidence-based screening and counseling for unhealthy alcohol use, and (3) build tools within our EHR to facilitate screening, delivery of appropriate interventions, and referrals.

DESCRIPTION OF PROGRAM/INTERVENTION, INCLUDING ORGANIZATIONAL CONTEXT (E.G. INPATIENT VS. OUTPATIENT, PRACTICE OR COMMUNITY CHARACTERISTICS): Beginning in July 2016, our multidisciplinary quality improvement team including faculty and resident providers, nurses, a patient representative, and a social worker developed standard work protocols for screening and appropriate interventions in our outpatient academic general internal medicine clinic. We used small tests of change to refine the processes and content, and to inform the development of tools in our EHR. We used the single alcohol screening question followed by the Alcohol Use Disorders Identification Test (AUDIT) for those with positive initial screens. Providers received training on (1) recognizing when patients have alcohol use disorder (AUD) versus risky drinking without AUD, (2) delivering behavioral counseling, and (3) accessing and using resources for referral and treatment for patients with AUD. We developed visit-based reminders, tracking systems, and EHR documentation tools to facilitate screening, appropriate interventions, and referrals, aligning processes with those used in our clinic for depression screening and treatment.

MEASURES OF SUCCESS (DISCUSS QUALITATIVE AND/OR QUANTITATIVE METRICS WHICH WILL BE USED TO EVALUATE PROGRAM/INTERVENTION): Our main outcome is the number (proportion) of patients screened. Other outcomes include the proportion of those with positive screens who complete the AUDIT, documentation of whether patients with positive screens have AUD, documentation of appropriate counseling, documentation of appropriate referral or treatment for AUD, and nurse and provider satisfaction.

FINDINGS TO DATE (IT IS NOT SUFFICIENT TO STATE FINDINGS WILL BE DISCUSSED): Nurses have screened 1,348 (11%) patients over the first 5 months as we expanded to include all providers and nurses. After development of initial EHR tools, 1-on-1 and group trainings, and incentives, about 70% of eligible patients are being screened each week. Of the patients screened, 119 (9%) screened positive; 98 (82%) of those with positive screens

completed the AUDIT and 2 (2%) likely have AUD. The rate of documentation of appropriate counseling has been relatively low (29%).

KEY LESSONS FOR DISSEMINATION (WHAT CAN OTHERS TAKE AWAY FOR IMPLEMENTATION TO THEIR PRACTICE OR COMMUNITY?): EHR tools can facilitate implementation of screening for unhealthy alcohol use. A multidisciplinary team effort, training of providers and staff, and formal systems and support tools were required. Competing demands may limit optimal delivery of appropriate counseling and other interventions; focus on mitigating obstacles may be needed.

IMPLEMENTING A COMBINED WORKFLOW-INFORMATICS SYSTEM FOR THE MANAGEMENT OF PATIENTS ON CHRONIC OPIOIDS AT A LARGE ACADEMIC PRIMARY CARE PRACTICE

Alev Atalay[3]; Rose M. Kakoza[2]; Adrian Zai[4, 5]; Patrick R. Cronin[4]; Lori W. Tishler[1]. [1]Brigham and Women, Boston, MA; [2]Brigham and Women's Hospital, Boston, MA; [3]Brigham and Women's Hospital, Jamaica Plain, MA; [4]Massachusetts General Hospital, Boston, MA; [5]SRG Technology, Boston, MA. (Control ID #2705098)

STATEMENT OF PROBLEM OR QUESTION (ONE SENTENCE): With increasing rates of opioid addiction and opioid-related deaths, primary care clinics need to identify, risk stratify and monitor their patients on chronic opioids to develop a systematic approach, based on CDC guidelines, to safely manage their opioid prescriptions.

OBJECTIVES OF PROGRAM/INTERVENTION (NO MORE THAN THREE OBJECTIVES): 1. To develop an electronic registry of patients on chronic opioids. 2. To establish safe opioid prescribing guidelines based on the 2016 CDC Guidelines. 3. To improve opioid prescribing practices by integrating the registry to the practice's clinical workflow.

DESCRIPTION OF PROGRAM/INTERVENTION, INCLUDING ORGANIZATIONAL CONTEXT (E.G. INPATIENT VS. OUTPATIENT, PRACTICE OR COMMUNITY CHARACTERISTICS): We developed an electronic registry (TopCare) to identify and track patients on chronic opioids at our academic practice consisting of 45 attendings and 64 resident primary care physicians (PCPs). The registry lists: patient name, name of the opioid prescribed, its morphine equivalent daily dose (MEDD), risk stratification, concurrent benzodiazepine use, prescriptions for intranasal naloxone, next opioid prescription refill date, past and future visit dates with their PCP and other providers at the practice, and date of the most recent urine drug test (UDT). Using the registry, we developed new clinical workflows that include proactive opioid refills and routine urine drug toxicology screening. Additional workflows in development include scheduling follow-up visits and systematic prescribing of naloxone.

MEASURES OF SUCCESS (DISCUSS QUALITATIVE AND/OR QUANTITATIVE METRICS WHICH WILL BE USED TO EVALUATE PROGRAM/INTERVENTION): Success of the opioid registry is defined by the ability of the registry to accurately identify patients on chronic opioids and to use the registry to monitor and improve safe opioid prescribing practices. Safe opioid prescribing was defined by rates of UDT testing within the last year, PCP visits every 3 months, naloxone prescriptions for patients on a MEDD $\geq$ 50 mg/day, and risk stratification of patients by their PCPs.

FINDINGS TO DATE (IT IS NOT SUFFICIENT TO STATE FINDINGS WILL BE DISCUSSED): We improved our opioid patient identification algorithm significantly over several iterations (True Positive from .23 to 1.0). Over the past 6 months, we improved UDT rates from 20 to 58%. Additional workflows are still in development. Currently, less than 1 percent of patients on a MEDD >= 50% have an active naloxone prescription. The percentage of patients with appropriate PCP follow up has fallen from 40 to 10%. Only 14% of patients have a risk assessment documented in the registry.

KEY LESSONS FOR DISSEMINATION (WHAT CAN OTHERS TAKE AWAY FOR IMPLEMENTATION TO THEIR PRACTICE OR COMMUNITY?): In the wake of the opioid epidemic, PCPs need to address the needs of their patients on chronic opioids. Based on our experience, few patients met safe prescribing goals. We believe that our combined workflow-informatics intervention can successfully improve the efficacy of opioid management and that the following lessons are keys to its success: (1) identify current workflow problems before suggesting an overall approach that includes an informatics solution, (2) request that all stakeholders be involved with the design team, (3) determine how and if physicians need to be part of the workflow, and (4) aligning user interface design with clinical workflow, and (5) continuously track outcomes of our intervention.

IMPLEMENTING OPIOID EDUCATION AND NALOXONE DISTRIBUTION (OEND) IN A VA PRIMARY CARE PRACTICE

Leif Petterson[4]; Anna L. Dill[1, 4]; Jonathan N. Pumilia[2]; Leila Haghighat[1, 4]; Benjamin Lu[1, 4]; Stephanie Leung[4]; Cory Curley[4]; Susan Langerman[4]; Danielle Wojtaszek[4]; Brent A. Moore[3]; Kathleen White[4]. [1]Yale Internal Medicine-Primary Care, New Haven, CT; [2]Yale-New Haven Hospital, New Haven, CT; [3]Yale University School of Medicine, New Haven, CT; [4]VA Connecitcut Healthcare System, West Haven, CT. (Control ID #2707570)

STATEMENT OF PROBLEM OR QUESTION (ONE SENTENCE): VA has created OEND (Opioid Education and Naloxone Distribution) to educate providers on the indications for and availability of naloxone for high-risk opioid users, but has not established a means for local care teams to identify eligible patients and distribute this potentially lifesaving medication.

OBJECTIVES OF PROGRAM/INTERVENTION (NO MORE THAN THREE OBJECTIVES): To educate providers and support staff on the indications for and availability of naloxone for high-risk opioid users To monitor naloxone prescription receipt and to identify patients in need of outreach To create a system where individual care teams perform their own outreach and education

DESCRIPTION OF PROGRAM/INTERVENTION, INCLUDING ORGANIZATIONAL CONTEXT (E.G. INPATIENT VS. OUTPATIENT, PRACTICE OR COMMUNITY CHARACTERISTICS): Using the "Primary Care Almanac" on CPRS, we generated lists of high-risk patients (defined as those receiving >90 milliequivalents of morphine every 28 days) for each individual PACT team. Each care team underwent a 30-min seminar designed by a multi-disciplinary team on the epidemiology of opioid abuse and misuse, the safety and efficacy of naloxone, and how to train eligible patients. After this training, each care team received a list of patients on their panel who were identified as appropriate for naloxone; were ready to perform outreach to eligible patients. Patients can be educated on proper naloxone use by an RN or a provider; and clinic staff can provide training the same day the prescription is written. Monthly lists will be generated and distributed to the individual PACT teams, which will serve as a list of patients who need to be contacted and as a report card on their team's success over the past 30 days. A focus-group will be

conducted at 90 days with the entire primary care practice to assess challenges faced and successess achieved by individual care teams.

MEASURES OF SUCCESS (DISCUSS QUALITATIVE AND/OR QUANTITATIVE METRICS WHICH WILL BE USED TO EVALUATE PROGRAM/INTERVENTION): Intervention success will be evaluated based on the percentage of eligible patients who have received the medication and appropriate education, as well as reduction in the total number of patients who receive >90 milliequivalents of morphine each month. The focus-group will provide a forum for participating providers and support staff to discuss challenges they have faced in outreach and implementation, and to generate solutions based on their collective experience.

FINDINGS TO DATE (IT IS NOT SUFFICIENT TO STATE FINDINGS WILL BE DISCUSSED): Findings will be discussed once further data has been collected and the focus-group has been held.

KEY LESSONS FOR DISSEMINATION (WHAT CAN OTHERS TAKE AWAY FOR IMPLEMENTATION TO THEIR PRACTICE OR COMMUNITY?): Our intervention demonstrates that implementing national directives on the local, practice level can be achieved by utilizing panel management to identify target patients, and generating “report cards” for individual providers to monitor their progress at enrolling their own patients. Centralized data generation and regular feedback in the form of the report cards provides an objective measure of team’s performance, while encouraging individual care teams to determine the best way to engage their patients allows for a personalized and flexible approach.

IMPLEMENTING PERSONAL HEALTH PLANNING IN VA: RESULTS OF A QUALITATIVE, MULTISITE EVALUATION

Gemmae Fix[1]; Rendelle Bolton[2]; Timothy P. Hogan[4]; Tana Luger[6]; Anna M. Barker[5]; Donald Miller[3]; Mollie A. Ruben[3]; Barbara Bokhour[5]. [1]Center for Healthcare Organization and Implementation Research/Boston University School of Public Health, Bedford, MA; [2]Edith Nourse Rogers Memorial VA Hospital, Bedford, MA; [3]US Department of Veterans Affairs, Boston, MA; [4]United States Department of Veterans Affairs, Bedford, MA; [5]Veterans Health Administration, Bedford, MA; [6]Pitzer, California, CA. (Control ID #2705885)

STATEMENT OF PROBLEM OR QUESTION (ONE SENTENCE): Healthcare has typically been disease focused. There is increasing demand for patient-centered care (PCC). The Department of Veteran Health Affairs (VHA) is implementing an innovative approach to establishing PCC, through focusing clinical encounters on developing shared goals, using goals using Personal Health Planning (PHP). We sought to understand how VHAs are implementing the PHP & the impact of PHP on patients.

OBJECTIVES OF PROGRAM/INTERVENTION (NO MORE THAN THREE OBJECTIVES): Use PHP to align care with patient goals.

DESCRIPTION OF PROGRAM/INTERVENTION, INCLUDING ORGANIZATIONAL CONTEXT (E.G. INPATIENT VS. OUTPATIENT, PRACTICE OR COMMUNITY CHARACTERISTICS): The PHP consists of a series of questions designed to identify “what really matters” to the patient. It includes eight realms of patients’ lives: food and drink, working the body and personal development This process allows patients and providers to collaborate on goal identification and create a plan based on patients’ values and preferences.

MEASURES OF SUCCESS (DISCUSS QUALITATIVE AND/OR QUANTITATIVE METRICS WHICH WILL BE USED TO EVALUATE PROGRAM/INTERVENTION): We conducted a mixed methods evaluation of PHP across 10 VHA facilities. We examined qualitatively through interviews and observations: 1) how facilities implemented PHP; 2) keys to successful implementation; 3) alignment of the process with key principles of PCC. Qualitative data were analyzed using an iterative approach combining emergent & a priori coding procedures based on VHA’s PHP program & PCC theories. We collected mailed surveys ($N = 418$ patients) at 2 sites, including patient reported outcomes (experiences of care, self-reported health status, self-efficacy and activation).

FINDINGS TO DATE (IT IS NOT SUFFICIENT TO STATE FINDINGS WILL BE DISCUSSED): The 10 facilities used a variety of approaches to structure their PHP program, centering on: a) location, b) patients targeted, & c) staff responsible. From the site visits, we identified 5 practices critical to PHP implementation. 1) Developing a local vision, including facility-level strategic planning & self-reflection. 2) Defining roles & communication practices across the team. 3) Creating infrastructure to support the PHP process. 4) Iterative rounds of piloting to incorporate staff, provider and patient needs. 5) Fostering an organizational climate that supports PHP, such as identifying and supporting PCC champions. Presently, these programs only partially met PCC principles. While PHP fostered some practices aligned with PCC, patients’ life context, values & preferences were not shared across the team or always evident in the resulting plan. From the surveys we found significant correlations between experiencing a PHP & all patient reported outcomes (p ranged from $< .001$ to $< .05$)

KEY LESSONS FOR DISSEMINATION (WHAT CAN OTHERS TAKE AWAY FOR IMPLEMENTATION TO THEIR PRACTICE OR COMMUNITY?): Our mixed-methods evaluation found PHP may be effective for improving patient-reported outcomes. However, facilities need to use concurrent, multilevel strategies to implement a complex PCC initiative, like PHP. Piecemeal implementation resulted in care practices which fell short of PCC. As healthcare systems embark on PCC, implementing programs such as PHP can facilitate a shift toward PCC practice. Having staff dedicated to PCC is necessary, but insufficient to affect these changes. PCC implementation must engage all stakeholders and be evident across all team members.

IMPROVING CONTINUITY OF CARE: A BUILDING BLOCK FOR HIGH-FUNCTIONING PRIMARY CARE RESIDENCY CLINICS

Roberto O. Diaz Del Carpio. University at Buffalo, Buffalo, NY. (Control ID #2701048)

STATEMENT OF PROBLEM OR QUESTION (ONE SENTENCE): There was no continuity of care in our primary care residency clinic.

OBJECTIVES OF PROGRAM/INTERVENTION (NO MORE THAN THREE OBJECTIVES): 1. To increase patient and resident perceived continuity of care by 80% in our primary care residency clinic by June 2017. 2. To increase patient and resident satisfaction with continuity of care by 80% in our primary care residency clinic by June 2017.

DESCRIPTION OF PROGRAM/INTERVENTION, INCLUDING ORGANIZATIONAL CONTEXT (E.G. INPATIENT VS. OUTPATIENT, PRACTICE OR COMMUNITY CHARACTERISTICS): Our outpatient center has 5 FTE internal medicine attending physicians, 1 nurse practitioner and 31 internal medicine residents. Residents are scheduled to see patients every five weeks as part of our 4 + 1 schedule. The continuity of care among residents and attendings was on average 30 and 80% respectively. In our center,

multiple attempts have been made to increase continuity, most of them at a policy level. We used the model for improvement from the Institute of healthcare Improvement and received mentorship from the Centre for Quality Improvement and Patient Safety from the University of Toronto. Based in our root cause analysis, our first intervention targeted human factors and infrastructure. Our EHR team simplified the discharge template and provided discharge process training to all our providers. Our infrastructure problem was related to the lack of an adequate scheduling software. After a structured interview with our front desk office team we decided to change our residents schedule from individual to a block schedule to facilitate patient appointments. Subsequent interventions have focused on simplification and standardization of the resident block schedule by empaneling patients and consolidating didactic teaching activities. Audit and feedback to/from residents, front desk staff and attendings continue to help redesigning our block schedule. We reviewed data in a weekly basis. Data was analyzed using QI Macros 2015.

MEASURES OF SUCCESS (DISCUSS QUALITATIVE AND/OR QUANTITATIVE METRICS WHICH WILL BE USED TO EVALUATE PROGRAM/INTERVENTION): Process measures: 1. Percentage of correct discharge order sets completed by providers 2. Percentage of follow up appointments correctly scheduled by front desk staff Outcomes measures: 3. Percentage of patients scheduled for a follow up visit that were seen by the same provider 4. Patient/resident satisfaction Balancing measures 5. Patient volume 6. No-show rate

FINDINGS TO DATE (IT IS NOT SUFFICIENT TO STATE FINDINGS WILL BE DISCUSSED): By December 2016: 1. 97% of discharge order sets were completed correctly by residents. 2. 90% of follow up appointment were correclty scheduled by front desk staff 3. Continuity of care increased to 80% among residents' patients 4. Patient satisfaction with continuity incrased by 20%. Resident satisfaction increased by 50% 5. Patient volume increased by 20% among residents. 6. Patient no-show rate remained the same: 20%

KEY LESSONS FOR DISSEMINATION (WHAT CAN OTHERS TAKE AWAY FOR IMPLEMENTATION TO THEIR PRACTICE OR COMMUNITY?): Continuity of care is among the building blocks of a high-functioning primary care residency clinic. Our continuity of care has improved as well as our provider and patient satisfaction. Using rigorous QI methodology, engaging key stakeholders and having data readily available have helped us to overcome barriers. Our residents have ranked our clinical learning environment among the best training locations in our program.

IMPROVING HANDOFFS FROM ACUTE TO SUB-ACUTE CARE: A VA INTERDISCIPLINARY HFMEA QUALITY IMPROVEMENT PROJECT Amy W. Baughman[2]; Barbara Shahood[2]; Lakshmana Swamy[2]; Marcus D. Ruopp[2]; Christopher Worsham[2]; Patricia Soonthornprapuet[2]; Frederick Pasche[2]; Denice Mitchell[2]; Manuela Ferreira[2]; Shivani Jindal[2]; Sandra Vilbrun-Bruno[2]; Matthew Ronan[1]; Caitlin Oliveira[2]; Steven R. Simon[2]. [1]VA Boston, Brockton, MA; [2]VA Boston Healthcare System, Boston, MA. (Control ID #2703158)

STATEMENT OF PROBLEM OR QUESTION (ONE SENTENCE): Communication has been cited as the most common root cause in sentinel events, with failed patient care handoffs contributing to an estimated 80% of serious preventable adverse events; handoffs to sub-acute care such as nursing homes are at particularly high risk for communication breakdown given high patient complexity and comorbidity.

OBJECTIVES OF PROGRAM/INTERVENTION (NO MORE THAN THREE OBJECTIVES): Improve the handoff process from an acute inpatient hospital to a sub-acute care facility by: 1) Standardizing verbal handoff content and usage 2) Simplifying communication modes 3) Decreasing inappropriate transfers and delays in care (transfer time, discharge summary completion)

DESCRIPTION OF PROGRAM/INTERVENTION, INCLUDING ORGANIZATIONAL CONTEXT (E.G. INPATIENT VS. OUTPATIENT, PRACTICE OR COMMUNITY CHARACTERISTICS): Background: Our healthcare system includes a 400-bed acute care hospital and 112-bed sub-acute care facility. Handoff processes were highly variable in quality, format and completion. Communication about travel and team/unit assignment was chaotic, involving multiple providers, social workers, nurses, and unit secretaries. Observational data from June 2014 - April 2015 showed for 159 transfers, handoff was absent for 29 transfers (18%). Intervention: In conjunction with Patient Safety leadership, we conducted a Healthcare Failure Modes Effects Analysis (HFMEA) from March-October 2016. Strategy: 1) Establish Interdisciplinary Team: hospital and subacute care providers, nurses, social workers, and unit secretaries. 2) Define goals, outcomes, and a data collection system 3) Create detailed process-maps 4) Conduct Failure Modes Analysis to identify failures 5) Construct Hazard Analysis to prioritize failures based on severity and probability 6) Action Plans for high scoring failures: ■ Standard Operating Procedures (SOP) for transfer notification and cancellations ■ Standardize verbal handoff content for providers (I-PASS [I: Illness severity; P: Patient summary; A: Action items; S: Situation awareness and contingency planning; S: Synthesis by receiver]) ■ Retrain administrative staff on travel processes

MEASURES OF SUCCESS (DISCUSS QUALITATIVE AND/OR QUANTITATIVE METRICS WHICH WILL BE USED TO EVALUATE PROGRAM/INTERVENTION): Seven measures were tracked daily from April-October 2016 (interventions began June 2016).

FINDINGS TO DATE (IT IS NOT SUFFICIENT TO STATE FINDINGS WILL BE DISCUSSED): Completion of provider verbal handoff improved from 80 to 100%. I-PASS usage, which was started in July, improved from 11% to 82%. Discharge documentation was high at baseline (93-96%) and remained at 95%. Nursing verbal handoffs also were high at baseline (93-100%) and remained at 100%. There were only 2 inappropriate transfers, 1 in the baseline period and 1 in the intervention period. Transfers with "unfinished business" decreased from 10% to zero in the last two months. Transfers with adverse events or delays in care decreased from 13% to zero.

KEY LESSONS FOR DISSEMINATION (WHAT CAN OTHERS TAKE AWAY FOR IMPLEMENTATION TO THEIR PRACTICE OR COMMUNITY?): The HFMEA process improved several hand-off process measures for acute to sub-acute care transfers. Key features were sound data collection, collaboration with Patient Safety, and having an interdisciplinary team from both acute and sub-acute care. A systematic process was essential: process maps to evaluate processes and failures, analysis to prioritize failures, and action plans to develop interventions.

IMPROVING INTERN EFFICIENCY USING THE ELECTRONIC MEDICAL RECORD AT A VA INTERNAL MEDICINE CLINIC Ruth Fernandez Ruiz; Susan Slycord; Maria Story. University of Iowa Hospitals and Clinics and Iowa City VA Medical Center, Iowa City, IA. (Control ID #2702242)

STATEMENT OF PROBLEM OR QUESTION (ONE SENTENCE): Learning to successfully navigate the electronic medical record utilized by the Veterans Affairs (VA) Health Care system, the Computerized Patient Records System (CPRS), can be challenging for interns starting their clinics at the Iowa City VA Medical Center. A more practical guide is necessary to help residents increase their efficiency.

OBJECTIVES OF PROGRAM/INTERVENTION (NO MORE THAN THREE OBJECTIVES): Identify barriers residents face learning how to navigate CPRS in clinic, and assess their baseline level of efficiency Design a pocket guide, focused on the areas where residents performed poorly Compare the efficiency and performance on common clinic topics between the residents that underwent regular orientation and the ones that also received the new pocket guide.

DESCRIPTION OF PROGRAM/INTERVENTION, INCLUDING ORGANIZATIONAL CONTEXT (E.G. INPATIENT VS. OUTPATIENT, PRACTICE OR COMMUNITY CHARACTERISTICS): Attending staff from the VA outpatient clinic were interviewed to identify frequently asked questions and common problems interns face when beginning to work in the clinic. Ten residents rotating at the same-day scheduling clinic without prior experience in the VA outpatient setting were surveyed to assess level of comfort completing specific tasks in clinic, the time required to complete these tasks, and their overall feeling of efficiency. Based on faculty interviews and resident surveys, we created a booklet containing details on how to complete tasks commonly encountered in clinic. Another survey was performed 5 months after distribution of the manual to new interns (91% responded).

MEASURES OF SUCCESS (DISCUSS QUALITATIVE AND/OR QUANTITATIVE METRICS WHICH WILL BE USED TO EVALUATE PROGRAM/INTERVENTION): We compared the results obtained from the groups of residents before and after the distribution of the pocket guide. The efficiency means were calculated in both groups, as well as the percentage of change. For questions dedicated to assess knowledge, we obtained the percentage of correct responses. The group who had access to the pocket guide was asked to evaluate the usefulness of this manual and to provide additional comments for improvement.

FINDINGS TO DATE (IT IS NOT SUFFICIENT TO STATE FINDINGS WILL BE DISCUSSED): Since July 2016, 80% of the interns ($n = 10$) have read the manual at least once and the average rating of usefulness was 6 (range from 4–8) on a scale of 1–10. Objective evaluation on how to resolve a clinical reminder improved from 30% to 70% after implementation of the manual. Subjectively, level of comfort managing clinical reminders also improved 42%, from a mean of 4.5 to 6.4 (on a scale from 1–10, with 1 being very uncomfortable and 10 completely comfortable). Self-rated efficiency of residents improved 16%, from a mean of 4.3 to 5.0. The most common request for improvement from survey respondents was the need for development of an electronic version of the manual.

KEY LESSONS FOR DISSEMINATION (WHAT CAN OTHERS TAKE AWAY FOR IMPLEMENTATION TO THEIR PRACTICE OR COMMUNITY?): The orientation interns receive prior to beginning work at their VA clinics has several areas for improvement. We have identified many of these by conducting a brief survey. The creation of a tool aimed to improve physician comfort and efficiency using CPRS in the form of a pocket guide was shown to be successful, however, further work remains. We expect to continue to improve the resident's manual, taking into consideration input from the users.

IMPROVING MEANINGFUL USE OF PATIENT PORTALS IN AN ACADEMIC SAFETY-NET CLINIC

Elaine C. Khoong[2]; Natalie Combs[2]; Malia Honda[2]; Samuel Miller[2]; Lisa Ochoa-Frongia[1]; Shobha Sadasivaiah[2]; Courtney R. Lyles[3]. [1]University Of California San Francisco, San Francisco, CA; [2]University of California - San Francisco, San Francisco, CA; [3]University of California San Francisco, San Francisco, CA. (Control ID #2706935)

STATEMENT OF PROBLEM OR QUESTION (ONE SENTENCE): Patient portal enrollment and use in safety-net clinics lags behind other healthcare settings.

OBJECTIVES OF PROGRAM/INTERVENTION (NO MORE THAN THREE OBJECTIVES): 1. Increase enrollment and use of a patient portal in a safety-net clinic 2. Ascertain provider and patient-level barriers to patient portal use

DESCRIPTION OF PROGRAM/INTERVENTION, INCLUDING ORGANIZATIONAL CONTEXT (E.G. INPATIENT VS. OUTPATIENT, PRACTICE OR COMMUNITY CHARACTERISTICS): This was a resident-led quality improvement effort at a single academic safety-net general medicine clinic staffed by resident and attending physicians as well as nurse practitioners. Our clinic serves only patients who are uninsured or have Medicare and/or Medicaid. Half our patients have limited English proficiency. We used a multi-faceted approach targeting providers and patients to increase patient portal enrollment and use. In early 2016, the research team conducted provider education sessions focused on portal functions and how to offer patients portal access. In spring 2016, a volunteer approached patients in the waiting room to enroll patients in the portal; in winter 2016, the volunteer began contacting web-enabled patients to arrange in-person training for portal use.

MEASURES OF SUCCESS (DISCUSS QUALITATIVE AND/OR QUANTITATIVE METRICS WHICH WILL BE USED TO EVALUATE PROGRAM/INTERVENTION): Two primary outcomes are based on previously defined Meaningful Use (MU) metrics: a) offering patients portal access (i.e. "web-enabling"); b) portal use after enrollment. Secondary outcomes included: c) provider self-rated knowledge about the portal; and d) patient reasons for declining enrollment or not using the portal.

FINDINGS TO DATE (IT IS NOT SUFFICIENT TO STATE FINDINGS WILL BE DISCUSSED): Data in the 4th quarter of 2015 (baseline) showed 38% (1586/4190) of patient encounters were with a web-enabled patient. In the first six months of 2016 this improved to 50% (3554/7083). While the majority of patients were offered portal access, patient use of the portal website once enrolled did not improve. At baseline, 1.8% (56/3082) of encounters were with patients who had used the portal, but in the first half of 2016, this rate was similar (119/7083 = 1.7%). Analyses of these metrics will continue as data become available. Provider self-assessments ($n = 59$ at baseline; $n = 40$ at follow-up) about the portal improved: a) self-reported confidence in ability to describe the portal to patients from 25 to 63%; b) self-reported knowledge about web-enablement from 29 to 60%. Most patients (720/978 = 82%) approached in the waiting room declined enrollment. Common reasons for declining were language barrier (25%), lack of computer/Internet access (22%), and poor computer skills (19%). When web-enabled patient were contacted to arrange in-person trainings, the majority (66/99 = 67%) were interested in training but a large portion were unaware they had portal access (25/99 = 25%).

KEY LESSONS FOR DISSEMINATION (WHAT CAN OTHERS TAKE AWAY FOR IMPLEMENTATION TO THEIR PRACTICE OR COMMUNITY?): Major barriers exist to enrolling and engaging vulnerable – particularly limited English proficient and technologically illiterate – patients in online portal use. Education and workflow improvements increase provider knowledge and skills but have limited impact on sustained patient use of portals. Safety net settings need more support to address the hurdles that prevent underserved patients from using portal websites for healthcare management.

IMPROVING MEDICATION RECONCILIATION IN A VA NURSING HOME AS PART OF MARQUIS2 Amy W. Baughman[2]; Nicole Murphy[2]; Laura Driscoll[2]; Caitlin Moses[2]; Jeni Norstrom[2]; Rajani Balasubramaniam[2]; Kathryn Lange[2]; Adam Woolley[2]; Sandra Vilbrun-Bruno[2]; Nancy Connors[2]; Wei Shen[2]; Amy Hanson[2]; Marcus D. Ruopp[2]; Shivani Jindal[2]; Barbara Shahood[2]; Gilda Cain[2]; Tosha B. Wetterneck[1]; Amanda S. Mixon[3]; Steven R. Simon[2]. [1]University of Wisconsin School of Medicine and Public Health, Madison, WI; [2]VA Boston Healthcare System, Boston, MA; [3]VA Tennessee Valley Healthcare System and Vanderbilt University, Nashville, TN. (Control ID #2706413)

STATEMENT OF PROBLEM OR QUESTION (ONE SENTENCE): Accurate, efficient medication reconciliation (med rec) is a known safety concern for healthcare professionals caring for patients with polypharmacy, multimorbidity, and cognitive impairment.

OBJECTIVES OF PROGRAM/INTERVENTION (NO MORE THAN THREE OBJECTIVES): 1. Improve med rec by implementing best practices in a nursing home. 2. Evaluate a novel software tool. 3. Improve clinician experience.

DESCRIPTION OF PROGRAM/INTERVENTION, INCLUDING ORGANIZATIONAL CONTEXT (E.G. INPATIENT VS. OUTPATIENT, PRACTICE OR COMMUNITY CHARACTERISTICS): Setting: VA Boston's Community Living Center (Brockton, MA) is a 110-bed nursing home that provides transitional (skilled or rehabilitation), palliative/hospice and long-term care. Patients are medically complex and often have limited medication knowledge. The interdisciplinary quality improvement (QI) team includes pharmacists, nurses, physicians, nurse practitioners, physician assistants, information technologists and QI experts. Intervention: This study will span October 2016 - June 2018 as part of MARQUIS2 (Multi-Center Medication Reconciliation Quality Improvement Study 2). Baseline assessments included policy review, completion of a provider survey, and process mapping of all current med rec processes. In the next phase, we will implement interventions based on identified challenges and established best practices. These include pharmacist-driven intensive med rec for high-risk patients and the Avicenna MedRec Tool, proprietary software to overcome existing barriers in our current electronic medical record.

MEASURES OF SUCCESS (DISCUSS QUALITATIVE AND/OR QUANTITATIVE METRICS WHICH WILL BE USED TO EVALUATE PROGRAM/INTERVENTION): Primary outcome: unintentional medication discrepancies, tracked from a random sample of 22 patients per month by study pharmacists. We will also evaluate clinician satisfaction with med rec processes as we test various interventions.

FINDINGS TO DATE (IT IS NOT SUFFICIENT TO STATE FINDINGS WILL BE DISCUSSED): In our baseline survey, 11 providers (response rate 100%) reported spending approximately 30 min on each admission and discharge reconciliation, identifying 2.7 errors per patient. Most (7/11) lacked confidence in the accuracy of the med rec process. Yet the majority identified med rec as important. Few received formal education (2/11), incentives (1/11) or resources (2/11) to address medication discrepancies. After 5 weeks of discrepancy data collection, 24 patients have been reviewed. 13 patients were found to have unintentional discrepancies on admission. For the 8 patients discharged to date, 2 unintentional discrepancies were found at discharge. There have been 29 discrepancies total; of these, 23 were due to history errors and 6 were due to reconciliation errors.

KEY LESSONS FOR DISSEMINATION (WHAT CAN OTHERS TAKE AWAY FOR IMPLEMENTATION TO THEIR PRACTICE OR COMMUNITY?): ■ Nursing homes represent a critical setting for medication reconciliation efforts due to the often challenging but clinically important determination of medication lists. ■ Medication reconciliation is time consuming and error-prone in the current state. ■ Stakeholder surveys and process maps will inform targeted interventions by providing detailed information on work flow and practice variation.

IMPROVING OSA SCREENING IN HYPERTENSIVE PATIENTS USING THE STOP-BANG QUESTIONNAIRE IN PRIMARY CARE CLINIC: QUALITY IMPROVEMENT PROJECT Musa Saeed[1]; Mansi Nigam[1]; Amita Krishnan[1]; Marwan Saoud[1]; Smita Y. Bakhai[2]. [1]SUNY University at Buffalo, Amherst, NY; [2]SUNY at BUffalo, Williamsville, NY. (Control ID #2691242)

STATEMENT OF PROBLEM OR QUESTION (ONE SENTENCE): Obstructive sleep apnea (OSA) is more prevalent in patients with Hypertension (HTN), while it is associated with morbidities such as stroke, heart failure and premature death, it remains underdiagnosed.

OBJECTIVES OF PROGRAM/INTERVENTION (NO MORE THAN THREE OBJECTIVES): The purpose of this project is to increase the use of the STOP-BANG questionnaire by 10% from baseline in hypertensive patients between the ages of 18–75 over 6 months.

DESCRIPTION OF PROGRAM/INTERVENTION, INCLUDING ORGANIZATIONAL CONTEXT (E.G. INPATIENT VS. OUTPATIENT, PRACTICE OR COMMUNITY CHARACTERISTICS): We used Plan Do Study Act (PDSA) model and root cause analysis using fish-bone diagram in a group discussion with preceptors and residents to identify system, provider and patient barriers. System barriers were identified as lack of electronic database, documentation and unavailability of STOP-BANG questionnaire in the EMR. Provider barriers were lack of knowledge about relationship between HTN and OSA, lack of reminders and extra time spent during the visit to use the questionnaire. Patient barriers were identified as lack of knowledge about OSA and procedure of sleep study as well as cost or insurance coverage. Electronic patient registry was created in collaboration with the Information Technology Department using Allscript (EMR). Customized workflow was created in the EMR to remind and document STOP-BANG questionnaire. A presentation on OSA and discussions about EMR workflow for documentation was reviewed with all the 40 residents in our Internal Medicine Clinic at ECMC. Nurses were educated about STOP-BANG questionnaire and paper format of the questionnaire was given to the patients while checking them in the examination room. Time spent during visits on questionnaire leading to backlog of patients waiting in the clinic was determined to be the balance measure.

MEASURES OF SUCCESS (DISCUSS QUALITATIVE AND/OR QUANTITATIVE METRICS WHICH WILL BE USED TO EVALUATE PROGRAM/INTERVENTION): Outcome measure was identified as number of patients with HTN screened for OSA and number of Sleep Studies ordered for all those screened as high risk for OSA. Data analysis was performed using monthly run charts.

FINDINGS TO DATE (IT IS NOT SUFFICIENT TO STATE FINDINGS WILL BE DISCUSSED): Prior to initiation of this project, less than 1% of hypertensive patients were screened for OSA using the STOP-BANG questionnaire. After physician education was introduced, screening rates increased to 3.92% in the month of September. After nursing education and administration of paper-formatted questionnaires to the patients were done, screening rates increased to 9.23% in the month of November. The extra time used on the screening tool did not lead to any patient backlog in the clinic.

KEY LESSONS FOR DISSEMINATION (WHAT CAN OTHERS TAKE AWAY FOR IMPLEMENTATION TO THEIR PRACTICE OR COMMUNITY?): STOP-BANG integration in EMR and introduction of a team approach by educating physicians and nursing staff can lead to a dramatic increase in screening for OSA. Cost and lack of insurance coverage for sleep study was identified as a major barrier. Confirmation of OSA after screening will help reiterate the need for OSA Screening with STOP-BANG questionnaire in all patients with HTN.

IMPROVING OUTCOMES IN UNCONTROLLED DIABETICS

oluwatoyin opelami. MetroHealth, Cleveland heights, OH. (Control ID #2706713)

STATEMENT OF PROBLEM OR QUESTION (ONE SENTENCE): The aim of the program was to achieve a 20% HbA1c reduction in patients with type 2 diabetes seen at a community primary care practice within a 12 month period, by increasing frequency of office visits, reducing medication titration intervals and scheduling regular diabetic education visits.

OBJECTIVES OF PROGRAM/INTERVENTION (NO MORE THAN THREE OBJECTIVES): Increase patient's adherence to diabetic therapy by reducing the interval for medication titration. Having regular structured patient education.

DESCRIPTION OF PROGRAM/INTERVENTION, INCLUDING ORGANIZATIONAL CONTEXT (E.G. INPATIENT VS. OUTPATIENT, PRACTICE OR COMMUNITY CHARACTERISTICS): The study was designed using a population in an outpatient clinic within an urban community with a low household income and low literacy levels as compared to the general population. Frequent clinic visits were scheduled for patients with HbA1C > 9% using a known electronic medical record for sample selection. These visits were held concurrently with both their physician/nurse and a DM educator. Two consecutive weekly visits followed by a fortnight visit and then two consecutive monthly visits were scheduled with the aim of titrating medications to achieve a fasting blood glucose goal between 80–130 mg/dl and 1–2 hours postprandial glucose less than 180 mg/dl. At each initial visit, the patient was educated on the diagnosis of diabetes, possible complications and available treatments, including diet, oral medications and insulin. A blood glucose (BG) meter was prescribed in addition to other materials needed to check BG at home (initially twice daily for people on oral hypoglycemic agents and at least three times daily for people on insulin). Patients with HbA1C > 10 at initiation were started on long acting insulin at bedtime. During that visit, they also met the DM educators to establish a relationship. They were instructed on how to use a meter and administer insulin, if prescribed. They were given a brief overview on the sugar contents of some common meals and some handouts to take home. During the program HbA1c levels were checked at 6 months to evaluate the effectiveness of the current regimen. Patients who were at goal were encouraged to join new group classes while those not at goal had their regimen modified. Group diabetic education classes were organized in an informal setting with the diabetic educator as the facilitator.

