

# Low-Value Care and Clinician Engagement in a Large Medicare Shared Savings Program ACO: a Survey of Frontline Clinicians



Adam A. Markovitz, BS<sup>1,2</sup>, Michael D. Rozier, PhD<sup>3</sup>, Andrew M. Ryan, PhD, MA<sup>2,4</sup>, Susan D. Goold, MD, MHSA, MA<sup>2,4,5</sup>, John Z. Ayanian, MD, MPP<sup>2,4,5,6</sup>, Edward C. Norton, PhD<sup>2,4,7,8</sup>, Timothy A. Peterson, MD, MBA<sup>9,10</sup>, and John M. Hollingsworth, MD, MS<sup>4,11</sup>

<sup>1</sup>University of Michigan Medical School, Ann Arbor, MI, USA; <sup>2</sup>Department of Health Management and Policy, University of Michigan School of Public Health, Ann Arbor, MI, USA; <sup>3</sup>Department of Health Management and Policy, Saint Louis University, St. Louis, MO, USA; <sup>4</sup>Institute for Healthcare Policy and Innovation, University of Michigan, Ann Arbor, MI, USA; <sup>5</sup>Division of General Medicine, Department of Internal Medicine, University of Michigan Medical School, Ann Arbor, MI, USA; <sup>6</sup>Gerald R. Ford School of Public Policy, University of Michigan, Ann Arbor, MI, USA; <sup>7</sup>Department of Economics, University of Michigan, Ann Arbor, MI, USA; <sup>8</sup>National Bureau of Economic Research, Cambridge, MA, USA; <sup>9</sup>Physician Organization of Michigan Accountable Care Organization, Ann Arbor, MI, USA; <sup>10</sup>Department of Emergency Medicine, University of Michigan Medical School, Ann Arbor, MI, USA; <sup>11</sup>Dow Division of Health Services Research, Department of Urology, University of Michigan Medical School, Ann Arbor, MI, USA.

**BACKGROUND:** Although the Medicare Shared Savings Program (MSSP) created new incentives for organizations to improve healthcare value, Accountable Care Organizations (ACOs) have achieved only modest reductions in the use of low-value care.

**OBJECTIVE:** To assess ACO engagement of clinicians and whether engagement was associated with clinicians' reported difficulty implementing recommendations against low-value care.

**DESIGN:** Cross-sectional survey of ACO clinicians in 2018.

**PARTICIPANTS:** 1289 clinicians in the Physician Organization of Michigan ACO, including generalist physicians (18%), internal medicine specialists (16%), surgeons (10%), other physician specialists (27%), and advanced practice providers (29%). Response rate was 34%.

**MAIN MEASURES:** Primary exposures included clinicians' participation in ACO decision-making, awareness of ACO incentives, perceived influence on practice, and perceived quality improvement. Our primary outcome was clinicians' reported difficulty implementing recommendations against low-value care.

**RESULTS:** Few clinicians participated in the decision to join the ACO (3%). Few clinicians were aware of ACO incentives, including knowing the ACO was accountable for both spending and quality (23%), successfully lowered spending (9%), or faced upside risk only (3%). Few agreed (moderately or strongly) the ACO changed compensation (20%), practice (19%), or feedback (15%) or that it improved

care coordination (17%) or inappropriate care (13%). Clinicians reported they had difficulty following recommendations against low-value care 18% of the time; clinicians reported patients had difficulty accepting recommendations 36% of the time. Increased ACO awareness (1 standard deviation [SD]) was associated with decreased difficulty (−2.3 percentage points) implementing recommendations (95% confidence interval [CI] −3.8, −0.7), as was perceived quality improvement (1 SD increase, −2.1 percentage points, 95% CI, −3.4, −0.8). Participation in ACO decision-making and perceived influence on practice were not associated with recommendation implementation.

**CONCLUSIONS:** Clinicians participating in a large Medicare ACO were broadly unaware of and unengaged with ACO objectives and activities. Whether low clinician engagement limits ACO efforts to reduce low-value care warrants further longitudinal study.

