CLINICAL COMMENTARY

Good Ideas Go Up in Smoke: Inpatient Nicotine Replacement Therapy Is Rarely Continued in Discharged Patients

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Abstract

Introduction: Counseling and medication(s) more than double the likelihood of successful smoking cessation. In November 2012, our hospital instituted a tobacco-free campus policy. We investigated the percent of smokers receiving nicotine replacement therapy (NRT) during hospitalization and immediately post-discharge after institution of the tobacco-free campus policy and describe physicians' perceived barriers to ordering NRT for inpatients and prescribing post-discharge NRT.

Methods: This was an observational/descriptive study of adult patients admitted between November 15, 2012 and January 31, 2013 at a publicly-supported, academic teaching hospital. We examined the percent of inpatients who were current smokers; percent of inpatient smokers receiving NRT; percent of recently-discharged smokers who filled an outpatient NRT prescription at our hospital; and physician-identified barriers to inpatient smoking interventions.

Results: Twenty-two percent of inpatients (323) during 1,485 admissions were current smokers. Forty-one percent (133) received NRT; outpatient NRT was dispensed to only 1 discharged patient (0.3% of smokers; 0.75% of those prescribed NRT). Physicians identified forgetting, inadequate time, and lack of confidence conducting a smoking cessation conversation as the most common barriers to inpatient smoking cessation interventions.

Conclusions: Only a minority of hospitalized smokers were ordered NRT, and only one filled a post-discharge NRT prescription at our hospital. Initiating inpatient NRT is associated with long-term smoking cessation. Failure to order inpatient or prescribe post-discharge NRT is a missed opportunity. Inpatient physicians can play an important role promoting smoking cessation, aided by educational programs, documentation templates with reminders, and inpatient NRT order sets and simplified discharge prescribing.

Introduction

Tobacco remains the leading preventable cause of mortality in the United States, contributing to 20% of deaths—nearly 500,000 annually.[1] When made aware of the dangers, many smokers desire to quit.[2] Pharmacologically-aided quit attempts are more successful than those without pharmacologic aid. With counseling and medication, smokers can more than double the chance of success.[3,4,5]

With more than 42 million smokers in the United States,[1] tobacco control continues to be an important public health initiative. Successfully addressing it requires a comprehensive approach, including patient education and counseling, routine follow-up, public health campaigns, prevention policies, and access to and funding for smoking cessation pharmacotherapy.[3]

Nicotine replacement therapy (NRT) is a smoking cessation aid associated with increased quit rates.[3,4] It is available in various formulations: gum, transdermal patches, inhalers, nasal sprays, lozenges, and sublingual tablets. NRT is free to hospitalized or outpatient Californians registered with the state's smoking cessation program (1-800-NO-BUTTS), which reimburses pharmacies for dispensed NRT.

With every hospital now smoke-free, hospitalization is a prime opportunity to target individuals to initiate smoking cessation for the nearly 4 million smokers hospitalized annually.[6] Hospitalized patients may be more open to quitting, and find it easier, where smoking is prohibited, or during a tobacco-related (e.g., cardio-pulmonary) admission. The United States Public Health Service recommends addressing tobacco cessation in every healthcare setting.[7]

In November 2012, our hospital designated the campus "smoke-free." There was a need to address smoking cessation and assist inpatient smokers with both initiation of cessation and persistence beyond hospitalization. NRT was available in both patch and gum forms. The hospital pharmacy restricted use to patients enrolled in the 1-800-NO-BUTTS smoking cessation program was available to inpatients.

The "smoke-free" campus campaign roll-out at our hospital was widely-announced but not accompanied by aggressive primary care or inpatient physician education about smoking cessation aids, such as NRT.

Several months after initiating the "smoke-free" campus campaign, we sought to determine:

1. Smoking prevalence amongst inpatients;
2. The percent of inpatient smokers for whom NRT was ordered;
3. The percent of inpatients dispensed discharge NRT by our hospital's pharmacy; and
4. Physicians' perceived barriers to prescribing NRT to inpatient and discharged tobacco users.

Methods

Our hospital is a 377-licensed bed, publicly-supported, academic teaching hospital offering inpatient and outpatient adult and pediatric generalist and specialty care. It is staffed to 200 beds and serves a medically-indigent, largely-immigrant, non-English-speaking minority population. Professional translation services are easily-accessible and commonly-utilized. All admissions are managed by house staff with faculty supervision. Eighty percent of admissions are to the Department of Medicine, which sponsors a 72-house staff residency training program.

During the study timeframe, there was no electronic health record beyond templated, narrative documentation. None of the services (e.g., Internal Medicine, OB/Gyn) documentation templates contained a specific prompt to inquire about smoking. The generic, paper-based inpatient admission order set did not have a prompt regarding smoking cessation or built-in orders for NRT. Likewise, there was no discharge planning process. The only reference to smoking cessation in the discharge orders/instructions template was a statement, "Smoking causes many health problems and can shorten your life. We advise you not to smoke. For free help with quitting, call 1-800-NO-BUTTS."