MEASURES OF SUCCESS (DISCUSS QUALITATIVE AND/OR QUANTITATIVE METRICS WHICH WILL BE USED TO EVALUATE PROGRAM/INTERVENTION): HbA1c was checked at the start of the program, at 6 months and at 12 months.

FINDINGS TO DATE (IT IS NOT SUFFICIENT TO STATE FINDINGS WILL BE DISCUSSED): Twenty eight patients participated in the pilot phase of the program. 54% of participants were females and all were self-identified African-Americans. 64% of program participants were on insulin, either alone or in combination with other agents. Average HbA1c at the start of the program was 10.9. At the end of 6 months, there was a 23% reduction in HbA1c and this was sustained at the end of 12 months.

KEY LESSONS FOR DISSEMINATION (WHAT CAN OTHERS TAKE AWAY FOR IMPLEMENTATION TO THEIR PRACTICE OR COMMUNITY?): A cost-analysis is to be carried out following which the program will be extended to other providers within the practice and eventually to providers within the larger health system.

IMPROVING OUTPATIENT FOLLOW-UP WITH PRIMARY CARE PHYSICIANS AFTER AN EMERGENCY DEPARTMENT VISIT

Casey White; Roberto O. Diaz Del Carpio; Pojchawan Yampikulsakul. University at Buffalo State University of New York, Amherst, NY. (Control ID #2707067)

STATEMENT OF PROBLEM OR QUESTION (ONE SENTENCE): Following an internal chart review, post-Emergency Department (ED) discharge appointment compliance amongst Hertel-Elmwood Internal Medicine Center (HEIMC) patients was found to be suboptimal at only 30%.

OBJECTIVES OF PROGRAM/INTERVENTION (NO MORE THAN THREE OBJECTIVES): To increase by 30% the rate of follow up visits post-ED discharge by March 2017 at HEIMC.

DESCRIPTION OF PROGRAM/INTERVENTION, INCLUDING ORGANIZATIONAL CONTEXT (E.G. INPATIENT VS. OUTPATIENT, PRACTICE OR COMMUNITY CHARACTERISTICS): HEIMC is an academic outpatient clinic, part of the Kaleida Health System (KHS), and is affiliated with the Department of Medicine at the University at Buffalo. HEIMC provides healthcare to a diverse population of patients from various cultural backgrounds and low socioeconomic status. Our center has 5 internal medicine attending physicians, 1 nurse practitioner, and 31 internal medicine residents who rotate in a 4 + 1 schedule. Coordination of care among our inpatient and outpatient centers have become a priority, especially considering our accreditation as a certified level 3 Patient Centered Medical Home (PCMH). Our follow up rates of patients being discharged from KHS EDs were suboptimal. Initial root cause analysis revealed a lack of structured outpatient scheduling at the time of ED discharge, time constraints of providers, and deficiency in communication with patients following discharge as main drivers of suboptimal ED follow up. At the system level, we created a

structured network for patient follow-up. Our designated nurse will contact all patients who were discharged from the ED and direct messages to providers for review and to front desk personnel for making appointments using our designed template.

MEASURES OF SUCCESS (DISCUSS QUALITATIVE AND/OR QUANTITATIVE METRICS WHICH WILL BE USED TO EVALUATE PROGRAM/INTERVENTION): Process measures: % of HEIMC patients who visited KHS ED and were contacted by our nurse. % of HEIMC patients that are scheduled for follow up appointment. Outcomes measures: The rate of outpatient follow up appointment compliance, including time from the ED visit to office visit. Balancing measures: Number of HEIMC patients that visited the ED Staff/Provider satisfaction

FINDINGS TO DATE (IT IS NOT SUFFICIENT TO STATE FINDINGS WILL BE DISCUSSED): As of December 2016, after we started our intervention, All HEIMC patients who were discharged from ED were contacted, 96% of patients were reached by phone call, 67% had been scheduled for follow up. The rate of outpatient follow up appointment compliance to date is 37%, another 30% already have pending appointments.

KEY LESSONS FOR DISSEMINATION (WHAT CAN OTHERS TAKE AWAY FOR IMPLEMENTATION TO THEIR PRACTICE OR COMMUNITY?): As preliminary data has shown thus far, there is an objectively measurable increase in post-ED discharge communication and follow-up through this initiative. As identified through root cause analysis, poor appointment compliance is multifactorial and is recognized by our designated nurse and staff. Our model encourages participation amongst staff members and defines new roles that allow bidirectional contribution to the team. Having a designated nurse contact will help to both screen patients in need of urgent evaluation by physicians, as well as allow for patient education. Since its initiation, this model has been met with an overall increase in appointment compliance and concurrent staff support and satisfaction.

IMPROVING PRIMARY CARE PROVIDER EFFICIENCY IN NEW PATIENT VISITS VIA A NEW PATIENT INTAKE FORM Anne Linker[1]; Charlotte Herring[3]; Vijay Kotecha[1]; Andrew Lau[3]; Satvik Ramakrishna[1]; Lauren Rettberg[3]; Maya H. Dulay[2]. [1]UCSF, San Francisco, CA; [2]UCSF/VA, San Francisco, CA; [3]San Francisco VA Medical Center, San Francisco, CA. (Control ID #2706756)

STATEMENT OF PROBLEM OR QUESTION (ONE SENTENCE): Our local needs assessment found that primary care providers (PCPs) at the San Francisco VA (SFVA) Medical Practice Clinic frequently judged intake visits to be inefficient, in part due to time spent reviewing each patient's past medical history.

OBJECTIVES OF PROGRAM/INTERVENTION (NO MORE THAN THREE OBJECTIVES): Our objective was to develop an intake form to improve the percentage of providers who find new patient visits "efficient" or "very efficient," from a baseline of 5% to at least 25%, and to decrease overall time spent reviewing a new patient's history during the intake visit.

DESCRIPTION OF PROGRAM/INTERVENTION, INCLUDING ORGANIZATIONAL CONTEXT (E.G. INPATIENT VS. OUTPATIENT, PRACTICE OR COMMUNITY CHARACTERISTICS): SFVA Medical Practice Clinic is an adult primary care clinic serving approximately 9,000 patients from the Northern California area. PCPs include MD/NP trainees and attending providers ($n = 62$). Our quality improvement project was led by an interprofessional trainee team of the SFVA Center of Excellence in Primary Care Education, and was conducted from October 2015 through May 2016. We collected baseline data on new clinic patients seen in October 2015, and on PCP perceptions of intake visits. Patients were willing to complete forms prior to the first clinic visit and most preferred to complete forms in the waiting room instead of at home prior to the visit. We also surveyed PCPs and found that 22% of providers spent more than half of the initial visit on past medical history, and 83% thought an intake form would be helpful. We then designed a new patient intake form and performed three PDSA cycles, gathering feedback from patients and providers at each step.

MEASURES OF SUCCESS (DISCUSS QUALITATIVE AND/OR QUANTITATIVE METRICS WHICH WILL BE USED TO EVALUATE PROGRAM/INTERVENTION): We evaluated our intervention using patient and PCP surveys with 5 point Likert scales (1 = very inefficient/ dissatisfied, 5 = very efficient/satisfied).

FINDINGS TO DATE (IT IS NOT SUFFICIENT TO STATE FINDINGS WILL BE DISCUSSED): Between the 1st and 3rd PDSA cycles, we found a significant increase in providers' perceived efficiency using the form (3.95 to 4.4 ($p = 0.083$)) and a decrease in time spent reviewing prior history during the visit (2.23 to 1.33 (1 = 10-15min, 2 = 15–20 min, 3 = 20-30min, 4= >30min, $p = 0.004$)). Providers were highly satisfied with the last iteration of the form (4.6 ± 0.5). 30% of clinic providers completed a final electronic survey. Of these providers, 60% found the new patient visits while using the form to be "efficient" or "very efficient". Patients were satisfied with the form (3.7 ± 0.92), and most patients found the form to be an appropriate length (3.0 ± 0.21).

KEY LESSONS FOR DISSEMINATION (WHAT CAN OTHERS TAKE AWAY FOR IMPLEMENTATION TO THEIR PRACTICE OR COMMUNITY?): We successfully developed a clinic intake form that enhanced provider efficiency during new patient visits. Early in our PDSA cycles, the importance of engaging all stakeholders (clinic staff) in a new intervention became clear, and we found greater success when we incorporated feedback on process measures from clinic administrative staff. Frequent introduction of new administrative staff and new providers was also challenging, and we had to include additional training for staff and publicity for the project. We believe that intake tools such as our survey can be used more widely to enhance clinic efficiency.

IMPROVING SAFETY AND APPROPRIATENESS OF PERIPHERALLY INSERTED CENTRAL CATHETERS(PICC): A RESIDENT EDUCATION AND QUALITY IMPROVEMENT INITIATIVE Serena M. Ogunwole[2, 3]; Jack Badawy[1, 2]; Scott DePaul[2, 3]; Kristine Coronado[3]; Robert Quitta[3]; Joshua pozos[2, 3]; Alison Wiseman[2, 3]; Marcos Restrepo[3, 2]. [1]University of texas Southwestern, Dallas, TX; [2]UT health Science Center at San Antonio, San Antonio, TX; [3]South Texas Veterans Health Care System, San Antonio, TX. (Control ID #2707485)

STATEMENT OF PROBLEM OR QUESTION (ONE SENTENCE): Most Internal medicine residency programs do not offer formal PICC line education for trainees. Because of this lack of knowledge and the prior lack of uniform guidelines, a large number of PICC lines are placed inappropriately. This has led to increased morbidity in patients with PICC lines, increased lengths of stay, failure to meet core measures and increased overall costs for hospitals.

OBJECTIVES OF PROGRAM/INTERVENTION (NO MORE THAN THREE OBJECTIVES): Primary aim: We aim to decrease rate of inappropriate PICC line insertion by 25% at the ALM-VA inpatients in the period of January-February 2017 when compared to Oct2015 to Oct2016. Secondary Aims: We aim to increase the rate of midline catheter use by 25% at the ALM-VA inpatients in the period of January-February 2017 when compared to Oct2015 to Oct2016. We aim to decrease rate of complications of PICC line (CLABSI) insertion by 10% at the ALM-VA inpatients in the period of January-February 2017 when compared to Oct2015 to Oct2016.

DESCRIPTION OF PROGRAM/INTERVENTION, INCLUDING ORGANIZATIONAL CONTEXT (E.G. INPATIENT VS. OUTPATIENT, PRACTICE OR COMMUNITY CHARACTERISTICS): In 2015, an international panel was convened that applied the RAND/UCLA Appropriateness Method to develop criteria for use of PICCs and the Michigan Appropriateness Guide for Intravenous Catheters (MAGIC) were published. Using these guidelines and in consultation with various groups from the hospital (including hospital medicine, nephrology, medical and surgical ICU, nursing, and pharmacy) we have created our own criteria for appropriate IV access. We used these criteria as the basis of the following interventions: Interventions: Changing the electronic medical record consult for IV access to reflect appropriateness criteria defined by our team Resident education in a case based format to introduce appropriate IV access decision making Resident pocket cards will be created that reflect the algorithm for making a decision on the best IV access for individual patient scenarios

MEASURES OF SUCCESS (DISCUSS QUALITATIVE AND/OR QUANTITATIVE METRICS WHICH WILL BE USED TO EVALUATE PROGRAM/INTERVENTION): Complication rates of complications of PICC line (CLABSI) Return on investment from increased use of midline and ultrasound gudied peripheral IV

FINDINGS TO DATE (IT IS NOT SUFFICIENT TO STATE FINDINGS WILL BE DISCUSSED): 1. Resident Survey: understating perceptions and attitudes regarding the use of PICC lines by trainees All residents who identifed as internal medicine residents were asked to partcipate- 60% of residents completed survey Survey includes demographic infomation on all residents including PGY year, plans for future practice(inpatient vs outpatient) 92% of residents have never recieved formal training on indications for PICC line placement, while 100% of them order picc lines for their patients The most common indication for placing picc consults was longterm antibitoics 51% of residents would be interested in formal education regarding indications for PICC line training

KEY LESSONS FOR DISSEMINATION (WHAT CAN OTHERS TAKE AWAY FOR IMPLEMENTATION TO THEIR PRACTICE OR COMMUNITY?):.This kind of project will broaden the scope of traditional training by exposing residents to the importance of resources allocation, cost effectiveness, and patient experience. Furthermore it will push trainees to recognize that evidence based medicine is not limited to diagnostic decisions but should be factored into all of the decisions that we make for our patients.

IMPROVING SCREENING FOR WOMEN WITH DISABILITIES

Peter D. Bulova[1]; Stephen Corey[2]. [1]UPMC, Pittsburgh, PA; [2]Magee Hospital, Pittsburgh, PA. (Control ID #2703831)

STATEMENT OF PROBLEM OR QUESTION (ONE SENTENCE): Does a dedicated center for women with disabilities improve the rates of breast cancer and cervical cancer screening?

OBJECTIVES OF PROGRAM/INTERVENTION (NO MORE THAN THREE OBJECTIVES): 1. Although women with disabilities are living longer, healthier lives, they are less likely than their able counterparts to have basic breast and cervical cancer screening performed. We established a dedicated center to serve women with disabilities with the purpose of providing improved care for this underserved population. 2. We reviewed our patient files to compare the screening rates of breast and cervical cancer in age appropriate patients, compared to national rates of women with disabilities.

DESCRIPTION OF PROGRAM/INTERVENTION, INCLUDING ORGANIZATIONAL CONTEXT (E.G. INPATIENT VS. OUTPATIENT, PRACTICE OR COMMUNITY CHARACTERISTICS): The Magee Center for women with disabilities is designed to provide easy access for women with disabilities, with adaptive equipment, dedicated staff with experience working with women with disabilities, and flexible length to appointment times. The center is designed to overcome physical barriers to routine women's health care. Women in wheelchairs are weighed on a scale in their chairs and the wheelchair is weighed separately later. Our mammogram equipment is wheelchair accessible. Our specialized equipment includes: Scales for weighing women in wheelchairs, universally accessible exam tables, Patient lifts and padded velcro stirrups for comfort. This is solely an outpatient program. It is in an academic hospital.

MEASURES OF SUCCESS (DISCUSS QUALITATIVE AND/OR QUANTITATIVE METRICS WHICH WILL BE USED TO EVALUATE PROGRAM/INTERVENTION): Higher rates of screening of breast and cervical cancer compared to other cohorts of women with disabilities

FINDINGS TO DATE (IT IS NOT SUFFICIENT TO STATE FINDINGS WILL BE DISCUSSED): We performed a retrospective chart review to determine rates of screening for mammograms and Pap Smears in patients seen at our facility. We obtained EPIC as a medical records system in 2009, and obtained data from 2009–2012. We found that we saw a total of 560 face to face encounters. In patients ages 20–69, 363 of 432 had received a pap smear. This is a rate of 84%. In our sample of women between the ages of 50–65, 166 of 200 had a recent mammogram - for a rate of 83%. This is considerably higher than other national estimates for women with disabilities. In a CDC study in 2010[1], 75% of women without disabilities and 61% of those with disabilities received a mammogram. In a national CDC survey of women with any basic actions difficulty or complex activity limitation the rates of Pap smears within 5 years was 66% in 2013[2]. 1. Wisdom, J.P., et al..(2010). Health disparities between women with and without disabilities: A review of the research. *Social Work in Public Health*, *25*(3), 368–386. 2. CDC Table 71. Use of Pap smears among women aged 18 and over

KEY LESSONS FOR DISSEMINATION (WHAT CAN OTHERS TAKE AWAY FOR IMPLEMENTATION TO THEIR PRACTICE OR COMMUNITY?): While there is a great discrepancy in care for women with disabilities, it is remarkable that well known and easily reproducible interventions such as adaptive equipment, educated staff and appropriate time for appointments, can have a significant effect on care. While more studies are needed, we feel that our center is easily reproducible and is a valuable intervention.

IMPROVING THE QUALITY OF CARE FOR HIGH-RISK DIABETIC PATIENTS: THE IMPACT OF A CLINICAL PHARMACIST IN AN URBAN PRIMARY CARE PRACTICE

Stephanie C. Wang; Deborah

Wittman; Naa-Abia Casely-Hayford; Theresa Mack. Mount Sinai St. Luke's Hospital, New York, NY. (Control ID #2706322)

STATEMENT OF PROBLEM OR QUESTION (ONE SENTENCE): Limited resources for high-risk diabetes care management exert greater pressure on the primary care physician (PCP) leading to physician burnout.

OBJECTIVES OF PROGRAM/INTERVENTION (NO MORE THAN THREE OBJECTIVES): Incorporation of a clinical pharmacist (CP) into a collaborative team-based approach will: 1. Improve diabetic glycemic control 2. Increase cost-savings by enhancing access to healthcare 3. Reduce physician burnout by distributing the care burden of high-risk diabetic patients

DESCRIPTION OF PROGRAM/INTERVENTION, INCLUDING ORGANIZATIONAL CONTEXT (E.G. INPATIENT VS. OUTPATIENT, PRACTICE OR COMMUNITY CHARACTERISTICS): Mount Sinai Doctors Faculty Practice (MSDFP) is a community based academic primary care office located in Harlem, NY. MSDFP serves a predominantly African and Hispanic American population, of which 15% are diabetic. A CP was integrated into the practice to improve quality of care for high-risk patients. CPs with their expertise in medication therapy management (MTM) can assist PCPs in managing chronic diseases, expand patient access and improve patient health outcomes. A collaborative team-based approach can reduce physician burnout, and expand high-quality, low-cost care. The CP developed the collaborative drug therapy management (CDTM) agreements based on current practice guidelines. Diabetic patients with a hemoglobin A1c (HbA1c) > 9% were referred to the CP either during an office visit or via referral. The CP reviewed all medications, provided education on disease state management and proper medication use. All patient visits and MTM adjustments were communicated to the PCP via documentation in the patient's medical record.

MEASURES OF SUCCESS (DISCUSS QUALITATIVE AND/OR QUANTITATIVE METRICS WHICH WILL BE USED TO EVALUATE PROGRAM/INTERVENTION): The primary endpoint was change in HbA1c. Secondary endpoints included change in low-density lipoprotein, blood pressure and body mass index. Cost analysis was performed on a sampling of patient encounters. Relative value units (RVUs) were calculated and used to compare the difference between collaborative versus usual care (PCP only). Results were examined using descriptive statistics and paired t-tests.

FINDINGS TO DATE (IT IS NOT SUFFICIENT TO STATE FINDINGS WILL BE DISCUSSED): A total of 21 patients with HbA1c > 9% were referred to the CP. The average patient age was 58.6 years (range 39 to 72). The majority were female (71%), and African American (90%). Baseline mean HbA1c was 12.0% (95% CI 11.2 to 13.1). The average HbA1c improved from 12.0 to 8.4% (CI 7.9 to 8.9) over an average of 5 visits in 4 months. Secondary measures trended toward statistical significance. Based on CP productivity, a potential revenue of $60,000 annually was determined. Over a 4 month period, a collaborative team-based approach would result in an estimated $99 of cost-savings per patient compared to usual care.

KEY LESSONS FOR DISSEMINATION (WHAT CAN OTHERS TAKE AWAY FOR IMPLEMENTATION TO THEIR PRACTICE OR COMMUNITY?): This study demonstrated that the redesign of healthcare delivery for a high-risk diabetic population using a CP can improve health outcomes, minimize physician isolation and redistribute the burden of care decreasing physician burnout. Services performed by a CP can generate practice based revenue streams with built-in-cost savings and financial incentives from pay-for-performance programs. Analysis of emergency room and hospital utilization may reveal additional cost savings in avoidable admissions.

INCREASING CLINICIANS' RESILIENCE, ENGAGEMENT AND USE OF COACHING SKILLS THROUGH A PEER-BASED COACHING AND MENTORING PROGRAM Andrea L. Sikon; Elaine Schulte. Cleveland Clinic, Cleveland, OH. (Control ID #2703545)

STATEMENT OF PROBLEM OR QUESTION (ONE SENTENCE): Can a peer-based coaching and mentoring program increase participant engagement and resilience during a time of rapid change in healthcare?

OBJECTIVES OF PROGRAM/INTERVENTION (NO MORE THAN THREE OBJECTIVES): *1. Facilitate* a coaching and mentoring network for all faculty to increase their resilience, engagement and achievement of development goals. 2.Create *training* for participants in asset-based coaching and mentoring.

DESCRIPTION OF PROGRAM/INTERVENTION, INCLUDING ORGANIZATIONAL CONTEXT (E.G. INPATIENT VS. OUTPATIENT, PRACTICE OR COMMUNITY CHARACTERISTICS): Staff Coaching and Mentoring Program (SCMP) was created in 2008 to provide peer coaching for professional development and mentorship for all of our institution's faculty. Participants complete a CME orientation course, differentiating program roles and teaching coaching skills based on fundamentals of relationship-centered communication and positive psychology. The Coach serves as a thinking partner, aiding Coachee in identifying goals and values and how those align with actions, translating these into actionable steps. Coachee may also meet with a Mentor/s, who serve as self defined experts in one of 8 domains, offering specific advice. Program participation is voluntary and peer based.

MEASURES OF SUCCESS (DISCUSS QUALITATIVE AND/OR QUANTITATIVE METRICS WHICH WILL BE USED TO EVALUATE PROGRAM/INTERVENTION): Course evaluations were assessed and a participant survey administered to understand participant practices and to measure self reported impact of participation on components of engagement, resilience and use of learned skills in daily interactions with colleagues, patients, and in one's personal life. Survey quantitative analysis of participants of both training and also matched relationships used confirmatory factor analysis in the three aforementioned factors. Course evaluations were qualitatively coded from categorizing repeated verbiage according to *3S Understanding* to describe the major emergent themes from the orientation courses.

FINDINGS TO DATE (IT IS NOT SUFFICIENT TO STATE FINDINGS WILL BE DISCUSSED): 335 program participants from across specialties were surveyed in 2016. All roles (coaches, mentors, coach/mentees) reported an increase in the above with those in a matched coaching or mentoring relationship showing a statistically significant increase. Participants reported a moderate-significant increase in expanded relationship with colleagues across the institution. Two revealed staying at our organization due to experience in SCMP. Qualitatively, each theme from 395 evaluations also aligned with one of the three domains of engagement, resilience and use of coaching skills.

KEY LESSONS FOR DISSEMINATION (WHAT CAN OTHERS TAKE AWAY FOR IMPLEMENTATION TO THEIR PRACTICE OR COMMUNITY?): A Peer coaching and mentoring program can positively impact engagement and resilience, and provide valuable coaching skills that can be

used in daily interactions across contexts. Even unmatched participants reported additional benefits, suggesting that the training itself can have a positive impact. Additional benefits gained by the organization from having peers engage in such programming extends beyond the direct benefits gained by coachees/mentees. Formal similar initiatives can result in a trained network that supports personal, professional, and organizational resilience and engagement, which ultimately encourages retention and increased quality of patient care.

INCREASING NARCAN CO-PRESCRIPTION RATES FOR PATIENTS ON CHRONIC OPIATES AT AN ACADEMIC PRIMARY CARE CLINIC Jon E. Freise[2]; Elizabeth E. McCarthy[2]; Leslie Sheu[2]; Michelle E. Guy[1]. [1]University of California San Francisco, San Francisco, CA; [2]University of California, San Francisco, San Francisco, CA. (Control ID #2692082)

STATEMENT OF PROBLEM OR QUESTION (ONE SENTENCE): In light of the national opioid epidemic, the CDC recommends increasing the prescription of Narcan within primary care practices, but Narcan co-prescription rates with opioids remain low.

OBJECTIVES OF PROGRAM/INTERVENTION (NO MORE THAN THREE OBJECTIVES): We aimed to explore barriers to prescribing Narcan at an academic primary care clinic. We then designed an intervention to address barriers and increase co-prescription rates of Narcan for patients on chronic opiates.

DESCRIPTION OF PROGRAM/INTERVENTION, INCLUDING ORGANIZATIONAL CONTEXT (E.G. INPATIENT VS. OUTPATIENT, PRACTICE OR COMMUNITY CHARACTERISTICS): Our intervention was multi-pronged. First, we administered a 12 question anonymous survey to physicians within the University of California, San Francisco Division of General Internal Medicine to assess barriers to Narcan prescription and provider suggestions to increase Narcan prescription rates. 53 out of 117 (45%) providers completed the survey. Notable barriers to prescribing Narcan included lack of time in appointments (30%) and lack of understanding of how to educate patients about Narcan use (21%). Based on this, we sent individualized emails to providers identifying their patients on chronic opiates, those not prescribed Narcan, and information on prescribing Narcan to encourage discussions. To address concerns about lack of time, medical assistants were asked to pend Narcan during the check-in process for high-dose chronic opiate patients, and providers were encouraged to have clinic nurses educate patients on how to use Narcan.

MEASURES OF SUCCESS (DISCUSS QUALITATIVE AND/OR QUANTITATIVE METRICS WHICH WILL BE USED TO EVALUATE PROGRAM/INTERVENTION): Improvement in Narcan prescription rate for patients on chronic opiates, particularly those on high-dose opiates (≥50 morphine milligram equivalents/day), is our quantitative measure of success.

FINDINGS TO DATE (IT IS NOT SUFFICIENT TO STATE FINDINGS WILL BE DISCUSSED): From the start of our intervention on October 3rd, 2016, to December 7th, 2016, the Narcan prescription rate for the 269 high-dose chronic opiate patients increased from 75 (28%) to 99 (37%). Of the 597 total patients on chronic opiates, Narcan prescription rates increased from 103 (17%) to 133 (22%). Looking forward, we will continue our interventions, email providers every two months with updates on individual and collective success, and will additionally interview clinical staff about the impact of discussing Narcan on overall work flow to refine our intervention.

KEY LESSONS FOR DISSEMINATION (WHAT CAN OTHERS TAKE AWAY FOR IMPLEMENTATION TO THEIR PRACTICE OR COMMUNITY?): This quality improvement effort illustrates promising initial improvement of opiate safety through increasing co-prescription of Narcan for patients on chronic opiate therapy. It highlights the importance of performing a needs assessment to inform quality improvement, and the effectiveness of an interprofessional team-based intervention. We hope to provide a reproducible model for other clinics to use to increase Narcan prescription as a harm reduction strategy for patients on chronic opiates.

INDIVIDUALIZED COACHING AS A MEANS OF REDUCING PHYSICIAN BURNOUT. Karim Awad; Anne Dixon; Peter Dreyfus; Joe Kimura. Atrius Health, Boston, MA. (Control ID #2702585)

STATEMENT OF PROBLEM OR QUESTION (ONE SENTENCE): The objective of this study is to test the hypothesis that physician coaching will help reduce the severity of burnout in physicians in an ambulatory practice.

OBJECTIVES OF PROGRAM/INTERVENTION (NO MORE THAN THREE OBJECTIVES): Objective: Reduce Maslach Burnout Inventory (MBI) scale by 3 points after 12-weeks of coaching, which will be sustained 1-year after the intervention is completed. A one-point reduction in the MBI scale leads to clinically significant improvements.

DESCRIPTION OF PROGRAM/INTERVENTION, INCLUDING ORGANIZATIONAL CONTEXT (E.G. INPATIENT VS. OUTPATIENT, PRACTICE OR COMMUNITY CHARACTERISTICS): Atrius Health is a large multispecialty group practice serving 675,000 patients in eastern Massachusetts. Currently, 54% of physicians experience burnout. Clinician burnout is recognized as a tremendous problem across the country and has been demonstrated to have many consequences, including: lower patient satisfaction scores (J Healthc Manag. 2016;61:105), decreased productivity (BMC Health Serv Res. 2014;14:254), increased medical errors (Annals of Surgery 2010;6:995), and higher turnover rate (J Clin Oncol. 2014;32:1127). Our pilot program will enroll burned out physicians in a formal coaching over a 12-week period. Weekly coaching session will be held to specifically address the physician's burnout drivers.

MEASURES OF SUCCESS (DISCUSS QUALITATIVE AND/OR QUANTITATIVE METRICS WHICH WILL BE USED TO EVALUATE PROGRAM/INTERVENTION): Reduction in MBI scale by 3 points.

FINDINGS TO DATE (IT IS NOT SUFFICIENT TO STATE FINDINGS WILL BE DISCUSSED): Currently, a high percentage of our physicians are exhibiting symptoms of burnout.

KEY LESSONS FOR DISSEMINATION (WHAT CAN OTHERS TAKE AWAY FOR IMPLEMENTATION TO THEIR PRACTICE OR COMMUNITY?): Interventions to help reduce burnout are few. Research indicates that strategies like mindfulness and stress reduction is only modestly beneficial. Our study wishes to prove that coaching physicians is an extremely valuable and beneficial tool to help with burnout.

INPATIENT NALOXONE DISTRIBUTION AT A LARGE URBAN ACADEMIC MEDICAL CENTER Andrea Jakubowski[1]; Alexander Pappas[1]; Lee Isaachsohn[1]; Felipe Castillo[2]; Mariya Mayusokova[1]; Richard J. Silvera[1]; Evan Rausch[1]; Louisa Holaday[1]; Sameen Farooq[1]; Marcus

Bachhuber[1]. [1]Montefiore Medical Center, New York, NY; [2]Montefiore Medical Center, Bronx, NY. (Control ID #2702497)

STATEMENT OF PROBLEM OR QUESTION (ONE SENTENCE): Inpatient general medical settings are a promising venue to provide overdose education and naloxone distribution (OEND) to patients at risk for overdose, however, few such programs exist.

OBJECTIVES OF PROGRAM/INTERVENTION (NO MORE THAN THREE OBJECTIVES): 1) To develop and pilot an OEND program on two general medical floors of a large urban medical center.

DESCRIPTION OF PROGRAM/INTERVENTION, INCLUDING ORGANIZATIONAL CONTEXT (E.G. INPATIENT VS. OUTPATIENT, PRACTICE OR COMMUNITY CHARACTERISTICS): Led by ten resident physicians from three post-graduate training programs (Family Medicine, Internal Medicine, Psychiatry) and two faculty mentors, we developed and piloted an OEND program. We obtained take-home naloxone kits free-of-charge from the New York City Department of Health and Mental Hygiene (DOHMH) and worked with the inpatient pharmacy to incorporate kits into the inpatient formulary. For the program, we chose a consult service model, whereby the admitting or primary inpatient care team paged the clinical consult team (consisting of rotating members from the planning committee) for any newly admitted patient who had used any opioid in the past year. The consult team members then screened the patients for eligibility. Eligibility criteria were based on current guidelines and included: opioid misuse, receipt of high dose opioid analgesics, concurrent use of opioids with benzodiazepines or alcohol, current hospitalization for opioid overdose or withdrawal, methadone or buprenorphine use, recent release from incarceration, and patient request. Patients meeting eligibility criteria then received OEND from a consult team member through a short video training; patient understanding was informally assessed through teach-back, and the patient was given a take-home naloxone kit upon training completion.

MEASURES OF SUCCESS (DISCUSS QUALITATIVE AND/OR QUANTITATIVE METRICS WHICH WILL BE USED TO EVALUATE PROGRAM/INTERVENTION): 1) Number of consults received 2) Number of eligible patients 3) Number of patients receiving education and a naloxone kit

FINDINGS TO DATE (IT IS NOT SUFFICIENT TO STATE FINDINGS WILL BE DISCUSSED): From implementation (April 2016) to the present, we were consulted on 54 patients, resulting in 52 eligible patients. Of those, 21 (40%) were taking high doses of opioid analgesics, 19 (37%) used heroin, 11 (21%) used daily methadone or buprenorphine, 17 (33%) were taking opioids combined with benzodiazepines/alcohol, 7 (13%) were hospitalized for withdrawal or overdose, and 1 (2%) requested training. We trained and provided naloxone kits to 35 (67%) patients; 9 (17%) patients declined training, 5 (10%) were discharged, eloped, or left against medical advice prior to training, 2 (4%) was not able to consent to training, and 2 (4%) already had a naloxone kit.

KEY LESSONS FOR DISSEMINATION (WHAT CAN OTHERS TAKE AWAY FOR IMPLEMENTATION TO THEIR PRACTICE OR COMMUNITY?): 1) Implementation OEND in the inpatient setting is possible and requires multidisciplinary collaboration with clinical leadership, pharmacy, and public health agencies. 2) Most patients we identified as eligible for OEND had never received it, suggesting that inpatient settings are promising for reaching those who do not currently have access to naloxone. 3) Relying on the primary medical team to page a consult team may have limited our program's reach; alternatives such as identifying eligible patients directly from electronic medical records may be needed.

INTEGRATING BEHAVIORAL HEALTH INTO AN ACADEMIC PRIMARY CARE PRACTICE: COLLABORATION IS KEY Neda Laiteerapong[1]; Mara Terras[1]; Erin M. Staab[1]; Nancy Beckman[1]; Pooja Dave[2]; Sachin D. Shah[1]; Daniel Yohanna[1]; Lisa M. Vinci[1]. [1]University of Chicago, Chicago, IL; [2]University of Chicago Medicine, Chicago, IL. (Control ID #2705881)

STATEMENT OF PROBLEM OR QUESTION (ONE SENTENCE): There is a large unmet need for behavioral health care among primary care (PC) patients; however, improving behavioral health care in PC requires a complex health systems intervention.

OBJECTIVES OF PROGRAM/INTERVENTION (NO MORE THAN THREE OBJECTIVES): To improve behavioral health care in PC by integrating behavioral health services, implementing electronic clinical decision support, increasing provider resources, educating providers, and assessing referrals to mental health.

DESCRIPTION OF PROGRAM/INTERVENTION, INCLUDING ORGANIZATIONAL CONTEXT (E.G. INPATIENT VS. OUTPATIENT, PRACTICE OR COMMUNITY CHARACTERISTICS): Academic PC practice (Faculty/resident combined full-time equivalents: 18; 26,000 unique patients/year; 40,000 encounters/year). A stakeholder-led team (PC medical director, PC physician champion, chair of psychiatry, psychologist, director of medical informatics, and health services researcher) began meeting monthly in August 2014. Year 1 focused on increasing access and improving the quality of behavioral health care. Year 2 focused on identifying undiagnosed depression. Piloted interventions included an embedded behavioral health clinic 3 half-days per week, clinical decision support for depression screening and management, and physician feedback on screening rates and referral completion.

MEASURES OF SUCCESS (DISCUSS QUALITATIVE AND/OR QUANTITATIVE METRICS WHICH WILL BE USED TO EVALUATE PROGRAM/INTERVENTION): Faculty/staff perception of level of integration of PC-behavioral health clinic at baseline and 6 months, using a validated tool (score 0 (low)- 100 (high)) and faculty/staff satisfaction with integration of the behavioral health clinic. Change in depression screening rates.

FINDINGS TO DATE (IT IS NOT SUFFICIENT TO STATE FINDINGS WILL BE DISCUSSED): At baseline, the overall level of integration score was 64.5 (SD 8.4). The program was rated highly in beliefs and commitment (81.8 ± 11.2), leadership (74.6 ± 16.0), and interdisciplinary alliance (70.0 ± 11.2). At 6-month follow-up, the overall score increased significantly (64.5 vs. 70.1, $p = 0.001$), as did three areas with the greatest need for improvement: systems integration (57.0 to 63.8, $p = 0.001$), integrated clinical practice (60.0 to 68.4, $p < 0.001$), and training (56.7 to 65.3, $p = 0.001$). Depression screening increased from 10.0% to 18.2% from 2/16 to 10/16. Each month was associated with a 7% increased odds of screening (odds ratio 1.07, 95% CI 1.06-1.09), adjusting for attending vs. resident physician and patient race, age and gender. About half of providers/staff were satisfied with our progress at 6-months; areas for improvement included expanding to a full-time behavioral health clinic and increasing scheduling of referred patients. We received approval to hire a full-time behavioral health faculty for PC in 11/16.

KEY LESSONS FOR DISSEMINATION (WHAT CAN OTHERS TAKE AWAY FOR IMPLEMENTATION TO THEIR PRACTICE OR COMMUNITY?): Improving behavioral health care for PC patients requires a multi-level, multi-stakeholder intervention. Early engagement with a broad range of administrative, clinical, and research stakeholders was key to driving the intervention. Access to patient-level data and use of data analytics to assess the impact of our interventions was instrumental to our advocacy efforts at re-directing resources toward PC-behavioral health integration.

INTEGRATING INDICATIONS FOR USE INTO THE MEDICATION PRESCRIBING PROCESS AT A TERTIARY ACADEMIC MEDICAL CENTER Jackie Ho; Carolyn Wrzesniewski; Noelle Hasson. VA Palo Alto Health Care System, Mountain View, CA. (Control ID #2702164)

STATEMENT OF PROBLEM OR QUESTION (ONE SENTENCE): The Joint Commission requires that a diagnosis, condition or indication for use exists for each medication ordered; to our knowledge no studies have described the integration of indications for use into the prescribing process at a health-system.

OBJECTIVES OF PROGRAM/INTERVENTION (NO MORE THAN THREE OBJECTIVES): Describe the development and implementation of a patient-centric clinical indications library into the medication prescribing process. Highlight the operational, humanistic and clinical outcomes of indications on patient prescription labels.

DESCRIPTION OF PROGRAM/INTERVENTION, INCLUDING ORGANIZATIONAL CONTEXT (E.G. INPATIENT VS. OUTPATIENT, PRACTICE OR COMMUNITY CHARACTERISTICS): Indications for use on medication orders can increase patient safety by: 1) empowering and engaging patients in their health care and reinforcing adherence to medications; 2) articulating the use of the drug to other health care team members; and 3) decreasing prescribing errors by ensuring the right drug is issued for the right condition. The U.S. Department of Veterans Affairs uses the Computerized Patient Record System (CPRS) Electronic Health Record (EHR) system. In recent months, pharmacists and prescribers have been instructed to ensure that all medications have an indication in the directions on prescription labels. This has caused prescription processing delays and provider/pharmacist frustration. A well-designed organizational workflow and development of outcome measures are needed to determine and track the best way to increase the number of prescriptions with an indication. This project existed in three phases: 1) developing an indications library for each medication orderable item in the EHR system; 2) integrating indications into the prescribing process; 3) measuring outcomes to continually improve both the indications library and operational processes.

MEASURES OF SUCCESS (DISCUSS QUALITATIVE AND/OR QUANTITATIVE METRICS WHICH WILL BE USED TO EVALUATE PROGRAM/INTERVENTION): Operationally, the percent of medication orderable items with a default indication in the EHR, the percent of outpatient prescriptions with an indication, and the overall prescription verification time for pharmacists before and after the intervention will be measured. Qualitatively, survey of physicians and pharmacists satisfaction with standard work developed around inclusion of indications into the prescribing process will be evaluated. Patient satisfaction surveys will be distributed to assess patient's perception of indication on prescription labels. Lastly, the relationship between indication on patient prescription labels and medication adherence will be analyzed.