**KEY WORDS:** healthcare reform; health policy; health services research; stakeholder engagement; survey research.

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## INTRODUCTION

Encouraging clinicians to decrease inappropriate or low-value care is a central goal of payment reform. In Medicare Accountable Care Organizations (ACOs), groups of providers assume responsibility for the spending and quality outcomes of a defined patient population. Despite the possibility of shared savings, emerging data suggest that Medicare ACOs have had a modest effect on the use of low-value services.<sup>1, 2</sup> Explanations for ACOs' limited success reducing utilization are multiple, including the strength of collective incentives and lack of specialist physician participation. One unexplored explanation is organizations' failure to engage frontline

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clinicians in the practice changes necessary to become a successful ACO. Since the inception of the ACO model, policymakers have commented on ACOs' need to ensure clinician awareness ACO goals,<sup>3, 4</sup> provide useful performance feedback,<sup>5, 6</sup> and create payment structures that align clinicians' and organizations' incentives and norms.<sup>5, 7–11</sup>

The perspective of individual clinicians has been largely absent from these policy conversations. Research has primarily relied on data gathered from surveys and interviews of ACO executives and physician leaders.<sup>12–16</sup> A recent national survey of primary care physicians (PCPs) and internal medicine specialists during the early ACO experience (2014–2015) found that Medicare ACOs had limited success engaging physicians in decision-making, awareness of ACO incentives, or changing care delivery.<sup>17</sup> However, there are no data on ACO engagement of other physician specialists (who make an outsized contribution to total spending), physician assistants, or advanced practice nurses.<sup>18</sup> Further, how engagement of these clinicians relates to their perceived ability to provide high-value care is not known.

In this context, we designed and administered a survey to individual clinicians in the Physician Organization of Michigan (POM) ACO. The POM ACO is the largest Medicare Shared Savings Program (MSSP) ACO in Michigan and among the ten largest in the county.<sup>19</sup> We asked POM ACO clinicians about their level of organizational engagement by the ACO, as well as their reported ability to implement recommendations against low-value care. We hypothesized that clinicians would report limited ACO engagement but that ACO engagement would be positively associated with clinicians' reported ability to implement recommendations against low-value care.

## METHODS

**Study Design.** We conducted a cross-sectional survey between February and July 2018. Our survey assessed four dimensions of ACO engagement of clinicians: (1) involvement in the decision to join ACO; (2) awareness of ACO incentives and initiatives; (3) perceived influence of the ACO on practice; and (4) perceived effect of the ACO on quality improvement. Our survey also assessed clinicians' reported ability to follow recommendations against low-value care.

**Setting.** The POM ACO comprises 5128 clinicians from ten clinician organizations: Michigan Medicine; Integrated Health Associates; Huron Valley Physicians Association; MidMichigan Health; St Mary's of Michigan; Answer Health; Wexford/Crawford PHO; Oakland Southfield Physician; United Physicians; and Olympia Medical (Table 1) and approximately 80,000 attributed beneficiaries. The POM ACO communicates with ACO clinicians via a semi-annual letter sent to all participating clinicians that summarizes cost and quality performance and goals for the upcoming performance year. The POM ACO also assists the 10 participating physician organizations in

**Table 1 Characteristics of Respondents in the Accountable Care Organization**

Sample characteristics (N = 1289)	
Clinician type and specialty <sup>†</sup>	
Generalist physician	18%
Physician, internal medicine specialty	16%
Surgeon	10%
Physician, other specialty	27%
Advanced practice nurse	18%
Physician assistant	11%
Gender	
Female	51%
Age	
Under 35	13%
35–44	34%
45–54	22%
55–64	22%
65 or older	8%
Primary professional activity	
Direct patient care	85%
Teaching	3%
Research	7%
Administration/management	3%
Other	2%
Practice arrangement	
Employed by a medical school	59%
Employed by a hospital	25%
Employed by a managed care organization	1%
Solo practice	2%
Single specialty group practice	4%
Multi-specialty group practice	7%
Other	2%
Clinician organization	
Michigan Medicine	78%
Integrated Health Associates	9%
Huron Valley Physicians Association	4%
MidMichigan Health	3%
St Mary's of Michigan	1%
Answer Health	1%
Wexford/Crawford PHO	2%
Oakland Southfield Physician	2%
United Physicians	0%
Olympia Medical	0%

<sup>†</sup>Physicians included MDs, DOs, and international degrees such as MBBS. Generalist physician included the following specialties: family medicine, general internal medicine, geriatrics, palliative medicine, hospitalist, primary care, general practice, and preventive medicine. Advanced practice nurses included certified nurse midwives, certified nurse anesthetists, and nurse practitioners

communicating with individual clinicians and implementing practice changes to meet performance goals.

Our sample frame included all clinicians listed as participants in the POM ACO administrative roster, including physicians, advanced practice providers (physician assistants, nurse practitioners, certified nurse anesthetists, certified nurse midwives), and other clinicians (clinical social workers, psychologists, audiologists, podiatrists, optometrists, chiropractors, and physical therapists).

