

LETTERS—CONCISE RESEARCH REPORTS

Hospitalists' Role in Improving Prescriptions of Nicotine Replacement Therapy Among Tobacco Users During Hospitalization and at Discharge

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INTRODUCTION

Hospitals that have a tobacco-free environment require patients to abstain from smoking.¹ Tobacco users generally experience withdrawal within 2–3 h of their last cigarette, with cravings becoming most severe within 2–3 days.² Thus, identifying, preventing, and treating withdrawal symptoms is important to promote recovery during hospitalization.³ While a tobacco treatment service (TTS) improves inpatient counseling, hospitalists have an important role in treating tobacco withdrawal symptoms and smoking cessation counseling. Our objective was to compare the effect of tobacco cessation counseling by provider type on the inpatient rate of nicotine replacement therapy (NRT) orders and patient use.

METHODS

We included all adult daily tobacco users discharged from the hospitalist service in a 500-bed academic medical center for 12 consecutive months. Tobacco use was documented in the electronic health record (EHR) by the admission nurse. Those identified by the formal nursing assessment triggered a TTS evaluation. TTS also received direct consults from the primary treatment team. Daily tobacco users willing to speak with TTS counselors received smoking cessation counseling. The primary team placed NRT orders based on TTS recommendations.⁴ We excluded intermittent smokers, patients who died during the hospitalization ($n=96$), and those who received TTS counseling during a previous admission in the preceding calendar year ($n=147$). For patients with multiple admissions during the study period, we used the first admission with documented counseling. We abstracted demographic, tobacco treatment, and hospitalization data from the EHR. To account for hospitalist counseling, we used corresponding CPT®

codes. We defined TTS counseling as a brief intervention of three or more minutes. We included any form of NRT and excluded varenicline and bupropion. To determine the effect of provider type on NRT orders and administration, we used logistic regression model with Bonferroni's correction.

RESULTS

Between the 12 months, there were 1136 daily tobacco users discharged by the hospitalist service (Table 1). A total of 49.9% of tobacco users received tobacco cessation counseling. Counseling was done by the TTS alone in 38% ($n=432$), the hospitalists alone in 6% ($n=72$); 6% ($n=63$) received counseling by both groups. Provider type was significantly related to admission category, tobacco use disorder documentation, severity of illness score, discharge disposition, and smoking-related discharge diagnosis (Table 1). The highest NRT order and administration rate was in the group counseled by both hospitalist and TTS (81%), followed by hospitalist (66.7%), and TTS alone (60%). Adjusted odds of having an NRT order were highest for patients advised by hospitalist and TTS (OR 7.22, 95% CI = 2.94–17.72), followed by hospitalist (OR 3.28, 95% CI = 1.6–6.75), and TTS (OR 2.6, 95% CI = 1.81–3.73) (Table 2). Not all patients prescribed NRT accepted it, with a similar pattern of adjusted odds (both: OR 6.68, 95% CI = 2.90–15.08, hospitalist only: OR 2.62, 95% CI = 1.31–5.21, TTS only: OR 2.09, 95% CI = 1.45–3.0).

DISCUSSION

Hospitalists in our study tended to counsel more hospitalized daily tobacco users with lower acuity of illness and those more often discharged home compared to higher acuity patients and with more comorbidities. This likely represents a challenge in prioritization of workflow. For the hospitalist, tobacco cessation counseling becomes less urgent among other daily patient management tasks. Our study was conducted at a single institution with an existing TTS, which may limit its generalizability. Counseling was based on claims data which may have underestimated the effect of hospitalist counseling. Furthermore,