FINDINGS TO DATE (IT IS NOT SUFFICIENT TO STATE FINDINGS WILL BE DISCUSSED): After development of the clinical indications library, medication orderable items in our system with a default indication increased from 29.8% ($n = 717/2,409$) to 72.4% ($n = 1,743/2,409$). Clinical indications library and standard work implementation increased the number of prescriptions with an indication from 64% to 90%. Other findings will be discussed.

KEY LESSONS FOR DISSEMINATION (WHAT CAN OTHERS TAKE AWAY FOR IMPLEMENTATION TO THEIR PRACTICE OR COMMUNITY?): 1) Recognize the value and benefits of integrating medication indications into the prescribing process 2) Understand the implications and barriers of incorporating indications for use on prescriptions 3) Evaluate how providers can improve patient care through the use of indication information

INTEGRATION OF CLINIC-BASED, OPT-OUT TESTING FOR HCV INTO AN EXISTING HIV TESTING FRAMEWORK AT A COMMUNITY HEALTH CENTER IN CHICAGO Kristin Keglovitz-Baker; Magda Houlberg; Chad Hendry; Laura Rusie; Tommy Schafer. Howard Brown Health, Chicago, IL. (Control ID #2692020)

STATEMENT OF PROBLEM OR QUESTION (ONE SENTENCE): How can a community health center best integrate opt-out Hepatitis C testing into an already existing framework for rapid HIV testing?

OBJECTIVES OF PROGRAM/INTERVENTION (NO MORE THAN THREE OBJECTIVES): Systematically determine best practices for the integration of HCV testing into an existing opt-out HIV testing framework. Continuously evaluate and revise current practices to elucidate what would work for our clinical setting. Build a system for ongoing recording and analysis of testing outcomes in order to disseminate successes and opportunities for improvement.

DESCRIPTION OF PROGRAM/INTERVENTION, INCLUDING ORGANIZATIONAL CONTEXT (E.G. INPATIENT VS. OUTPATIENT, PRACTICE OR COMMUNITY CHARACTERISTICS): Howard Brown Health, one of the nation's largest LGBTQ healthcare organizations, was awarded funding in 2015 to create best practices around the expansion of routine opt-out Human Immunodeficiency Virus (HIV) testing and integration of Hepatitis C virus (HCV) screening into this framework. After modification of the Electronic Medical Record to prompt for HIV testing, testing was routinized by training Medical Assistants (MAs) to offer testing using a script while rooming/vitaling patients. HIV testing was rapid unless patients preferred lab-based. HCV testing was routinized by adding labs to order-sets for a variety of visits. Education emphasized the importance of HCV screening for patients born 1945–1965, living with HIV, and with IV drug use/sexual risk factors. Positive HCV Ab tests auto-reflexed to a viral load test to determine active HCV.

MEASURES OF SUCCESS (DISCUSS QUALITATIVE AND/OR QUANTITATIVE METRICS WHICH WILL BE USED TO EVALUATE PROGRAM/INTERVENTION): The following were quantified monthly: the number and percentage of visits where HIV and/or HCV testing were offered and conducted, the number of new HIV and HCV positives identified through opt-out testing, and the number of new HIV and HCV positives linked to care. Patient refusal reasons for testing and barriers perceived by provider (e.g. high HCV testing cost) were documented.

FINDINGS TO DATE (IT IS NOT SUFFICIENT TO STATE FINDINGS WILL BE DISCUSSED): 6961 patients were seen in HBH primary care, an increase of 7.8% from 2013. 85.8% more HIV tests were offered to eligible patients (2982 vs. 1605 in 2013). 10.6% of patients refused tests in 2015 vs. 8.3% in 2013, most due to "no risk". HIV positivity was 1.05% in 2015 vs. 0.88% in 2013. 3 acute HIV infections were found in each year and all new positives were linked to care. 593 of the projected 1500 HCV tests were offered to eligible patients, 282 accepted a test and 18 were positive. 4558 total patients were tested for HCV and 82 were positive. All 31 RNA positives were linked to care. MA-perceived barriers were most often: busy clinic, provider prefers lab test, and visit not related to sexual health.

KEY LESSONS FOR DISSEMINATION (WHAT CAN OTHERS TAKE AWAY FOR IMPLEMENTATION TO THEIR PRACTICE OR COMMUNITY?): HIV test refusal increased in 2015, but a high testing rate was maintained along with higher HIV testing volume. Opt-out testing identified new HIV positives, aided in disclosure for known positives, and facilitated prevention discussion with HIV negatives. High HCV positivity in eligible patients confirmed a need for targeted testing and high positivity in the general primary care population indicates a similar need for general screening. Allowing flexibility in testing type was a barrier for MAs but necessary for buy-in from providers.

INTEGRATIVE PAIN MANAGEMENT CLINIC SERVING HIGH-RISK PRIMARY CARE PATIENTS WITH CHRONIC PAIN Emily E. Hurstak[4, 1]; Barbara Wismer[2]; Kristina Leonoudakis[2]; Joseph Pace[2]; Maria T. Chao[3, 4]. [1]San Francisco Free Clinic, San Francisco, CA; [2]San Francisco Department of Public Health, San Francisco, CA; [3]UCSF, San Francisco, CA; [4]University of San Francisco, San Francisco, CA. (Control ID #2703723)

STATEMENT OF PROBLEM OR QUESTION (ONE SENTENCE): Primary care clinics have limited access to multimodal treatments to improve patients' pain and minimize reliance on opioid analgesics.

OBJECTIVES OF PROGRAM/INTERVENTION (NO MORE THAN THREE OBJECTIVES): To create an integrative pain management clinic within a primary care safety-net clinic serving a community with high prevalence of chronic pain and high rates of opioid analgesic overdose. To determine feasibility and acceptability of the program by measuring program referrals and participation. To assess the effects of the program on patients' pain intensity, health-related quality of life, and opioid analgesic use.

DESCRIPTION OF PROGRAM/INTERVENTION, INCLUDING ORGANIZATIONAL CONTEXT (E.G. INPATIENT VS. OUTPATIENT, PRACTICE OR COMMUNITY CHARACTERISTICS): We designed and implemented an integrative pain management program (IPMP) within an outpatient primary care clinic serving a high proportion of patients with poverty, unstable housing, substance use, and mental health conditions. We designed the program with input from patient and staff focus groups, a multidisciplinary steering committee, and the support of leadership from the San Francisco Department of Public Health. IPMP accepts patients with chronic pain greater than 3 months duration who are prescribed opioid analgesics. IPMP involves group-based participation in behavioral health techniques, educational sessions on topics including neurobiology of pain and medication safety, physical movement sessions guided by a physical therapist, and individual sessions of acupuncture and massage therapy.

MEASURES OF SUCCESS (DISCUSS QUALITATIVE AND/OR QUANTITATIVE METRICS WHICH WILL BE USED TO EVALUATE PROGRAM/INTERVENTION): Assess program feasibility and acceptability through referrals, participation rates, and qualitative interviews Assess short-term pain management outcomes including patient pain intensity, health-related quality of life, and opioid analgesic use.

FINDINGS TO DATE (IT IS NOT SUFFICIENT TO STATE FINDINGS WILL BE DISCUSSED): Participation: 147 patients were referred to the program. Fifty-five patients completed 12 weeks of participation in one of three cohorts; 15% of participants dropped out before program completion. Sixty-five percent of patients attended greater than 75% of recommended sessions. Pilot Satisfaction: Patients and providers reported high satisfaction with the program; 62% of patients chose to enroll in a graduate group after pilot completion. The most popular program aspects included home-group sessions, massage therapy, mindfulness instruction, physical movement classes, and individual acupuncture sessions. Pain and Functioning: Patients who completed the 12-week program reported decreased isolation, improved coping skills, improved mood, building a sense of community, and decreased pain intensity. Pre and post intervention comparison tests indicate statistically significant improvements in pain interference and pain self-efficacy.

KEY LESSONS FOR DISSEMINATION (WHAT CAN OTHERS TAKE AWAY FOR IMPLEMENTATION TO THEIR PRACTICE OR COMMUNITY?): We found that an integrative pain management program delivered within a safety-net primary care clinic was feasible to patients and providers, and associated with high rates of participation and satisfaction. Given the initial success of this model, leadership within our health system decided to expand the clinic services. Group based multimodal pain approaches may be one strategy to address chronic pain treatment in safety-net clinical settings.

INTERVIEW OSCE (OBJECTIVE STRUCTURED CLINICAL EXAMINATION): A NOVEL STRATEGY IN INTERVIEWING HOSPITALIST APPLICANTS Katherine A. Hochman[2]; Nicole Adler[1]; joshua smith[1]. [1]NYULMC, New York, NY; [2]New York University School of Medicine, New York, NY. (Control ID #2701145)

STATEMENT OF PROBLEM OR QUESTION (ONE SENTENCE): Hospitalist directors typically rely on the review of curriculum vitae, recommendations from peers and traditional interviews in hiring hospitalists; while important, this strategy has limitations.

OBJECTIVES OF PROGRAM/INTERVENTION (NO MORE THAN THREE OBJECTIVES): Our goal was to complement the traditional strategy in hiring hospitalists with one that allows for direct observation of how an applicant reasons through various common clinical scenarios in real-time. We designed an "Interview OSCE" to complement the traditional strategy.

DESCRIPTION OF PROGRAM/INTERVENTION, INCLUDING ORGANIZATIONAL CONTEXT (E.G. INPATIENT VS. OUTPATIENT, PRACTICE OR COMMUNITY CHARACTERISTICS): After review of the curriculum vitae, recommendations from peers and a brief telephone conversation, applicants were invited to formally interview in person. 4–6 hospitalist applicants were interviewed each day. The interview day consists of opening remarks from the Hospitalist Director and introductions of three additional hospitalist faculty over breakfast. The candidates then rotate through four

stations: one formal interview conducted by the Hospitalist Director and 3 OSCE stations staffed by members of the hospitalist faculty. The three OSCE cases reflected our institutional priorities. These were 1.) goals of care, 2.) value-based medicine and 3.) transitions of care. Before entering each room, hospitalist applicants read a one-paragraph case presentation. Hospitalist faculty were provided a checklist of what constitutes an excellent answer. For the value-based medicine case, for example, the candidates are expected to a.) identify that routine daily labs are wasteful especially on the day of discharge when they have been stable, b.) proceed with discharging a stable patient despite a hemolyzed potassium and c.) use this moment as a teaching opportunity. Each case was designed to last 10 min with 5 min of feedback and discussion. Hospitalist faculty subsequently filled out a short evaluation form. At the conclusion of the rotation, the hospitalist faculty would convene and discuss the candidates in aggregate. Some candidates who performed well on the formal interview were less impressive in the OSCE stations, and vice versa.

MEASURES OF SUCCESS (DISCUSS QUALITATIVE AND/OR QUANTITATIVE METRICS WHICH WILL BE USED TO EVALUATE PROGRAM/INTERVENTION): We will measure success in two ways: 1.) end-of-year hospitalist satisfaction survey 2.) hospitalist retention

FINDINGS TO DATE (IT IS NOT SUFFICIENT TO STATE FINDINGS WILL BE DISCUSSED): 23 candidates were invited to participate in the Interview OSCE for the 2015–6 recruitment season (for hospitalists positions to start July 1, 2015). Of these, 16 were offered positions and 9 accepted. Of the 9 that accepted, 100% completed the year successfully and 5 signed on for another year (the remaining 4 enrolled in fellowship programs).

KEY LESSONS FOR DISSEMINATION (WHAT CAN OTHERS TAKE AWAY FOR IMPLEMENTATION TO THEIR PRACTICE OR COMMUNITY?): The Interview OSCE is a highly portable, low-cost and effective strategy to complement the traditional means of evaluating hospitalist candidates. In addition to helping choose candidates whose strengths align with instiutional initiatives, the Interview OSCE becomes a powerful means of engaging the current hospitalist faculty in shaping the program.

JOB SHARING IN ACADEMIC INTERNAL MEDICINE, A 25 year EXPERIENCE Janet Sundquist; Catherine P. O'Neill. University at Buffalo, East Aurora, NY. (Control ID #2707018)

STATEMENT OF PROBLEM OR QUESTION (ONE SENTENCE): Academic medicine suffers from attrition of young faculty and young faculty often struggle with work life balance.

OBJECTIVES OF PROGRAM/INTERVENTION (NO MORE THAN THREE OBJECTIVES): Demonstrate the feasibility and sustainability of an academic medicine job share. Identify potential advantages alternative work arrangements can bring to academic medical centers, including patients and other faculty.

DESCRIPTION OF PROGRAM/INTERVENTION, INCLUDING ORGANIZATIONAL CONTEXT (E.G. INPATIENT VS. OUTPATIENT, PRACTICE OR COMMUNITY CHARACTERISTICS): The University at Buffalo Internal Medicine Residency is an academic program training approximately 100 housestaff at three major teaching hospitals in Buffalo, New York. Two physicians arranged a job share of one full time clinical faculty position after completing residency in 1992. The physicians strove to match the job expectations of a full time person, dividing the week into a Monday, Tuesday and alternate Wednesdays schedule for one physician. The other physician worked Thursday, Fridays and alternate Wednesdays. Like most institutions, work responsibilities and schedules as well as employers have evolved; but the job share arrangement adapted over the course of 25 years. Initially responsibilities included both inpatient care in an urban teaching hospital along with outpatient care in a hospital based safety net clinic. The clinic is a continuity site for 30 medical residents as well as rotating medical students. As inpatient responsibilities increased a one week on one week off schedule was developed which was considered half time. Recently the physicians have transitioned to outpatient only.

MEASURES OF SUCCESS (DISCUSS QUALITATIVE AND/OR QUANTITATIVE METRICS WHICH WILL BE USED TO EVALUATE PROGRAM/INTERVENTION): Length of employment of full time faculty over the same time period can be compared to the length of employment of the physicians in the job share arrangement. Other measures include engagement of the physicians in teaching and administration as well as promotion and recognition.

FINDINGS TO DATE (IT IS NOT SUFFICIENT TO STATE FINDINGS WILL BE DISCUSSED): Over the past 25 years 14 full time physicians have come and gone from the same clinical setting. Only one person hired since 1992 has remained for more than 10 years. Continuity of care is an important goal in resident clinics and faculty with flexible work arrangements may paradoxically give patients greater continuity than full time faculty who move on quickly. Recruiting and replacing faculty is expensive and may offset the cost of benefits for job share physicians. In times of stress a job share is a more flexible arrangement as both physicians can work simultaneously if needed to cover an emergency for another faculty member. Work arrangements developed within the job share such as alternating weeks have become standard for hospitalists.

KEY LESSONS FOR DISSEMINATION (WHAT CAN OTHERS TAKE AWAY FOR IMPLEMENTATION TO THEIR PRACTICE OR COMMUNITY?): A job share model can allow physicians the freedom to adapt to changing needs. The program can benefit by retaining faculty and potentially decreasing cost of turnover. Description of a successful job share may help other faculty negotiate and develop alternative work arrangements.

LEAN METHODOLOGIES AND PATIENT SCHEDULING: IMPROVING CONTINUITY IN AN INTERNAL MEDICINE RESIDENT CLINIC Richard M. Atkins[1, 2]; Sonal Patel[1, 2]; Leigh Wynkoop[2]. [1]Duke University, Durham, NC; [2]Durham VA Healthcare System, Durham, NC. (Control ID #2705324)

STATEMENT OF PROBLEM OR QUESTION (ONE SENTENCE): Patient-provider continuity in the Durham Veterans Affairs (VA) Healthcare System resident clinic is poor and may reduce satisfaction for both housestaff and patients.

OBJECTIVES OF PROGRAM/INTERVENTION (NO MORE THAN THREE OBJECTIVES): 1. Quantify continuity for an Internal Medicine residency ambulatory clinic 2. Study the principal drivers of patient-provider discontinuity through multiple LEAN methodologies 3. Use iterative Plan-Do-Study-Act (PDSA) cycles to improve patient-provider continuity.

DESCRIPTION OF PROGRAM/INTERVENTION, INCLUDING ORGANIZATIONAL CONTEXT (E.G. INPATIENT VS. OUTPATIENT,

PRACTICE OR COMMUNITY CHARACTERISTICS): The Durham VA PRIME clinic is one of three Duke Internal Medicine Residency continuity clinics. Visit level data was obtained from the VA's Corporate Data Warehouse (CDW) for all patient visits from the preceding 12 months. Patient-provider continuity was defined as office encounters during which a patient saw the primary care provider (PCP) identified for him/her in the EMR at the time of the encounter. We studied the data using statistical control charts of weekly continuity. Next, we performed gemba walks and process flow mapping to understand the process of scheduling office visits.

MEASURES OF SUCCESS (DISCUSS QUALITATIVE AND/OR QUANTITATIVE METRICS WHICH WILL BE USED TO EVALUATE PROGRAM/INTERVENTION): 1. Outcome measure - Patient-provider continuity 2. Process measure - Proportion of RTC orders that follow the specified format

FINDINGS TO DATE (IT IS NOT SUFFICIENT TO STATE FINDINGS WILL BE DISCUSSED): At baseline, 51% of patient visits to the PRIME clinic were with the identified PCP. This process was in control aside from an unexplained two-month run of improvement in fall of 2015 and drop in continuity in late June/early July 2016, during the period of expected turnover in residents related to academic years. We also found that continuity was higher for PGY-2 and 3 residents (56%) than PGY-1 residents (41%). Based on in-person observations, the "Return To Clinic" (RTC) order placed at the end of every visit was identified as a source of significant variation between PCPs. PDSA interventions designed to standardize this process include the following: 1. At every clinic session, each resident is given his/her schedule for the remainder of the year listing clinic weeks. The resident may then use this schedule to determine the RTC date as the first day of a future week he/she has clinic. Currently, we are tracking how frequently RTC orders are entered according to these instructions using control charts. To date, only ~38% of RTC orders are in the appropriate format which is also in statistical control. 2. We are changing the RTC order template within the EMR to nudge PCPs to enter RTC in the appropriate format and will educate providers on this new process.

KEY LESSONS FOR DISSEMINATION (WHAT CAN OTHERS TAKE AWAY FOR IMPLEMENTATION TO THEIR PRACTICE OR COMMUNITY?): 1. Achieving patient-provider continuity in IM resident clinics is difficult and can be affected at numerous levels by multiple people or processes. 2. Local scheduling processes (e.g. return-to-clinic orders) can have a large impact on continuity.

LPN-LED INSULIN AND ANTIHYPERTENSIVE MEDICATION TITRATION PROTOCOLS IMPROVE HEMOGLOBIN A1C AND BLOOD PRESSURE IN AN URBAN, UNDERSERVED PRIMARY CARE OFFICE Valerie Ganetsky[2]; Steven Kaufman[1]; Rachel Adams[2]. [1]Cooper Health System, Camden, NJ; [2]Cooper University Hospital, Camden, NJ. (Control ID #2705889)

STATEMENT OF PROBLEM OR QUESTION (ONE SENTENCE): Long wait times for primary care provider (PCP) appointments and endocrine care limit access to medication adjustment and detract physicians from more complex medical decision-making.

OBJECTIVES OF PROGRAM/INTERVENTION (NO MORE THAN THREE OBJECTIVES): The program objectives were to enhance operational efficiency, patient engagement, and education by task shifting medication titration for insulin and antihypertensive medications to LPNs.

DESCRIPTION OF PROGRAM/INTERVENTION, INCLUDING ORGANIZATIONAL CONTEXT (E.G. INPATIENT VS. OUTPATIENT, PRACTICE OR COMMUNITY CHARACTERISTICS): The Cooper Health System Urban Health Institute (UHI) in Camden, New Jersey offers licensed practical nurse (LPN)-led insulin and antihypertensive medication titration protocols to a high-risk, underserved patient population. Titration protocols developed by a PCP, endocrinologist, advanced practice nurse (APN), and PharmD were used to promote patient education and improve blood pressure (BP) and glycemic control were used during visits. Patients meeting the following criteria were eligible to be referred into the LPN protocols from the UHI primary care clinic or from the diabetes group medical visit (GMV) for the insulin titration protocol. Eligible patients included: type 1 or 2 diabetes plus, new insulin start or currently on insulin with hemoglobin A1c (HbA1c) >8% (insulin titration protocol); any patient with BP >150/90 mm Hg or newly initiated on medication (antihypertensive titration protocol). For both protocols, patients were asked to attend a minimum of 4 sessions for education and medication titration.

MEASURES OF SUCCESS (DISCUSS QUALITATIVE AND/OR QUANTITATIVE METRICS WHICH WILL BE USED TO EVALUATE PROGRAM/INTERVENTION): Pre- and post-intervention HbA1c, systolic blood pressure (SBP), and diastolic blood pressure (DBP) were collected and analyzed using paired t-tests.

FINDINGS TO DATE (IT IS NOT SUFFICIENT TO STATE FINDINGS WILL BE DISCUSSED): A total of 135 and 151 patients were enrolled in the insulin and antihypertensive titration protocols, respectively, between 7/2015 and 10/2016. Mean age was 57 years and mean number of protocol visits was 4 ± 3. The population consisted of underserved racial/ethnic minorities (60% African American, 35% Hispanic), with 45% of patients on Medicaid insurance. Mean baseline HbA1c and BP was 10.2 and 152/90 mm Hg, respectively. Among the 70 patients that had baseline and follow-up HbA1c values within 6 months of the most recent LPN visit, there was a statistically significant difference in the mean pre- and post-HbA1c: −0.85 (95% CI, −0.15 to −1.55, $P = 0.02$). Among the 47 patients that were enrolled in the insulin titration protocol and did not attend diabetes GMVs, the mean pre- and post-HbA1c was −0.57 (95% CI, 0.30 to −1.44, $P = 0.2$). There was also a statistically significant difference in pre- and post-SBP [−9.5 mm Hg (95% CI −5.62 to −13.34, P value <0.00001)] and DBP [−4.83 mm Hg (95% CI −2.67 to −7.00, P value <0.00001)]. Mean post-intervention BP was 142/85 mm Hg.

KEY LESSONS FOR DISSEMINATION (WHAT CAN OTHERS TAKE AWAY FOR IMPLEMENTATION TO THEIR PRACTICE OR COMMUNITY?): Low-resource PCP offices have limited resources for patient education and frequent visits for medication titration. Task shifting insulin and antihypertensive medication titration from physicians to LPNs enables relationship building, increases patient education, and frees physician appointments for complex decision-making in a cost-efficient manner.

MEDICAID ENROLLMENT INITIATIVE AT A STUDENT-FACULTY COLLABORATIVE CLINIC IN A BOSTON JAIL Kavitha Anandalingam[2]; Christian Kaufman[1]; Daniel McGuire[1]; Manjinder Kandola[2]; Molly Zhao[3]; Justin Reynolds[3]; Kimberly Sue[1]; Matthew Tobey[1]; David Beckmann[1, 2]; Lisa Simon[4, 2]. [1]Massachusetts General Hospital, Boston, MA; [2]Harvard Medical School, Boston, MA; [3]Harvard College, Cambridge,

MA; [4]Harvard School of Dental Medicine, Boston, MA. (Control ID #2700402)

STATEMENT OF PROBLEM OR QUESTION (ONE SENTENCE): Millions of people leave incarceration or detention without health insurance; these individuals have higher rates of physical and mental health conditions than the general population, and post-release remain less likely to access medical care.

OBJECTIVES OF PROGRAM/INTERVENTION (NO MORE THAN THREE OBJECTIVES): 1) Develop a team as a component of the weekly student-faculty collaborative clinic at a large county jail in Boston to begin the Medicaid insurance enrollment process for detainees, which may help expand healthcare access, increase social stability, and lead to decreased rates of recidivism. 2) Provide an opportunity for interested members of the clinic team to become more involved in advocacy and research efforts.

DESCRIPTION OF PROGRAM/INTERVENTION, INCLUDING ORGANIZATIONAL CONTEXT (E.G. INPATIENT VS. OUTPATIENT, PRACTICE OR COMMUNITY CHARACTERISTICS): The Nashua Street Jail (NSJ) houses nearly 600 male detainees engaged in court processes, who stay for a time ranging from several days to two years. The jail has a single discharge planner who aids detainees' transition back to the community, including enrolling them for health insurance through Medicaid. The student-faculty collaborative clinic at NSJ is part of the Crimson Care Collaborative, an interprofessional organization administered by the Stoeckle Center for Primary Care Innovation at Massachusetts General Hospital. The clinic includes medical students, nurse practitioner and physician assistant students, dental students, and undergraduates. Clinics are held at the jail once per week and include medical, mental health, education, dental and Medicaid enrollment teams. Students involved in Medicaid initiative complete online modules to become a Certified Application Counselor and are trained by the jail's discharge planner to complete Medicaid applications. The discharge planner identifies the individuals to be registered. During each clinic, a student will help 3 to 4 detainees complete the first of two necessary steps for Medicaid enrollment.

MEASURES OF SUCCESS (DISCUSS QUALITATIVE AND/OR QUANTITATIVE METRICS WHICH WILL BE USED TO EVALUATE PROGRAM/INTERVENTION): During the 2.5 months of the pilot phase of this initiative, 30 detainees started the process for obtaining MassHealth during our weekly clinics at NSJ. Detainees may also register to vote. As of December, nine students have completed the certification and training process.

FINDINGS TO DATE (IT IS NOT SUFFICIENT TO STATE FINDINGS WILL BE DISCUSSED): Our experience in the clinic has helped to elucidate the varied challenges individuals face when attempting to enroll for coverage, including having a native language other than English, differing levels of literacy, and difficulties with vision. Additional efforts are required from participants after discharge, including documentation attesting they are no longer incarcerated and selecting a specific insurance plan, and in the future, we hope to follow up with individuals to explore further barriers to insurance enrollment and access to care after release.

KEY LESSONS FOR DISSEMINATION (WHAT CAN OTHERS TAKE AWAY FOR IMPLEMENTATION TO THEIR PRACTICE OR COMMUNITY?): A individual's time in jail or prison offers an opportunity to plan and arrange follow-up just prior to a critical transition of care. Students can play an important role in both establishing and supporting existing systems to aid in that transition.

MENDING THE DISCHARGE FENCE: IMPLEMENTATION OF A COMMUNITY HEALTH HOSPITALIST AMBASSADORSHIP PROGRAM (CHHAP) Patrick Ryan[1, 3]; Chi Zheng[2, 3]; Sarah A. Stella[2, 3]; Rebecca Hanratty[1, 3]. [1]Denver Health, Denver, CO; [2]Denver Health Medical Center, Denver, CO; [3]University of Colorado, Aurora, CO. (Control ID #2705027)

STATEMENT OF PROBLEM OR QUESTION (ONE SENTENCE): Since the advent of hospitalist medicine there has been an increasing division of labor between inpatient and outpatient providers leading to fractured care, decreased provider satisfaction and the potential for errors in discharge transitions.

OBJECTIVES OF PROGRAM/INTERVENTION (NO MORE THAN THREE OBJECTIVES): The goals of this program were to: 1) improve communication between inpatient and outpatient providers, 2) identify transitional care practices needing improvement, 3) improve provider satisfaction.

DESCRIPTION OF PROGRAM/INTERVENTION, INCLUDING ORGANIZATIONAL CONTEXT (E.G. INPATIENT VS. OUTPATIENT, PRACTICE OR COMMUNITY CHARACTERISTICS): In a vertically integrated system with a 525 bed hospital and 9 federally qualified community health centers with a shared electronic health record (EHR), communication between hospitalists and primary care providers (PCP) is not standardized, and there was a perceived lack of communication and collaboration on issues pertaining to transitions of care. Through a Transitions of Care (TOC) workgroup comprised of hospitalist and PCP leaders, hospitalists volunteered as "ambassadors" to each CHS clinic and would attend clinic staff meetings on a quarterly basis. This provided a point-of-contact and opportunities for regular face-to-face interactions with PCPs. The TOC workgroup would review findings of the CHHAPs program in monthly meetings, and identify system-based processes needing improvement. We hypothesized that the CHHAPs program might improve communication and feedback between hospitalists and PCPs, and identify interdisciplinary solutions to address system-wide gaps in transitional care. We also hypothesized that increasing hospitalists' engagement in the community they serve might improve collegiality and satisfaction among both hospitalists and PCPs.

MEASURES OF SUCCESS (DISCUSS QUALITATIVE AND/OR QUANTITATIVE METRICS WHICH WILL BE USED TO EVALUATE PROGRAM/INTERVENTION): Questionnaire of PCP and hospitalist leadership was used to measure sense of community and collaboration between PCPs and hospitalists and provider satisfaction with CHHAPs.

FINDINGS TO DATE (IT IS NOT SUFFICIENT TO STATE FINDINGS WILL BE DISCUSSED): 100% of 11 identified PCP and hospitalist leaders responded. 64% of respondents identified a lack of time as a barrier to communication between PCP and hospitalists. 82% found that the use of CHHAPs provides a means to address barriers in communication. 64% found that CHHAPs improves sense of community between departments identifying themes of feeling connected, improving team work in patient care and developing collaborative partnerships. 82% identified CHHAPs as a means of improving provider satisfaction. CHHAPs has had an integral role in QI projects in improving the accuracy of admission medication reconciliation and process of home oxygen ordering upon discharge.

KEY LESSONS FOR DISSEMINATION (WHAT CAN OTHERS TAKE AWAY FOR IMPLEMENTATION TO THEIR PRACTICE OR COMMUNITY?): A hospitalist ambassadorship program may improve communication and increase satisfaction and engagement among PCPs and hospitalists, and create a venue for systematically studying the needs of community health as they relate to transitions of care and developing collaborative solutions to address unmet needs. While this program has been sustainable in a vertically integrated system, it may also be of benefit in non-academic, community based settings that lack shared resources and EHR.

MOBILE INSULIN TITRATION INTERVENTION (MITI) - A TEXTING PROGRAM TO HELP TYPE 2 DIABETES (T2D) PATIENTS AT BELLEVUE HOSPITAL AND GOUVERNEUR HEALTH FIND THEIR BASAL INSULIN DOSE - AN INTERIM ANALYSIS
Natalie K. Levy2; Natasha Orzeck-Byrnes[2]; Dana Moloney[2]; Sneha R. Aidasani[2]; Lu Hu[1]; Aisha Langford[1]; Yiding Jiang[1]; Mary Ann Sevick[1]; Erin Rogers[1]. [1]NYU School of Medicine, New York, NY; [2]NYU School of Medicine, Bellevue Hospital, New York, NY. (Control ID #2693330)

STATEMENT OF PROBLEM OR QUESTION (ONE SENTENCE): T2D patients needing insulin adjustments require multiple clinic visits for titration, but face barriers (missed work, transportation costs, clinic co-pays) all of which disproportionately affect vulnerable populations.
OBJECTIVES OF PROGRAM/INTERVENTION (NO MORE THAN THREE OBJECTIVES): MITI aims to be clinically efficacious, patient-centered, and highly accessible (only requires text messaging and phone calls).
DESCRIPTION OF PROGRAM/INTERVENTION, INCLUDING ORGANIZATIONAL CONTEXT (E.G. INPATIENT VS. OUTPATIENT, PRACTICE OR COMMUNITY CHARACTERISTICS): MITI is an efficacious, patient-centered, accessible program that remotely guides T2D patients to their correct basal insulin dose (glargine, detemir). Eligible patients have T2D, an A1c >8%, a phone that can text, and need titration of basal insulin. Patients referred by their providers are enrolled on a secure website which sends a weekday text message asking 'What was your fasting blood sugar this morning?' Each day the MITI nurse checks the website for alarm values (extreme high or low values). Once a week, the MITI nurse calls patients and, using the MITI titration algorithm, advises them on dose adjustments. The goal of the program is to find the optimal basal insulin dose (OID), which is the dose that achieves a fasting blood sugar between 80 and 130 (or the maximal dose of 50 units). MITI lasts a maximum of 12 weeks. When the program ends, patients return to usual care.
MEASURES OF SUCCESS (DISCUSS QUALITATIVE AND/OR QUANTITATIVE METRICS WHICH WILL BE USED TO EVALUATE PROGRAM/INTERVENTION): Using a single-group, quasi-experimental approach, we examined the proportion of patients reaching OID within 12 weeks, the mean number of days required to reach OID, and reductions in fasting glucose and A1c. We described participant response rates, staff time required to deliver the intervention, and patient time saved. Qualitative interviews were also conducted.
FINDINGS TO DATE (IT IS NOT SUFFICIENT TO STATE FINDINGS WILL BE DISCUSSED): Of the 71 participants who completed the program, 86% reached OID, 5.6% did not reach OID, and 8.5% terminated the program early. Those reaching OID did so in a mean of 21 (SD 21) days. Fasting glucose levels decreased from 209 (SD 77) mg/dl to 140 (SD 45), and mean A1c (for those with follow up labs thus far) decreased from 11.6% (SD 1.9) to 10.0% (SD 2.2). Ninety-one percent of text prompts received a response from the participant. Mean staff time required to deliver MITI was 16 min (SD 5) per participant per week, and patients reported a mean time saving of 150 (SD 74) min each time an in-person visit was averted. Qualitative interviews suggest that clinical staff perceived MITI to be a preferred alternative to clinic-based insulin titration, one that resulted in good care without interfering with clinic flow. Patients reported that the enrollment process was easy and that MITI motivated them to eat healthier food, take their insulin, and check their blood sugars. Because of MITI they reported feeling more connected to their medical team.
KEY LESSONS FOR DISSEMINATION (WHAT CAN OTHERS TAKE AWAY FOR IMPLEMENTATION TO THEIR PRACTICE OR COMMUNITY?): MITI is a clinically efficacious, patient-centered and accessible program for the titration of basal insulin for T2D patients. By eliminating the need for in-person access, MITI proves especially helpful for vulnerable populations. Patients and staff found MITI to be convenient, time-saving, and motivating for patients.

MPATH-LUNG: AN EHR-BASED CLINICAL INFORMATICS LUNG CANCER SCREENING PROGRAM
Ajay Dharod[1]; Christina Bellinger[2]; Kristie Foley[2]; Doug Case[3]; David P. Miller[1]. [1]Wake Forest School of Medicine, Winston-Salem, NC; [2]Wake Forest School of Medicine, Winston Salem, NC; [3]Wake Forest, Winston-Salem, NC. (Control ID #2706102)

STATEMENT OF PROBLEM OR QUESTION (ONE SENTENCE): Despite guidelines recommending Low Dose Computed Tomography screening (LDCTscr) for lung cancer in high-risk individuals (defined by age and smoking history), usage of LDCTscr in the United States has been low.
OBJECTIVES OF PROGRAM/INTERVENTION (NO MORE THAN THREE OBJECTIVES): −Create an EHR algorithm to identify potential candidates for LDCTscr. -Create a LDCTscr web application (mPATH-Lung WebApp) to determine patients' eligibility for LDCTscr and, if eligible, present a personalized decision aid with instructions for obtaining a LDCTscr. -In a pilot study of 1000 patients, assess the feasibility of a clinical informatics LDCTscr intervention that combines the EHR algorithm and mPATH-Lung WebApp.
DESCRIPTION OF PROGRAM/INTERVENTION, INCLUDING ORGANIZATIONAL CONTEXT (E.G. INPATIENT VS. OUTPATIENT, PRACTICE OR COMMUNITY CHARACTERISTICS): We combined the EHR algorithm and WebApp into a system for population-level LDCTscr. The EHR algorithm identifies potential candidates for LDCTscr scheduled to see a primary care provider within 1 month. These patients are sent a secure patient portal message notifying them of their potential eligibility for LDCTscr and invitation to complete the mPATH-Lung WebApp via hyperlink. The mPATH-Lung WebApp allows users to determine their risk of developing lung cancer over the next 6 years and presents personalized risk-benefit information.
MEASURES OF SUCCESS (DISCUSS QUALITATIVE AND/OR QUANTITATIVE METRICS WHICH WILL BE USED TO EVALUATE PROGRAM/INTERVENTION): The primary measure of success is the number of patients who complete the mPATH-Lung web-decision aid. Secondary measures include: proportion of patients who read the patient portal message, proportion who click on the embedded web app link, proportion

confirmed eligible for LDCTscr, proportion who request a LDCTscr test, proportion having a LDCTscr test ordered, and proportion completing screening.

FINDINGS TO DATE (IT IS NOT SUFFICIENT TO STATE FINDINGS WILL BE DISCUSSED): Among the first 388 potentially eligible patients who were sent patient portal messages, 130 (33.5%) visited the mPATH-Lung WebApp. 14% (18/130) abandoned the WebApp before eligibility for LDCT could be determined. Among the remaining 112 patients, 24% (27) were confirmed eligible for LDCT and 76% (85) were ineligible, primarily because they quit smoking greater than 15 years ago (53/85, 62%). Most eligible patients (20/27, 74%) determined their lung cancer risk, with risk levels ranging from 0.4% to 13.4% (mea*n* = 3.8%). 22 patients indicated their level of interest in being screened: 23% (5) wanted screening, 36% (8) did not want screening, and 41% (9) were not sure. The mean risk for developing lung cancer did not differ by patients' screening decisions (3.8% for those who wanted screening; 4.2% for those not wanting screening; 3.5% for those unsure; $p = 0.74$)

KEY LESSONS FOR DISSEMINATION (WHAT CAN OTHERS TAKE AWAY FOR IMPLEMENTATION TO THEIR PRACTICE OR COMMUNITY?): The creation of the EHR algorithm required several validation cycles to exclude individuals with a disease predicting short life expectancy (not appropriate candidates for LDCTscr). More patients than expected visited the mPATH-Lung WebApp. There was a low abandonment rate indicating robust website design. The mean risk for developing lung cancer was not significantly different among those who wanted, did not want, or were not sure they wanted screening, suggesting factors other than absolute risk alone drive patients' screening decisions.

MULTI-SITE INTEGRATION OF AN INNOVATIVE LONGITUDINAL QUALITY IMPROVEMENT CURRICULUM TO IMPROVE RESIDENT PATIENT OUTCOMES

Natasha Parekh[3]; Elena Lebduska[1]; Erika L. Hoffman[2]; Amar Kohli[4]; David C. Demoise[4]; Jaishree Hariharan[4]. [1]University of Colorado, Aurora, CO; [2]VAPHS/Univeristy of Pittsburgh, Pittsburgh, PA; [3]University of Pittsburgh, Pittsburgh, PA; [4]University of Pittsburgh Medical Center, Pittsburgh, PA. (Control ID #2706535)

STATEMENT OF PROBLEM OR QUESTION (ONE SENTENCE): Although previous literature evaluated the effectiveness of an innovative residency quality improvement (QI) curriculum at one clinical site over one year at our institution, it is unknown how the integration of the QI curriculum at different clinical sites over multiple academic years affected resident patient outcomes.