This was an observational/descriptive study. The population included all adult inpatients admitted to our hospital between November 15, 2012 (when the hospital began its anti-smoking/tobacco-free campaign) until January 31, 2013. We determined the number of inpatients who affirmatively responded to a universal nursing admission questionnaire about current tobacco use. As part of their initial admission intake, inpatient nurses ask patients, "Do you smoke?" A positive response triggers the follow-up question, "When was the last time you smoked?" This phrasing was chosen because it is general enough to capture even casual smokers. A pharmacy database query revealed the number of inpatients receiving NRT while hospitalized and the number of outpatient NRT prescriptions filled. The query returned nicotine form, dose, strength, route, and frequency ordered or prescribed but could not distinguish between patients initiated on NRT during the admission or continued on NRT from pre-admission. Medical record numbers were used to determine whether patients receiving prescriptions were among those hospitalized during study dates.

To assess self-perceived frequency of engaging inpatient smokers in smoking cessation discussions and explore reasons for low inpatient NRT ordering, an email invitation to complete an electronic survey was sent to all Internal Medicine house staff. We surveyed only Internal Medicine house staff (rather than all house staff) for two reasons: 1) 80% of admissions are to Internal Medicine with the vast minority of the remainder split among pediatrics (average census 2 patients), OB/Gyn, and Surgery, and 2) Internal Medicine is the only service at our hospital that runs its own Residency program. Internal Medicine house staff rotate at the hospital the majority of their training, and we have easy access to them via email and at conferences. In contrast, other services are staffed by Residencies based at a local, tertiary-care teaching hospital whose house staff rotate only intermittently at our hospital. The survey was anonymous and multiple-choice. Respondents could select more than one option in response to the question "Reason for not addressing smoking cessation," and could choose "Other" and fill in a free-text response. A reminder email was sent after two weeks; house staff had a total of 30 days to respond to the survey.

Statistical analyses were performed using Microsoft Excel (2010, Redmond, WA). Two-sided statistical significance was set a priori at $p < 0.05$.

This study was approved by the institutional Investigational Review Board (Education and Research Institute).

Results

During the study period, 1,485 patients were admitted; 323 (22%) were current tobacco users. Table 1 shows their demographic characteristics. Of current smokers, 41.1% (133) received NRT during their hospitalization (15.1% nicotine patch and 26.0% nicotine gum). Outpatient NRT was dispensed to only 1 discharged patient (0.3% of admitted smokers; 0.75% of those prescribed NRT while hospitalized). Smokers were much more likely to receive NRT (133/323 = 41%) as inpatients than be prescribed NRT upon discharge (1/323 = 0%); $p < 0.0001$. Figure 1.

Survey responses were returned by 38/72 = 53% of house staff. Of respondents, 42% stated they address smoking cessation "rarely" to "some of the time" with inpatients they knew were smokers, while 58% address it "most of the time" to "always." "Do not remember" was the primary reason (71%) for not addressing smoking cessation; 47% reported they lack time; 15% stated they do not know how to effectively have a smoking cessation conversation with patients. A few commented that smoking cessation counseling is not an inpatient priority and should be done on an outpatient basis.

Discussion

Our results show only a minority of our hospital's inpatient smokers are ordered NRT, and essentially none fill an outpatient NRT prescription at our hospital upon discharge. House staff stated "not remembering" as the most common reason for not ordering inpatient NRT.

Previous studies demonstrated low rates of inpatient NRT ordering. Rigotti, et al[8] found only 5.2% of inpatient smokers at a large, urban teaching hospital with a non-smoking policy received NRT; NRT was primarily used to treat nicotine withdrawal, rather than assist with smoking cessation. Emmons, et al[9] found only 7.1% of inpatient smokers at two private, academic teaching hospitals were ordered NRT.

Our study's results are unfortunate, given NRT's efficacy in improving smoking cessation rates, its cost-effectiveness, and the missed opportunity of a hospital admission to stimulate smoking cessation. Others have shown initiating inpatient NRT and providing post-discharge follow-up improves long-term smoking cessation. A 2012 Cochrane review of 50 trials of inpatient-initiated smoking cessation interventions found significantly-increased smoking cessation rates post-discharge.[10] A pooled analysis of six of these trials found a statistically-significant 54% increase in smoking cessation rate when NRT was added to counseling vs. counseling alone.

Inpatient physicians can play an important role promoting smoking cessation through:[8]

1. Discussing smoking cessation with patients, including assessing and motivating desire to quit;
2. Ordering inpatient NRT;
3. Prescribing discharge NRT;
4. Arranging post-discharge counseling via proactive referral to a quitline or other counseling service; and
5. Providing or arranging smoking cessation post-discharge follow-up, either through a post-discharge clinic, or by notifying the patient's primary care provider of the patient's desire and effort to quit smoking.