Table 1 Demographic and Hospitalization Characteristics by Counselor Type

	No counseling	TTS only	Hospitalist only	Both	<i>p</i>
<i>N</i> (%)	569 (50.1)	432 (38.0)	72 (6.3)	63 (5.6)	
Gender					
Female	51.4	36.3	6.9	5.4	0.661
Male	49.1	39.4	5.9	5.7	
Age, mean (SD)	50.7 (15.2)	50.6 (14.1)	48.5 (15.1)	47.7 (14.6)	0.310
Race					
White	49.7	38.7	6.3	5.4	0.341
African American	48.7	37.4	5.9	8.1	
Other/unspecified	54.9	35.3	7.5	2.3	
Health insurance					0.432
Commercial	48.4	40.5	5.6	5.6	
Public	50.8	37.4	6.7	5.1	
None	46.6	37.9	3.5	12.1	
LOS, median (IQR)	4 (6)	4 (4)	4 (3.5)	4 (3)	0.222
Admission type					
Emergency	47.7	39.8	6.9	5.6	<0.001
Urgent	66.3	29.6	2.0	2.0	
Elective	51.5	27.3	12.1	9.1	
Trauma	41.1	42.3	8.0	8.6	
SOI					
Minor	42.6	42.6	7.1	7.8	<0.001
Major/extreme	57.2	33.7	5.7	3.4	
Discharge disposition					
Home	45.4	41.6	6.9	6.1	<0.001
Health facility	61.6	29.3	4.6	4.6	
Other	63.6	27.3	9.1	0	
Smoking-related discharge diagnosis ^a (ICD9/10)	54.9	36.2	5.0	3.8	0.001
Documented tobacco use disorder (ICD9/10)	46.5	39.6	7.6	6.3	<0.001

N = 1136 inpatients discharged by hospitalist service reported daily use of tobacco with no TTS counseling in 2014. Health Facility = skilled nursing facility or other hospital. Public insurance = Medicare, Medicaid, Veterans Affairs, Tri-care

TTS Tobacco Treatment Service, HMO Health Maintenance Organization, ICD International Classification Disease, LOS length of stay, IQR interquartile range, SOI Severity of Illness Score

^aSmoking-related discharge diagnoses defined as International Classification of Diseases (ICD)-9 codes (140-151 157 161-162 180 188-189 204-208 390-398 410-417 420-438 440-448 480-492 496 765 769 798.0) and ICD-10 codes (C00-C14 C15 C16 C25 C32 C33-C34 C53 C64-C65 C67 C92.0 I20-I25 I00-I09 I26-I28 I29-I51 I60-I69 I70-I78 J10-J18 J40-J44) for cancers, cardiovascular, respiratory, and perinatal conditions according to the 2014 Surgeon General Report.⁵ Tobacco Use Disorder documented as ICD-9 305.1 or ICD-10 F17.2

Table 2 Odds Ratios for NRT Ordered and NRT Administered to Hospitalized Patients

	NRT ordered		NRT administered	
	Baseline OR (95% CI)	Adjusted OR (95% CI)	Baseline OR (95% CI)	Adjusted OR (95% CI)
Provider [#] (ref: no counselor))	<i>p</i> < 0.001	<i>p</i> < 0.001	<i>p</i> < 0.001	<i>p</i> < 0.001
TTS	2.64 (2.04, 3.41)	2.60 (1.81, 3.73)	2.06 (1.59, 2.67)	2.09 (1.45, 3.00)
Hospitalist	3.52 (2.1, 5.92)	3.28 (1.60, 6.75)	2.72 (1.66, 4.48)	2.62 (1.31, 5.21)
Both	7.49 (3.9, 14.37)	7.22 (2.94, 17.72)	6.4 (3.53, 11.59)	6.68 (2.90, 15.08)

N = 1136 inpatients discharged by hospitalist service. Models adjusted for significant between group differences (severity of illness, discharge disposition, smoking related diagnosis, tobacco use disorder; admit type). Multivariable model confidence intervals adjusted for multiple comparisons using Bonferroni's correction

NRT nicotine replacement therapy, OR odds ratio, CI confidence interval, TTS Tobacco Treatment Service

[#]*P* value is from the likelihood ratio test comparing each model against a reduced model that excludes the provider variable

we did not evaluate sustained smoking cessation or use of NRT after hospital discharge, nor did we measure the frequency of warm handoff between the hospitalists and primary care physicians. In summary, when hospitalists counsel daily tobacco users on cessation, they are more likely to receive an order for and use NRT during the hospitalization. While TTS provides a valuable service, hospitalists play an important role among patients at risk for tobacco withdrawal during admission.

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Compliance with Ethical Standards:

Conflict of Interest: The authors declare that they do not have a conflict of interest.

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