OBJECTIVES OF PROGRAM/INTERVENTION (NO MORE THAN THREE OBJECTIVES): Assess the effectiveness of a longitudinal team-based quality improvement curriculum on resident patient outcomes at 3 clinical sites over 2 academic years (AYs).

DESCRIPTION OF PROGRAM/INTERVENTION, INCLUDING ORGANIZATIONAL CONTEXT (E.G. INPATIENT VS. OUTPATIENT, PRACTICE OR COMMUNITY CHARACTERISTICS): A stepwise longitudinal curriculum was designed to simulate the Plan-Do-Study-Act cycle of QI. It was implemented at 3 sites with varying resources: a large academic center with 56 residents, a community-based clinic with 25 residents, and a VA-based clinic with 56 residents. Each site's residents developed and implemented new QI projects based on their site residents' lowest adherence to quality metrics and institutional needs, which differed each AY. AY1 was 9/2014-6/2015, and AY2 was 9/2015-6/2016. Major themes of the curriculum included: 1) brief didactics on QI principles and identification of QI projects; 2) creation of aim statements using resident analysis of their own panels' quality metrics; 3) collaboration between residents and staff to form a "QI council" that determined practice, provider, and patient interventions to achieve aim statements; and 4) provision of transparent and timely data for continuous re-evaluation.

MEASURES OF SUCCESS (DISCUSS QUALITATIVE AND/OR QUANTITATIVE METRICS WHICH WILL BE USED TO EVALUATE PROGRAM/INTERVENTION): The academic center's QI projects were diabetic foot and eye exams in AY1 and blood pressure (BP) control (<140/90) in AY2; the community-based site chose diabetic foot exams for AY1 and eye exams for AY2; and the VA site chose BP control in AY1 and BP control in diabetics for AY2. We assessed effectiveness through quality metric rates from quarterly patient outcomes reports.

FINDINGS TO DATE (IT IS NOT SUFFICIENT TO STATE FINDINGS WILL BE DISCUSSED): At the academic center, resident foot exams steadily increased from 64% to 78 and eye exams increased from 42 to 69% in AY1. BP control increased from 51 to 61% in AY2. At the community clinic, resident foot exams increased from 59 to 66% in AY1 and eye exams increased from 44 to 77% in AY2. At the VA, BP control increased from 67 to 87% in AY1 and diabetic BP control increased from 75 to 90% in AY2. All increases were steady as demonstrated through QI run charts (unable to show on abstract).

KEY LESSONS FOR DISSEMINATION (WHAT CAN OTHERS TAKE AWAY FOR IMPLEMENTATION TO THEIR PRACTICE OR COMMUNITY?): Our innovative QI curriculum was successfully implemented at 3 sites with varying resources and different QI projects. We showed dramatic improvements in each QI project's quality metrics at the end of their respective academic years. Active resident participation, QI project selection based on each sites' specific quality metrics and resources, team-based collaboration for QI intervention development and implementation, and data transparency and availability for re-evaluation were keys to success. Future research will need to assess sustainability of previous QI projects as new QI projects are selected.

MYLIFE: USING IMPLEMENTATION SCIENCE TO DEVELOP A DIGITAL HEALTH PROGRAM THAT ENCOURAGES HEALTHY BEHAVIORS IN PATIENTS AT RISK FOR LIFESTYLE-RELATED CHRONIC DISEASES

Daniel M. Croymans[1]; Paul Bixenstine[1]; Ian M. Hurst[2]; Carlos Casillas[3]; Lisa Gantz[1]; Sung Hyun Kim[3]; Sally Elliott[3]; Sarah Tan[2]; Alice Kuo[1]. [1]UCLA Health, Los Angeles, CA; [2]UCLA, Los Angeles, CA; [3]UCLA David Geffen School of Medicine, Los Angeles, CA. (Control ID #2707077)

STATEMENT OF PROBLEM OR QUESTION (ONE SENTENCE): Can digital health technology be integrated into the electronic medical record and the primary care setting to encourage healthy behaviors in patients at risk for lifestyle-related chronic diseases?

OBJECTIVES OF PROGRAM/INTERVENTION (NO MORE THAN THREE OBJECTIVES): To assess whether a primary care setting can integrate a comprehensive digital health program to: 1) encourage patients to adopt healthy lifestyle behaviors, 2) improve patient engagement and

motivation, and 3) help providers counsel patients in prevention and treatment of lifestyle-related chronic diseases.

DESCRIPTION OF PROGRAM/INTERVENTION, INCLUDING ORGANIZATIONAL CONTEXT (E.G. INPATIENT VS. OUTPATIENT, PRACTICE OR COMMUNITY CHARACTERISTICS): UCLA primary care providers (PCPs) referred patients for enrollment. Upon intake, study personnel gave patients an activity tracker (Jawbone UP3) and instructions for using the mobile application. Patients set exercise goals, identified barriers and discussed solutions. Patients then received follow-up calls every 2 weeks and 4–6 text messages per week designed to help them stay motivated, set actionable goals, and reflect on their progress. PDSA cycles were used to evaluate and refine the MyLife program preliminary results and feedback. In phase 2, the messaging system includes food diaries and utilizes SMART strategies to improve patient motivation. Behavior Change Techniques (BCT) Taxonomy was consulted to guide iterative improvements.

MEASURES OF SUCCESS (DISCUSS QUALITATIVE AND/OR QUANTITATIVE METRICS WHICH WILL BE USED TO EVALUATE PROGRAM/INTERVENTION): Patient data was compiled from Jawbone UP3, the REDCap survey tool, and Chorus (a HIPAA-compliant messaging platform). Team progress is evaluated using the IHI Collaborative Assessment Scale and patient/provider feedback. Patient success is assessed by changes in patient bodyweight, blood pressure, and nutritional choices. Patient engagement is assessed by PAM13.

FINDINGS TO DATE (IT IS NOT SUFFICIENT TO STATE FINDINGS WILL BE DISCUSSED): Participant baseline characteristics (cycle 1, $n = 12$; cycle 2, $n = 10$) include mean age 42 ± 11 years, 50% female, BMI 35.4 ± 7.5, and PA 34.5 ± 38 min/wk. Patients responded to 74% of messages and wore the device 92% of the time. Patients who completed the program increased their baseline PA by more than 200 and lost an average of 5% of their bodyweight. In total the program uses over 100 unique, branching logic messages. Current results suggest that patients can maintain healthy behaviors if validated behavior change techniques are integrated alongside digital health technology. The MyLife team aims to make communication more interactive in future cycles by supplementing targeted health coaching with chatbot technology.

KEY LESSONS FOR DISSEMINATION (WHAT CAN OTHERS TAKE AWAY FOR IMPLEMENTATION TO THEIR PRACTICE OR COMMUNITY?): 1) Health personnel should start with a target patient population and a few clinics with providers who are willing to give regular feedback. 2) Success of integrated digital health programs is dependent on identification of key stakeholders within the healthcare system and coordination across multiple departments including Information Technology, Operations, and Compliance. This is crucial for connecting data systems and ensuring security and compliance standards are met. 3) Quality improvement efforts are assisted by an integrated data system that can display patient performance metrics in real-time to the program team.

NO PAP LEFT BEHIND: AN INNOVATIVE SYSTEMS AUTOMATION TO OPTIMIZE TIMELY AND APPROPRIATE FOLLOW UP OF CERVICAL CANCER SCREENING. Ellen F. Yee1, 2; Nancy FryeWeaver[1]; Allison Murata[1]; Larry Massie[1]; James Goff[1]; Glen Murata[1]. [1]NMVAHCS, Albuquerque, NM; [2]University of New Mexico, Albuquerque, NM. (Control ID #2698182)

STATEMENT OF PROBLEM OR QUESTION (ONE SENTENCE): Appropriate and timely follow up of women who have had cervical cancer screening is important to ensure that needed care occurs without delays.

OBJECTIVES OF PROGRAM/INTERVENTION (NO MORE THAN THREE OBJECTIVES): 1. Systematically identify women who have had cervical cancer screening with pap smears and human papilloma virus (HPV) testing. 2. Use innovative data and information technology approaches to track these test results to optimize timely and appropriate follow up.

DESCRIPTION OF PROGRAM/INTERVENTION, INCLUDING ORGANIZATIONAL CONTEXT (E.G. INPATIENT VS. OUTPATIENT, PRACTICE OR COMMUNITY CHARACTERISTICS): The New Mexico VA Health Care System (NM VAHCS) includes 13 Community Based Outpatient Clinics (CBOCs) and the main facility in Albuquerque. Individual providers are responsible for cervical cancer screening and follow up, but guidelines for follow up are complex. We created a pap smear and HPV registry using analytics and advanced programming. A cervical cancer screening dashboard assists with finding women due for paps. The pap/HPV registry program then incorporates critical pathways, branching decision trees, and programming of complex algorithms. Use of the registry is intended to create a safety net to ensure that women with abnormal cervical cancer screening tests have the appropriate follow up.

MEASURES OF SUCCESS (DISCUSS QUALITATIVE AND/OR QUANTITATIVE METRICS WHICH WILL BE USED TO EVALUATE PROGRAM/INTERVENTION): This work involved collaboration between Clinical, Lab, and Informatics Services. We accessed the Veterans Integrated Service Network (VISN) 18 data warehouse for quality improvement purposes to identify women Veterans who receive care at the NMVAHCS and who had cervical cancer screening. Microsoft SQL programming linked Pap smear results and HPV results by patient. We wrote 57 algorithms using the following variables: current age, current co-test or pap result, previous co-tests or pap results, and previous treatments identified by CPT codes in order to determine identify women who did not have follow-up and who required further attention.

FINDINGS TO DATE (IT IS NOT SUFFICIENT TO STATE FINDINGS WILL BE DISCUSSED): There were 3268 women Veterans in the NM VAHCS system with a primary care provider. Of these, 2168 were eligible for cervical cancer screening and 1100 were not eligible due to age or hysterectomy. Since 2/6/14, there were 1213 normal paps, 149 abnormal paps, 51 unsatisfactory paps, 8 cancelled/other paps (total of 1421 paps). There were 35 women identified as needing follow up. This group included 13 women needing a pap (11 were notified, 2 had no follow up scheduled), 9 women who moved, 3 women notified and awaiting colposcopy, 2 who declined care, 3 who cancelled or no-showed, 2 with outside care, and 3 who had a colposcopy or hysterectomy (found by chart review).

KEY LESSONS FOR DISSEMINATION (WHAT CAN OTHERS TAKE AWAY FOR IMPLEMENTATION TO THEIR PRACTICE OR COMMUNITY?): Follow up of test results is time consuming and can lead to gaps in care if an abnormal test result is missed. An automated system using health informatics and data can be developed to identify missed opportunities in cervical cancer screening follow up. A collaborative partnership between clinical care, lab services, and informatics is needed to create the registry, and local expertise is vital to implementation of this system. A coordinator to utilize the registry system and assist with follow up care would be helpful to busy providers.

OUTPATIENT APPOINTMENT SCHEDULING FOR DISCHARGED PATIENTS - A SUCCESSFUL TRANSITION OF CARE. Ebenezer Oni[1,2]; Tanyka S. Sam[1]. [1]The Brooklyn Hospital Center, Brooklyn, NY; [2]Mount Sinai Ichan School of Medicine, Brooklyn, NY. (Control ID #2707769)

STATEMENT OF PROBLEM OR QUESTION (ONE SENTENCE): Ensuring continuity of care on outpatient after discharged from inpatient care is often a significant challenge for care givers and a burden for residents mandated to sure a safe transition of care.

OBJECTIVES OF PROGRAM/INTERVENTION (NO MORE THAN THREE OBJECTIVES): Transition of care is an established index to reducing hospital readmission rates. While safe practice requires discharging patients from the in-patient wards with scheduled follow up appointments, this process can be very challenging for the resident who is encumbered with other clinical activities. Objectives: 1. We aimed to assess overall post-hospital follow up rates and readmission rates before and after intervention in one of the busiest medical units in the hospital. 2. Coordiate with ancillary staff to develop strategy to ensure all discharged patients have a scheduled follow up visit with a PCP on discharge.

DESCRIPTION OF PROGRAM/INTERVENTION, INCLUDING ORGANIZATIONAL CONTEXT (E.G. INPATIENT VS. OUTPATIENT, PRACTICE OR COMMUNITY CHARACTERISTICS): Intervention: Residents worked with the hospital to design, implement, and evaluate an improvement project through the framework of a Quality Improvement Clinic, a 6-month structured educational program providing didactics and small group mentorship on using PDSA cycles to improve outpatient appointment scheduling rates post discharge. Using the process mapping technique, we identified major gaps in the scheduling process. We collaborated with clerical staff and the informatics department to implement a step-by-step algorithm for the post-discharge follow-up process. Our education intervention included didactic educational sessions for all housestaff and discharge software training for all ancillary staff in charge of scheduling follow up appointments.

MEASURES OF SUCCESS (DISCUSS QUALITATIVE AND/OR QUANTITATIVE METRICS WHICH WILL BE USED TO EVALUATE PROGRAM/INTERVENTION): Pre-intervention, baseline data showed an average hospital post discharge follow up appointment rate of 20 and readmission rate of 23% between December 2015 - January 2016. After the first PDSA cycle of our intervention, post discharge appointment scheduling follow up rate improved to 42% with a corresponding decline of readmission rate to 11% in June 2016.

FINDINGS TO DATE (IT IS NOT SUFFICIENT TO STATE FINDINGS WILL BE DISCUSSED): After the first PDSA cycle of our intervention, post discharge appointment scheduling follow up rate improved to 42% with a corresponding decline of readmission rate to 11% in June 2016.

KEY LESSONS FOR DISSEMINATION (WHAT CAN OTHERS TAKE AWAY FOR IMPLEMENTATION TO THEIR PRACTICE OR COMMUNITY?): Our project demonstrates how a multidisciplinary and collaborative intervention can improve transition of care. These efforts can reduce hospital readmissions and improve overall patient care and also impact positively on resident training. A resident-led approach created the space for housestaff to work collaboratively with ancillary staff to identify and address weaknesses in the discharge process. In addition to providing residents with invaluable training on systems-based practice, the process of working with hospital leadership to jointly address an issue that was negatively impacting both patient outcomes and resident satisfaction allowed housestaff to take proactive leadership in improving the environment of care for all. Further evaluation and follow up of this intervention is imperative to achieving sustained improved in these important matrices.

PALLIATIVE MEDICINE CONSULTATION TRIGGERS ON THE GENERAL PRACTICE UNIT Melanie Robbins-Ong; Kristen A. Chasteen; Matthew T. Cerasale. Henry Ford Hospital, Detroit, MI. (Control ID #2707518)

STATEMENT OF PROBLEM OR QUESTION (ONE SENTENCE): Identifying patients on general practice units who could benefit from a palliative medicine consultation can be difficult and there is little available literature to help guide selection.

OBJECTIVES OF PROGRAM/INTERVENTION (NO MORE THAN THREE OBJECTIVES): 1. Develop evidence-based criteria for identification of patients who would benefit from a palliative medicine consultation. 2. Integrate the criteria into a sustainable workflow, such that the volume of triggered consultations is manageable to be seen daily.

DESCRIPTION OF PROGRAM/INTERVENTION, INCLUDING ORGANIZATIONAL CONTEXT (E.G. INPATIENT VS. OUTPATIENT, PRACTICE OR COMMUNITY CHARACTERISTICS): The development of criteria to trigger a palliative medicine consultation began with a review of the available literature. Multiple studies have created consultation criteria for the intensive care unit. Features of these studies were selected that could be applied on general practice units. An initial list of patient characteristics was developed and included potentially life-threatening condition plus positive "surprise" question, ≥2 hospitalizations for the same condition in 3 months, admission for difficult to control physical or psychological symptoms, metastatic or incurable cancer, advanced dementia, failure to thrive, or admission from advanced care facility, which was to be applied upon admission. Secondary criteria were developed to increase specificity of patients who would benefit from consultation. These criteria included ongoing distressing physical or psychological symptoms, social or spiritual concerns affecting daily life, lack of understanding of current illness, goals or care unidentified, uncertainly of decision maker, or treatment options do not match patient-centered goals, which would be applied on the second day of hospitalization and only to patients who met the initial criteria.

MEASURES OF SUCCESS (DISCUSS QUALITATIVE AND/OR QUANTITATIVE METRICS WHICH WILL BE USED TO EVALUATE PROGRAM/INTERVENTION): The primary outcome measure of the project is the number of consultations that would be generated daily. Initial process measures include the number of patients triaged and the number of patients who meet the first set of criteria. Qualitative feedback from the general practice unit teams on the aid from the completed consultations would also be reviewed.

FINDINGS TO DATE (IT IS NOT SUFFICIENT TO STATE FINDINGS WILL BE DISCUSSED): Two PDSA cycles using consultation trigger criteria were completed on a single general practice unit with largely qualitative data collection. The first cycle found the single-step criteria was easily applied in daily rounds, but there was initially discrepancy amongst the providers regarding criteria definitions. Nearly 50% of new admissions met the initial criteria. During the second PDSA cycle, fewer patients met the initial trigger criteria and even fewer met the second step. The volume of potential new

consultations averaged less than one per day. The project lead felt the criteria were easy to apply, but had to help guide the other members of the team on criteria application.

KEY LESSONS FOR DISSEMINATION (WHAT CAN OTHERS TAKE AWAY FOR IMPLEMENTATION TO THEIR PRACTICE OR COMMUNITY?): A two-step, evidence-based, criteria for recommendation of a palliative medicine consultation was able to generate a sustainable volume of potential new patients on general practice units who would be highly likely to see benefit from a consultation.

PARTNERSHIP BETWEEN PROVIDERS AND COMMUNITY-BASED HEALTH COACHES TO IMPROVE DIABETES OUTCOMES IN PRIMARY CARE Jamillah Hoy-Rosas[2]; Manmeet Kaur[2]; Victoria L. Mayer[1]; Laurie Edelman[1]; Jonathan Arend[1]. [1]Icahn School of Medicine at Mount Sinai, New York, NY; [2]City Health Works, New York, NY. (Control ID #2706771)

STATEMENT OF PROBLEM OR QUESTION (ONE SENTENCE): Community-based health coaching programs have shown promise in improving outcomes for high-risk patients with diabetes mellitus (DM), although integration of such services into the workflows of primary care practices is often lacking. Our academic primary care practice worked in full partnership with a community-based health coaching program to develop, implement, and sustain workflows to manage our high-risk patients with DM.

OBJECTIVES OF PROGRAM/INTERVENTION (NO MORE THAN THREE OBJECTIVES): To optimize the clinical outcomes of high-risk patients with DM; to reduce the cost of care for these patients by preventing excess utilization of acute care services; and to provide an operational model for the integration of a community-based health coaching program into primary care office workflows.

DESCRIPTION OF PROGRAM/INTERVENTION, INCLUDING ORGANIZATIONAL CONTEXT (E.G. INPATIENT VS. OUTPATIENT, PRACTICE OR COMMUNITY CHARACTERISTICS): Internal Medicine Associates (IMA), the academic internal medicine practice for Mount Sinai Hospital in New York, NY, serves predominantly Latino and African American residents of East Harlem, a medically and psychosocially complex population with the highest rates of diabetes and diabetes-related complications in New York City. To improve outcomes for our patients with uncontrolled DM, we partnered with City Health Works (CHW), a community-based organization that aims to create healthier neighborhoods and reduce healthcare spending through the delivery of health coaching and care coordination. CHW utilizes neighborhood-specific health coaches to provide home-based self-management support and address social determinants of health. IMA leadership was an integral part of the development of the CHW DM program and continues to meet with CHW regularly to monitor performance and optimize workflow integration. Through a data sharing agreement, CHW utilizes IMA DM registries to identify eligible patients and provides clinical decision support to elicit referrals from providers. Once patients are enrolled, the health coaches and the patients' providers engage in bidirectional communication via Mount Sinai's electronic health record.

MEASURES OF SUCCESS (DISCUSS QUALITATIVE AND/OR QUANTITATIVE METRICS WHICH WILL BE USED TO EVALUATE PROGRAM/INTERVENTION): We collected data on diabetes-related biometric measures and acute care utilization pre- and post-intervention.

FINDINGS TO DATE (IT IS NOT SUFFICIENT TO STATE FINDINGS WILL BE DISCUSSED): During the first 3 years of our partnership, 285 patients were enrolled, and 115 completed a full year of the intervention. Mean HbA1c decreased by 1.6 points overall and dropped below 8% in 44% of patients one year post-intervention. Early cost data indicate that CHW achieved an average reduction of $600 per member per month at approximately week 10 of the intervention.

KEY LESSONS FOR DISSEMINATION (WHAT CAN OTHERS TAKE AWAY FOR IMPLEMENTATION TO THEIR PRACTICE OR COMMUNITY?): The use of community-based health coaches for DM self-management support has the potential to significantly impact clinical outcomes and cost of care. It is likely that strong partnerships between such organizations and referring primary care practices are critical to achieving success. While the degree of collaboration between CHW and IMA is unique, many aspects of the partnership are scalable. CHW is currently in the process of expanding its model to other primary care sites; the impact of such efforts will be revealing.

PATIENT AND SYSTEM FACTORS ASSOCIATED WITH POOR GLYCEMIC CONTROL AT AN URBAN, SAFETY-NET HOSPITAL John C. Ricketts[2]; Gretchen Snoeyenbos[4]; Alejandra Bustillo[4]; Ashley M. Castillo[2]; John L. Elliott[3]; Sarah Dobro[1]; Stacy Higgins[3]; Shelly-Ann Fluker[4]. [1]Emory School of Medicine, Atlanta, GA; [2]Emory University, Atlanta, GA; [3]Emory University, Decatur, GA; [4]Emory University School of Medicine, Atlanta, GA. (Control ID #2706238)

STATEMENT OF PROBLEM OR QUESTION (ONE SENTENCE): To identify factors that are associated with poor glycemic control at an urban, safety-net hospital.

OBJECTIVES OF PROGRAM/INTERVENTION (NO MORE THAN THREE OBJECTIVES): 1) To identify statistically significant factors correlated to control of Hb A1C in this population; 2) To analyze which of these factors are most likely to provide a benefit when intervened upon.

DESCRIPTION OF PROGRAM/INTERVENTION, INCLUDING ORGANIZATIONAL CONTEXT (E.G. INPATIENT VS. OUTPATIENT, PRACTICE OR COMMUNITY CHARACTERISTICS): We decided to investigate factors that influenced the glycemic control of our patients in a large, urban, safety-net hospital in Atlanta, GA as part of a practice improvement project aimed at reducing the percentage of patients with very uncontrolled diabetes (HbA1C >10%). We first developed a 16-question survey that ranged from testing the patients' knowledge of their illness, to delving into patient behaviors, to assessing involvement of multidisciplinary diabetes care provided by the clinic. This survey was distributed to 150 patients who carried an ICD-9/10 diagnosis of diabetes and was answered by 142 patients. It was distributed to patients who completed it prior to seeing the physician and was handed out over a 3 month period. The survey data was then sent to statisticians who performed a multiple regression model to look for significance when compared to patients' actual A1Cs.

MEASURES OF SUCCESS (DISCUSS QUALITATIVE AND/OR QUANTITATIVE METRICS WHICH WILL BE USED TO EVALUATE PROGRAM/INTERVENTION): The data from the above surveys underwent two separate rounds of analysis. The first round of analysis was to determine the correlation between different patient and system factors that were assessed in the survey, while the second round of data analysis looked at which of these factors was correlated with poor glycemic control.

FINDINGS TO DATE (IT IS NOT SUFFICIENT TO STATE FINDINGS WILL BE DISCUSSED): The first round showed that there was a strong correlation between patient knowledge and whether a patient had seen a nutritionist. Even though having seen a nutritionist was highly correlated with being involved in a multi-disciplinary diabetes care model, being involved with this model was not significantly correlated with knowledge of what an A1C is or what their A1C is. The second round of statistical analysis took into account patient data such as their most recent A1C when they took the survey and showed statistically significant associations with cost and diet. These findings suggest that an area that is ripe for intervention is one that focuses on both cost and food choice.

KEY LESSONS FOR DISSEMINATION (WHAT CAN OTHERS TAKE AWAY FOR IMPLEMENTATION TO THEIR PRACTICE OR COMMUNITY?): For patients receiving care at an urban, safety net hospital, factors such as medication costs and knowledge of diabetes are significant barriers to glycemic control. Multidisciplinary care models, while correlated with improved glycemic control, are not sufficient to overcome these patient-sided factors. Therefore we conclude that interventions to improve glycemic control should focus on public health interventions such as healthy food availability and affordable medications. In this light, we have developed a shopping list based on common grocery stores in our patients' zip codes that focuses on high nutritional value at affordable cost and will be disseminating this list to patients from our original survey and monitoring for improvements in HbA1C while using this tool.

PATIENT NAVIGATION PROGRAM FOR LUNG CANCER SCREENING IN COMMUNITY HEALTH CENTERS Sanja Percac-Lima; Jeffrey M. Ashburner; Nancy A. Rigotti; Elyse R. Park; Steven J. Atlas. Massachusetts General Hospital, Boston, MA. (Control ID #2706141)

STATEMENT OF PROBLEM OR QUESTION (ONE SENTENCE): Annual chest computed tomography (CT) screening decreases lung cancer mortality in high-risk smokers. Patient navigation (PN) has been shown to increase cancer screening rates in underserved populations.

OBJECTIVES OF PROGRAM/INTERVENTION (NO MORE THAN THREE OBJECTIVES): To evaluate a new lung screening (LS) PN program in older current smokers at 5 community health centers (CHC) affiliated with an academic medical center.

DESCRIPTION OF PROGRAM/INTERVENTION, INCLUDING ORGANIZATIONAL CONTEXT (E.G. INPATIENT VS. OUTPATIENT, PRACTICE OR COMMUNITY CHARACTERISTICS): A population-based information technology (IT) tool was used to identify current smokers aged 55–77 receiving care in the CHCs and randomize them to PN ($n = 400$) or usual care ($n = 800$). Patient navigators (PNs) were trained to educate patients, determine eligibility for LS, and provide brief smoking cessation counseling and referral for tobacco treatment. For LS eligible patients, PNs introduced shared decision making about LS, scheduled appointments with the primary care provider (PCP), reminded patients about appointments, reminded PCPs to order the test, and helped patients attend CT testing and follow-up any abnormal results.

MEASURES OF SUCCESS (DISCUSS QUALITATIVE AND/OR QUANTITATIVE METRICS WHICH WILL BE USED TO EVALUATE PROGRAM/INTERVENTION): The primary outcome is the rate of LS in the intervention and control groups using intention-to-treat analyses. Current analyses assess interventions performed by PNs using tracking software in the IT tool; including patients contacted, LS eligibility determination, scheduled PCP and CT appointments, and smoking cessation activities. We also interviewed participating PNs ($n = 4$) to explore their perceptions of the program.

FINDINGS TO DATE (IT IS NOT SUFFICIENT TO STATE FINDINGS WILL BE DISCUSSED): During the first 10 months of the intervention starting in February 2016, PNs contacted 278 patients (70%); 14 declined to talk. PNs determined eligibility for 264 patients, of whom 133 (50%) were eligible. Exclusions included: insufficient smoking history ($n = 122$), competing comorbidities ($n = 6$), moved ($n = 1$), and died ($n = 2$). Brief smoking cessation counseling and referral for treatment if desired was provided to all current smokers. The eligible patients were educated about LS and options. After the PCP SDM appointment, PNs checked whether LS was scheduled/ordered and reminded patients about the test. Overall, 103 eligible patients (77%) in the intervention arm underwent LS. All 5 patients who needed follow up LS to date completed it. PNs reported a variety of challenges: contacting patients, determining eligibility, patients' social/medical needs, availability of timely PCP appointments, PCP forgetting to order LS despite reminder from PNs, and LS ordered but not scheduled.

KEY LESSONS FOR DISSEMINATION (WHAT CAN OTHERS TAKE AWAY FOR IMPLEMENTATION TO THEIR PRACTICE OR COMMUNITY?): A PN intervention for smokers in a CHC was feasible and associated with 77% compliance with LS among eligible smokers. However, multiple time-consuming actions were required to assess patient eligibility, schedule and complete PCP SDM visits, and complete screening tests. Only about half of older CHC current smokers were eligible for LS, but the PN encounter provided an opportunity to offer brief smoking cessation advice and referral for all current smokers.

PATIENT SATISFACTION WITH TELEPHONE COMMUNICATION IN AN URBAN PRIMARY CARE CLINIC Samantha Smith; Benjamin R. Doolittle. Yale University, New Haven, CT. (Control ID #2692990)

STATEMENT OF PROBLEM OR QUESTION (ONE SENTENCE): Patients at a busy, urban faculty-resident continuity clinic reported dissatisfaction with the telephone triage system, particularly with staff returning patient messages promptly and the ability to speak with providers during business hours.

OBJECTIVES OF PROGRAM/INTERVENTION (NO MORE THAN THREE OBJECTIVES): Refocus limited resources to improve the phone communication system with patients Increase the proportion of patients who report that staff always return their messages Decrease patient wait times to speak with staff

DESCRIPTION OF PROGRAM/INTERVENTION, INCLUDING ORGANIZATIONAL CONTEXT (E.G. INPATIENT VS. OUTPATIENT, PRACTICE OR COMMUNITY CHARACTERISTICS): An exploratory survey ($n = 26$) was conducted to assess patient satisfaction. The survey revealed that patient satisfaction with their clinician was high but was suboptimal with our phone communication. Only 55% of respondents reported that they were always able to speak to someone in clinic, and 33% reported that they never received a call back within 24 hours of leaving a message. A follow

up survey ($n = 200$) again showed that over 1/3 of patients reported never receiving a call back in 24 hours and over 1/3 also reported going to an urgent care center or the emergency room because they were not able to reach clinic staff. During this time, patient complaints were lodged nearly daily to either the medical director or nurse manager. Three interventions were planned. First, a multidisciplinary monthly quality meeting was established, chaired by rotating clerical staff. Second, appointment slots were opened several months in advance to facilitate patients more easily making appointments while in clinic. Third, all messages were entered into the EMR, thereby streamlining triage issues and improving accountability.

MEASURES OF SUCCESS (DISCUSS QUALITATIVE AND/OR QUANTITATIVE METRICS WHICH WILL BE USED TO EVALUATE PROGRAM/INTERVENTION): Success was assessed with both process and outcome measures. Process measures included clinic staff monitoring of the queue of patients waiting to speak to clinic staff and incoming patient complaints regarding phone triage issues. Outcomes measures include repeating the survey of patient satisfaction and experiences with the clinic phone system.

FINDINGS TO DATE (IT IS NOT SUFFICIENT TO STATE FINDINGS WILL BE DISCUSSED): There have been several outcomes to date. First, from August 1st - October 31st, 2016, there have been no patient complaints registered to the clinic nurse manager or medical director related to the phone system or obtaining an appointment. Second, the queue of incoming calls has disappeared. Third, the monthly quality meeting is well-attended, with enthusiastic endorsement by staff. Rotating leadership by clerical staff has been a key element to empower shared leadership, encourage ideas, and brainstorm solutions. This meeting has led to several improvements in other areas of clinic operation.

KEY LESSONS FOR DISSEMINATION (WHAT CAN OTHERS TAKE AWAY FOR IMPLEMENTATION TO THEIR PRACTICE OR COMMUNITY?): This project demonstrated that a data-driven collaboration, incorporating several small changes, can improve the phone system. Successful strategies included: developing an understanding of the phone triage workflow, incorporating input from multiple staff to improve buy-in, and choosing to focus on small, achievable changes. Specifically, increasing our clinic's ability to schedule appointments in person likely decreased the volume of incoming patient phone calls.

PCMH-BASED ADVANCE CARE PLANNING INITIATIVE Karen J. Kim[1]; Gayane Galustanian[1]; Lyndee Knox[2]; Heather B. Schickedanz[1]. [1]Olive View-UCLA Medical Center, Sylmar, CA; [2]L.A. Net Community Health Resource Network, Long Beach, CA. (Control ID #2704317)

STATEMENT OF PROBLEM OR QUESTION (ONE SENTENCE): Large knowledge gaps about Advance Care Planning (ACP) exist for patients and providers, and Patient-Centered Medical Home (PCMH) teams face significant challenges addressing comprehensive ACP, especially in the health care safety net.

OBJECTIVES OF PROGRAM/INTERVENTION (NO MORE THAN THREE OBJECTIVES): 1. Educate patients and families about the importance of ACP and assist them in completing an Advance Health Care Directive (AHCD). 2. Educate PCMH teams about how to discuss ACP and facilitate AHCD completion. 3. Create efficient, patient-centered workflows to incorporate ACP into clinic encounters.

DESCRIPTION OF PROGRAM/INTERVENTION, INCLUDING ORGANIZATIONAL CONTEXT (E.G. INPATIENT VS. OUTPATIENT, PRACTICE OR COMMUNITY CHARACTERISTICS): Our team reviewed best practices to improve ACP counseling and AHCD completion in primary care settings. Next, we carried out iterative QI-based interventions to improve our ACP counseling and AHCD completion. We targeted patients aged greater than 65 years in our safety net academic hospital-based clinic population, with the goal of achieving NCQA HEDIS and PRIME (Public Hospital Redesign in Medi-Cal) quality metrics.

MEASURES OF SUCCESS (DISCUSS QUALITATIVE AND/OR QUANTITATIVE METRICS WHICH WILL BE USED TO EVALUATE PROGRAM/INTERVENTION): We will evaluate our ACP initiative via survey data from patients and PCMH team members. We will ask patients about their experience using a tablet for ACP education and whether it increased their awareness and knowledge of the ACP process. We will ask PCMH staff whether the tools are appropriate and feasible to implement in the setting of a busy clinic. We will also track how many of our target patients have ACP counseling documented in the EMR, and of those, how many successfully complete an AHCD.

FINDINGS TO DATE (IT IS NOT SUFFICIENT TO STATE FINDINGS WILL BE DISCUSSED): We have created a clinic workflow that integrates a brief tablet-based ACP video into the visit intake process. We tested two validated ACP educational tools, and are adapting these to create our own low-literacy videos in English and Spanish. Our PCMH staff telephone-surveyed participating patients regarding questions and feedback on our ACP process and tools. We learned that some patients experienced anxiety when their provider initially discussed the topic, particularly in patients who were unfamiliar with ACP. We also found that the ACP counseling process was time-consuming for PCPs. These challenges may be pronounced in the safety net, where there are lower levels of health literacy. In addition to improving our tablet-based videos for initial ACP education, we plan to create a group visit model wherein a knowledgeable lay provider can provide ACP education for patients and family members together, and facilitate AHCD completion.

KEY LESSONS FOR DISSEMINATION (WHAT CAN OTHERS TAKE AWAY FOR IMPLEMENTATION TO THEIR PRACTICE OR COMMUNITY?): Our goal is to create high-quality, patient-centered ACP materials and team-based workflows tailored for use in the health care safety net. These novel tools will help equip busy primary care clinics to improve patient outcomes, quality metrics, and provider efficiency with regard to ACP. This addresses a broad systems need to promote ACP and support AHCD documentation as the population ages. Our tools can be adapted to ACP initiatives across other safety net PCMHs and the entire continuum of care.

PEER MENTORSHIP IN DIABETES: IMPLEMENTATION IN A SPANISH-SPEAKING POPULATION Utibe R. Essien[1, 2]; Jacqueline A. Seiglie[1]; Carolina A. Chiou[2]; Marya J. Cohen[1]. [1]Massachusetts General Hospital, Boston, MA; [2]Harvard Medical School, Boston, MA. (Control ID #2701957)

STATEMENT OF PROBLEM OR QUESTION (ONE SENTENCE): Peer mentorship (PM) has been considered a useful component of diabetes (DM) management but few data exists on its effectiveness in minority populations, which led to the question of whether a PM program among Spanish-speaking patients results in improved outcomes.

OBJECTIVES OF PROGRAM/INTERVENTION (NO MORE THAN THREE OBJECTIVES): 1. To develop a voluntary peer-mentorship program at a community health center for Hispanic diabetic patients 2. To improve HbA1c outcomes in Hispanic diabetic patients 3. To increase patient engagement in the management of DM

DESCRIPTION OF PROGRAM/INTERVENTION, INCLUDING ORGANIZATIONAL CONTEXT (E.G. INPATIENT VS. OUTPATIENT, PRACTICE OR COMMUNITY CHARACTERISTICS): We developed a PM program and tested it in a 6-month randomized-control trial at the Massachusetts General Hospital Chelsea Health Center (CHC), located in a largely Hispanic Boston suburb. Patients were included in the study if they were adults with DM and self-identified as Hispanic. Patients were invited to attend a recruitment session where they received information regarding the program and brief motivational interviewing training. Mentors were told that they would call the mentee once/week × 12 weeks and once/month thereafter for a total of 6 months. A mentor was chosen as a patient who previously had poor glycemic control (HbA1c >8 within the past 3 years) but had improved over the past year (HbA1c <7). A mentee was a patient who had an HbA1c > 8% within the past year. Controls were chosen from those eligible to be mentees. Patients who did not meet HbA1c criteria were excluded. Patients received a monetary incentive to participate in the study.

MEASURES OF SUCCESS (DISCUSS QUALITATIVE AND/OR QUANTITATIVE METRICS WHICH WILL BE USED TO EVALUATE PROGRAM/INTERVENTION): The primary outcome, change in HbA1c over 6 months, was compared between the peer mentees and the control group. We also observed the number of clinic visits made over the 6-month study, patient retention and study completion. Qualitative interviews were performed with those who completed the study.

FINDINGS TO DATE (IT IS NOT SUFFICIENT TO STATE FINDINGS WILL BE DISCUSSED): Of 1129 Spanish-speaking patients with DM at CHC assessed for eligibility 965 were excluded and 164 met criteria to be mentors ($n = 82$) or mentees ($n = 82$). After recruitment sessions, 18 patients agreed to participate - 6 as mentors, 6 were randomized to be mentees and 6 to the control group. By the end of 6 months, 4 pairs (8 patients) remained in the study. There was no significant change in HbA1c in mentees (0.14%) compared to the control group (0.13%) or in the number of clinic visits made. Both mentors/mentees found the program helpful though some were overwhelmed by the number of phone calls that had to be made. Some patients felt that group classes would have been helpful.

KEY LESSONS FOR DISSEMINATION (WHAT CAN OTHERS TAKE AWAY FOR IMPLEMENTATION TO THEIR PRACTICE OR COMMUNITY?): Implementing a peer mentor program at a community health center is challenging. We learned the importance of support from health center leadership and staff in starting a new initiative. The program may have benefited from expanded training, clear structure, and close follow-up. The patients enjoyed the program saying "it helped a lot with improving my blood sugar" but also that it was "difficult to call because of my busy schedule." By including patients in the development of the program we may have avoided the high rate of loss to follow-up observed.