This study has several limitations. As a single-site study, among a medically-indigent, largely-immigrant, non-English-speaking minority population, results may not be generalizable. Our study design was unable to distinguish inpatients who were not offered NRT on admission from those who refused it. Likewise, we could not distinguish between patients not prescribed NRT upon discharge vs. those who did not fill the prescription vs. those who filled it at another pharmacy. It is unlikely patients filled them outside our facility. The vast majority of our patient population fills prescriptions at pharmacies within our health system (67%, personal communication, Health System Pharmacy Affairs), as they are largely uninsured (whose prescriptions are honored at our pharmacy) or have a Medicaid managed care contract allowing them to fill prescriptions at our pharmacy. Alternatively**,** those who were prescribed NRT may not fill it because of the barrier of obtaining certification by the state's 1-800-NO-BUTTS smoking cessation program. Our pharmacy will not dispense NRT without the patient having a certificate of registration with 1-800-NO-BUTTS. Additionally, we could not distinguish between those initiated on NRT upon admission vs. those using NRT pre-admission who were continued on it. However, while nearly half of smokers attempt to quit each year, the point prevalence of a smoker being on NRT at any given time is low,[7] suggesting it is unlikely patients were on NRT immediately prior to admission. The 53% house staff survey response rate suggests bias; those who did not respond may be among those who feel smoking cessation is best addressed in the outpatient setting.

Reducing population smoking rates is best achieved through both inpatient and outpatient initiatives.[7] This study's results suggest several approaches hospitals can implement to potentially boost NRT ordering for inpatient smokers and prescribing to post-discharge patients:

1. Provide physician education programs to: a) raise awareness of a hospital's tobacco use prevalence, b) increase familiarity with NRT options and efficacy, and c) model smoking cessation conversations.
2. Create inpatient and outpatient documentation templates that include reminders to address tobacco use and desire to quit.
3. Add NRT to inpatient order sets and discharge prescribing programs to prompt and facilitate ordering and prescribing.
4. Aid patients in contacting quitlines (eg, 1-800-NO-BUTTS), such as by having the physician or nurse call the quitline from the bedside and pass the phone to the patient.

Figures and Table

Figure 1.

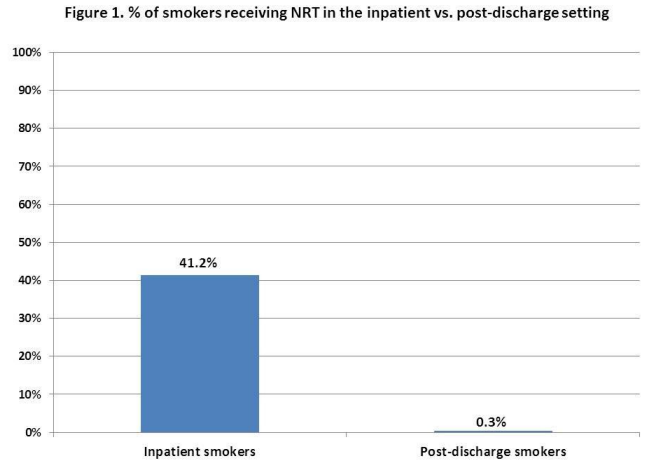

Figure 2.

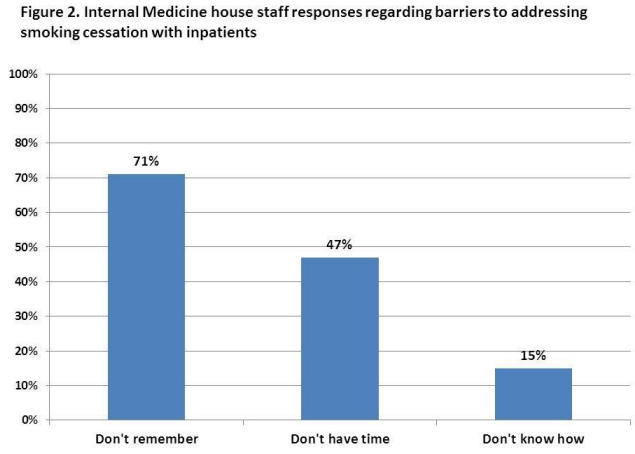

Table 1: Percentage of Smokers in Various Hospitalized Demographic Groups

Characteristic			**P-Value**
Race	White	Non-White	
	24	18	.007
Age	18-64	≥ 65	
	23	15	.003
Sex	Male	Female	
	31	12	< 0.001
Language	English	Non-English	
	32	13	< 0.001
Insurance Status	Insured	Uninsured	
	13	13	0.77

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