**Survey Development.** We selected survey domains from existing literature and four semi-structured interviews with ACO leaders. We then created or adapted survey items that mapped to those domains. We refined our survey based on two cognitive interviews and pretests with a purposive sample of 10 clinicians representing diverse specialties (e.g., urologists,

Table 2 ACO Engagement Measures and Scales

ACO engagement	Responses
<b>Participation in decision to join ACO</b>	
I was involved in the decision-making process	3%
I was not involved but was aware of the decision-making process	28%
I was not involved or aware of the decision-making process	69%
<b>ACO Awareness (1 = correct, 0 = incorrect or do not know)</b>	
Held accountable for both spending and quality	23%
Lowered spending in most recent performance year	9%
Emphasized conducting Welcome to Medicare and Annual Wellness visits	17%
Did not receive a financial bonus from Medicare in most recent performance year	3%
Does not face downside financial risk, i.e., cannot lose money	3%
Held accountable for only Medicare patients	6%
Six-item ACO Awareness scale (possible range: 0 to 6; Cronbach $\alpha$ score, 0.72)	Total = 0.6
<b>ACO Practice Change (1 = strongly disagree, 2 = moderately disagree, 3 = moderately agree, 4 = strongly agree)</b>	
Mean (SD)	
Joining an ACO has changed how I practice medicine	1.7 (0.8)
Joining an ACO has improved the quality of care my patients receive	1.9 (0.8)
Joining an ACO has made me more aware of controlling treatment costs	1.9 (0.8)
Joining an ACO has changed how I am compensated	1.7 (0.8)
I receive useful feedback on ACO cost and quality performance	1.6 (0.8)
ACO financial bonuses are large enough to influence my behavior	1.4 (0.6)
Six-item ACO Practice Change scale (possible range: 6 to 24; Cronbach $\alpha$ score, 0.88)	Total = 10.3
<b>ACO Quality Improvement (-1 = negative impact, 0 = no impact or do not know, 1 = positive impact)</b>	
Mean (SD)	
Coordinate care across care settings	0.1 (0.4)
Decrease unnecessary hospitalizations	0.1 (0.3)
Help patients manage care between visits	0.1 (0.4)
Engage in shared decision-making	0.1 (0.4)
Reduce inappropriate or harmful care	0.1 (0.4)
Improve health of low-income patients	0.1 (0.3)
Improve health of medically complex patients	0.1 (0.4)
Seven-item ACO Quality Improvement scale (possible range: -7 to 7; Cronbach $\alpha$ score, 0.88)	Total = 0.9

Scale development is described in the main text. Survey weights were applied to generalize to the Physician Organization of Michigan ACO. Multiple imputation was used for missing data. ACO, accountable care organization; SD, standard deviation

NPs, PCPs, interventional cardiologists). The survey domains, items, and adapted item sources<sup>14, 17, 20–25</sup> are described in the Supplemental Methods and Table A1 in the Online Appendix.

**Exposures.** Our main exposures encompassed four dimensions of ACO engagement (Table 2, Tables A2–A4 in the Online Appendix). First, we asked respondents to indicate their level of involvement in the decision to participate in the ACO (involved in the decision-making process, not involved but aware, not involved or aware). Second, we assessed respondent awareness of ACO incentives and initiatives, such as whether ACO was held accountable for both spending and quality. Third, we assessed respondent perception of the ACO's influence on their practice, for example, whether joining an ACO had changed how the respondent practices medicine. Fourth, we assessed respondent perception of the ACO's effect on quality improvement, for example, whether joining an ACO had had a positive impact on care coordination.

**Outcome.** Our main outcome was the respondent's reported difficulty implementing recommendations against low-value care. We presented respondents with four recommendations drawn from the *Choosing Wisely*® campaign.<sup>26</sup> Because *Choosing Wisely*® specifically targets unnecessary or harmful treatment and testing, implementation of these recommendations would likely help to achieve MSSP ACO objectives—reducing healthcare spending while maintaining minimum quality standards. All respondents were presented with the following recommendation, “Don't recommend cancer screening in adults with life expectancy of less than 10 years.” The other three recommendations were based on the respondent's specialty (Table 3, Table A5 in the Online Appendix).<sup>26</sup> We asked two questions for each recommendation: “Do you find this recommendation easy or difficult to follow most of the time?” (easy to follow, difficult to follow, does not apply to my practice) and “Do most patients find this recommendation easy or difficult to accept?” (easy to accept, difficult to accept, does not apply to my practice).