PERFORMANCE OF THREE MEDICAL HOME RECOGNITION TOOLS ON MEDICARE BENEFICIARY OUTCOMES

Ammarah Mahmud[2]; Justin W. Timbie[2]; Rosalie J. Malsberger[3]; Claude Setodji[3]; Liisa Hiatt[2]; Katherine L. Kahn[3, 1]. [1]David Geffen School of Medicine at UCLA, Los Angeles, CA; [2]RAND, Arlington, VA; [3]RAND Corporation, Santa Monica, CA. (Control ID #2704858)

STATEMENT OF PROBLEM OR QUESTION (ONE SENTENCE): Ambulatory clinics have several medical home recognition tools available to designate achievement of advanced primary care practices, but little is known about whether clinics achieving recognition with different standards achieve comparable effects on patient outcomes.

OBJECTIVES OF PROGRAM/INTERVENTION (NO MORE THAN THREE OBJECTIVES): We examined differences in utilization, process, and spending measures associated with three medical home recognition standards—NCQA patient-centered medical home (PCMH) Level-3, The Joint Commission (TJC), and Accreditation Association for Ambulatory Health Care (AAAHC)—among Medicare beneficiaries receiving care at federally qualified health centers (FQHCs).

DESCRIPTION OF PROGRAM/INTERVENTION, INCLUDING ORGANIZATIONAL CONTEXT (E.G. INPATIENT VS. OUTPATIENT, PRACTICE OR COMMUNITY CHARACTERISTICS): With data from the evaluation of the Centers for Medicare & Medicaid Services' FQHC Advanced Primary Care Practice Demonstration, we compared changes among beneficiaries attributed to 185 comparison FQHCs that achieved one of three medical home recognition types relative to beneficiaries attributed to 519 clinics that achieved no recognition during the three-year demonstration period. Analyses include the subset of Medicare beneficiaries attributed to 94 FQHCs achieving NCQA PCMH Level-3 recognition ($n = 250{,}163$ beneficiaries), 78 TJC-recognized FQHCs ($n = 167{,}150$), 13 FQHCs achieving AAAHC recognition ($n = 49{,}778$), and 519 FQHCs with no recognition ($n = 921{,}223$).

MEASURES OF SUCCESS (DISCUSS QUALITATIVE AND/OR QUANTITATIVE METRICS WHICH WILL BE USED TO EVALUATE PROGRAM/INTERVENTION): We used a propensity-weighted difference-in-differences (DID) analysis to examine the differential performance of three medical home recognition tools on utilization, process, and spending measures among Medicare beneficiaries at FQHCs.

FINDINGS TO DATE (IT IS NOT SUFFICIENT TO STATE FINDINGS WILL BE DISCUSSED): Beneficiaries attributed to NCQA PCMH Level-3 recognized FQHCs compared to non-recognized FQHCs had 208 more FQHC visits, 77 fewer specialist visits, 47 fewer non-FQHC primary care visits, and 123 more total primary care visits ($p < 0.05$); 2 percentage points higher rates of retinal exams and 1 percentage point decrease in HbA1c tests for diabetic patients ($p < 0.05$); and decreases in total spending ($434) ($p < 0.001$). Beneficiaries attributed to TJC-recognized FQHCs versus non-recognized FQHCs had 20 fewer inpatient admissions and 45 fewer ED visits per 1,000 beneficiaries ($p < 0.01$); 3 percentage points higher rates of overall testing for diabetic patients ($p < 0.05$); and no change in spending. AAAHC recognition was associated 104 more non-FQHC primary care visits and 166 more total primary care visits ($p < 0.05$); higher rates of overall testing for diabetes patients by 1 percentage point ($p < 0.05$); and no differences in spending.

KEY LESSONS FOR DISSEMINATION (WHAT CAN OTHERS TAKE AWAY FOR IMPLEMENTATION TO THEIR PRACTICE OR COMMUNITY?): Variations among the item requirements to achieve recognition may contribute to different patterns of change in utilization, process, and spending measures among FQHC users. Additional comparative analyses are needed to better understand the association between the requirements and elements that make up medical home recognition tools and patient outcomes.

We encourage further research comparing the impact of different recognition types on patient outcomes both within and outside FQHCs.

PILOT OF A LOW-RESOURCE, EHR-BASED TOOL FOR SEPSIS MONITORING, ALERT, AND INTERVENTION Christopher Sankey[1, 2]; Scott Sussman[2]; Kathleen Kenyon[2]; Fangyong Li[3]; Nitin Sukumar[3]; Alan S. Kliger[2]; Robert L. Fogerty[1, 2]. [1]Yale School of Medicine, New Haven, CT; [2]Yale-New Haven Health, New Haven, CT; [3]Yale Center for Analytical Sciences, New Haven, CT. (Control ID #2695047)

STATEMENT OF PROBLEM OR QUESTION (ONE SENTENCE): The increased mortality associated with delays in sepsis recognition may be amenable to reduction by improving the identification of sepsis using an automatic, EHR-based warning system.

OBJECTIVES OF PROGRAM/INTERVENTION (NO MORE THAN THREE OBJECTIVES): *Primary objective*: Improve the identification of patients at high risk for clinical decompensation using an EHR-based, automated detection tool. *Secondary objective*: Develop and implement a low-cost, highly sustainable protocol to allow for rapid cycle improvement and broad deployment.

DESCRIPTION OF PROGRAM/INTERVENTION, INCLUDING ORGANIZATIONAL CONTEXT (E.G. INPATIENT VS. OUTPATIENT, PRACTICE OR COMMUNITY CHARACTERISTICS): Using the native EHR (Epic) at our institution, a best practice alert (BPA) was adapted to monitor for patients who newly met modified SIRS criteria. Eligible patients were all adults admitted to the general medical units at the York Street Campus of Yale-New Haven Hospital (YNHH), a 900-bed campus of Yale New Haven Health, a 1500-bed academic medical center. When criteria were met, a “Sepsis Alert” was sent via Epic to the YNHH rapid response team (RRT) Hospitalist attending physician via pager in a HIPAA-compliant format. The attending physician then reviewed the EHR, determined the intervention (ranging from none to bedside evaluation), and documented a Sepsis Alert Note. The entire project was designed with a focus on low cost, ease of implementation, and sustainability.

MEASURES OF SUCCESS (DISCUSS QUALITATIVE AND/OR QUANTITATIVE METRICS WHICH WILL BE USED TO EVALUATE PROGRAM/INTERVENTION): 1. Risk of deterioration of patients identified by the modified SIRS criteria 2. Mortality and ICU-admission

FINDINGS TO DATE (IT IS NOT SUFFICIENT TO STATE FINDINGS WILL BE DISCUSSED): Our sample included 15,554 adults discharged from YNHH Medicine Service from April 2015 through March 2016 from specified medical units. There were 128 deaths in this group (raw mortality rate 0.82%). A control group immediately preceding the intervention had an unadjusted mortality rate of 0.29%, which did not reach statistical significance (3 deaths in 1027 discharges, OR 2.85, $p = 0.07$). The odds of ICU admission are 1.24 times greater in the period with the program fully implemented compared to the period with no program implemented ($p = 0.04$). The sepsis BPA trigger and completed attending assessment had an OR of death 15.76 (8.63,28.77 with $p < 0.0001$) which approximated that of an activated RRT assessment (OR 15.38, [10.25,23.09 with $p < 0.0001$]). The BPA trigger was additionally associated with increased risk of ICU admission, and hence the modified SIRS criteria appear to identify patients at higher risk of deterioration during their hospitalization. Furthermore, the BPA with completed attending-level assessment carries an increased mortality risk similar to that of a full RRT activation, while requiring substantially fewer resources. From origination to implementation, this project was completed in approximately 12 months and was considerably under budget.

KEY LESSONS FOR DISSEMINATION (WHAT CAN OTHERS TAKE AWAY FOR IMPLEMENTATION TO THEIR PRACTICE OR COMMUNITY?): Given the low cost and rapid implementation, this trigger tool appears to be a useful and easily implemented instrument to assist hospitals in identifying sepsis patients at increased risk of clinical decompensation.

PILOT OF AN INTERVENTION TO REDUCE UTILIZATION OF INTRAVENOUS OPIOID NARCOTICS IN HOSPITALIZED MEDICAL PATIENTS Adam Ackerman[1, 2]; Deirdre Doyle[2]; Carolyn Haight[2]; Sheyla Marranca[2]; Christine Day[2]; Robert L. Fogerty[1, 2]. [1]Yale School of Medicine, New Haven, CT; [2]Yale New Haven Hospital, New Haven, CT. (Control ID #2704094)

STATEMENT OF PROBLEM OR QUESTION (ONE SENTENCE): Opioids are commonly used to treat pain in hospitalized patients, however parenteral use, particularly via the intravenous (IV) route, carries increased risk of adverse events such as euphoria, nausea, and hypotension when compared with oral administration.

OBJECTIVES OF PROGRAM/INTERVENTION (NO MORE THAN THREE OBJECTIVES): 1) Reduction in IV doses administered to patients receiving parenteral opioid therapy. 2) Reduction in parenteral opioid doses administered to a general population of hospitalized medical patients. 3) Reduction in the rate of patients administered any parenteral opioid.

DESCRIPTION OF PROGRAM/INTERVENTION, INCLUDING ORGANIZATIONAL CONTEXT (E.G. INPATIENT VS. OUTPATIENT, PRACTICE OR COMMUNITY CHARACTERISTICS): A local opioid standard of practice was written on our general medical unit, establishing the oral route as preferred in patients tolerating oral intake, and the subcutaneous (SC) route as the preferred route of parenteral administration. We implemented education for providers and nursing staff on appropriate opioid prescribing, specifically targeting awareness of the SC route as an alternative to IV administration.

MEASURES OF SUCCESS (DISCUSS QUALITATIVE AND/OR QUANTITATIVE METRICS WHICH WILL BE USED TO EVALUATE PROGRAM/INTERVENTION): The primary measures of success will be reductions in number of parenteral doses administered to patients receiving parenteral opioid therapy, IV doses administered to patients receiving parenteral opioid therapy, and parenteral opioid doses administered to a general population of hospitalized medical patients.

FINDINGS TO DATE (IT IS NOT SUFFICIENT TO STATE FINDINGS WILL BE DISCUSSED): In preliminary analysis, the use of IV opioids decreased during the intervention (0.087 vs 0.391 doses per patient day, $p < 0.0001$) and the use of any parenteral opioids decreased during the intervention (0.149 vs 0.391 doses per patient day, $p < 0.0001$). Additionally, the rate of patients administered any parenteral opioid decreased during the intervention (0.15 vs 0.14, $p < 0.001$), however the clinical significance of this change is unclear. Mean pain scores were assessed for each patient in standard fashion for the first 5 days of parenteral narcotic administration. For day 1 (5.79 pre-intervention vs 5.81 post-intervention, $p = 0.98$), day 2 (5.12 vs 4.68, $p = 0.26$) and day 3 (4.58 vs 4.30, $p = 0.56$), there were no differences in reported pain score pre- and post-intervention. Day 4 scores were significantly lower

among the intervention group than the control group (4.64 vs 3.48, $p = 0.045$) and Day 5 scores were also lower in the intervention group, but did not reach statistical significance (4.49 vs 3.26, $p = 0.051$).

KEY LESSONS FOR DISSEMINATION (WHAT CAN OTHERS TAKE AWAY FOR IMPLEMENTATION TO THEIR PRACTICE OR COMMUNITY?): Our low-cost harm-reduction intervention targets the use of IV opioids via education of providers and nursing staff, placing emphasis on awareness of the SC route of inpatient opioid administration. Preliminary data suggest this may be a useful tool to reduce exposure to IV opioids while still providing effective pain control to hospitalized adults.

PILOT PROGRAM TO IMPROVE HYPERTENSION CONTROL IN ACADEMIC MEDICAL CENTER PRIMARY CARE CLINICS. Johan Lane; Daniel Dunham; Anthony J. Perry; Michael Hanak. Rush, Riverside, IL. (Control ID #2702619)

STATEMENT OF PROBLEM OR QUESTION (ONE SENTENCE): Uncontrolled hypertension is often unrecognized and undertreated in the primary care setting.

OBJECTIVES OF PROGRAM/INTERVENTION (NO MORE THAN THREE OBJECTIVES): The program intervention was designed to help providers recognize uncontrolled hypertension, and to provide a framework for better treatment and follow-up. Objectives of the intervention were to standardize measurement of ambulatory measurement, treatment and follow-up, and to improve overall hypertension control.

DESCRIPTION OF PROGRAM/INTERVENTION, INCLUDING ORGANIZATIONAL CONTEXT (E.G. INPATIENT VS. OUTPATIENT, PRACTICE OR COMMUNITY CHARACTERISTICS): An intervention was performed in 2 primary care clinics; interventions included standardizing the medical assistant workflow for measuring blood pressure, making an abnormal blood pressure more visible to providers, the use of patient registry to outreach uncontrolled hypertensive patients, providing hypertension control rates to providers, and giving electronic prompts to providers to follow-up for uncontrolled hypertensive patients in one month.

MEASURES OF SUCCESS (DISCUSS QUALITATIVE AND/OR QUANTITATIVE METRICS WHICH WILL BE USED TO EVALUATE PROGRAM/INTERVENTION): Data were collected on the rates and outcomes of one and two month follow-up for patients that had uncontrolled hypertension. Additionally, hypertension control rates were measured by provider and clinic before, during and after the pilot program period.

FINDINGS TO DATE (IT IS NOT SUFFICIENT TO STATE FINDINGS WILL BE DISCUSSED): Baseline hypertension control performance for the calendar years prior to the clinic intervention was 57.95% in 2014, and 61.30% in 2015. The pilot project was initiated in the 3rd quarter of 2015, and the current clinic control rate as of November 2016 is 71.8%. The rate of follow-up within 30 days for uncontrolled hypertensive patients averaged 21% for the first 5 months of 2016. Among the patients that were able to comply with follow-up, 80% showed improvement in blood pressure readings, and 49% showed a controlled blood pressure as defined by BP <140/90 mm Hg.

KEY LESSONS FOR DISSEMINATION (WHAT CAN OTHERS TAKE AWAY FOR IMPLEMENTATION TO THEIR PRACTICE OR COMMUNITY?): During the course of implementing the pilot program, we found that there was wide variation in the procedure used by medical assistants to measure blood pressure. By standardizing this rooming protocol and utilizing automated blood pressure cuffs, we felt that we were able to obtain better accuracy and standardization of blood pressure measurement. Additionally, making the clinic providers aware of the focus on the hypertension project and of their performance on hypertension control as measured by CMS criteria helped to spur more aggressive treatment of hypertension in the outpatient setting. We found that close blood pressure follow-up was associated with better hypertension control, but given the low rates of recommended 30-day follow-up, we feel this is a significant opprotunity for improvement.

POPULATION HEALTH AT HOME: BUILDING A DATA WAREHOUSE AND APPLYING CLUSTER ANALYSIS TO IDENTIFY PATTERNS IN HEALTHCARE UTILIZATION AND MULTIMORBIDITY AMONG PRIMARY CARE PATIENTS Seyed Parham Khalili; Marianna LaNoue. Thomas Jefferson University, Philadelphia, PA. (Control ID #2706763)

STATEMENT OF PROBLEM OR QUESTION (ONE SENTENCE): Although primary care practices provide a broad range of services to a usually heterogeneous patient population, it is still uncommon for machine learning methodology to be applied at the practice level to simultaneously identify patterns of healthcare utilization and multimorbidity for the purposes of practice design or care coordination.

OBJECTIVES OF PROGRAM/INTERVENTION (NO MORE THAN THREE OBJECTIVES): First, we present the development of a data repository merging information from multiple sources for a 5-year period starting in 2012, for a large panel of primary care patients. Second, we demonstrate the use of a statistical method known as cluster analysis, to segment a heterogeneous patient population into clusters according to multi-dimensional utilization and multimorbidity. Third, we examine select clusters of patients who may be candidates for case management to help address inefficient healthcare utilization and/or complex care needs.

DESCRIPTION OF PROGRAM/INTERVENTION, INCLUDING ORGANIZATIONAL CONTEXT (E.G. INPATIENT VS. OUTPATIENT, PRACTICE OR COMMUNITY CHARACTERISTICS): This project is implemented in a large urban, academic family medicine practice located on the campus of a tertiary care center in Philadelphia. This site serves approximately 27,000 patients, the majority of whom are age 18 and older, female, either African American or White, and commercially insured. Clinical data consists of diagnosis groups built from ICD-9 and ICD-10 codes for a range of chronic diseases. Healthcare utilization encompasses in-network primary care visits, specialist visits, emergency department visits and hospitalizations.

MEASURES OF SUCCESS (DISCUSS QUALITATIVE AND/OR QUANTITATIVE METRICS WHICH WILL BE USED TO EVALUATE PROGRAM/INTERVENTION): We present descriptive statistics for our developing clinical practice-level data warehouse. In addition we illustrate year-to-year “cluster maps” for the 5-year period, detailing how the large patient panel may be partitioned into clusters of patients with unique clinical needs and healthcare utilization patterns. Specific strategies for detection of “outliers” in utilization patterns are illustrated along with measures of model fit. Finally the degree of overlap with our institution’s care coordination team, in terms of high-risk patient identification, is provided for perspective.

FINDINGS TO DATE (IT IS NOT SUFFICIENT TO STATE FINDINGS WILL BE DISCUSSED): We find several persistent and clinically salient groupings, including particular combinations of cardiovascular diseases,

diabetes, psychiatric conditions, chronic pain, asthma and obesity. While up to 75% of individuals utilize relatively little healthcare during any given year of the data, there are several smaller unique clusters of patients including a consistently sized cohort of “outliers” (approximately 3% of the population) who utilize significantly more care and who exhibit complex multimorbidity profiles.

KEY LESSONS FOR DISSEMINATION (WHAT CAN OTHERS TAKE AWAY FOR IMPLEMENTATION TO THEIR PRACTICE OR COMMUNITY?): The methodology of our project may serve as a blueprint, readily adapted to a variety of practice settings. While some of the patient patterns detected are particular to the community in which our practice is located, the goals of dissemination include the hope that other practices will be able to in turn examine their own community-specific patterns and further inform practice-level changes and institution-level care coordination.

POTENTIAL SOLUTION TO SHORTAGE OF GENERAL INTERNAL MEDICINE PHYSICIANS IN JAPANESE HOSPITALS Urara Nakagawa[1]; Toshiaki Wakai[1]; Masaji Saijo[2]; yasushi tanabe[1]; Dongkyung Seo[1]. [1]Sapporo Tokushu-kai Hospital, Sapporo-shi, Japan; [2]Sapporo Tokushukai Hospital, Sapporo, Japan. (Control ID #2701286)

STATEMENT OF PROBLEM OR QUESTION (ONE SENTENCE): Shortage of general internal medicine (GIM) physicians in Japanese hospitals

OBJECTIVES OF PROGRAM/INTERVENTION (NO MORE THAN THREE OBJECTIVES): The need of GIM physicians has been multiplied because of this extremely aging society in Japan. However, comparing the number of GIM physicians per 10,000 population in the USA to the one in Japan, USA has 4.75 times more GIM physicians than Japan. (8.71 in the USA vs 1.83 in Japan, per 10,000) Therefore, the workload for each GIM physician has increased lately, which potentially cause burnout of GIM physicians.

DESCRIPTION OF PROGRAM/INTERVENTION, INCLUDING ORGANIZATIONAL CONTEXT (E.G. INPATIENT VS. OUTPATIENT, PRACTICE OR COMMUNITY CHARACTERISTICS): Sapporo Tokushu-kai Hospital, a community hospital with 300-bed in Japan, opened GIM department in 2008 as “Primary Department”, which was responsible for urgent and emergent care, as well as inpatient care in the hospital. However, most of those physicians had retired over 5 years because they switched their specialties. A remained physician hired 2 medical records clerks, which was not a common occupational category in Japan, to support the physician to maintain the department in 2012. They were assigned to document onto electronic medical record (EMR) and writing referral letters based on dictations by the physician, and to take over the physician’s chores including, e.g. physicians’ scheduling, the other paper works, and preparations for presentations.

MEASURES OF SUCCESS (DISCUSS QUALITATIVE AND/OR QUANTITATIVE METRICS WHICH WILL BE USED TO EVALUATE PROGRAM/INTERVENTION): We used two quantitative metrics to measure the outcome of the intervention; 1) Number of total discharged patients per year from the department, 2) As a quality of patient-care, the rates of sending referral letters to psychiatrists of drug overdose patients on their discharge from the hospital; this hospital was 9th best hospital in Japan which accepts drug overdose patients (2010), and letters for psychiatrists deemed crucial on discharge since the hospital has no psychiatric department, 3) Proportions of time spent on EMR and paper works by the physician.

FINDINGS TO DATE (IT IS NOT SUFFICIENT TO STATE FINDINGS WILL BE DISCUSSED): Majority of inpatients who were discharged from the department were older than 70 years old. (69.2%, 2014) Comparing pre-intervention (2011) to post-intervention (from 2012 to 2014), the findings includes; 1) The number of discharged patients per year from the department was 861 in pre-intervention, and 1003 on average in post-intervention, 2) The rate of sending referral letters was 40% in pre-intervention, and 78% on average in post-intervention, 3) The proportion of time spent on EMR and paper works by the physician was 59% in pre-intervention and 23% in post-intervention. In addition, academic activities including presentations in conferences and recruiting activities were vitalized regardless of increased numbers of patients per the physician.

KEY LESSONS FOR DISSEMINATION (WHAT CAN OTHERS TAKE AWAY FOR IMPLEMENTATION TO THEIR PRACTICE OR COMMUNITY?): GIM physicians’ workload can be decreased by medical records clerks, which may lead efficient inpatients care and potentially maintain quality of patient-care, despite of shortage of GIM physicians.

PRESERVING THE RIGHT TO VOTE IN SICKNESS AND IN HEALTH Carine Davila1; Irina Kryzhanovskaya[2]; Rachel J. Stern[2]; Jeffrey Critchfield[2]; Arla Escontrias[3]; Alon Unger[1]. [1]University of California, San Francisco, San Francisco, CA; [2]University of California, San Francisco at Zuckerberg San Francisco General Hospital, San Francisco, CA; [3]San Francisco Department of Public Health, Zuckerberg San Francisco General Hospital, San Francisco, CA. (Control ID #2703262)

STATEMENT OF PROBLEM OR QUESTION (ONE SENTENCE): Hospitalized patients lack information on absentee voting during a medical emergency.

OBJECTIVES OF PROGRAM/INTERVENTION (NO MORE THAN THREE OBJECTIVES): To design and implement a program to assist hospitalized registered voters to submit an absentee ballot for the 2016 US general election.

DESCRIPTION OF PROGRAM/INTERVENTION, INCLUDING ORGANIZATIONAL CONTEXT (E.G. INPATIENT VS. OUTPATIENT, PRACTICE OR COMMUNITY CHARACTERISTICS): We recruited a multi-disciplinary team including hospitalists, nurses, social workers and hospital personnel, in the inpatient setting of a 418-bed urban safety-net hospital. The program leader, an internal medicine resident, educated team members on absentee ballot procurement, dissemination of ballots, and submission of completed ballots. Key steps to enacting a patient voting program include: − Identify program lead for voting initiative - Research local or state-specific policy on absentee voting in setting of medical emergency - Identify liaison to work with local voting officials - Early outreach to hospitalists, nursing leadership, and staff on absentee voting procedure - Multidisciplinary effort to advertise absentee voting to all eligible patients - Define clear roles and workflow for absentee ballot requests, completion and submission

MEASURES OF SUCCESS (DISCUSS QUALITATIVE AND/OR QUANTITATIVE METRICS WHICH WILL BE USED TO EVALUATE PROGRAM/INTERVENTION): We measure success on multiple levels: level of awareness among patients and staff about the absentee voting process during a medical illness; multidisciplinary support for voter participation; and ballot completion among hospitalized patients.

FINDINGS TO DATE (IT IS NOT SUFFICIENT TO STATE FINDINGS WILL BE DISCUSSED): Ballot authorization forms in 4 languages were

distributed to hospital units on Nov. 8, 2016. There were 194 eligible patients: those in surgery or immediately post-operative, critically-ill, in skilled-nursing units, in research trials, or inpatient on the psychiatry ward were excluded. Bedside nurses asked all patients about their interest in voting, distributed forms and collected completed ones. Nurses did not verify voting eligibility. Patients did not participate for the following reasons: not registered, registered in another county, non-citizens, too ill, did not like candidates/issues, or declined without explanation. A hospital representative delivered 27 completed forms to the voting center. Election officials verified 11 (41%) applications and rejected 16 (59%) because applicants were not registered or registered in another county. Of the 11 absentee ballots, 8 (73%) were delivered; 3 patients were already discharged. All 8 ballots were completed and submitted to a polling location on Election Day.

KEY LESSONS FOR DISSEMINATION (WHAT CAN OTHERS TAKE AWAY FOR IMPLEMENTATION TO THEIR PRACTICE OR COMMUNITY?): We describe a successful resident-led patient advocacy initiative to help hospitalized eligible voters submit a ballot despite acute illness. In 2016, US voter participation was only 58.6 and recent elections have been decided by small margins. Poor health is an important barrier to voter participation, particularly among elderly and low-income voters. This program serves as a roadmap for healthcare leaders and voter advocates. Ongoing effort to advertise broadly and galvanize regional leadership is needed to ensure hospitalized eligible voters, despite poor health, can participate in future elections.

PREVENTING AVOIDABLE ED VISITS AND INPATIENT ADMISSIONS IN HIGH RISK PATIENTS Eleanor Weinstein[1, 2]; Dana Mallano1; Leora Botnick[1]; Carey Hamblin[1]; Marie Delgado[1]. [1]Jacobi Medical Center, Bronx, NY; [2]Albert Einstein College of Medicine, Bronx, NY. (Control ID #2698213)

STATEMENT OF PROBLEM OR QUESTION (ONE SENTENCE): Health care costs are concentrated in small populations of high risk and specifically concentrated in avoidable inpatient admissions and emergency department visits at H+H (Health + Hospitals - the public safety net system in NYC).

OBJECTIVES OF PROGRAM/INTERVENTION (NO MORE THAN THREE OBJECTIVES): To assist clinicians burdened by providing care for a medically and socially complex population. To use a collaborative care model to better understand the needs of the patient and to plan interventions. To decrease cost and improve outcomes for this high risk group.

DESCRIPTION OF PROGRAM/INTERVENTION, INCLUDING ORGANIZATIONAL CONTEXT (E.G. INPATIENT VS. OUTPATIENT, PRACTICE OR COMMUNITY CHARACTERISTICS): The team consisting of nurses, social workers, population health experts, clinicians and data managers worked with a population of 200 high -risk patients (100 Medicare patients and 100 Medicaid patients). Patients were considered high risk based on a risk stratification predictive model used by the H+H Accountable Care Organization for the Medicare group. For the Medicaid group, the patient was considered high risk if they had > 4 ED visits or > 3 hospitalizations in the previous 12 month period. The approach was to review the case in detail looking for red flags including high utilization of inpatient or ED services and low utilization of primary care services; risk score for hospitalization; and total cost of care in the previous 12 months. Patients were grouped according to what was felt to be the driver of the inappropriate utilization. The team met weekly to discuss each patient and plan the intervention. The goal was to engage the patient in appropriate primary care services as well as to deploy care management programs or other interventions addressing gaps in care according to the patient's need.

MEASURES OF SUCCESS (DISCUSS QUALITATIVE AND/OR QUANTITATIVE METRICS WHICH WILL BE USED TO EVALUATE PROGRAM/INTERVENTION): The outcome measures included a comparison of inpatient admissions, emergency room visits, and primary care visits to the ambulatory practice from baseline to the completion of the intervention period.

FINDINGS TO DATE (IT IS NOT SUFFICIENT TO STATE FINDINGS WILL BE DISCUSSED): The Medicare population was largely one with multiple medical co-morbidities. There was a large number of patients with ESRD in this group. The Medicaid population had many patients with behavioral health issues, substance abuse and social barriers to optimal health. Through the intervention period, we were able to show a decrease in inpatient admissions from 1.79 per patient per year to .66 as well as an increase in primary care utilization from 1.37 to 1.68 visits per patient per year for the overall group. The Medicaid subgroup of this population was difficult to engage in care.

KEY LESSONS FOR DISSEMINATION (WHAT CAN OTHERS TAKE AWAY FOR IMPLEMENTATION TO THEIR PRACTICE OR COMMUNITY?): Busy clinicians are unable to optimally care for a high risk population in the standard manner often leading to frustration and burnout. A collaborative model of care utilizing nursing, social work, clinicians and population health experts is key to have an impact on health outcomes in high risk populations. Additionally, we need to explore enhanced coordination and collaboration with the ED and CBO's to provide an alternative model that would support the homeless substance abusing population - addressing the gap in care within the ED - this group's most frequent site of care.

PRIMARY CARE BEHAVIORAL HEALTH INTEGRATION: IMPROVING PRIMARY CARE PROVIDER OUTCOMES? Liza Hoffman[1]; Jillian Burley[2]; Emily Benedetto[1]; Robert Joseph[2]; Collen O'Brien[2]; Ellie Grossman[1]. [1]Cambridge Health Alliance, Somerville, MA; [2]Cambridge Health Alliance, Cambridge, MA. (Control ID #2705709)

STATEMENT OF PROBLEM OR QUESTION (ONE SENTENCE): While research indicates that behavioral health (BH) integration can improve the patient experience of care, less is known about how this intervention affects Primary Care Providers (PCPs).

OBJECTIVES OF PROGRAM/INTERVENTION (NO MORE THAN THREE OBJECTIVES): 1. To improve care for patients with BH needs in a primary care setting. 2. To understand the functions of BH staff integrated into primary care. 3. To understand how BH integration affects PCPs.

DESCRIPTION OF PROGRAM/INTERVENTION, INCLUDING ORGANIZATIONAL CONTEXT (E.G. INPATIENT VS. OUTPATIENT, PRACTICE OR COMMUNITY CHARACTERISTICS): Our internal medicine practice serves 7700 patients and is part of a large, safety net health system in the greater Boston area. The clinic performs annual screening for depression and unhealthy alcohol and drug use in all patients. Integrated BH staff members are available onsite to provide clinical services and to partner with PCPs. The BH team's Mental Health Care Partner (MHCP, 1.0FTE) often serves as the first point of contact; the MHCP provides assistance with triage,

care coordination, brief interventions related to behavior change (e.g. sleep hygiene, risky drinking, smoking cessation), and population management for patients with depression. Integrated Therapists (1.5FTE) are available for informal consults and crisis intervention, and provide short-term psychotherapy for individuals and groups. The clinic's integrated Psychiatrist (.35FTE) provides medication consultation and short-term care (1–2 visits) to assist PCPs.

MEASURES OF SUCCESS (DISCUSS QUALITATIVE AND/OR QUANTITATIVE METRICS WHICH WILL BE USED TO EVALUATE PROGRAM/INTERVENTION): Evaluation of the program is ongoing, and will include: 1. PCP surveys to explore use of integrated BH services, confidence in providing care for patients with BH needs, work-life stress, and perception of patient outcomes. 2. Structured PCP interviews to explore themes from survey data. 3. Provider referral counts to BH services. 4. Time-study data for MHCPs. 5. Electronic medical record (EMR) data for screening rates, disease prevalence, care utilization, and clinical outcomes.

FINDINGS TO DATE (IT IS NOT SUFFICIENT TO STATE FINDINGS WILL BE DISCUSSED): PCP survey data show that 79% reported utilizing BH staff weekly or more than once per week for reasons that included consultation, referral for treatment, and crisis intervention. 100% of PCPs agreed or strongly agreed that clinical outcomes for patients with BH needs improved post-intervention, 92% agreed or strongly agreed that having on-site integrated BH staff decreased personal stress, and 100% of PCPs reported enhanced confidence in caring for patients with BH needs. Over 53% of MHCP time was spent in direct patient care or PCP discussions (not including documentation), and 74% of these direct patient contacts came from PCP referrals. Most patients had mild/moderate symptoms, and the most common condition addressed by the MHCP was anxiety.

KEY LESSONS FOR DISSEMINATION (WHAT CAN OTHERS TAKE AWAY FOR IMPLEMENTATION TO THEIR PRACTICE OR COMMUNITY?): In implementing BH integration programs, primary care practices can anticipate improvement in PCP confidence and decreased stress. Focused attention on building relationships between PCPs and BH team members may help to optimize these programs. Anxiety management may be a symptom particularly amenable to integrated BH team care.

PROMOTING WELLNESS IN PRIMARY CARE PROVIDERS: THE EFFECT OF A WELLNESS COMMITTEE ON PROVIDER SATISFACTION Katherine Small[1]; David Skovran[2]; Trang Vu[1]; Jonathan Ripp[1]; Shanna Levine[1]; Alex Federman[1]; Lauren Peccoralo[3]. [1]Icahn School of Medicine at Mount Sinai, New York, NY; [2]Mount Sinai, New York, NY; [3]Mount Sinai School of Medicine, New York, NY. (Control ID #2704101)

STATEMENT OF PROBLEM OR QUESTION (ONE SENTENCE): Physician burnout is common and can lead to poor morale, depression, reduced provider retention, decreased productivity and the perception of decrements in care quality.

OBJECTIVES OF PROGRAM/INTERVENTION (NO MORE THAN THREE OBJECTIVES): To assess work satisfaction and burnout in faculty physician (MD) and nurse practitioner (NP) primary care providers (PCPs) at a resident continuity clinic with the goals of identifying areas needing improvement, implementing appropriate interventions and reassessing satisfaction metrics.

DESCRIPTION OF PROGRAM/INTERVENTION, INCLUDING ORGANIZATIONAL CONTEXT (E.G. INPATIENT VS. OUTPATIENT, PRACTICE OR COMMUNITY CHARACTERISTICS): Based on the American Medical Association's STEPS Forward program, we formed a committee that composed an anonymous survey (modified Mini-Z, 16 questions, quantitative and qualitative) of faculty at Mount Sinai's Internal Medicine Associates (IMA) to assess satisfaction and gather suggestions for improvement. We then presented survey findings to leadership and devised interventions to address the most relevant issues. We plan to distribute a follow-up survey after the changes to the practice have been implemented.

MEASURES OF SUCCESS (DISCUSS QUALITATIVE AND/OR QUANTITATIVE METRICS WHICH WILL BE USED TO EVALUATE PROGRAM/INTERVENTION): The baseline data is presented in our findings to date. The quantitative assessment of satisfaction and burnout is presented as descriptive data. The qualitative assessment of the areas needing improvement and suggestions for change is assessed using a grounded theory approach and the main themes are presented.

FINDINGS TO DATE (IT IS NOT SUFFICIENT TO STATE FINDINGS WILL BE DISCUSSED): Overall, 31 PCPs (24 MD, 7 NP) responded to the survey (response rate 77%). On a 1–5 scale (1 = poor, 5 = optimal), the average score in response to the question "my control over my workload" was 3.2. In response to the question "I am satisfied with my current job" 58% (18) PCPs reported that they agree and 19% (6) reported that they strongly agree. In response to what level of burnout is felt, 16% (5) of PCPs reported no burnout, 45% (14) reported stress but no burnout, and 35% (11) reported at least one symptom of burnout. The qualitative answers to identify sources of burnout centered around five main themes: clarification of roles of support staff, improved teamwork, reciprocal feedback between leadership and providers, functional facility infrastructure, and acknowledgement of work not reflected by productivity and patient satisfaction metrics. Since presenting this feedback to leadership, we have begun discussions to address role clarity, helped secure funding for additional administrative support, added computers to teaching areas and added praise boxes to acknowledge colleagues.

KEY LESSONS FOR DISSEMINATION (WHAT CAN OTHERS TAKE AWAY FOR IMPLEMENTATION TO THEIR PRACTICE OR COMMUNITY?): The leadership and wellness committee have partnered to implement changes for faculty and staff wellness that are appropriate for our practice. The interventions are limited by funding and resources as well as survey anonymity precluding a paired pre/post analysis. The next steps will be to assess the impact of the interventions on PCP wellness and satisfaction.

PROPP: PATIENT RECALL OF PRIMARY PROVIDER Chirag R. Patel[1]; Daniel Bercik[2]; Austin Brown[2]; Karen L. Mendieta[2]. [1]The Ohio State University Wexner Medical Center, Columbus, OH; [2]The Ohio State University College of Medicine, Columbus, OH. (Control ID #2688242)

STATEMENT OF PROBLEM OR QUESTION (ONE SENTENCE): Physicians have found marginal success in effectively conveying to their patients that most basic of identifiers, their name.

OBJECTIVES OF PROGRAM/INTERVENTION (NO MORE THAN THREE OBJECTIVES): Improve the hospitalized patient's ability to accurately recall members of their primary inpatient care team.

DESCRIPTION OF PROGRAM/INTERVENTION, INCLUDING ORGANIZATIONAL CONTEXT (E.G. INPATIENT VS. OUTPATIENT, PRACTICE OR COMMUNITY CHARACTERISTICS): IRB approval

was sought and received in order to measure and improve inpatient General Medicine teaching service patients' accurate recall rate of their primary provider. Several exclusions were incorporated to ensure the validity of our data. Ultimately, we found results much lower than expected; as such causal determination was sought. A root cause analysis was undertaken and led to two major initiatives: photo roster card distribution and effective white board use. These initiatives were rolled out and data was collected regarding the primary team members' ability to effectively convey their respective name to the patient. The photo roster card included: team name; physician team member photo, name and role with description; medical student, case manager and social worker name and role with description. Effective white board use was described as listing of primary team member names and their role. The roster cards were distributed and white boards populated during the time of attending physician initial bedside encounter.

MEASURES OF SUCCESS (DISCUSS QUALITATIVE AND/OR QUANTITATIVE METRICS WHICH WILL BE USED TO EVALUATE PROGRAM/INTERVENTION): On hospital day 3, the study team visited with patients. Three objectives existed during this encounter, to determine: 1) if white board was used effectively, 2) if a patient received a photo card, 3) the patient's ability to accurately recall members of the primary team.

FINDINGS TO DATE (IT IS NOT SUFFICIENT TO STATE FINDINGS WILL BE DISCUSSED): Our end point was determining accurate provider recall of any member of the primary team. We found a strong statistically significant difference between the group of patients who received a photo card independent of white board use (63%) and those who did not (29%). Additionally, a medium strength statistically significant difference was determined between the group of patients with white board use independent of photo card receipt (79%) and those without use (34%). Lastly, sub-group measurement was done to better understand the impact of both white board use and photo roster card distribution. Although we found a significant difference in recall between the two groups, 87 and 23% respectively, the statistical strength was limited.