**Survey Administration.** We administered the pilot ( $n = 100$ ) and full ( $n = 5028$ ) surveys in February and May 2018, respectively, including responses from each survey in the cohort of eligible respondents. We mailed survey invitations to clinician practice addresses containing the survey description, a token gift (a \$2 bill and a cork coaster with the State of Michigan outline), a unique access code, and a link to the online survey (hosted by Qualtrics).<sup>27</sup> We sent up to three follow-up reminders to non-respondents at 1, 2, and 5 weeks either by email if possible (74% of roster) or by postcard (26%).

We used the American Association for Public Research RR1 response rate for the overall survey.<sup>28</sup> After survey administration, we restricted this analytic sample to clinicians most frequently represented in the *Choosing Wisely*® campaign (physicians, physician assistants, advanced practice nurses) and excluding clinical social workers, psychologists, audiologists, optometrists, podiatrists, chiropractors, physical therapists, and other/unknown (PhD, MBA, MHSA). We excluded clinicians who responded “does not apply to my practice” for all recommendations against low-value care. We also excluded pediatricians, as Medicare ACOs focus on adult beneficiaries (see Figure A1 and Supplemental Methods of Online Appendix for CONSORT diagram and response rate calculation).

**Analysis.** We estimated linear probability fixed effects models to assess the association between ACO engagement and the probability of a clinician reporting difficulty implementing a given recommendation against low-value care. Our analysis was conducted at the clinician-recommendation-response level.

We estimated three models for each dimension of ACO engagement (e.g., ACO Awareness). First, we estimated an unadjusted model that did not account for clinician or organizational characteristics but did account for the fact that different clinical specialties were shown different recommendations.

Table 3 Examples of Recommendations Against Low-Value Care Presented to Respondents

Specialty	Examples of recommendations against low-value care <sup>†</sup>	Difficult for clinician to follow <sup>‡</sup>	Difficult for patients to accept <sup>‡</sup>	Total responses
All specialties	Do not recommend cancer screening in adults with life expectancy of less than 10 years.	36%	58%	1643
Anesthesiology	Do not administer packed red blood cells (PRBCs) in a young healthy patient without ongoing blood loss and hemoglobin of $\geq 6$ g/dL unless symptomatic or hemodynamically unstable.	10%	18%	200
Cardiology	Do not image for suspected pulmonary embolism (PE) without moderate or high pre-test probability of PE.	32%	36%	119
Critical care	Do not order diagnostic tests at regular intervals (such as every day), but rather in response to specific clinical questions.	45%	27%	22
Dermatology	Do not routinely use topical antibiotics on a surgical wound.	0%	10%	40
Emergency medicine	Do not image for suspected pulmonary embolism (PE) without moderate or high pre-test probability of PE.	23%	21%	112
Endocrinology	Do not prescribe testosterone therapy unless there is biochemical evidence of testosterone deficiency.	0%	65%	34
Gastroenterology	For a patient with functional abdominal pain syndrome (as per ROME IV criteria), computed tomography (CT) scans should not be repeated unless there is a major change in clinical findings or symptoms.	6%	50%	32
Hematology	Do not treat with an anticoagulant for more than 3 months in a patient with a first venous thromboembolism (VTE) occurring in the setting of a major transient risk factor.	35%	30%	40
Neurology	Do not do imaging for uncomplicated headache.	11%	49%	71
Obstetrics and gynecology	Do not administer packed red blood cells (PRBCs) in a young healthy patient without ongoing blood loss and hemoglobin of $\geq 6$ g/dL unless symptomatic or hemodynamically unstable.	10%	10%	140
Oncology	Do not use combination chemotherapy (multiple drugs) instead of chemotherapy with one drug when treating an individual for metastatic breast cancer unless the patient needs a rapid response to relieve tumor-related symptoms.	11%	15%	69
Pathology	Do not test vitamin K levels unless the patient has an abnormal international normalized ratio (INR) and does not respond to vitamin K therapy.	0%	25%	14
Physical medicine and rehabilitation	Do not do imaging for low back pain within the first 6 weeks, unless red flags are present.	12%	50%	52
Primary care	Do not routinely prescribe antibiotics for acute mild-to-moderate sinusitis unless symptoms last for 7 or more days, or symptoms worsen after initial clinical improvement.	9%	70%	571
Psychiatry	Do not prescribe antipsychotic medications to patients for any indication without appropriate initial evaluation and appropriate ongoing monitoring.	8%	21%	76
Pulmonology	Do not image for suspected pulmonary embolism (PE) without moderate or high pre-test probability of PE.	52%	50%	61
Rheumatology	Do not prescribe biologics for rheumatoid arthritis before a trial of methotrexate (or other conventional non-biologic DMARDs).	7%	29%	28
Surgery	Do not administer packed red blood cells (PRBCs) in a young healthy patient without ongoing blood loss and hemoglobin of $\geq 6$ g/dL unless symptomatic or hemodynamically unstable.	9%	17%	337
Urology	Do not routinely perform PSA-based screening for prostate cancer.	68%	73%	44
Total		18%	36%	8470

<sup>†</sup>Respondents were shown four recommendations against low-value care. Recommendations were drawn from the Choosing Wisely® campaign. For each recommendation, respondents were asked two questions: “Do you find this recommendation easy or difficult to follow most of the time?” (easy to follow, difficult to follow, does not apply to my practice) and “Do most patients find this recommendation easy or difficult to accept?” (easy to accept, difficult to accept, does not apply to my practice)

<sup>‡</sup>Descriptive statistics and subsequent regression analyses excluded responses where clinicians indicated the recommendation “does not apply to my practice” ( $n = 1517$ ; 15.2% of total responses)

All respondents were given the following recommendation: “Do not recommend cancer screening in adults with life expectancy of less than 10 year,” as well as three specialty-specific recommendations. One specialty (physical medicine and rehabilitation) was not shown the cancer screening recommendation due to survey administration error

Survey weights were applied to generalize to the Physician Organization of Michigan ACO

This model included fixed effects for each unique recommendation displayed in the survey across all respondents ( $n = 63$ ), each specialty-specific block of recommendations ( $n = 27$ ), and whether the question pertained to the clinician following the recommendation or the patient accepting the recommendation. By evaluating only within-specialty variation, this model captured potential confounding introduced by variation across

specialties in ACO engagement and *Choosing Wisely*® recommendation, namely strength of evidence<sup>29</sup> and clinical and financial relevance.<sup>30–32</sup> Second, we estimated a model that also adjusted for unobserved differences across the ten clinician organizations in the ACO by adding fixed effects for the clinician’s organization. Third, we estimated a model that further adjusted for clinician gender, age, clinician type/

specialty (generalist physician, physician with internal medicine specialty, physician with other specialty, surgeon, physician assistant, advanced practice nurse), and professional activity (direct patient care, teaching, research, administration/management, other). In this final model, we compared differences in ACO engagement and recommendation implementation among clinicians in the same specialty, of the same clinician type, and practicing within the same organization.

To reduce potential bias from survey nonresponse and generalize estimates to the target population (the POM ACO), we applied post-stratification survey weights incorporating characteristics associated with nonresponse (in this case, clinician organization). We used iterative proportional fitting, or raking, to calibrate survey weights.<sup>33</sup> To reduce bias from missing data among respondents, we used multiple imputation for all models and implemented a recently developed quadratic-rule procedure to select the number of imputations needed to achieve estimate and standard error replicability.<sup>34</sup> We also tested for variation across clinician type, clinician organization, and whether the question pertained to clinician vs. patient difficulty following the recommendation (details in the [Online Appendix](#)).

This study was deemed exempt from review by the University of Michigan Health Sciences and Behavioral Sciences Institutional Review Board.

## RESULTS

**Respondent Characteristics.** Of the 4819 eligible respondents, 1620 completed the survey (response rate of 34%; [Figure A1](#) in the [Online Appendix](#)). Response rates differed across the clinician organizations but were otherwise comparable across clinician specialty and sex ([Table A2](#) in the [Online Appendix](#)). The analytic sample for the present analysis included 1289 respondents ([Table 1](#)). Respondents represented a wide range of clinician types and specialties, including generalist physicians (18%), internal medicine specialists (16%), surgeons (10%), other physician specialists (27%), advanced practice nurses (18%), and physician assistants (11%) ([Table 1](#)). Direct patient care was the most common professional activity (85%). Most respondents were either employed by a medical school (59%) or employed by a hospital (25%), and a majority served on the clinical staff of Michigan Medicine (78%).