KEY LESSONS FOR DISSEMINATION (WHAT CAN OTHERS TAKE AWAY FOR IMPLEMENTATION TO THEIR PRACTICE OR COMMUNITY?): Care of an ill patient requires several skills that are not only limited to one's clinical acumen but also include the personal connection developed with the patient. Doctor-Patient communication is a skill that many have developed over their years of training and then practice. At the heart of establishing a connection and developing rapport is the introduction. Our team determined that use of a photo roster card and/or white board use improves a patient's ability to recall a member of their primary team. Additionally, our data supports future determination of the efficacy on patient recall with utilization of both modalities concurrently.

PROTON PUMP INHIBITOR OVERUSE: LEVERAGING TECHNOLOGY TO DEPRESCRIBE

Colin T. Iberti; Clare Whipple; Katherine Small. Mount Sinai Hospital, New York, NY. (Control ID #2674233)

STATEMENT OF PROBLEM OR QUESTION (ONE SENTENCE): Proton pump inhibitor (PPI) overuse is associated with significant adverse events including increased risk of Clostridium difficile infection, community acquired pneumonia, and hip and spine fractures.

OBJECTIVES OF PROGRAM/INTERVENTION (NO MORE THAN THREE OBJECTIVES): To reduce PPI overuse via systematic deprescribing aided by an electronic medical record tool.

DESCRIPTION OF PROGRAM/INTERVENTION, INCLUDING ORGANIZATIONAL CONTEXT (E.G. INPATIENT VS. OUTPATIENT, PRACTICE OR COMMUNITY CHARACTERISTICS): Starting with our first Plan-Do-Study-Act (PDSA) cycle, we educated a team of two internal medicine attendings and 15 residents at the general internal medicine residency clinic of an urban tertiary care hospital regarding the harms of PPI overuse. Clinicians then received automatically generated electronic medical record messages with targeted patients on PPIs, triggering an in-visit prompt designed to quickly and easily assess indications, medical necessity of PPI, and potential to deprescribe. After clinician feedback, the second PDSA cycle refined the required response to the prompt and provided monthly report cards giving feedback on the PPI patients per clinician.

MEASURES OF SUCCESS (DISCUSS QUALITATIVE AND/OR QUANTITATIVE METRICS WHICH WILL BE USED TO EVALUATE PROGRAM/INTERVENTION): The primary outcome is the percentage of the team's patients on PPIs. The secondary outcomes include tracking the indication for PPI prescriptions to examine what proportion of our PPI use is appropriate. Process measures will include the frequency of use of the in-visit dotphrase prompt out of number of total visits with PPI patients, as well as the number of residents receiving PPI education. Balance measures include utility and ease as measured by team survey and follow-up phone calls with patients regarding symptoms, antacid requirements, or requiring restart of PPIs.

FINDINGS TO DATE (IT IS NOT SUFFICIENT TO STATE FINDINGS WILL BE DISCUSSED): The electronic medical record tool identified 332 panel patients chronically on PPIs; 103 were scheduled for office visits and eligible for the intervention during the six-month study period. Providers used the prompt in 70 of those visits, or 68% of the time. 36 (35%) of the 103 patients scheduled had their PPI discontinued as a result of the intervention. Of the 103 patients chronically on PPIs who were seen during the study period, the prevalence of PPI use decreased from 100% (103 patients) to 65% (67 patients). The most commonly encountered indications for chronic PPI use prior to the intervention were GERD (41.6%), dyspepsia (19.8%), and continued in-hospital GI prophylaxis (13.9%).

KEY LESSONS FOR DISSEMINATION (WHAT CAN OTHERS TAKE AWAY FOR IMPLEMENTATION TO THEIR PRACTICE OR COMMUNITY?): An electronic medical record intervention was successful in identifying PPI overuse, reducing patients on non-indicated chronic PPI therapy, and improved our ability to provide high-value care and prevent potential medication related adverse events.

PUTTING VETERANS F.I.R.S.T. FAILURE INTERVENTION RISK STRATIFICATION TOOL TO REDUCE 30 DAY READMISSION FOR PATIENTS WITH CONGESTIVE HEART FAILURE

Serena M. Ogunwole[1, 2]; Jason Phillips[2]; Patricia Wathen[2]. [1]University of Texas Health Science Center San Antonio, San Antonio, TX; [2]Ut health science center at San antonio, San Antonio, TX. (Control ID #2707659)

STATEMENT OF PROBLEM OR QUESTION (ONE SENTENCE): Over a million patients are hospitalized for heart failure each year. As many as 25% 1of these patients are readmitted within 30 days of discharge, making CHF exacerbations the most common cause of 30-day hospital

readmission.From a financial standpoint, treatment of CHF is extremely costly: with direct and indirect costs totaling more than 37billion dollars and Medicare spending exceeding 17 billion dollars. Additionally, the shift toward 30-day admission rates as a quality measure has led to increased financial penalties for institutions with the highest readmission rates. Several studies have linked the reduction of 30 day readmission with early (within 7 days) physician follow up after discharge

OBJECTIVES OF PROGRAM/INTERVENTION (NO MORE THAN THREE OBJECTIVES): Primary aim :increase the number of completed 7 day follow up appointments to 50% for all patients discharged from the internal medicine service with the diagnosis of acute decompensated heart failure by implementing a new discharge order template Secondray aim: reduce readmission rates CHF exacerbations by 20% at our hospital

DESCRIPTION OF PROGRAM/INTERVENTION, INCLUDING ORGANIZATIONAL CONTEXT (E.G. INPATIENT VS. OUTPATIENT, PRACTICE OR COMMUNITY CHARACTERISTICS): This project was done at an inpatient facility at the Veterans Administration hospital Proposed interventions: 1. Through literature review and consultation with a heart failure specialist we determined criteria for a high risk heart failure patient. Once these patients were identified, targeted interventions were given to them; including follow up with a CHF specialist. 2. We created a mandatory order set that populates upon discharge of a patient with a primary diagnosis of CHF: the order set has criteria that will enable internal medicine residents to risk stratify patients at high risk for CHF readmission. Patients identified as high risk for readmission will have follow up in the CHF clinic with a heart failure specialist. Patients who are not deemed high risk by the criteria will have follow up with a provider who can change medications. Regardless of who the patients follow up with, ALL follow up appointments will be placed within 7 days of discharge. This order set will auto-populate a clerk order to make an appointment with the appropriate clinic thus streamlining and standardizing the process for follow-up appointments for CHF patients.

MEASURES OF SUCCESS (DISCUSS QUALITATIVE AND/OR QUANTITATIVE METRICS WHICH WILL BE USED TO EVALUATE PROGRAM/INTERVENTION): 7 day follow up appointment percentage Absolute reduction in annual admission rates

FINDINGS TO DATE (IT IS NOT SUFFICIENT TO STATE FINDINGS WILL BE DISCUSSED): We decreased the average time to follow up from 17.7 days (October 2014) when the project was implemented to 8.7 days (January 2015) Percentage of patients readmitted within 30 days post-discharge at baseline, and following intervention one(creation of heart failure work group) and two (intensive follow up post discharge) were 25%, 22%, and 21%, respectively.

KEY LESSONS FOR DISSEMINATION (WHAT CAN OTHERS TAKE AWAY FOR IMPLEMENTATION TO THEIR PRACTICE OR COMMUNITY?): Identifying high risk patients is a cost effective strategy for utilizing limited resources. Using an electronic medical record as a strategy for enforcing adherence to a protocol is an extremely effective intervention

QUALITY IMPROVEMENT INTERVENTION ON HIGH UTILIZER INPATIENTS ADMITTED TO INTERNAL MEDICINE SERVICES

Samuel O. Schumann[2]; Marc Heincelman[2]; Patrick D. Mauldin[2]; Jingwen Zhang[1]; Justin Marsden[2]; Don Rockey[1]; William P. Moran[2]. [1]MUSC, Charleston, SC; [2]Medical University of South Carolina, Charleston, SC. (Control ID #2706729)

STATEMENT OF PROBLEM OR QUESTION (ONE SENTENCE): The top 10% high cost patients, labeled high utilizers (HU), disproportionately consume an exceedingly large amount of acute care resources and the value of this care is questionable.

OBJECTIVES OF PROGRAM/INTERVENTION (NO MORE THAN THREE OBJECTIVES): 1. Identify patients at risk for a HU admission in real time using predictive modeling. 2. Implement a quality improvement guideline intervention directed at patients identified as high risk for a HU admission to reduce low value inpatient care, primarily focusing on reducing length of stay.

DESCRIPTION OF PROGRAM/INTERVENTION, INCLUDING ORGANIZATIONAL CONTEXT (E.G. INPATIENT VS. OUTPATIENT, PRACTICE OR COMMUNITY CHARACTERISTICS): A quality improvement guideline intervention study was performed on all patients > 18 years old admitted to internal medicine services from October 1st, 2015 - April 11th, 2016. An established predictive model (AUROC = 0.80) was used to analyze admission variables and identify patients at risk for a HU admission in real time. A predictive model estimator score of ≥ 0.15 was used to define patients at risk for a high utilizer admission, giving the model a sensitivity of 55 and specificity of 84%. An estimator score of ≥ 0.15 was also projected to identify 2 patients per day at risk for a HU admission, which was a patient volume appropriate for the scope of the intervention. Certain patients meeting pre-specified criteria were excluded from the study, such as new solid organ or bone marrow transplant recipients. Patients with a HU estimator score ≥ 0.15 and not excluded were enrolled in the study and received intervention in three areas: early palliative care consultation, early pharmD medication reconciliation, and recommendations to follow Choosing Wisely guidelines for lab tests, chest x-rays and blood transfusions. The top 10% high cost patients admitted to internal medicine services from July 1st, 2013 - June 30th, 2014 were used as the comparison group.

MEASURES OF SUCCESS (DISCUSS QUALITATIVE AND/OR QUANTITATIVE METRICS WHICH WILL BE USED TO EVALUATE PROGRAM/INTERVENTION): Primary outcome was a reduction in length of stay. Secondary outcomes included pharmaceutical charges, laboratory charges, total hospital costs and discharge disposition.

FINDINGS TO DATE (IT IS NOT SUFFICIENT TO STATE FINDINGS WILL BE DISCUSSED): 373 patients were identified by the predictive model as being at risk for a HU admission (1.92 patients were identified per day). 130 patients were enrolled in the quality improvement guideline intervention and received all 3 areas of intervention (early palliative care, pharmD medication reconciliation and choosing wisely education). 243 patients were excluded. In the comparison group 7,571 patients were admitted to internal medicine services and 757 were the top 10% high cost patients. The mean LOS for HU patients enrolled in the guideline intervention was 10.3 days compared to a historical mean LOS of 25.4 days (*P* value 0.0183). The median LOS for HU patients enrolled in the guideline intervention was 6.1 ± 13.2 days, compared to a historical median LOS of 19.5 ± 32.5 days.

KEY LESSONS FOR DISSEMINATION (WHAT CAN OTHERS TAKE AWAY FOR IMPLEMENTATION TO THEIR PRACTICE OR COMMUNITY?): Patients at risk for a high utilizer admission can be identified in real-time based on admission variables. Guideline based interventions can then

be deployed early in an admission to improve the value of care and decrease length of stay

REDUCING CENTRAL VENOUS CATHETER RATES USING AN ULTRASOUND-GUIDED PERIPHERAL INTRAVENOUS CATHETER SERVICE

Benjamin T. Galen; William Southern. Albert Einstein College of Medicine, Bronx, NY. (Control ID #2692713)

STATEMENT OF PROBLEM OR QUESTION (ONE SENTENCE): Central venous catheters (CVC) may be used in patients with difficult venous access on medical wards, but carry risk of complications including infection, thrombosis, pneumothorax, or arterial injury.

OBJECTIVES OF PROGRAM/INTERVENTION (NO MORE THAN THREE OBJECTIVES): 1) To assess the impact of an ultrasound-guided peripheral IV (USGPIV) service on the rate of newly-placed CVC on an inpatient unit 2) To assess the acceptability and perceived benefit of this service by nurses

DESCRIPTION OF PROGRAM/INTERVENTION, INCLUDING ORGANIZATIONAL CONTEXT (E.G. INPATIENT VS. OUTPATIENT, PRACTICE OR COMMUNITY CHARACTERISTICS): The traditional technique (using manual palpation) of placing a peripheral IV is successful in most cases. However, when the traditional method fails, a central venous catheter may be placed to maintain intravenous access. Because CVCs are associated with complications, we tested the effectiveness of an ultrasound guided peripheral IV service to reduce the number of newly placed CVCs on an inpatient ward. We hypothesized that an USGPIV service would reduce the incident CVC rate on an intervention unit compared to a similar unit without this service. In this quality improvement initiative on an inpatient ward, providers activated the USGPIV service bundle when their patient's IV access was lost, insufficient, or expired and IV placement by the traditional technique (typically 3 attempts) was unsuccessful. The procedure team then placed at least one USGPIV in an upper extremity using a portable ultrasound device (GE V-Scan Dual Probe) and standard sized IV catheters.

MEASURES OF SUCCESS (DISCUSS QUALITATIVE AND/OR QUANTITATIVE METRICS WHICH WILL BE USED TO EVALUATE PROGRAM/INTERVENTION): The primary outcome measure was the number of newly placed CVCs on the intervention vs. control unit. Additional measures included a survey of the patients' nurse (at the time of IV placement) examining the intervention's acceptability and benefit to patient care.

FINDINGS TO DATE (IT IS NOT SUFFICIENT TO STATE FINDINGS WILL BE DISCUSSED): We found a significant reduction in the rate of newly placed CVC on the intervention unit compared to the control unit at 90 days: mean 0.47 vs. 0.67 newly-placed CVC/day ($p = 0.048$) We also found that 93% of nurses surveyed reported that the USGPIV service prevented delays in patient care. In addition, 73% of nurses reported that if an USGPIV service was not available, that a CVC would have been required for their patient. Furthermore, 80% of nurses felt that their patient preferred an USGPIV to the traditional technique and 100% agreed that an USGPIV service should be made permanently available on their unit.

KEY LESSONS FOR DISSEMINATION (WHAT CAN OTHERS TAKE AWAY FOR IMPLEMENTATION TO THEIR PRACTICE OR COMMUNITY?): An ultrasound-guided peripheral IV service appears to be an effective tool for the inpatient medical ward to reduce central venous catheter utilization. An intervention using a portable ultrasound and standard IV equipment was also found by nurses to be acceptable and beneficial to patients.

REDUCING THE BURDEN OF QUALITY IMPROVEMENT THROUGH THE ABMS MAINTENANCE OF CERTIFICATION PORTFOLIO SPONSOR PROGRAM

Sandhya K. Rao[2]; Suzanne M. Turner[3]; Timothy G. Ferris[1]. [1]MGH, Boston, MA; [2]Massachusetts General Hospital, Boston, MA; [3]Massachusetts General Physicians Organization, Boston, MA. (Control ID #2705621)

STATEMENT OF PROBLEM OR QUESTION (ONE SENTENCE): Many different stakeholders, including Center for Medicare Services (CMS), commercial payers, Joint Commission, state licensure boards, and the American Board of Medical Specialties (ABMS) require physicians to engage in separate practice improvement activities which contributes to administrative burden among physicians.

OBJECTIVES OF PROGRAM/INTERVENTION (NO MORE THAN THREE OBJECTIVES): 1. Enable physicians to meet multiple requirements through their on-going institutional and departmental quality improvement projects.

DESCRIPTION OF PROGRAM/INTERVENTION, INCLUDING ORGANIZATIONAL CONTEXT (E.G. INPATIENT VS. OUTPATIENT, PRACTICE OR COMMUNITY CHARACTERISTICS): The ABMS Multispecialty Portfolio Sponsor program enables instutions to approve local quality improvement efforts for MOC Part IV credit. The Mass General Physicians Organization enrolled in the Portfolio Sponsor Program in 2012. We established a quality review committee to review projects to ensure they were designed and executed according to the requirements of the program. In 2014, we enhanced the value of the program by obtaining Continuing Medical Education credit for physicians who earned MOC credits. Each participating physician is now eligible to earn up to 20 CME credits for their partcipation in a project in addition to MOC part IV credits.

MEASURES OF SUCCESS (DISCUSS QUALITATIVE AND/OR QUANTITATIVE METRICS WHICH WILL BE USED TO EVALUATE PROGRAM/INTERVENTION): 1. Number of projects submitted 2. Number of physicians earning CME and MOC Part IV credits 3. Estimated hours saved for physicians through alignment of requirements. (Assumes 10 hours per physician per MOC Part IV effort if completed on his or her own)

FINDINGS TO DATE (IT IS NOT SUFFICIENT TO STATE FINDINGS WILL BE DISCUSSED): Approved QI projects: 2012: 18 2013: 24 2015: 31 Physicians earning credit 2012: 117 2013: 192 2014: 507 2015: 705 Esimated Hours Saved: 2012: 1170 2013: 1920 2014: 5070 2015: 7050

KEY LESSONS FOR DISSEMINATION (WHAT CAN OTHERS TAKE AWAY FOR IMPLEMENTATION TO THEIR PRACTICE OR COMMUNITY?): 1. It is possible to earn MOC through local QI work. 2. Aligning projects to multiple requirements reduces physician administrative burden and saves time 3. Physicians need support in crafting projects to meet requirements, a MD champion with knowledge of their board requirements and administrative support to design and organize projects accordingly. 4. Leadership should design QI projects to support multiple requirements to allow for the largest number of physicians to earn credits and meet institutional requirements.

REDUCING THE NUMBER OF LABORATORY ORDERS IN A TERTIARY ACADEMIC FACILITY: A QUALITY IMPROVEMENT STUDY Rachna Rawal[2]; Oluwasayo Adeyemo[2]; Jennifer Schmidt[1]. [1]Saint Louis University, Saint Louis, MO; [2]St. Louis University, St. Louis, MO. (Control ID #2706336)

STATEMENT OF PROBLEM OR QUESTION (ONE SENTENCE): High prevalence of over-testing in academic medical centers due to lack of cost awareness and discussion among resident teams.

OBJECTIVES OF PROGRAM/INTERVENTION (NO MORE THAN THREE OBJECTIVES): 1. Reduce unnecessary daily labs among resident housestaff 2. Raise resident awareness of lab costs 3. Encourage discussion of cost-conscious lab testing

DESCRIPTION OF PROGRAM/INTERVENTION, INCLUDING ORGANIZATIONAL CONTEXT (E.G. INPATIENT VS. OUTPATIENT, PRACTICE OR COMMUNITY CHARACTERISTICS): The cost of health care is significant. Reducing unnecessary lab testing would decrease cost. In this study, we focused on residents rotating on the inpatient medicine service at an academic hospital servicing a large, urban population. Interventions targeted knowledge of daily lab ordering practices, including ordering rational. Resident experience discussing daily labs with their team and their global perspective on the physician's role in cost conscious medicine were addressed. The first intervention included educational presentations at resident conferences, team room posters, weekly informational emails, and monthly emails to alert attending physicians about the project. Future interventions include modification of conference presentations and Epic SmartSet changes.

MEASURES OF SUCCESS (DISCUSS QUALITATIVE AND/OR QUANTITATIVE METRICS WHICH WILL BE USED TO EVALUATE PROGRAM/INTERVENTION): We collected data on the number of basic metabolic panels (BMPs), comprehensive metabolic panels (CMPs), complete blood count with and without differential (CBC w/diff, CBC w/o diff) over the course of a four-week period (both at baseline and after each intervention). Additionally residents completed a survey before and after the intervention with multiple choice, free response and Likert scale questions (anchors 1 = never, 5 = always).

FINDINGS TO DATE (IT IS NOT SUFFICIENT TO STATE FINDINGS WILL BE DISCUSSED): After the initial intervention, we saw a non-significant decrease in CBCs w/diff and an increase in CBCs w/o diff. BMPs and CMPs ordered did not change. Baseline survey showed 88% of residents feel unnecessary lab ordering occurs at our institution. While 82% of residents feel it is their responsibility to consider lab cost, only 67% of residents actually do. 50% of residents never or rarely wait for admission lab results prior to placing additional lab orders. While these values did not change significantly after the intervention, significantly fewer residents stated they ordered daily CBCs if a patient had a normal admission CBC ($p = 0.019$). Post intervention results showed a significant increase in residents discussing lab ordering with their team, 50% to 100% ($p = 0.028$).

KEY LESSONS FOR DISSEMINATION (WHAT CAN OTHERS TAKE AWAY FOR IMPLEMENTATION TO THEIR PRACTICE OR COMMUNITY?): Our study confirms that residents are aware of unnecessary lab testing and feel they should consider testing cost; it also confirms that while residents feel this way, their actions do not consistently follow suit. We believe that the majority of our effect came through increasing awareness of testing costs and practices; we also believe this will be the most sustainable result moving forward. Anecdotally, some residents were unaware that a CBC could be ordered without a differential or that it was possible to order only a specific electrolyte rather than a full BMP. Basic education on lab cost as well as encouraged discussion within the resident team require relatively minimal labor but show significant results.

SBOT: A SHELTER-BASED OPIOID TREATMENT PROGRAM Avik Chatterjee[1, 2]; Aura Obando[2, 3]; Erica Strickland[2, 5]; Ariana Nestler[2, 6]; Terri LaCoursiere-Zucchero[2, 4]. [1]Harvard Medical School, Cambridge, MA; [2]Boston Health Care for the Homeless Program, Boston, MA; [3]Harvard Medical School, Boston, MA; [4]University of Massachusetts-Worcester, Worcester, MA; [5]Northeastern University, Boston, MA; [6]Tufts University School of Medicine, Boston, MA. (Control ID #2698947)

STATEMENT OF PROBLEM OR QUESTION (ONE SENTENCE): The opioid epidemic has brought significant morbidity and mortality, particularly among homeless individuals, but to our knowledge no shelter-based treatment for opioid addiction exists.

OBJECTIVES OF PROGRAM/INTERVENTION (NO MORE THAN THREE OBJECTIVES): To evaluate the successes and challenges of a novel family shelter-based opioid treatment (SBOT) program in its first year.

DESCRIPTION OF PROGRAM/INTERVENTION, INCLUDING ORGANIZATIONAL CONTEXT (E.G. INPATIENT VS. OUTPATIENT, PRACTICE OR COMMUNITY CHARACTERISTICS): A family outreach team at our Community Health Center has treated patients facing homelessness in diverse settings since 1985. Between 6/2015-6/2016, the team took care of 669 adults and 405 children. Prevalence of OUD in our patients during that time was 6%. Office-Based Opioid Therapy (OBOT) works for homeless adults as well as it does for housed adults. But homeless adults in families have unique barriers to OBOT including transportation and childcare needs. Our team of a physician, a nurse, case managers, and a therapist works in a twice-a-week outreach clinic at a 120-room family motel-shelter and regularly encounters patients with opioid use disorder. In 2015, our team developed SBOT. Features of SBOT include on-site induction, weekly group or individual therapy, regular urine drug testing and medication counts, intranasal naloxone training, medication lockboxes, and employment, housing and family support.

MEASURES OF SUCCESS (DISCUSS QUALITATIVE AND/OR QUANTITATIVE METRICS WHICH WILL BE USED TO EVALUATE PROGRAM/INTERVENTION): We reviewed the charts of patients who started SBOT from 8/2015 to 8/2016. We reported patient demographics and co-morbidities. We used Chi-squared tests to compare overdose history, urine drug test results, and employment at the beginning of and during treatment. We also reported reason for leaving the program.

FINDINGS TO DATE (IT IS NOT SUFFICIENT TO STATE FINDINGS WILL BE DISCUSSED): We started 10 patients on SBOT in our first year. Six were women and 6 reported white race. Mean age was 35 (range 32–40) and median number of children was 2 (range 1–5). Thirty percent had a history of illicit oral opioid use only, 20% had a history of heroin use only, and 50% had a history of both. Half tested positive for hepatitis C and none for HIV. All had anxiety and 70% had depression or bipolar disorder. Mean time in SBOT was 7.4 months (range 3–12 months). Four patients had experienced overdose before SBOT, but none did during SBOT ($P < 0.01$). In the first month of treatment, 77% of urine drug tests showed controlled substances, compared to

51% in the third month ($P < 0.01$). In their final month of treatment, 3 patients reported being employed, compared to 1 at the beginning ($P = 0.04$). After the review period, 4 continued SBOT, 5 moved out of the shelter and transferred care elsewhere, and 1 left the motel and did not continue agonist therapy. Two patients relapsed after leaving the shelter and lost custody of their children.
KEY LESSONS FOR DISSEMINATION (WHAT CAN OTHERS TAKE AWAY FOR IMPLEMENTATION TO THEIR PRACTICE OR COMMUNITY?): Shelter-based opioid treatment—SBOT—helped a diverse group of vulnerable adults access treatment. An inter-professional team and the ability to send labs contributed to our success. A significant challenge was transitioning care once patients left the shelter—access to OBOT in the community is limited, and requires solving transportation, childcare and other issues SBOT helped patients overcome.

SCREENING FOR DIABETIC RETINOPATHY IN PRIMARY CARE USING A HAND-HELD RETINAL CAMERA Carolyn F. Pedley[1]; Ramon Velez[1]; Claudia L. Campos[2]; James L. Wofford[2]; Darius Wilson[2]; Angela Smoak[2]; Dobson Latanya[2]; Delois Samuels[2]. [1]Wake Forest, Winston-Salem, NC; [2]Wake Forest University, WInston-Salem, NC. (Control ID #2706773)

STATEMENT OF PROBLEM OR QUESTION (ONE SENTENCE): Diabetes is the leading cause of acquired blindness in adults. Diabetics with limited access to health care are not properly screened for eye disease.
OBJECTIVES OF PROGRAM/INTERVENTION (NO MORE THAN THREE OBJECTIVES): 1. To provide effective screening for diabetic retinopathy in a population with limited accesss to health care 2. To screen for retinopathy during routine provider visits 3. To coordinate retinal screening with specialists able to provide eye care
DESCRIPTION OF PROGRAM/INTERVENTION, INCLUDING ORGANIZATIONAL CONTEXT (E.G. INPATIENT VS. OUTPATIENT, PRACTICE OR COMMUNITY CHARACTERISTICS): A safety net clinic staffed by an academic institution employed a hand-held Zeiss Visuscout 100 Retinal Imager camera to take retinal images of diabetics' eyes over a 3 1/2 month period. Pictures were taken in a procedure room in the clinic by nurses after the patients' clinic visits. Each eye was photographed without dilation and the images were transmitted by a TreVia portable tablet device to be read by Ophthalmology in the medical center. Picture quality could be assessed on a camera monitor before transmission and photographs could be retaken if necessary. Patients and providers received paper and electronic reports and recommendations based on the readings. The patients to be photographed were highlighted in the clinic schedule as they came in for regular visits.
MEASURES OF SUCCESS (DISCUSS QUALITATIVE AND/OR QUANTITATIVE METRICS WHICH WILL BE USED TO EVALUATE PROGRAM/INTERVENTION): 1. Number of diabetics screened 2. Clarity of images for reading 3. Nursing time involved 4. Effective communication among patients, providers and ophthalmologists
FINDINGS TO DATE (IT IS NOT SUFFICIENT TO STATE FINDINGS WILL BE DISCUSSED): 51 diabetic patients received retinal photographs in the 3 1/2 month period. 95% of the photographs were interpreted as being adequate for reading although 21% had to be repeated. 18% of the photographs recommended that the patients see an Ophthalmologist for further evaluation and treatment. Nurses required 20–40 min per patient depending on the ease of taking the images.
KEY LESSONS FOR DISSEMINATION (WHAT CAN OTHERS TAKE AWAY FOR IMPLEMENTATION TO THEIR PRACTICE OR COMMUNITY?): A hand-held retinal camera employed in a busy medical clinic is an effective tool for improving diabetic eye screening rates. The hand-held camera is easy to operate and training is not very difficult. Not dilating pupils adds to the comfort and safety of patients. The TreVia tablet system also proved to be effective in transmitting images and sending results and recommendations to providers and patients. The main barriers to increasing the screening numbers was the time needed by the nurses to take and transmit the images. In a busy practice individuals taking such images would have to have dedicated time.

SERVICE-LEARNING PROJECT IMPROVES HEALTH LITERACY VIA STEM CURRICULUM IN BRONX NY ELEMENTARY STUDENTS Andrew Johnston; Kim Ohaegbulam; Rohan Biswas; Kevin Shieh; Alicia Philippou; David Liao; Tonya Aaron; Liane Hunter; Aldemar Guzman; Elizabeth Fruchter; Maria Marzan; Christopher Phang; Judith Wylie-Rosett. Albert Einstein College of Medicine, Bronx, NY. (Control ID #2708035)

STATEMENT OF PROBLEM OR QUESTION (ONE SENTENCE): By engaging in health and STEM education awareness, can healthier lifestyle habits of Bronx youth be obtained through a medical student driven service-learning program?
OBJECTIVES OF PROGRAM/INTERVENTION (NO MORE THAN THREE OBJECTIVES): 1. Evaluate attitudes, habits, beliefs, and familial influences of youth that impact scientific curiosity and health awareness 2. Identify factors that demonstrate a relationship between STEM education/ interest and health literacy 3. Quantify the impact of the intervention on improving health literacy and STEM interest.
DESCRIPTION OF PROGRAM/INTERVENTION, INCLUDING ORGANIZATIONAL CONTEXT (E.G. INPATIENT VS. OUTPATIENT, PRACTICE OR COMMUNITY CHARACTERISTICS): Through a partnership with the South Bronx Police Athletic League after-school program, volunteers from Hoops for Health, a community based service learning program of the Albert Einstein College of Medicine, administered its innovative curriculum, mentored fourth and fifth grade students, and assessed the relationship between STEM education and health literacy. On a monthly basis during the 2015–2016 academic year, Hoops for Health volunteers conducted one forty-five minute session dedicated to modules in STEM education and health promotion and another forty-five minute session devoted to physical fitness and nutrition counseling.
MEASURES OF SUCCESS (DISCUSS QUALITATIVE AND/OR QUANTITATIVE METRICS WHICH WILL BE USED TO EVALUATE PROGRAM/INTERVENTION): A survey was given to the students at the start and end of the program to identify significant factors relevant to health and science promotion, along with a nine-item feedback survey to evaluate the program. Using this data, we examined the objectives of our program.
FINDINGS TO DATE (IT IS NOT SUFFICIENT TO STATE FINDINGS WILL BE DISCUSSED): We found that students, who identified as having math or science as their favorite subject, not only liked science more, but also participated in physical activity more frequently during the week. Furthermore, we show that students in our program with parents in a STEM-related field practiced healthier lifestyle habits and displayed more health awareness.

Students rated our program highly, noted that they learned new concepts in health and science, and favored our hands-on modules.

KEY LESSONS FOR DISSEMINATION (WHAT CAN OTHERS TAKE AWAY FOR IMPLEMENTATION TO THEIR PRACTICE OR COMMUNITY?): Since household background is a critical component in fostering lasting healthy lifestyles, creating events and programs aimed at promoting health education to both parents and children should be prioritized. Also, creating strong relationships between after-school programs (Police Athletic League, Boys and Girls club, YMCA, etc.) and local medical/graduate schools is an easily accessible avenue to disseminate health and STEM awareness information as well as establish a forum with the community to better assess their needs. Furthermore, we make our curriculum available to facilitate the establishment of other positive learning environments.

SHARING THE LOAD: THE EFFECTIVENESS OF INVOLVING A NON-CLINICAL TEAM MEMBER IN DIABETES GROUP EDUCATION AND SUPPORT Melanie Martin[1]; Feben Girma[2]. [1]Wake Forest, Greensboro, NC; [2]Wake Forest Baptist, Winston-Salem, NC. (Control ID #2706371)

STATEMENT OF PROBLEM OR QUESTION (ONE SENTENCE): Patient engagement is crucial for improved outcomes in diabetes and can be enhanced by use of a non -clinical team member to provide disease education and support, even in a challenging patient population.

OBJECTIVES OF PROGRAM/INTERVENTION (NO MORE THAN THREE OBJECTIVES): 1.Describe a diabetes education/support course that can be led by a trained non-clinical team member. 2.Provide evidence of improvement in glycemic control via measurement of participants' Hemoglobin A1c through this program.

DESCRIPTION OF PROGRAM/INTERVENTION, INCLUDING ORGANIZATIONAL CONTEXT (E.G. INPATIENT VS. OUTPATIENT, PRACTICE OR COMMUNITY CHARACTERISTICS): Care Plus is a multidisciplinary outpatient program that provides primary care and care coordination to frequently admitted patients from safety net practices at Wake Forest Baptist Health. Fifty percent of the patients enrolled in Care Plus have diabetes, and most have multiple other comorbid conditions along with significant psychosocial challenges. Effective treatment of Type 2 Diabetes Mellitus requires lifestyle changes along with medication adherence. Adequate instruction on the causes, consequences and treatment of diabetes can be challenging in a resource limited practice. We explore the benefits of training a non-clinical patient navigator as a peer diabetes educator. This educator was trained in the Diabetes Empowerment Education Program under Alliant Quality, a Quality Improvement Organization under Centers for Medicare and Medicaid. Weekly diabetes education support groups are conducted following the Alliant Quality 6–8 week curriculum.

MEASURES OF SUCCESS (DISCUSS QUALITATIVE AND/OR QUANTITATIVE METRICS WHICH WILL BE USED TO EVALUATE PROGRAM/INTERVENTION): We compare individual pre and post participation HgbA1c results during the program. Patient satisfaction survey regarding the program is forthcoming.

FINDINGS TO DATE (IT IS NOT SUFFICIENT TO STATE FINDINGS WILL BE DISCUSSED): Fifteen Care Plus patients with DM II attended at least half of the curriculum and are included in this study. Seven of these patients chose to attend the program multiple times as they found it to be engaging and helpful. For patients that chose to participate repeatedly, we compared their results prior to enrollment of their first session to their results after completion of their last session. The group average HgbA1c prior to enrollment was 10.1 (range 7.1- 13.7) and the group average HgbA1c after completion was 9.0 (range 7.1- 12.2). The average improvement in HgbA1c was 1.1. Individual results ranged from worsening by 0.5 to improvement by 3.4. Although the changes cannot be attributed to this intervention alone, the group education and support enhanced patient engagement.

KEY LESSONS FOR DISSEMINATION (WHAT CAN OTHERS TAKE AWAY FOR IMPLEMENTATION TO THEIR PRACTICE OR COMMUNITY?): Effective diabetes education is time consuming and can be especially challenging for clinics with limited resources serving uninsured and under insured patients. The lifestyle changes and importance of medication adherence are paramount to improving glycemic control. Training a non-clinical team member as a Peer Educator in the Diabetes Empowerment Education Program has proven to be an effective way to engage patients and provide diabetes education, resulting in HgbA1c improvement.

SLEEP IS VITAL: IMPROVING SLEEP BY REDUCING NOCTURNAL VITAL SIGNS Elaine C. Khoong[2]; Hana Lim[2]; Timothy Judson[2]; Kelly Johnson[2]; Nicole Kim[2]; Karen Bieragual[2]; Jin Ge[2]; Priya A. Prasad[1]; Kyle Tillinghast[3]; Catherine Lau[3]; Michelle Mourad[3]. [1]UCSF, San Francisco, CA; [2]University of California - San Francisco, San Francisco, CA; [3]University of California, San Francisco, San Francisco, CA. (Control ID #2705849)

STATEMENT OF PROBLEM OR QUESTION (ONE SENTENCE): Hospitalized patients get fewer than five hours of sleep a night, and poor sleep leads to increased rates of delirium, falls and hypertension as well as decreased patient satisfaction.

OBJECTIVES OF PROGRAM/INTERVENTION (NO MORE THAN THREE OBJECTIVES): 1. To improve sleep among hospitalized patients by minimizing nighttime disruptions and increasing housestaff awareness of their role in promoting sleep. 2. To ensure the intervention does not compromise patient safety

DESCRIPTION OF PROGRAM/INTERVENTION, INCLUDING ORGANIZATIONAL CONTEXT (E.G. INPATIENT VS. OUTPATIENT, PRACTICE OR COMMUNITY CHARACTERISTICS): This project was conducted at a tertiary care academic hospital. We included patients on the hospital medicine service who were discharged from an acute or step-down unit. In our baseline needs assessment, hospitalized patients reported nighttime disruptions, including vital signs, were a common cause of sleep disturbance. At baseline, 15% of patients at our hospital were discharged on sleep promotion vital signs (VS), defined as any VS less frequent than every four hours. Our goal was to increase the rate of patients with sleep promotion VS 24 hours prior to discharge to 45%. To ensure continued patient safety, we tracked rapid response calls and intensive care unit (ICU) transfers for the hospital medicine teaching service. Housestaff led a yearlong project that included interventions - including provider and nursing education, audit and feedback, and electronic medical record (EMR) changes - aimed at decreasing nocturnal VS checks for stable patients. We provided education at monthly resident orientations and encouraged housestaff to order sleep promotion VS on patients with stable VS for 24 hours and no anticipated medical changes. We provided real-time feedback to each medicine team by emailing a performance dashboard every

two weeks, fostering healthy competition. High and low performing teams were given a brief survey regarding barriers to sleep promotion VS. We created easily accessible "Sleep Promotion Vitals" orders and embedded them into the hospital medicine admission order set and the standard order entry tool.

MEASURES OF SUCCESS (DISCUSS QUALITATIVE AND/OR QUANTITATIVE METRICS WHICH WILL BE USED TO EVALUATE PROGRAM/INTERVENTION): Our outcome measures were: a) the rate of patients discharged from the hospital medicine teaching service on sleep promotion vitals at least 24 hours prior to discharge; b) the rate of rapid response calls and ICU transfers for our patients; and c) validated measures of sleep quality from patients on sleep promotion versus standard (every 4 hours) VS.

FINDINGS TO DATE (IT IS NOT SUFFICIENT TO STATE FINDINGS WILL BE DISCUSSED): Early results demonstrated an increase in sleep promotion VS from 15 to 55% within six months. We have met our goal (45 + %) for each of the last four months (08-12/2016). There were no recorded adverse outcomes (rapid response calls or ICU transfers) related to decreased nocturnal VS.

KEY LESSONS FOR DISSEMINATION (WHAT CAN OTHERS TAKE AWAY FOR IMPLEMENTATION TO THEIR PRACTICE OR COMMUNITY?): Through a multifaceted, resident-driven approach including provider and nursing education, feedback, and EMR changes, we can successfully and safely decrease nocturnal vital signs in hospitalized patients.

STANFORD'S PRIMARY CARE 2.0: INTENTIONAL LEAN DESIGN OF A QUADRUPLE-AIM-BASED PRIMARY CARE TRANSFORMATION ALTERNATIVE TO THE PATIENT-CENTERED MEDICAL HOME Garrett Chan[1]; Rumana Hussain[3]; Marcy Winget[1]; Cati Brown-Johnson[1]; Jonathan G. Shaw[2]; J A. Glaseroff[1]; Megan Mahoney[1]. [1]Stanford School of Medicine, Stanford, CA; [2]Stanford School of Medicine, S, CA; [3]Stanford Health Care, Stanford, CA. (Control ID #2699102)

STATEMENT OF PROBLEM OR QUESTION (ONE SENTENCE): Systematic reviews of patient satisfaction, utilization, cost, and provider outcomes associated with the Patient Centered Medical Home (PCMH) have been inconclusive, showing only modest improvements across all the domains; as an alternative, an intentional "Lean" (continuous improvement) design approach could lead to more profound improvements.

OBJECTIVES OF PROGRAM/INTERVENTION (NO MORE THAN THREE OBJECTIVES): In 2016, Stanford Healthcare undertook the goal to develop a new model of primary care specifically directed at meeting the Quadruple Aim. Facility and care models were designed using Integrated Facility Design, ie. Lean 3P Design. This design approach was an adaptation of Toyota 3P (Production, Preparation, Process) employing a team-based process design with representation from all relevant stakeholder groups to achieve a design that promoted high quality care, reduction of waste, and patient and employee satisfaction.

DESCRIPTION OF PROGRAM/INTERVENTION, INCLUDING ORGANIZATIONAL CONTEXT (E.G. INPATIENT VS. OUTPATIENT, PRACTICE OR COMMUNITY CHARACTERISTICS): Design activities spanned 18 months and included local consumer research (22 interviews); site visits (9 sites, 33 participating stakeholders); and visioning sessions. Notable features of the core Primary Care 2.0 model included: (1) three Physician (MD) and Advanced Practice Provider (APP) pairs, caring for 10,000 patients; (2) 3,330 patients empaneled to an MD-APP pair and four care coordinators (CCs) in each team; (3) embedded extended care team relevant to primary care, namely clinical pharmacist, dietitian, behavioral health specialist, nurse, and physical therapist.

MEASURES OF SUCCESS (DISCUSS QUALITATIVE AND/OR QUANTITATIVE METRICS WHICH WILL BE USED TO EVALUATE PROGRAM/INTERVENTION): 1. Survey sent to SHC stakeholders who had any involvement in the design process, assessing feasibility and acceptability of the design process. 2. Survey sent specifically to Design Team members. This open-ended survey focused on group composition and dynamic on the creation of a multidisciplinary team-based model.

FINDINGS TO DATE (IT IS NOT SUFFICIENT TO STATE FINDINGS WILL BE DISCUSSED): Lean Integrated Facility Design was appropriate and acceptable to stakeholders, who created a full care model based on the Quadruple Aim. 77% of respondents reported that they strongly believed the design process was valuable. Notably, no respondent selected neutral or negative rankings for questions related to the design process. In the comment sections, respondents described an effective team, leadership, and collaborative experience. Themes from the second survey included the importance of team building activities in promoting a psychologically safe and effective group process and the role of the multidisciplinary composition of the design team in creating a multidisciplinary care model for PC 2.0.

KEY LESSONS FOR DISSEMINATION (WHAT CAN OTHERS TAKE AWAY FOR IMPLEMENTATION TO THEIR PRACTICE OR COMMUNITY?): Lean Integrated Facility Design can be adapted to primary care redesign by focusing multidisciplinary teams on sequential design processes. Diverse stakeholders' perspectives promote a final blueprint that reflects diverse constituents and promote overall buy-in. Time spent in "soft-skill" teambuilding is valuable for promoting group efficacy in designing new primary care models.

SYRIAN CRISIS: AN INNOVATIVE SANITARY RESPONSE IN SWITZERLAND Jeremie Blaser1; Ioana Hincu[1]; Brigitte Pahud-Vermeulen[1]; Mario Gehri[2]; Joan Carles Suris Granell[2]; Patrick Bodenmann[1]. [1]Vulnerable Population Center, Lausanne, Switzerland; [2]Children's Hospital, Lausanne, Switzerland. (Control ID #2701429)

STATEMENT OF PROBLEM OR QUESTION (ONE SENTENCE): The Swiss government started a resettlement program, in collaboration with the United Nation High Commission on Refugees (UNHCR) to facilitate the arrival of particularly vulnerable refugees from Syria, which brings the need of a dedicated healthcare program.

OBJECTIVES OF PROGRAM/INTERVENTION (NO MORE THAN THREE OBJECTIVES): 1) To provide the necessary healthcare for this particularly vulnerable population. 2) To gather information about this population, in terms of medical conditions, but also from a more holistic view of the families, as we know they are selected on vulnerability criteria. This can be used as a feedback to the health authorities about the specific needs of this population. 3) To offer a protection to the medical staff against compassion fatigue through an interdisciplinary consultation, as repeated exposition to the traumatic history of most of these families can be difficult to bear.

DESCRIPTION OF PROGRAM/INTERVENTION, INCLUDING ORGANIZATIONAL CONTEXT (E.G. INPATIENT VS. OUTPATIENT, PRACTICE OR COMMUNITY CHARACTERISTICS): Around 1800 persons are expected to arrive in Switzerland between 2016 and 2017 from the resettlement program. In the canton of Vaud (10% of the general population), an interdisciplinary family consultation was set up for those families, staffed with a pediatrician, a general practitioner, an interpreter, as well as a nurse practitioner. At the first consultation, a health assessment is provided to the whole family at the same time. Vaccinations are proposed and screening for tuberculosis is planned for children systematically. Patients can then be oriented toward different medical specialties as needed. A second consultation is planned two months later for a clinical follow-up, to pursue the vaccination plan, and to discuss the results if tests were performed. A shared meeting with the whole medical team concludes the assessment. After this 2nd consultation, a follow-up with a private general practitioner and/or pediatrician is organized.
MEASURES OF SUCCESS (DISCUSS QUALITATIVE AND/OR QUANTITATIVE METRICS WHICH WILL BE USED TO EVALUATE PROGRAM/INTERVENTION): 1) Feasibility will be assessed by the number of consultations provided. Medical conditions of the patients will be reported as the number of chapters from the ICPC-2 classification (classification of symptoms and medical conditions for primary care) concerned by the complaints of the patients 2) Vulnerability will be assessed with a validated vulnerability scale. 3) Protection against compassion fatigue will be reported as the absence of compassion fatigue in the medical team.
FINDINGS TO DATE (IT IS NOT SUFFICIENT TO STATE FINDINGS WILL BE DISCUSSED): 1) Between July and December 2016, 60 persons have been seen for a first medical evaluation, including 32 adults and 28 children. The adults had on average complaints concerning 3.1 chapters of the ICPC-2 classification, and children 1.3. 2) With the use of the vulnerability scale: 2 adults were identified with 4 axes of vulnerability and 3 with 3 axes. One child was identified with 3 axes. 3) No compassion fatigue has been reported so far.
KEY LESSONS FOR DISSEMINATION (WHAT CAN OTHERS TAKE AWAY FOR IMPLEMENTATION TO THEIR PRACTICE OR COMMUNITY?): The interprofessional model of a consultation for Syrian migrant families is feasible. The complementarities of the actors are a good protection against compassion fatigue that may threaten the staff.

TEACHING WHEN YOU CAN'T SPEAK: LEADING SHARED MEDICAL APPOINTMENTS (SMAS) FOR LINGUISTIC MINORITIES
Cynthia Schoettler; McShane Michael; Nihan K. Cannon; Kelly Pereira; Yamini Saravanan. Cambridge Health Alliance, Cambridge, MA. (Control ID #2698752)

STATEMENT OF PROBLEM OR QUESTION (ONE SENTENCE): Shared Medical Appointments (SMAs) have been shown to be an effective way to teach self-management, improve measures of control and increase patient self-efficacy for chronic illnesses using a less hierarchical, culturally focused context; however non-English speakers are often excluded from this intervention due to limited provider linguistic capabilities, despite evidence showing medical interpreters can help overcome language barriers.
OBJECTIVES OF PROGRAM/INTERVENTION (NO MORE THAN THREE OBJECTIVES): The objectives of this Quality Improvement (QI) project were to 1) Pilot SMAs for non-English speakers when providers do not share the same language, 2) To understand if SMAs using medical interpreters could be successful and effective for this population, and 3) Establish best-practices for this type of SMA.
DESCRIPTION OF PROGRAM/INTERVENTION, INCLUDING ORGANIZATIONAL CONTEXT (E.G. INPATIENT VS. OUTPATIENT, PRACTICE OR COMMUNITY CHARACTERISTICS): The Primary Care Center (PCC) of Cambridge Health Alliance is an urban safety-net, Harvard Medical School-affiliated community outpatient clinic that serves a culturally and linguistically diverse patient population, including a large Portuguese-speaking population. A monthly series of 10 SMAs for Portuguese speakers with Diabetes Mellitus was created. SMAs are led by a multidisciplinary team including (non-Portuguese speaking) resident and attending physicians, 2 Portuguese interpreters, and 1 Portuguese-speaking medical assistant. SMAs follows the same format: Pre-visit team huddle to discuss flow, content/plan, methods of interpreting; 30 min of 1:1 brief diabetes-focused patient visits for focused exam and individualized management (1 physician:1 interpreter); 60 min for group discussion (led by physicians and facilitated by both interpreters); End-of-visit team de-brief reviewing all elements of the SMA. This roughly follows the traditional QI format of continuous Plan, Do, Study, Act (PDSA) cycles.
MEASURES OF SUCCESS (DISCUSS QUALITATIVE AND/OR QUANTITATIVE METRICS WHICH WILL BE USED TO EVALUATE PROGRAM/INTERVENTION): To understand the impact of using medical interpreters in groups, effects will be followed in 3 main areas: traditional measures of diabetes control (i.e. A1c), patient perceptions (via focus groups), and provider (especially interpreter and medical assistant) feedback to identify successful elements and best practices. Focus groups will take place midway (early 2017) and after completion of the series.
FINDINGS TO DATE (IT IS NOT SUFFICIENT TO STATE FINDINGS WILL BE DISCUSSED): Thus far, patients have demonstrated good attendance and are very involved in asking questions. Facilitators focus on interactive group dynamic that encourages peer teaching. Interpreters use "simultaneous" translation method to reduce the need to pause for interpretation, which allowed for lively conversations and education, and ability to address cultural perceptions of diabetes such as, "diabetes is caused by stress".
KEY LESSONS FOR DISSEMINATION (WHAT CAN OTHERS TAKE AWAY FOR IMPLEMENTATION TO THEIR PRACTICE OR COMMUNITY?): It is possible to develop and lead effective SMAs in languages other than English, if group leaders partner with strong in-person interpreting services.

TEAM FACECARDS IMPROVE PATIENT IDENTIFICATION OF PHYSICIANS BUT HAS LITTLE IMPACT ON PATIENT SATISFACTION
Ernie L. Esquivel[2]; Michael Ding[2]; Nancy Tray[2]; Laura F. Gingras[1]; Arthur Evans[2]. [1]New York Presbyterian Hospital - Weill Cornell Medical Center, New York, NY; [2]Weill Cornell Medical College, New York, NY. (Control ID #2703724)

STATEMENT OF PROBLEM OR QUESTION (ONE SENTENCE): Caring for patients in the hospital requires the efforts of many health care providers, but several studies have highlighted that most inpatients are unable to identify the physician(s) responsible for their daily management.

OBJECTIVES OF PROGRAM/INTERVENTION (NO MORE THAN THREE OBJECTIVES): We evaluated the effect of a healthcare team identification tool, team facecards, on provider identification, patient perceptions of physician communication, and patient satisfaction.

DESCRIPTION OF PROGRAM/INTERVENTION, INCLUDING ORGANIZATIONAL CONTEXT (E.G. INPATIENT VS. OUTPATIENT, PRACTICE OR COMMUNITY CHARACTERISTICS): A prospective study was conducted to evaluate the efficacy of team facecards among patients admitted to inpatient teams at NewYork-Presbyterian Hospital. Team facecards were designed to include a photo of each physician member of the primary care team and descriptions of their roles. Patients in the intervention group were provided a team facecard at the beginning of their hospital stay by a non-physician research assistant, and a second team facecard was posted in the room. Patients in the control group did not receive the team facecards.

MEASURES OF SUCCESS (DISCUSS QUALITATIVE AND/OR QUANTITATIVE METRICS WHICH WILL BE USED TO EVALUATE PROGRAM/INTERVENTION): After one to two days, patients were asked to identify one of their providers and to answer dichotomized questions adapted from the ABIM-PSQ, addressing the provider's communication skills including use of non-medical jargon, honesty in answering questions, investment in patient well-being and recovery, explanations of diagnosis, treatment, and listening skills.

FINDINGS TO DATE (IT IS NOT SUFFICIENT TO STATE FINDINGS WILL BE DISCUSSED): During an eight-week study period, a total of 328 team facecards were distributed. Of these, 231 patients could be surveyed since 97 patients were either discharged or transferred to the ICU. A total of 166 (71.9%) agreed to be surveyed while 202/243 controls (83.1%) participated in the survey. Patients who received team facecards could correctly name one of the physicians in 41/166 (24.7%) cases, while another 62 (37.3%) pointed to the card when asked to identify their team. In the control group, only 57/202 (28.2%) could identify a member of the team. The majority of patients in the intervention group 142/166 (85.5%) found the facecard helpful, while 175/202 (86.6%) control patients thought that it might have been useful to receive a team facecard. Patients in the intervention group were significantly more likely to state that their doctors explained their diagnosis and treatment in an understandable way 94.6% vs. 88.1% ($P = 0.03$). Trends toward significant difference ($P = 0.09$) were also noted in patient's perception that their doctors used language that was easy to understand, were honest in answering questions, and communicated better during the physical examination if they had received a team facecard. No significant differences were noted in six other questions of patient satisfaction, with favorable responses obtained in more than 80% of cases.

KEY LESSONS FOR DISSEMINATION (WHAT CAN OTHERS TAKE AWAY FOR IMPLEMENTATION TO THEIR PRACTICE OR COMMUNITY?): Team facecards helped patients identify a member of their physician care team, and were perceived positively by patients who received them. However, responses to patient satisfaction questions in both groups were generally favorable and team facecards had only minimal impact on improving these responses.

TELE MONITORING OF PATIENTS WITH UNCONTROLLED HYPERTENSION- A PROPOSAL FOR POPULATION HEALTH MANAGEMENT Charles Choi[1]; Matthew Wilson[1]; Jason Hopper[1]; Elizabeth Tysinger[1]; Kristy Marvin[1]; Deanna Jones[2]; Claudia L. Campos[1]. [1]Wake Forest University, WInston-Salem, NC; [2]Wake Forest Baptist Health, Winston Salem, NC. (Control ID #2706363)

STATEMENT OF PROBLEM OR QUESTION (ONE SENTENCE): Acces to care is another barrier to achieving blood pressure control in under represented minorities.

OBJECTIVES OF PROGRAM/INTERVENTION (NO MORE THAN THREE OBJECTIVES): The objectives of this pilot intervention are to determine (1) the feasibility (medication side effects, acceptability, recruitment, retention, adherence to protocol) and (2) the effect on BP at 3 months of home BP telemonitoring and use of protocols lead by a nurse practitioner in patients with uncontrolled hypertension of the internal medicine clinic.

DESCRIPTION OF PROGRAM/INTERVENTION, INCLUDING ORGANIZATIONAL CONTEXT (E.G. INPATIENT VS. OUTPATIENT, PRACTICE OR COMMUNITY CHARACTERISTICS): We propose to implement a tele monitoring system using home blood pressure measurements via phone transmission. It differs from clinic-based care through the systematic use of home BP tele monitoring and telehealth care coordinated by a nurse practitioner.BP protocols will be used for medication titration..

MEASURES OF SUCCESS (DISCUSS QUALITATIVE AND/OR QUANTITATIVE METRICS WHICH WILL BE USED TO EVALUATE PROGRAM/INTERVENTION): The outcomes are (1) treatment side effects, acceptability, self-monitoring rates, medication and protocol adherence. The secondary outcomes are (1) BP control to <140/90 at 3 months and (2) change SBP and DBP at 3 months. Side effects will be elicited during phone visits (Appendix B), self -monitoring rates will be recorded on HBPM device and compared to paper recordings. Medication adherence will be assessed using the medication adherence (Morisky Medication Adherence) Scale during the initial and final visits. We will measure patient acceptability of HBPM using the questionnaire by Lindroos during the final visit. Protocol adherence will be monitored by assessing if patients do comply with measurement times (4 measurements per week for 3 months) and if phone communicated measurements are consistent with recorded numbers. Patient drop outs before the end of the study will be monitored. We will define "out-of-window" visits when more than 7 days from originally scheduled visit have elapsed.

FINDINGS TO DATE (IT IS NOT SUFFICIENT TO STATE FINDINGS WILL BE DISCUSSED): A cross sectional study through an EHR query between 04/17/2016 and 10/17/2016 revealed that among 1833 patients seen at OPD, a third (691/1833) have suboptimal BP control (SB$P > 140$ or DBP >90). One investigator (C Choi) randomly selected 30 charts during that time period of patients scheduled for a BP check with a nurse for uncontrolled hypertension and performed a chart review. Patients were 12 Male and 18 Female, ages ranging from 26 to 74 years old (mean 57) and predominantly AA (20/30). Initial office mean BP was 172/90 and subsequent nurse visit mean BP was 158/82. 5 patients had private insurance, 9 patients were uninsured, 13 Medicare and 3 Medicaid recipients. Nurse follow up visit no show rate was 27% (8/30). The average number of BP medications per patient was 2.5 and the average number of total medications was 9.2 (range 1 to 22).

KEY LESSONS FOR DISSEMINATION (WHAT CAN OTHERS TAKE AWAY FOR IMPLEMENTATION TO THEIR PRACTICE OR COMMUNITY?): Changing our practice patterns towards patient centered and population management interventiosn are imperatives in achieving better healthcare outcomes

THE 4:2 ON/OFF SERVICE MODEL FOR AMBULATORY PRECEPTING: AN INNOVATIVE SOLUTION TO MAINTAINING RESIDENT-ATTENDING-PATIENT CONTINUITY Melissa S. Lee[1, 2]; Andrew A. Chang[1, 2]; Moses Lee[1, 2]; David Stevens[1, 2]. [1]Kings County Hospital, Brooklyn, NY; [2]SUNY Downstate, Brooklyn, NY. (Control ID #2707561)

STATEMENT OF PROBLEM OR QUESTION (ONE SENTENCE): The shift to an X + Y system risks disruption of continuity between residents and their patients/preceptors because residents will be precepted by multiple attendings.

OBJECTIVES OF PROGRAM/INTERVENTION (NO MORE THAN THREE OBJECTIVES): To test a scheduling system where ambulatory faculty preceptors “follow” their residents in a 4:2 On/Off Service model. To preserve the resident-patient-preceptor relationship. To avoid faculty burnout as a result of the intervention.

DESCRIPTION OF PROGRAM/INTERVENTION, INCLUDING ORGANIZATIONAL CONTEXT (E.G. INPATIENT VS. OUTPATIENT, PRACTICE OR COMMUNITY CHARACTERISTICS): Kings County is a large, urban, academic safety-net institution located in Central Brooklyn. We are the primary care continuity practice site for 36 SUNY Downstate Internal Medicine residents. Firms of 12 residents attend clinic during the 2 week Y block. Preceptors supervise 4 residents. Rather than maintaining the traditional preceptor schedule in which each attending precepts the same half-day each week, preceptors are now “on service” with their residents for 6/8 continuity sessions during the Y block. A swing preceptor covers 2 sessions. Faculty do not precept during the 4 “off service” weeks while their residents are on the inpatient wards.

MEASURES OF SUCCESS (DISCUSS QUALITATIVE AND/OR QUANTITATIVE METRICS WHICH WILL BE USED TO EVALUATE PROGRAM/INTERVENTION): Maintenance of resident continuity with preceptors and patients, improved resident and faculty satisfaction.

FINDINGS TO DATE (IT IS NOT SUFFICIENT TO STATE FINDINGS WILL BE DISCUSSED): Continuity with a primary care provider is widely accepted as a cornerstone of quality and patient experience. In the 4:2 model where attendings have the same precepting schedule every week, resident continuity with preceptors and patients is limited. Residents have a different preceptor for each continuity session. Had we chosen to maintain current attending preceptor schedules in which each attending precepts once per week, residents would have 25% continuity with their preceptors instead of 75% in our On/Off Service model. This was achieved without increasing the total number of attending precepting sessions. The On/Off Service model did not result in attending burnout due to the loss of balance in their work week as was feared. 83% felt they did not lose a sense of balance in their work week, and felt this model was better than the traditional once weekly paradigm. All faculty reported that the 4:2 On/Off Service model kept them excited about working at Kings County. An unexpected finding disclosed during an informal evaluation process was strengthened relationships and improved resident-preceptor communication around patient care. Continuous conversations with a preceptor over 2 weeks improved patient safety and care as laboratory and imaging results were reviewed and discussed promptly.

KEY LESSONS FOR DISSEMINATION (WHAT CAN OTHERS TAKE AWAY FOR IMPLEMENTATION TO THEIR PRACTICE OR COMMUNITY?): When transitioning to an X + Y system, give strong consideration to an On/Off Service Ambulatory Precepting Model to preserve resident continuity with patients and preceptors and improve resident-preceptor relationships and satisfaction.

THE COMPLEX HIGH ADMISSION MANAGEMENT PROGRAM (CHAMP): DEVELOPMENT AND PRELIMINARY IMPACT ON HOSPITAL UTILIZATION Bruce L. Henschen[2]; Margaret Chapman[1]; Abby Toms[1]; Mckay Barra[1]; Luke O. Hansen[3]. [1]Northwestern Memorial Hospital, Chicago, IL; [2]Northwestern University, Chicago, IL; [3]Amita Health, Chicago, IL. (Control ID #2673887)

STATEMENT OF PROBLEM OR QUESTION (ONE SENTENCE): Patients who are high-utilizers of hospital-based resources pose unique challenges to medical and psychosocial support networks that our current fragmented health care delivery model is unable to manage.

OBJECTIVES OF PROGRAM/INTERVENTION (NO MORE THAN THREE OBJECTIVES): 1. Reduce hospital utilization and improve clinical outcomes among medical high-utilizer patients. 2. Use intensive case management and care coordination to create a system of care that meets the complex needs of high-utilizers. 3. Partner with patients to develop individualized care plans, promote continuity, and rebuild trusting relationships.

DESCRIPTION OF PROGRAM/INTERVENTION, INCLUDING ORGANIZATIONAL CONTEXT (E.G. INPATIENT VS. OUTPATIENT, PRACTICE OR COMMUNITY CHARACTERISTICS): The Complex High Admission Management Program (CHAMP) is a longitudinal, relationship-based care model that consists of two social workers (comprised of 1.5 FTE total), two physicians (0.5 FTE), and a program administrator (0.1 FTE). The EMR alerts providers to CHAMP patients; the CHAMP team provides consistency in care services across the continuum through creation of individualized care plans in collaboration with the patient, acts as a hospital consultation service for their patients when admitted, and provides primary care and care coordination when discharged. Intensive case management and trust building, both with patients and providers, play key roles in identifying and targeting the root causes of high utilization.

MEASURES OF SUCCESS (DISCUSS QUALITATIVE AND/OR QUANTITATIVE METRICS WHICH WILL BE USED TO EVALUATE PROGRAM/INTERVENTION): We have examined rates of hospital admission among patients enrolled in CHAMP compared to retrospective data prior to enrollment. Through a randomized, controlled trial, we plan to prospectively gather utilization, patient satisfaction and quality of life, and other clinical endpoints.

FINDINGS TO DATE (IT IS NOT SUFFICIENT TO STATE FINDINGS WILL BE DISCUSSED): As of Fall 2016, 53 patients have been enrolled in CHAMP. Their mean age is 56; 17 (32%) carry a diagnosis of sickle cell disease, although the spectrum of medical and social issues is diverse. In a 6-month follow-up period, patients enrolled in CHAMP experienced a 30.0% decrease in hospital 30-day unplanned inpatient readmissions as defined by Medicare ($p = 0.04$), compared with 6 months prior to each patient’s enrollment. There was also a 29.3% decrease in total hospital admissions and an 11.7% decrease in total number of inpatient bed-days during the study period. Patients self-identified with the CHAMP intervention, and providers from varied settings anecdotally reported improvements in care coordination.

KEY LESSONS FOR DISSEMINATION (WHAT CAN OTHERS TAKE AWAY FOR IMPLEMENTATION TO THEIR PRACTICE OR COMMUNITY?): CHAMP, designed to improve care for high-utilizing patients, is

associated with a significant decrease in inpatient hospital readmissions, total admissions, and days in the hospital in a retrospective pre-post analysis. Key drivers of success have been re-establishing trust and strengthening engagement in both patients and providers. The program is feasible with institutional support and has been promoted by clinicians and other members of health care teams, administrators, and hospital executives. Ongoing and future investigations assessing a broader range of outcomes and looking at long-term outcomes are necessary to demonstrate program effectiveness and sustainability.

THE ED-PACT TOOL: COMMUNICATING VETERANS' CARE NEEDS AFTER EMERGENCY DEPARTMENT VISITS VIA ELECTRONIC MESSAGES Kristina M. Cordasco[1, 2]; Hemen Saifu[1]; Lisa V. Rubenstein[1, 2]; Mana Khafaf[1, 2]; Brian Doyle[1, 1]; Jonie Hsiao[1]; Greg Orshansky[1, 2]; David Ganz[1, 2]. [1]VA Greater Los Angeles Healthcare System, Los Angeles, CA; [2]UCLA, Los Angeles, CA. (Control ID #2702251)

STATEMENT OF PROBLEM OR QUESTION (ONE SENTENCE): Communication failures between providers are a threat to patient safety. Despite the importance of timely receipt of recommended post-emergency department (ED) care, up to two-thirds of patients discharged from EDs do not receive recommended post-ED care.

OBJECTIVES OF PROGRAM/INTERVENTION (NO MORE THAN THREE OBJECTIVES): We developed, piloted, and formatively evaluated a tool (The ED-PACT Tool) facilitating post-ED communication for patients in six primary care clinics in VA's Greater Los Angeles Healthcare System (VAGLAHS).

DESCRIPTION OF PROGRAM/INTERVENTION, INCLUDING ORGANIZATIONAL CONTEXT (E.G. INPATIENT VS. OUTPATIENT, PRACTICE OR COMMUNITY CHARACTERISTICS): The ED-PACT Tool uses the electronic health record to send messages from Veterans Health Administration (VA) ED providers to patients' VA Patient-aligned Care Teams (PACT) nurses, when patients are discharged home from the ED with urgent or specific follow-up needs.

MEASURES OF SUCCESS (DISCUSS QUALITATIVE AND/OR QUANTITATIVE METRICS WHICH WILL BE USED TO EVALUATE PROGRAM/INTERVENTION): Before implementation, we assessed readiness to participate in the innovation with ED and PACT leadership interviews and PACT nurse questionnaires. During deployment, we used audit and feedback to monitor adherence with correct use of the tool. We logged all user feedback, tracked all failures (i.e., PACT nurse not acting on a message) and their causes, and used run charts to assess for weekly variations in failures. We audited a random sample of 150 messages to capture types of care needs for which messages were sent. We interviewed leaders in the ED and three PACT clinics about perceptions of the ED-PACT Tool's usability and value, as well as implementation facilitators and barriers.

FINDINGS TO DATE (IT IS NOT SUFFICIENT TO STATE FINDINGS WILL BE DISCUSSED): In pre-implementation interviews, ED and PACT clinic leadership endorsed improving post-ED care communication as being a priority issue. Nurse care manager pre-implementation questionnaires showed that 23 of 29 nurses were "confident" or "extremely confident" in their ability to use the ED-PACT Tool. Between November 1, 2015 and November 30th, 2016, the ED-PACT Tool was used to send 1630 messages from the VAGLAHS ED to nurses in 48 PACT teams. Care needs included: symptom recheck (55%); care coordination (16%); wound care (5%); medication adjustment (5%); laboratory recheck (5%); radiology follow-up (3%); and blood pressure recheck (3%). On average, nurses successfully acted on 88% of messages (weekly range, 72% - 100%). Reasons for failure included human error, staffing shortages and technical errors. Interviews with ED and PACT clinic leaders revealed that the ED-PACT Tool is perceived to provide substantial benefit for coordinating post-ED care by effectively communicating with patients' PACT nurses. PACT leaders also reported nurse training and "buy-in" facilitated implementation, while insufficient staff posed a barrier.

KEY LESSONS FOR DISSEMINATION (WHAT CAN OTHERS TAKE AWAY FOR IMPLEMENTATION TO THEIR PRACTICE OR COMMUNITY?): The ED-PACT Tool facilitates communication between providers during a vulnerable care transition. Primary care nurses can fill an important role in receiving and triaging post-ED care coordination messages. Deployment of similar tools should include attention to the organizational, human and technical factors revealed by our evaluation.

THE HEART OF THE TEAM IN TEAM-BASED CARE: IMPROVING PROVIDER-MEDICAL ASSISTANT PAIRING IN PRIMARY CARE Braden K. Mogler[2]; David Lee[1]; Claire K. Horton[1]. [1]UCSF, San Francisco, CA; [2]University of California San Francisco, San Francisco, CA. (Control ID #2706810)

STATEMENT OF PROBLEM OR QUESTION (ONE SENTENCE): While stable pairings of primary care providers (PCPs) and medical assistants (MAs) is a core component of team-based care and can decrease burnout and improve team functioning, achieving stable pairings is a particular challenge in a residency based clinic with many part-time providers.

OBJECTIVES OF PROGRAM/INTERVENTION (NO MORE THAN THREE OBJECTIVES): 1. Assess baseline rate of MA-PCP pairings 2. Identify root causes of pairing discontinuity 3. Implement interventions to improve rate of stable pairings

DESCRIPTION OF PROGRAM/INTERVENTION, INCLUDING ORGANIZATIONAL CONTEXT (E.G. INPATIENT VS. OUTPATIENT, PRACTICE OR COMMUNITY CHARACTERISTICS): Over the past 5 years, our clinic has made major efforts to improve team-based care and create a high-functioning medical home model. Key stakeholders identified discontinuity with MAs (ie, rarely working with their assigned MA) as a core area of dissatisfaction. This low rate of stable MA-PCP pairings was a frequent complaint among providers, and other clinics have described an inverse relationship between rate of stable pairings and burnout. To increase our rate we measured stable pairing rates over time, identified factors contributing to missed pairings, chose a staff champion to oversee scheduling, changed staff scheduling protocols to favor stable pairings, and focused efforts on clinic sessions with greatest opportunity for improvement.

MEASURES OF SUCCESS (DISCUSS QUALITATIVE AND/OR QUANTITATIVE METRICS WHICH WILL BE USED TO EVALUATE PROGRAM/INTERVENTION): We defined our primary measure of success as a 10% relative increase in stable MA-PCP pairing rates over one year. We also monitored qualitative satisfaction among staff and providers via regular clinic feedback sessions.

FINDINGS TO DATE (IT IS NOT SUFFICIENT TO STATE FINDINGS WILL BE DISCUSSED): Our baseline rate of MAs and PCPs working together in their assigned pairing was 50%. Our first intervention was to

identify a senior MA with a high degree of peer leadership skills as staff champion in charge of MA scheduling and to make teamlet pairing top prioritiy in MA scheduling. With this intervention alone our stable pairing rate improved to 70%. In our second intervention we identified root causes of discontinuity of pairing. These factors included sick calls, difficulty in scheduling MAs for evening clinic sessions, and a cultural bias toward prioritizing attending-MA pairs over resident-MA pairs. We explicitly re-prioritized MA-resident pairings, improved full staffing rates overall, and our current work focuses on improving evening clinic assignments. Provider feedback indicates a high degree of satisfaction with the improved pairing rates, with many providers indicating that this change has improved their clinic experience significantly; MAs express more satisfaction as well.

KEY LESSONS FOR DISSEMINATION (WHAT CAN OTHERS TAKE AWAY FOR IMPLEMENTATION TO THEIR PRACTICE OR COMMUNITY?): 1. Stable MA-PCP pairings in primary care clinic can decrease provider and staff burnout. 2. While achieving high rates of stable pairings in a residency based clinic is challenging due to the large number of part-time providers, monitoring pairing rates and data transparency can give insight into modifiable factors to increase stability. 3. Identifying a staff champion and prioritizing stable pairings in scheduling can greatly increase rates as well as staff and provider satisfaction.

THE HOMELESS RESPONSE TEAM: PROVIDING CONTINUITY OF CARE FOR HOMELESS PATIENTS Meghan R. Rochester[1]; Erik Rueckmann[2]. [1]University of Rochester School of Medicine and Dentistry, Rochester, NY; [2]University of Rochester Medical Center, Rochester, NY. (Control ID #2702415)

STATEMENT OF PROBLEM OR QUESTION (ONE SENTENCE): Homeless patients have higher readmission rates and healthcare costs with worse health outcomes.

OBJECTIVES OF PROGRAM/INTERVENTION (NO MORE THAN THREE OBJECTIVES): Improve continuity of care from inpatient to outpatient. Enhance medical student competence in caring for homeless individuals. Reduce healthcare costs associated with the care of homeless individuals.

DESCRIPTION OF PROGRAM/INTERVENTION, INCLUDING ORGANIZATIONAL CONTEXT (E.G. INPATIENT VS. OUTPATIENT, PRACTICE OR COMMUNITY CHARACTERISTICS): The Homeless Response Team is a pilot program comprised of an interdisciplinary team working with homeless patients accessing care at Strong Memorial Hospital in Rochester, NY. Self-identified homeless individuals admitted to the hospital were screened by social work to determine eligibility. Inclusion criteria included: the patient's status as homeless, no history of violence, not acutely psychotic. If appropriate, a response team was dispatched to enroll the patient. Student teams evaluated the patient's willingness to participate, reason for hospitalization, discharge plan, and response plan. Post discharge, teams scheduled weekly follow-up to assess current needs and barriers to compliance with the treatment plan, providing support as able. The intervention period is six months but is ended if patients are lost to follow-up or wish to withdrawal.

MEASURES OF SUCCESS (DISCUSS QUALITATIVE AND/OR QUANTITATIVE METRICS WHICH WILL BE USED TO EVALUATE PROGRAM/INTERVENTION): Measures of success include impact on patient care and barriers to care, student learning, and health care costs. These measures will be assessed by administering the Health Care Climate Questionnaire, Patient Activation Measures and Patient Activation Assessment at the start and end of the intervention and by qualitative analysis of student notes. Impact on care will be monitored by assessing the number of patients who are newly connected with a PCP, outpatient social work or housing. We will administer the Health Professionals' Attitudes Towards the Homeless Inventory to medical students pre and post-intervention to assess for changes in bias. We will analyze the readmission rates and hospital-associated health costs of the patients prior to, during, and after the intervention period.

FINDINGS TO DATE (IT IS NOT SUFFICIENT TO STATE FINDINGS WILL BE DISCUSSED): Since April 2016, the Homeless Response Team has been referred fourteen patients, assessed twelve, and enrolled ten patients. One completed the intervention, five were lost to follow-up, two entered inpatient substance abuse treatment, two voluntarily ended their participation. The patients were racially diverse; the majority were chronically homeless middle-aged men with substance abuse problems living in emergency shelters, had insurance and a PCP, and identified transportation and cost as barriers. Students noted motivation as a barrier. Assistance given included establishing care with PCPs and social work, arranging transportation, accompanying patients to appointments, obtaining eyeglasses, insurance, and substance abuse treatment. Students worked with patients on reconciling concerns regarding treatment plans and the health care system.

KEY LESSONS FOR DISSEMINATION (WHAT CAN OTHERS TAKE AWAY FOR IMPLEMENTATION TO THEIR PRACTICE OR COMMUNITY?): Active post-hospitalization follow-up by medical students shows promise in connecting homeless patients with appropriate services and bridging the gap between inpatient and outpatient care.

THE MAGIC CLINIC: AN INTERDISCIPLINARY GERIATRIC CONSULT CLINIC EMBEDDED IN A PATIENT-CENTERED MEDICAL HOME Mark J. Simone[2, 1]; Lisa Padgett[2, 3]. [1]Harvard Medical School, Boston, MA; [2]Mount Auburn Hospital, Cambridge, MA; [3]Massachusetts College of Pharmacy and Health Sciences, Boston, MA. (Control ID #2693535)

STATEMENT OF PROBLEM OR QUESTION (ONE SENTENCE): Chronically ill older adults in the primary care setting often require an interdisciplinary team to address their health care needs; we therefore studied the impact of the creation of a geriatric consult service in a patient-centered medical home.

OBJECTIVES OF PROGRAM/INTERVENTION (NO MORE THAN THREE OBJECTIVES): 1. Optimize the medication regimens for older adults 2. Reduce health care utilization (ED visits, hospitalizations, readmissions) 3. Improve health outcomes and perform appropriate geriatric assessments for chronically ill older patients

DESCRIPTION OF PROGRAM/INTERVENTION, INCLUDING ORGANIZATIONAL CONTEXT (E.G. INPATIENT VS. OUTPATIENT, PRACTICE OR COMMUNITY CHARACTERISTICS): The MAGIC (Mount Auburn Geriatric Interdisciplinary Consultation) Clinic was created to provide an interdisciplinary geriatric consultative service to older adults in the Primary Care Center (PCC) at Mount Auburn Hospital (MAH). The MAGIC Clinic is staffed by a geriatrician, clinical pharmacist, and geriatric social worker. The MAGIC Team also includes interdisciplinary members from the PCC and MAH community who meet monthly to review recent cases and coordinate ongoing care. Geriatric patients are referred by their PCPs often

for reasons of dementia evaluation and management, medication optimization, functional decline, and complicated psychosocial issues.

MEASURES OF SUCCESS (DISCUSS QUALITATIVE AND/OR QUANTITATIVE METRICS WHICH WILL BE USED TO EVALUATE PROGRAM/INTERVENTION): We will measure health care utilization and other patient outcomes 6 months before and after enrollment in the MAGIC Clinic. We will also survey patients and providers.

FINDINGS TO DATE (IT IS NOT SUFFICIENT TO STATE FINDINGS WILL BE DISCUSSED): The MAGIC Clinic opened March 2015, and during its first year, saw 27 patients during 61 encounters. The mean age is 79.3, range 65–92 years old. The majority of patients live alone (59%), 1/3 are dependent in ADLs, 2/3 are dependent in IADLs, with a mean of 12.6 chronic active conditions (range 7–23). One third have a high-school education or less, and about 15% are non-English speaking and racial minorities. Our pilot data for patients with at least 6 months of follow-up in the MAGIC Clinic ($n = 15$) show reductions in ED visits (70%, $n = 7$), hospitalizations (66%, $n = 6$), and readmissions (100%, $n = 3$). 10 patients were newly diagnosed with dementia. Vaccination rates increased significantly ($n = 27$) from 33 to 96% ($p < .0001$), and documentation of health care proxy increased from 41 to 62% ($p = .0143$). Our efforts to optimize medications show a decrease in anticholinergic risk score, total number of medications, daily dose burden, and reductions in potentially inappropriate medications. Our patient and provider surveys show high levels of satisfaction. Pre and post patient/caregiver surveys show improvements in all domains, with most feeling that the visits have improved their overall care and that they would recommend the service to others.