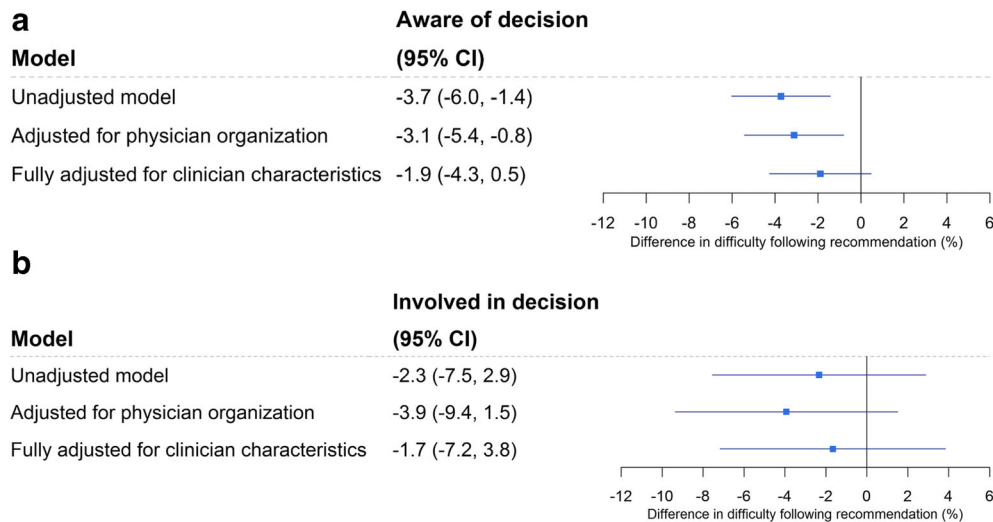
**ACO Engagement.** ACO engagement of clinicians was low ([Table 2](#)). Most respondents were not aware or involved of the decision to join the ACO (69%); 28% were aware but not involved, and 3% were involved in the decision-making process. Respondents reported limited awareness of ACO incentives and initiatives ([Table 2](#), [Table A3](#) in

the [Online Appendix](#)). For example, 23% knew that the ACO was accountable for both spending and quality, 9% knew the ACO had successfully lowered spending, 6% knew the ACO was accountable for only Medicare patients, and 3% knew the ACO only faced upside risk (i.e., could not lose money). Across the six ACO Awareness scale items, the mean respondent knew 0.6 items and the median respondent knew 0 items.

Respondents perceived the ACO to have had minimal influence on their practice ([Table 3](#), [Table A4](#) in the [Online Appendix](#)). Few respondents agreed (moderately or strongly) that joining an ACO has “made me more aware of controlling treatment costs” (26%), “changed how I am compensated” (20%), or “changed how I practice medicine” (18%). Only 15% felt they received “useful feedback on ACO cost and quality performance.” Respondents perceived that the ACO had a minimally positive effect on quality improvement ([Table 3](#), [Table A5](#) in the [Online Appendix](#)). Few respondents, for example, felt the ACO had a positive effect on their ability to coordinate care (16%), reduce inappropriate care (13%), or reduce unnecessary hospitalizations (12%).

**Implementation of Recommendations Against Low-Value Care.** Respondents provided 8470 responses for 27 specialty-specific blocks containing 63 unique recommendations against low-value care ([Table 3](#), [Table A6](#), [Figure A2](#) in the [Online Appendix](#)). Recommendations were “difficult to follow” for clinicians 18% of the time (standard deviation, 38%) and “difficult to accept” for patients 36% of the time (standard deviation, 48%). The finding that respondents typically considered recommendations more difficult for patients to accept than for clinicians to follow was consistent across clinician type and organization ([Figure A2](#)). For instance, generalist physicians reported recommendations were “difficult to follow” 13% of the time and “difficult to accept” for patients 40% of the time ([Figure A2](#)). At the same time, perceived difficulty varied widely across specific recommendations against low-value care ([Table A6](#)).

**Association between ACO Engagement and Recommendations Against Low-Value Care.** Some dimensions of ACO engagement were associated with implementation of recommendations against low-value care ([Figs. 1, 2, and 3](#)). In models fully adjusted for organization and clinician characteristics, awareness of the decision to join the ACO was not significantly associated with reported difficulty implementing recommendations against low-value care ([Fig. 1](#); -1.9 percentage points, 95% confidence interval [CI] -4.3 to 0.5). Increased awareness of ACO incentives and initiatives was associated with greater reported ability to implement recommendations against low-value care ([Fig. 2](#)). After adjusting for organization and clinician characteristics, a 1 standard deviation (SD) increase in ACO awareness was



**Figure 1 Association between clinician involvement in decision to join ACO and recommendations against low-value care. Models compare differences between clinicians who were not involved but were aware of decision to join ACO (panel a) or were involved in decision-making process (panel b) versus the reference group, clinicians who were not involved in or aware of the decision to join the ACO. Models are described in the main text. Survey weights were applied to generalize to the Physician Organization of Michigan ACO. Multiple imputation was used for missing data. ACO, accountable care organization; CI, confidence interval.**