KEY LESSONS FOR DISSEMINATION (WHAT CAN OTHERS TAKE AWAY FOR IMPLEMENTATION TO THEIR PRACTICE OR COMMUNITY?): We created an innovative and much needed geriatric consultative service embedded in a patient-centered medical home. This new clinical service is highly valued by patients and providers. Our team focuses on areas of great importance to the care of older adults. Patients and providers from practices outside of the PCC have asked for referrals to the MAGIC Clinic, so in the future we hope to expand our services beyond the PCC.

THE SHINGLES VACCINATION INITIATIVE- INCREASING RATE OF IMMUNIZATION AGAINST HERPES ZOSTER IN AN ELIGIBLE OUTPATIENT POPULATION. Irina Kushnir[2]; Ibrahim Ali[2]; Frank Cacace[1, 2]. [1]Hofstra North Shore LIJ, Great Neck, NY; [2]Northwell Health, Manhasset, NY. (Control ID #2707026)

STATEMENT OF PROBLEM OR QUESTION (ONE SENTENCE): How to improve the quality of preventive care at the Long Island Jewish Ambulatory Care Unit (LIJ ACU) by increasing the rate of Shingles vaccination.

OBJECTIVES OF PROGRAM/INTERVENTION (NO MORE THAN THREE OBJECTIVES): The primary objective of our initiative was to increase the number of patients at LIJ ACU who received a vaccine against Herpes Zoster. Our secondary objectives were to increase provider and patient awareness of the shingles vaccine, and to identify the barriers to administration of the vaccine which was being underutilized at our clinic.

DESCRIPTION OF PROGRAM/INTERVENTION, INCLUDING ORGANIZATIONAL CONTEXT (E.G. INPATIENT VS. OUTPATIENT, PRACTICE OR COMMUNITY CHARACTERISTICS): Our initiative was implemented at a resident run clinic with a predominantly socioeconomically underprivileged and elderly patient population. We first identified and educated all health care personnel and patients about the benefits, harms, and indications for the Zoster vaccine. All patients over the age of 60 who do not have specific contraindications are eligible for the vaccine; we identified our population of interest with the help of a database provided by IT. We also identified barriers to administration of the vaccine, in particular lack of financial coverage by certain insurance companies, and collaborated with pharmacists to address these barriers.

MEASURES OF SUCCESS (DISCUSS QUALITATIVE AND/OR QUANTITATIVE METRICS WHICH WILL BE USED TO EVALUATE PROGRAM/INTERVENTION): We used quantitative metrics to measure the success of our initiative by comparing the number of individuals vaccinated with Zoster in the ACU clinic prior to initiation of our quality improvement project, and then at its completion. We also measured the amount of individuals vaccinated for Zoster each year, and analyzed the trend over the years, with particular attention to the trend from 2014 to 2016, from before the initiation to after the conclusion of our project.

FINDINGS TO DATE (IT IS NOT SUFFICIENT TO STATE FINDINGS WILL BE DISCUSSED): We found that after implementation of our intervention, the rate of shingles immunizations rose drastically at our clinic. We began to implement our intervention after the advent of the 2015 academic year, and watched the rate of vaccinations practically quadruple from 14 vaccinated individuals in 2014 to 42 patients in 2015. We had completed our quality improvement project by the end of the academic year in 2016, and by July 2016, there were already 28 vaccinated patients in 2016. When simply comparing vaccination rates prior to and after implementation of our project, our findings were even more remarkable. A total of only 35 eligible patients received the Zoster vaccine between 2012 and 2015, compared to 91 patients that were vaccinated between July 2015 and 2016, the rate of vaccinations had nearly tripled in 1/3 the studied time after implementation of the zoster vaccination initiative.

KEY LESSONS FOR DISSEMINATION (WHAT CAN OTHERS TAKE AWAY FOR IMPLEMENTATION TO THEIR PRACTICE OR COMMUNITY?): Our takeaway point from our quality improvement project is that a multidisciplinary approach should be employed, and that the benefits, harms, degree of efficacy and monetary cost of an intervention must always be addressed prior to its implementation.

THE SUBSTANCE USE WARMLINE: A NEW RESOURCE FOR PRIMARY CARE Rebecca Sedillo[2]; carolyn chu[2]; James Gasper[2]; Erin Lutes[2]; Benjamin R. Smith[2]; Jacqueline P. Tulsky[2]; Scott Steiger1. [1]University of California, San Francisco, San Francisco, CA; [2]University of California-San Francisco, San Francisco, CA. (Control ID #2702571)

STATEMENT OF PROBLEM OR QUESTION (ONE SENTENCE): Many primary care clinicians lack confidence and/or experience in substance use management, leading to significant stress, frustration, and burnout.

OBJECTIVES OF PROGRAM/INTERVENTION (NO MORE THAN THREE OBJECTIVES): In 2015, the Clinician Consultation Center (CCC) and Bureau of Primary Health Care launched a Substance Use Warmline (SUW), 855-300-3595, to increase access to timely, evidence-informed addiction medicine consultation for community health providers. The SUW aims to increase provider knowledge and skill through the delivery of tailored, expert clinical decision-support.

DESCRIPTION OF PROGRAM/INTERVENTION, INCLUDING ORGANIZATIONAL CONTEXT (E.G. INPATIENT VS. OUTPATIENT, PRACTICE OR COMMUNITY CHARACTERISTICS): A multidisciplinary team of expert nurses, Addiction Medicine-certified physicians, and clinical pharmacists provides free, on-demand telephone consultation for clinicians. The SUW offers advice on all aspects of substance use evaluation and management, including complex patients with co-occurring chronic pain, behavioral health issues, HIV, and other chronic conditions. The team logs case details in the CCC's secure standardized database.

MEASURES OF SUCCESS (DISCUSS QUALITATIVE AND/OR QUANTITATIVE METRICS WHICH WILL BE USED TO EVALUATE PROGRAM/INTERVENTION): Callers are emailed a 5-item Likert survey after each consultation to assess satisfaction with the service. Respondents also have an option to submit free-text comments. The SUW also monitors monthly call volume and repeat callers.

FINDINGS TO DATE (IT IS NOT SUFFICIENT TO STATE FINDINGS WILL BE DISCUSSED): 63.7% of calls over the first year were from MDs/DOs, and the number of calls increased by an average of 28% per month. >25% were internists and 30% of physician callers had DATA2000 waivers to prescribe buprenorphine. Prescription opioids were discussed in 64.2% of cases, followed by stimulants (31.1%), alcohol (28.3%), non-prescription opioids (17.9%), sedative/hypnotics (13.2%), and other substances (13.2%). 43.4% of cases involved polysubstance use. Consultants discussed a broad range of clinical topics: SUD screening and diagnosis, MAT options, opioid safety/dosing/tapering, urine toxicology use, behavioral interventions for SUD, and withdrawal management. Almost 60% of cases involved documented psychiatric co-morbidities, and over a third involved patients with chronic pain. Callers consistently rated the SUW highly: the vast majority indicated questions were answered thoroughly with useful, up to date information. All survey respondents said they would both utilize the SUW again and recommend it to colleagues. One caller noted: "This was a great resource. I was at my wits' end trying different techniques and getting nowhere. I felt supported and I received new information to use." Almost a third of all callers contacted the SUW more than once.

KEY LESSONS FOR DISSEMINATION (WHAT CAN OTHERS TAKE AWAY FOR IMPLEMENTATION TO THEIR PRACTICE OR COMMUNITY?): The SUW appears to be a useful tool for primary care practitioners who have called to request on-demand, telephone-based substance use consultation.Early results suggest this service may help reduce or prevent burnout among providers managing complex patients who use drugs and/or are prescribed high-doses of opioids.

TIME CONSTRAINTS TRUMP ENTHUSIASM IN MEDICATION RECONCILIATION Carmen L. Lewis; Laurence Williams; Mary W. McCord; Hillary Chrastil; Lauren Drake; Huong M. Lam. University of Colorado, Denver, CO. (Control ID #2698925)

STATEMENT OF PROBLEM OR QUESTION (ONE SENTENCE): General Internal Medicine practices increasingly face unrealistic work expectations and are challenged to re-distribute work from physicians to other team members.

OBJECTIVES OF PROGRAM/INTERVENTION (NO MORE THAN THREE OBJECTIVES): 1.) Determine the practicality of full medication reconciliation by medical assistants (MAs) during the rooming process. 2.) Assess the fidelity and time required for full medication reconciliation.

DESCRIPTION OF PROGRAM/INTERVENTION, INCLUDING ORGANIZATIONAL CONTEXT (E.G. INPATIENT VS. OUTPATIENT, PRACTICE OR COMMUNITY CHARACTERISTICS): Initially, our practices agreed across our three clinical teams to train MAs to reconcile up to six medications, deferring patients with more than six medications to physicians. Subsequently, a system wide initiative for medication reconciliation training was required. After this training, MAs on two of three teams organically expanded to full medication reconciliation. To standardize our work, the nurse coordinator required the third team expand to full medication reconciliation. MAs on the third team voiced concerns about their ability to complete full medication reconciliation, in addition to other rooming requirements within the currently allotted 5 to 7 min traditional rooming time.

MEASURES OF SUCCESS (DISCUSS QUALITATIVE AND/OR QUANTITATIVE METRICS WHICH WILL BE USED TO EVALUATE PROGRAM/INTERVENTION): Several weeks after the clinic-wide implementation, the third team's providers indicated that not only was medication reconciliation not being done reliably, but other rooming requirements were also suffering. This outcome seemed to be isolated only to the third team, as the other two teams reported strong compliance with the new medication reconciliation procedure and high quality rooming. We performed a Root Cause Analysis (RCA) exercise to: 1) Define the timeline that led to the current state. 2) Identify the contributing factors and root causes. MA observations were conducted to determine fidelity and time required for full medication reconciliation.

FINDINGS TO DATE (IT IS NOT SUFFICIENT TO STATE FINDINGS WILL BE DISCUSSED): The RCA exercise concluded with two possible root causes: 1) Workload distribution within the clinic was not consistent, causing challenges for the third MA team. 2) The concern about time constraints were not adequately addressed on the two teams who adopted full medication reconciliation. We found that individual MA rooming workload was unequally distributed across teams (15.3, 13.7, and 11.5 patients roomed/MA) indicating that volume was not the cause of the third team's performance, as it was the team with the lowest volume. We also conducted a series of 13 observations, which showed an additional five to eight min were required to complete full medication reconciliation. We found only members of the third team correctly completed full medication reconciliation.

KEY LESSONS FOR DISSEMINATION (WHAT CAN OTHERS TAKE AWAY FOR IMPLEMENTATION TO THEIR PRACTICE OR COMMUNITY?): 1.) System training can impact local environments and disrupt existing workflows. 2.) Enthusiasm for expanded work among MAs, encouraged spread without adequate evaluation of time and fidelity. 3.) RCA analysis can be a helpful tool to examine performance.

TO CHOOSE WISELY: REDUCING THE OVERUSE OF LABS IN HOSPITALIZED PATIENTS - A HIGH VALUE CARE ENDEAVOR
Ana I. Velazquez[2]; Mariana Mercader[2]; Krystle Hernandez[2]; Rifat Mamun[2]; Daniel I. Steinberg[1]; Alfred Burger[3]. [1]Beth Israel Medical Center, New York, NY; [2]Mount Sinai Beth Israel, New York, NY; [3]Mount Sinai Beth Israel, Icahn School of Medicine at Mount Sinai, New York, NY. (Control ID #2706220)

STATEMENT OF PROBLEM OR QUESTION (ONE SENTENCE): Routine daily labs are often performed without clear clinical indication on stable hospitalized patients.

OBJECTIVES OF PROGRAM/INTERVENTION (NO MORE THAN THREE OBJECTIVES): 1. To reduce the ordering of unnecessary daily labs 2. To educate providers on appropriate ordering of labs on the hospitalized patient

DESCRIPTION OF PROGRAM/INTERVENTION, INCLUDING ORGANIZATIONAL CONTEXT (E.G. INPATIENT VS. OUTPATIENT, PRACTICE OR COMMUNITY CHARACTERISTICS): The Society of Hospital Medicine Choosing Wisely recommendations state providers should avoid performing repetitive CBC and chemistry testing in the face of clinical and lab stability. Our institution removed the “daily labs” order capability from our EMR in June 2014. An audit of lab use 1-year later showed no change in lab volume. Discussion with providers revealed labs were being ordered several days in a row, by creating individual orders timed to occur each day. A survey of our housestaff showed a majority were in favor of change reducing “daily labs” use. The HVC committee devised a multipronged approach to reduce lab overuse via provider education, peer champion advocacy, and team based feedback on lab ordering patterns. We reviewed CBC and chemistry labs performed from March- July 2016 on3 of our general medicine teaching floors to establish our baseline ordering practices. The percentage of basic labs ordered >24 h in advance of being done was found to be 20%. An educational presentation based on the *Choosing Wisely* campaign and our baseline lab ordering pattern was given to IM residents and hospitalists. This intervention was performed at the start of each 4-week block beginning in August. IM service lab ordering data was reported bi-weekly to team members, reviewing the percentage of labs ordered >24 hours in advance for their block period.

MEASURES OF SUCCESS (DISCUSS QUALITATIVE AND/OR QUANTITATIVE METRICS WHICH WILL BE USED TO EVALUATE PROGRAM/INTERVENTION): At the end of each 4 week block the percentage of labs ordered >24 hours in advance was measured. This percentage was compared to our baseline percentage. An absolute and relative change was calculated for each block rotation.

FINDINGS TO DATE (IT IS NOT SUFFICIENT TO STATE FINDINGS WILL BE DISCUSSED): In the first 4 week block of our intervention we saw no change. In the second block with an increased focus on peer championing and feedback to each team member we saw a slight decrease in unnecessary lab ordering to a total rate 18.4%. In the 3rd and 4th 4 week blocks of the intervention we respectively saw decreases to 12.5 and 13.8% in labs ordered >24 hours advance of being drawn. This was a relative decrease by 37.5 and 31% of labs ordered in the absence of current clinical data.

KEY LESSONS FOR DISSEMINATION (WHAT CAN OTHERS TAKE AWAY FOR IMPLEMENTATION TO THEIR PRACTICE OR COMMUNITY?): Our project shows that while the best solutions generally are system based, the culture around overuse and the ability of physicians to create solutions to problems may require a more manual process of monitoring clinical behaviors and providing feedback. We have seen significant changes in physician behavior during our intervention. While culture change may take a longer period and regression to the mean errors can be made based on early and limited data, we look to sustain this success and change the culture at our institution around daily lab use.

TO THE HOSPITAL AND BACK: AN INTERPROFESSIONAL TRANSITION OF CARE CLINIC TO REDUCE HOSPITAL READMISSION Ryan Nall. University of Florida, Gainseville, FL. (Control ID #2706341)

STATEMENT OF PROBLEM OR QUESTION (ONE SENTENCE): Can a primary care based interprofessional transition of care clinic reduce 30 day hospital readmission, ED utilization 30 days post-discharge, and improve timely primary care follow-up?

OBJECTIVES OF PROGRAM/INTERVENTION (NO MORE THAN THREE OBJECTIVES): 1. Reduce hospital readmission at 30 days 2. Reduce ED utilization 30 days post hospital discharge 3. Improve timely follow-up in the primary care clinic post discharge (defined as less than or equal to 14 days)

DESCRIPTION OF PROGRAM/INTERVENTION, INCLUDING ORGANIZATIONAL CONTEXT (E.G. INPATIENT VS. OUTPATIENT, PRACTICE OR COMMUNITY CHARACTERISTICS): We developed an outpatient interprofessional transition of care clinic in a university based academic internal medicine clinic. The clinic is staffed by an attending physician, medical resident, medical student, social worker, psychologist, pharmacist, pharmacy resident, pharmacy student, registered nurse and home health representative and operates one half-day a week. Our clinic is notified of hospital discharge for those patients seen at our affiliated hospital. Within 48 hours after discharge all patients followed by our clinic are contacted by phone by a registered nurse or pharmacist. This call focuses on ensuring appropriate follow up in clinic, medication reconciliation, and addressing any issues since discharge. The primary goal for follow up is with the patient’s primary care provider, when that isn’t possible in an appropriate time frame the patient is scheduled in the transition clinic. The first 30 min of the transition clinic schedule is protected for an interdisciplinary team huddle which focuses on follow up from the prior week and review of the patients that will be seen in clinic each day. The resident or attending will present the medical history followed by group discussion of medical, psychosocial and logistical issues which could contribute to readmission. During the huddle we determine which team members will see the patient and when. The note from the visit is forwarded to the primary care provider for review.

MEASURES OF SUCCESS (DISCUSS QUALITATIVE AND/OR QUANTITATIVE METRICS WHICH WILL BE USED TO EVALUATE PROGRAM/INTERVENTION): Through chart review we will measure the transition clinics impact on 30-day readmission rate, ED utilization 30 days post discharge, and the number days until follow-up in primary care when compared to standard follow-up in our clinic.

FINDINGS TO DATE (IT IS NOT SUFFICIENT TO STATE FINDINGS WILL BE DISCUSSED): Data from the project is currently under review. Preliminary data to date shows a statistically significant reduction in 30-day readmission rate in those patient’s seen in the transition clinic when compared to those with standard follow-up. Complete results will be available at the time of the conference.

KEY LESSONS FOR DISSEMINATION (WHAT CAN OTHERS TAKE AWAY FOR IMPLEMENTATION TO THEIR PRACTICE OR COMMUNITY?): Our project demonstrates that an interprofessional outpatient transition clinic can reduce 30 day hospital readmission. Our transition clinic leverages many already existing resources and focuses them in a collaborative fashion on patients during this high risk transition in care. Through interprofessional teamwork many of the psychosocial and logisitical issues that lead to readmission can be addressed.

TRANSFORMING A LARGE URBAN HEALTH SYSTEM TO PROVIDE COMPREHENSIVE TRANSGENDER CARE Jules Chyten-Brennan[1]; Zoe Ginsburg[2]; Mollie B. Nisen[2]; Madeleine Lipshie-Williams[2]; Elliot Goodenough[3]; Patel V. Viraj[1]; Robert Beil[1]. [1]Montefiore Medical

Center/Albert Einstein College of Medicine, New York, NY; [2]Albert Einstein College of Medicine, Bronx, NY; [3]Montefiore Medical Center, Bronx, NY. (Control ID #2703567)

STATEMENT OF PROBLEM OR QUESTION (ONE SENTENCE): Transgender (trans) people are highly marginalized, have pervasively poor health outcomes, and limited access to healthcare.

OBJECTIVES OF PROGRAM/INTERVENTION (NO MORE THAN THREE OBJECTIVES): We describe efforts to integrate trans healthcare throughout a large integrated health system with primary through quaternary care, with the goals of: 1. Increasing access to comprehensive healthcare for trans people in an urban, underserved area. 2. Increasing competence in caring for trans patients at every level of care.

DESCRIPTION OF PROGRAM/INTERVENTION, INCLUDING ORGANIZATIONAL CONTEXT (E.G. INPATIENT VS. OUTPATIENT, PRACTICE OR COMMUNITY CHARACTERISTICS): In 2014, five Montefiore providers formed the Trans Health Working Group with initial goals of attracting key department champions, and improving care for trans people within existing services. Senior administration expressed support, and provided the services of a learning specialist. The new goal of a comprehensive transgender health program emerged. Program focus areas include: best practices for medical, surgical and mental health care; institutional policies; information systems; development and implementation of educational curricula; and mechanisms for community accountability.

MEASURES OF SUCCESS (DISCUSS QUALITATIVE AND/OR QUANTITATIVE METRICS WHICH WILL BE USED TO EVALUATE PROGRAM/INTERVENTION): Process and outcome based metrics are being used in the following areas: −Representation in the Trans Health Working Group -Number of departments and employees trained -Utilization of internal referrals systems -Trans inclusion in institutional policies -Qualitative feedback from trans community members -Number of available trans-specific medical, surgical, and mental health services

FINDINGS TO DATE (IT IS NOT SUFFICIENT TO STATE FINDINGS WILL BE DISCUSSED): The Trans Health Working Group now has over 50 members from 14 departments, including residents and medical students. We have created an intensive trans competency curriculum for higher volume sites, and an online course is being implemented for all new employees. We have completed focus groups among current and potential trans patients as a step toward an ongoing community advisory board. Institutional non-discrimination, and bed assignment policies have been modified. Primary and hormonal care are available at one third of clinical sites. Numerous transgender surgeries are available, with more planned. Trans appropriate electronic health records will be piloted in 2017.

KEY LESSONS FOR DISSEMINATION (WHAT CAN OTHERS TAKE AWAY FOR IMPLEMENTATION TO THEIR PRACTICE OR COMMUNITY?): Heathcare for trans people has been historically limited to LGBT specific clinics or individual providers with few health systems taking steps to care for transgender communities. However, with newly expanded access to health insurance, decreasing exclusions for trans care, and growing social support, the movement of trans communities into mainstream health settings will likely continue. Examining the successes and challenges of integrating trans healthcare into our large, urban health system offers a model for other institutions.

TRIANGLE INTERPROFESSIONAL PARTNERS FOR PREVENTION (TIPP): STUDENTS COLLABORATING TO IMPROVE CARE FOR SUPERUTILIZER PATIENTS

Trudy Li[3]; Rob Broadhurst[3]; Meg Zomorodi[3]; Jamie A. Jarmul[2]; Anne Jones[3]; Sara Skavroneck[3]; Meredith Park[4]; Amy Weil[1]. [1]UNC Chapel Hill School of Medicine, Chapel Hill NC, NC; [2]UNC-Chapel Hill, Durham, NC; [3]University of North Carolina at Chapel Hill, Chapel Hill, NC; [4]University of North Carolina at Chapel Hill, Greensboro, NC. (Control ID #2704227)

STATEMENT OF PROBLEM OR QUESTION (ONE SENTENCE): Superutilizers (SUs) of the healthcare system experience frequent hospitalizations and emergency department (ED) use as well as fragmented care, leading to high costs and low quality care.

OBJECTIVES OF PROGRAM/INTERVENTION (NO MORE THAN THREE OBJECTIVES): 1. Develop sustainable processes to engage IP students in improving quality of care for SUs by identifying and addressing root causes of hospitalizations. 2. Decrease hospitalizations and ED visits for SUs, lowering total hospital charges. 3. Increase IP students' mutual understanding and respect for each other's skill set.

DESCRIPTION OF PROGRAM/INTERVENTION, INCLUDING ORGANIZATIONAL CONTEXT (E.G. INPATIENT VS. OUTPATIENT, PRACTICE OR COMMUNITY CHARACTERISTICS): Using an algorithm to identify SUs at our institution (>3 hospitalizations in 12 months), IP teams of students (social work, nursing, public health, and medicine) conducted home visits to identify root causes of hospitalizations and improve care coordination. Student teams of 2 or 3 worked closely with SUs to address risk factors for readmission. Each week, students met with IP faculty to discuss SU needs and progress.

MEASURES OF SUCCESS (DISCUSS QUALITATIVE AND/OR QUANTITATIVE METRICS WHICH WILL BE USED TO EVALUATE PROGRAM/INTERVENTION): 1. Pre/post-intervention hospitalization and rates and monthly charges were compared. 2. Pre/post surveys of readiness to work in IP teams were performed.

FINDINGS TO DATE (IT IS NOT SUFFICIENT TO STATE FINDINGS WILL BE DISCUSSED): Recruitment is ongoing, but preliminary results are available. Of the seven enrolled patients, pre-intervention average monthly inpatient charges ranged from $2,235 to $19,662 monthly. Pre-intervention average monthly outpatient charges ranged from $0 to $6,457. Post-intervention, average monthly inpatient cost decreased in five of seven patients. For these patients, average monthly inpatient charges ranged from $0 to $50,267 and outpatient charges ranged from $85 to $5,290. Three of seven patients have not had any additional hospitalizations post-intervention.

KEY LESSONS FOR DISSEMINATION (WHAT CAN OTHERS TAKE AWAY FOR IMPLEMENTATION TO THEIR PRACTICE OR COMMUNITY?): Identifying and connecting with patients 1. Custom-built Electronic Medical Record reports identified patients with high hospitalization and/or ED use. 2. Initially only currently admitted patients were enrolled. However, inclusion criteria were broadened to include patients identified from the outpatient setting. 3. Exclusion criteria were key for facilitating student participation (e.g. exclusion of patients with unsafe home conditions/ongoing psychological issues after communication with PCPs as well as patients who lived too far away from campus) IP Education: Logistical difficulties 1. Scheduling meetings and patient visits was difficult due to differences in curricular schedules among schools. 2. Differences in students' EMR access denoted an implicit hierarchy as in many cases only medical students had access. Students as significant contributors to

care To improve quality and efficiency of care for SUs, many of whose needs are contextual rather than purely medical, students are an untapped resource for academic medical centers. Working with SUs also increases students' commitment to care for vulnerable populations.

URINE TOXICOLOGY SCREENING IN PATIENTS WITH CHRONIC OPIATE USE: AN ATTEMPT TO CURB OPIATE ABUSE IN A PRIMARY CARE PRACTICE Kaitlin E. Crowley[1]; Amy L. Bilodeau[1]; Alev Atalay[2]; Rose M. Kakoza[1]. [1]Brigham and Women's Hospital, Boston, MA; [2]Brigham and Women's Hospital, Jamaica Plain, MA. (Control ID #2706768)

STATEMENT OF PROBLEM OR QUESTION (ONE SENTENCE): With the rapid increase in rates of opioid addiction and opioid-related deaths, it is important for primary care clinics to monitor opioid use utilizing urine toxicology screens and appropriately act on those results to improve the safety of opioid prescribing.

OBJECTIVES OF PROGRAM/INTERVENTION (NO MORE THAN THREE OBJECTIVES): To analyze urine toxicology results at our large academic primary care practice for discrepancies and assess rates of primary care provider follow up.

DESCRIPTION OF PROGRAM/INTERVENTION, INCLUDING ORGANIZATIONAL CONTEXT (E.G. INPATIENT VS. OUTPATIENT, PRACTICE OR COMMUNITY CHARACTERISTICS): Retrospective chart review at a large outpatient primary care practice within a tertiary academic medical center. Using a new chronic opioid registry, the practice implemented workflows to facilitate routine urine toxicology screening. Patients analyzed were those screened between 7/1/2016 to 10/30/2016.

MEASURES OF SUCCESS (DISCUSS QUALITATIVE AND/OR QUANTITATIVE METRICS WHICH WILL BE USED TO EVALUATE PROGRAM/INTERVENTION): Urine toxicology screen results were assessed for discrepancies based on the opioid medications patients were prescribed. Following assessment of these results, further chart review was conducted to determine actions taken by primary care providers based on those results, specifically: documentation of discrepancies and adjustments to medication regimens.

FINDINGS TO DATE (IT IS NOT SUFFICIENT TO STATE FINDINGS WILL BE DISCUSSED): A total of 62 urine toxicology screens were reviewed for this analysis. Of the 62 screens, 37 (59.7%) were found to be appropriate, 15 (24.1%) were inappropriate, and 10 (16.1%) had results with unclear interpretation. Of the 15 cases determined to be inappropriate, 6 (40.0%) were suspect for patient tampering, 7 (46.7%) were positive for drugs not prescribed to the patient, and 2 (13.3%) yielded negative results when they should have been positive. Documented acknowledgement ("review") of the urine toxicology screen by the ordering provider in the electronic medical record was noted for 49 (79%) of the screens. However, further documentation or discussion of the results with a note in the medical record chart was found for only 14 (23%) of the screens. Of the 25 potentially discrepant results, 20 (80.0%) were not addressed in the electronic health record and only 1 (4%) had a change to their medication regimen in response to the discrepancy found on urine toxicology screening.

KEY LESSONS FOR DISSEMINATION (WHAT CAN OTHERS TAKE AWAY FOR IMPLEMENTATION TO THEIR PRACTICE OR COMMUNITY?): With the current opioid epidemic primary care practices need to implement effective monitoring systems to proactively screen patients on chronic opioids to ensure safe prescribing. In our experience, despite implementation of an effective screening process, a minority of patients identified with discrepant urine toxicology results had any documented follow up or change to their opioid medication regimen. Potential factors for poor follow up include lack of provider education on interpretation of urine toxicology screens and provider time and skill in addressing discrepant results with patients. Provider education and training in these areas will be an important next step for the practice as we seek to improve our ability to not only screen our patients on chronic opioids but to also adequately treat those for whom a potential problem is identified.

USE OF A MACHINE-LEARNING ELECTRONIC EARLY WARNING SCORE SYSTEM REDUCES TIME TO THERAPY IN ACUTE DETERIORATION. Santiago Romero Brufau; Kim Gaines; Jordan Kautz; Matthew G. Johnson; Joel A. Hickman; Curt Storlie; Jill Nagel; Jeanne M. Huddleston. Mayo Clinic, Rochester, MN. (Control ID #2707223)

STATEMENT OF PROBLEM OR QUESTION (ONE SENTENCE): Delayed detection and intervention to acute deterioration of inpatients is prevalent and increases mortality risk.

OBJECTIVES OF PROGRAM/INTERVENTION (NO MORE THAN THREE OBJECTIVES): − Reduce time to response after acute deterioration of inpatients (sepsis, shock, acute respiratory insufficiency, etc.). - Reduce time to therapy (antibiotics, other medication, oxygen, fluids, etc.) in instances of acute deterioration of inpatients.

DESCRIPTION OF PROGRAM/INTERVENTION, INCLUDING ORGANIZATIONAL CONTEXT (E.G. INPATIENT VS. OUTPATIENT, PRACTICE OR COMMUNITY CHARACTERISTICS): Setting: two tertiary hospitals in southeastern Minnesota. Intervention: a system that automatically pulls data from the electronic medical record, calculates risk score for acute deterioration, and send an automatic alert to the physician, resident or NPPA on call. After receiving an automatic alert, the recipient is expected to go to the bedside to assess the potentially deteriorating patient. The system rechecks two and three hours after that point, sending additional automatic alerts if the patient's risk score is still unusually high. At the three-hour mark, the attending physician is also automatically alerted. The risk score was developed using machine learning methods, and a nursing assessment using their pattern recognition. After the initial alert, the system guides a time-limited escalation of expertise to the bedside.

MEASURES OF SUCCESS (DISCUSS QUALITATIVE AND/OR QUANTITATIVE METRICS WHICH WILL BE USED TO EVALUATE PROGRAM/INTERVENTION): − Main measures of success are: Reduction in the time to any order (laboratory tests, image tests, medication, etc.), measuring time to physician action or assessment. Reduction in the time to a therapy order (medication, oxygen, fluids).

FINDINGS TO DATE (IT IS NOT SUFFICIENT TO STATE FINDINGS WILL BE DISCUSSED): − The intervention reduced the time to any order from 63 min to 41 min (a 40% reduction), and the time to a therapy order from 106 min to 56 min (a 47% reduction). - As counterbalance measures, rates of ICU transfer and mortality were not significantly changed.

KEY LESSONS FOR DISSEMINATION (WHAT CAN OTHERS TAKE AWAY FOR IMPLEMENTATION TO THEIR PRACTICE OR

COMMUNITY?): − Automatic alerts using accurate early warning scores can help with detection of instances of acute deterioration of inpatients. - A time-limited escalation of expertise can help with timely intervention and prioritization of acute events in the hospital, and can reduce time to intervention.

USING AN OUTPATIENT POST-MORTEM SURVEY TO IDENTIFY QUALITY IMPROVEMENT STRATEGIES Jessica Kaltman; Anne M. Walling; Neil Wenger. UCLA, Los Angeles, CA. (Control ID #2706554)

STATEMENT OF PROBLEM OR QUESTION (ONE SENTENCE): Significant deficiencies exist in quality of end-of-life care received by cancer patients in symptom management, communication, emotional and spiritual support, advance care planning and coordination of care.

OBJECTIVES OF PROGRAM/INTERVENTION (NO MORE THAN THREE OBJECTIVES): A post-mortem survey is an emerging strategy to inform end of life quality improvement efforts. We describe the process of developing and implementing a post-mortem survey in the outpatient setting at an academic health system, and the barriers and facilitators of implementation in this setting.

DESCRIPTION OF PROGRAM/INTERVENTION, INCLUDING ORGANIZATIONAL CONTEXT (E.G. INPATIENT VS. OUTPATIENT, PRACTICE OR COMMUNITY CHARACTERISTICS): We developed a 24-item post-mortem survey consisting of 14 items from the National Quality Forum-endorsed Bereaved Family Survey, seven validated items from the After Death Bereaved Family Interview, Family Evaluation of Hospice Care, and the National Health and Aging Trends Study, and three created items to reflect the ambulatory care setting. Eligible decedents were > 18 years of age and spoke English, had > 2 visits to the oncologist in the last 6 months of life, received chemotherapy or radiation therapy in the last 2 years of life, and had chart documentation of metastatic disease. Death was verified in the chart or by obituary found via internet search. Caregivers surveyed were the appointed healthcare surrogate in an advance directive or the first listed contact. The list of eligible decedents was reviewed by the Offices of Risk Management and Patient Relations to identify individuals who may experience harm by receiving a survey. An introduction letter and survey were sent 12 weeks after the decedent's death to the identified caregiver. Respondents could opt out by telephone or mail. A post-card reminder was sent two weeks after initial mailing if no response received and telephone follow up after four weeks.

MEASURES OF SUCCESS (DISCUSS QUALITATIVE AND/OR QUANTITATIVE METRICS WHICH WILL BE USED TO EVALUATE PROGRAM/INTERVENTION): We tracked response rate, percentage of post-card reminders sent and follow-up phone calls required to evaluate mechanisms to improve response rate. Challenges faced during implementation were tracked. We evaluated time required for administrative departments to review decedent list and time required to prepare survey mailings.

FINDINGS TO DATE (IT IS NOT SUFFICIENT TO STATE FINDINGS WILL BE DISCUSSED): Of 111 eligible decedents, 94 surveys were mailed to caregivers and 30 surveys (32%) were completed. Of the total eligible decedents, 21% had an advance directive. Death could not be verified for 12% of decedents, addresses for 15% of caregivers could not be found and only 5% of caregivers called to find their address returned the call. 4% of caregivers opted out. Of the surveys returned, over 80% of respondents answered all items on the survey and 83% responded to the open-ended item. Responses to the open-ended question addressed caregiver training, quality of hospice care, and communication amongst physicians and between the physician and patient. Follow-up phone calls to non-responders did not improve response rate.

KEY LESSONS FOR DISSEMINATION (WHAT CAN OTHERS TAKE AWAY FOR IMPLEMENTATION TO THEIR PRACTICE OR COMMUNITY?): A post-mortem survey can be implemented in the outpatient setting to assess quality of end of life care, but additional efforts are needed to enhance response rate.

VIDEO VISITS IN PRIMARY CARE: A NATIONWIDE PILOT STUDY AT THE VETERANS HEALTH ADMINISTRATION Leonie Heyworth[2]; Kathryn Corrigan[3]; Gordon Schectman[1]. [1]Veterans Affairs Central Office, Milwaukee, WI; [2]VA San Diego, San Diego, CA; [3]VA Central Office, Washington, WA. (Control ID #2710674)

STATEMENT OF PROBLEM OR QUESTION (ONE SENTENCE): Does the addition of video visits among Veterans receiving traditional primary care improve clinical outcomes, satisfaction and reduce cost of care?

OBJECTIVES OF PROGRAM/INTERVENTION (NO MORE THAN THREE OBJECTIVES): To examine the impact of video visits, in addition to traditional primary care, on outpatient quality measures, healthcare utilization, cost and satisfaction among Veterans at 4 sites.

DESCRIPTION OF PROGRAM/INTERVENTION, INCLUDING ORGANIZATIONAL CONTEXT (E.G. INPATIENT VS. OUTPATIENT, PRACTICE OR COMMUNITY CHARACTERISTICS): The Veterans Health Administration's (VHA) Patient-Aligned Care Team (PACT), is a team-based approach to delivering patient-centered primary care with the aim of enhanced access and coordinated care management. Core PACT team members include the primary care provider, the registered nurse care manager, the clinical assistant and the clerical assistant. To date, PACT has successfully increased reliance on non-traditional means of accessing care, such as use of secure messaging and teleprimary care into a rural clinic setting. The "Video PACT" offers video encounters through clinical video technology (CVT) and web-based real time communication via mobile platform. Four sites were invite to participate. Each site identified two physicians as Video PACT providers. Veterans are selected for participation in the pilot by their PACT based on several criteria, including willingness to participate, ability to use a computer or tablet, and likelihood to benefit from the pilot (e.g. difficulty accessing care, frequent ER/hospital use, multiple comorbidities). Veterans are trained to use the tablet or computer software for the video visit and issued a tablet if needed.

MEASURES OF SUCCESS (DISCUSS QUALITATIVE AND/OR QUANTITATIVE METRICS WHICH WILL BE USED TO EVALUATE PROGRAM/INTERVENTION): The first phase of this pilot assessed Veteran and provider experience of video visits by survey as well as clinical quality metrics, such as blood pressure; utilization of health services; and process measures like diabetes screening and receipt of vaccinations, obtained via chart review. The direct cost of video encounters was compared to face-to-face encounters.

FINDINGS TO DATE (IT IS NOT SUFFICIENT TO STATE FINDINGS WILL BE DISCUSSED): In the first phase of this pilot, 15 video encounters took place across 2 medical centers. Survey response rate was 71%. The mean age of participants was 65. The majority were white males. 71% had a

diagnosis of PTSD or depression; 71% had hypertension; 57% had heart disease; 36% took opiates for chronic pain. A majority of patients were up to date with recommended vaccinations and screening for key chronic conditions. Overall, patients were very satisfied with their experience with video visits, with 90% opting for a repeat video visit, 90% willing to recommend video visits and 78% believing that it improved their access to care. The average cost for a video visit was $390, compared to $457 for a face-to-face visit.

KEY LESSONS FOR DISSEMINATION (**WHAT CAN OTHERS TAKE AWAY FOR IMPLEMENTATION TO THEIR PRACTICE OR COMMUNITY**?): Implementing video encounters presents a novel opportunity to enhance patient-centered care for organizations interested in leveraging technology to expand access in primary care. The findings to date from this pilot study suggest high levels of patient satisfaction for video visits and a lower cost of video visits compared to face-to-face visits.