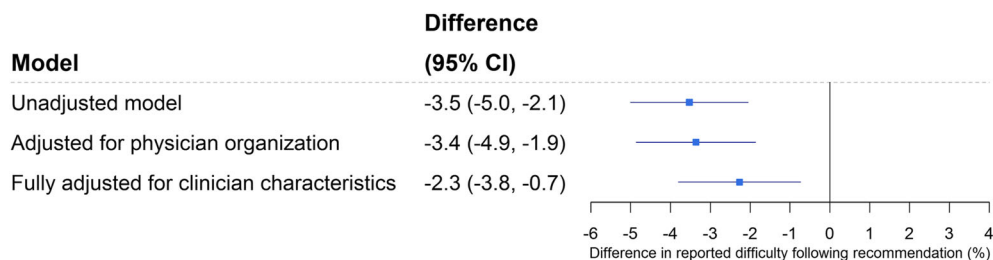
associated with 2.3 percentage point less reported difficulty implementing recommendations against low-value care (95% CI – 3.8, – 0.7). This represents a 9% improvement in reported ability to implement recommendations (2.3 percentage point divided by base likelihood of 27.1%). Perceived influence of ACO on practice was not associated with respondents’ reported difficulty implementing recommendations against low-value care (Fig. 3, panel a; 1.0 percentage point, 95% CI – 0.4 to 2.4). Conversely, a 1 SD increase in perceived quality improvement was associated with 2.1 percentage point less reported difficulty implementing recommendations (Fig. 3, panel b; 95% CI – 3.4 to – 0.8).

This pattern of results was robust across clinician organization (Michigan Medicine vs. non-Michigan Medicine) and clinician type (Table A7). Although patients were perceived to be more resistant than clinicians to recommendations against low-value care (Figure A2), both clinicians’ reported ability to follow recommendations and patients’ perceived ability to accept recommendations were associated with ACO awareness and perceived quality improvement (Table A8).

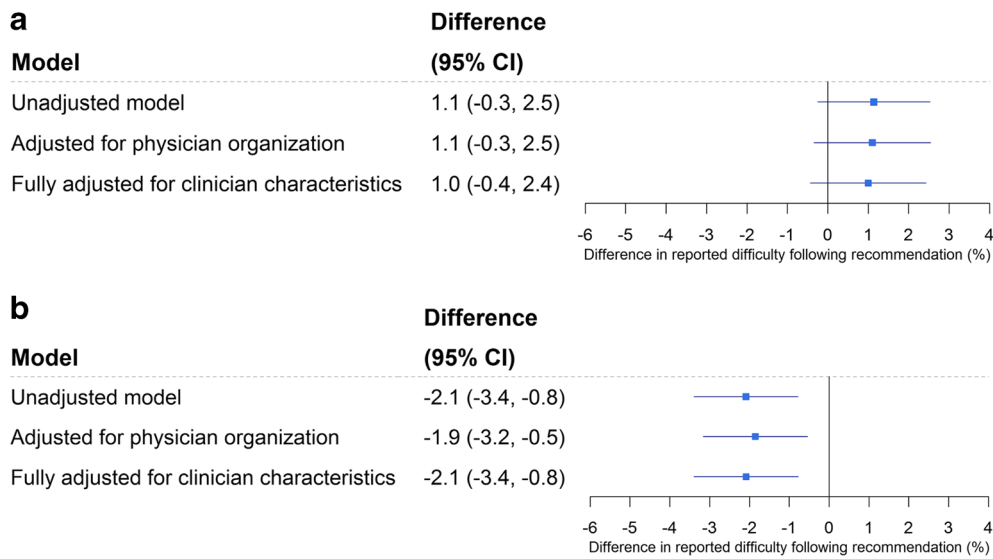
**DISCUSSION**

In a survey of one of the largest MSSP ACOs in the country, we found limited engagement of frontline clinicians charged with implementing ACO value-based initiatives. Few clinicians participated in the decision to join the ACO, fewer yet were aware of new organizational financial incentives created by the MSSP, and most reported that the ACO had limited effect on practice or quality improvement. At the same time, some aspects of clinician engagement—in particular, improved awareness of ACO incentives and ability to improve care quality—were associated with improvement in clinicians’ reported ability to implement recommendations against low-value care. Taken together, our results suggest that limited engagement of ACO clinicians may hamper ACO efforts to reduce low-value care.

There are few data on the degree to which ACOs have engaged individual clinicians in efforts to improve healthcare value. A national survey of PCPs (~ 78%) and internal medicine specialists (~ 18%) during the early MSSP experience (2014–2015) found MSSP ACOs had a modest perceived effect on practice change (e.g., half agreed ACOs had influenced care).<sup>17</sup> Our study extends these results, finding little



**Figure 2 A. Association between clinician ACO awareness and recommendations against low-value care. Estimated change is for a 1 standard deviation increase in the ACO Awareness scale. The scale and models are described in the main text and in Table 2. Survey weights were applied to generalize to the Physician Organization of Michigan ACO. Multiple imputation was used for missing data. ACO, accountable care organization; CI, confidence interval.**



**Figure 3 Association between perceived ACO impact on practice and quality and recommendations against low-value care. Estimated change is for a 1 standard deviation increase in either the ACO Practice Change scale (panel a) or the ACO Quality Improvement scale (panel b). Scales and models are described in the main text and in Table 2. Survey weights were applied to generalize to the Physician Organization of Michigan ACO. Multiple imputation was used for missing data. ACO, accountable care organization; CI, confidence interval.**

ACO engagement among physician specialists (e.g., anesthesiologists, dermatologists), surgeons, physician assistants, and advanced practices nurses. Our finding that physicians perceive *Choosing Wisely*® recommendations to be more difficult for patients to accept than for clinicians to follow is consistent with those from a national survey of Medicare and VA PCPs,<sup>20</sup> and suggests that ACO efforts to lower spending may benefit from promoting patient education and clinician-patient conversations regarding high-value healthcare decisions.

Our study is the first to test whether ACO clinician engagement is associated with reported ability to practice high-value care. Why were ACO awareness and perceived ACO quality improvement associated with an improved reported ability to implement recommendations against low-value care, while perceived practice change in the ACO was not? One possibility is that direct knowledge of ACO rules and incentives is particularly important for high-value care. Another possibility is that some third unobserved characteristic (e.g., the desire to provide high-value care) may drive ACO awareness and perceived changes in quality but not practice change. Moving forward, quasi-experimental studies of longitudinal data are needed to determine whether ACO engagement plays a causal role in reducing low-value care.

Our study must be interpreted in the context of several limitations. First, data from a single, large Medicare ACO in Michigan may not generalize to other ACOs. Second, 78% of respondents were from one health system (Michigan Medicine), although survey weights were used to generalize results to the ACO and findings were robust across organizations in sensitivity analyses. Third, the moderate response rate (34%) raises the possibility of response bias, e.g., clinicians with strong opinions about ACOs might have disproportionately responded to the survey. However, this seems unlikely given

respondents’ limited ACO awareness and relatively tepid perceptions of change in the ACO. Instead, our response rate likely reflects the increasing difficulty of conducting clinician surveys, particularly without use of large financial incentives.<sup>35</sup> Fourth, our study measured reported ability to implement recommendations and not actual clinician behavior. Finally, causation cannot be inferred from this cross-sectional design. Although our analytic approach controlled for fixed differences across organizations and clinician type and specialty, it is possible that clinicians with greater desire to provide high-value care choose to engage ACOs in a more effective manner and report greater ability to implement recommendations against low-value care (i.e., confounding).

These limitations notwithstanding, our study has important policy implications. The accountable care model encompasses a wide diversity of ACOs, with studies suggesting greater savings among physician-led ACOs than among hospital-led ACOs.<sup>36</sup> Our finding of low clinician engagement in the POM ACO (which includes multiple hospitals) is consistent with the possibility that hospital-led ACOs’ inability to lower spending may be partially due to greater difficulty engaging frontline clinicians. At the same time, the diversity of ACOs belies an essential commonality—all ACOs rely on frontline clinicians to improve quality and eliminate low-value care.<sup>17</sup> If there is indeed a causal relationship between ACO awareness and high-value care, ACOs’ limited engagement of individual clinicians observed in this and previous studies may help explain findings that ACOs have had little-to-no effect on spending and quality.<sup>1, 17, 36-41</sup>

**CONCLUSIONS**

Systematic improvements by ACOs to healthcare value will likely require consistent engagement of frontline clinicians.

Our study underscores clinician uncertainty regarding ACO participation, incentives, and initiatives. Future research should test interventions ACOs can use to engage individual clinicians more effectively. Whether low clinician engagement plays a causal role in limiting ACO success warrants longitudinal evaluation of observed clinician behavior.

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**Corresponding Author:** John M. Hollingsworth, MD, MS; Dow Division of Health Services Research, Department of Urology University of Michigan Medical School, Ann Arbor, MI, USA (e-mail: kinks@med.umich.edu).

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#### Compliance with Ethical Standards:

**Conflict of Interest:** Dr. Rozier, Dr. Gool, Dr. Ayanian, Dr. Norton, and Dr. Peterson have no disclosures to make. The remaining author disclosures are listed in the funding statement.

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