Improving Smoking Cessation Education and Referral in the Ambulatory Surgical Setting

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Introduction

Smoking is the leading cause of preventable death in the United States, causing more than 480,000 deaths per year through heart disease, stroke, and cancer. An estimated 36.5 million adults in the U.S. currently smoke and over 16 million Americans have at least one disease caused by smoking. Over $170 billion is spent annually in direct medical costs. The U.S. could save approximately $7,000 per adult smoker if every person who smokes was assisted with quitting (Centers for Disease Control and Prevention, 2018).

Among current U.S. adult cigarette smokers, nearly 7 out of every 10 reported that they wanted to quit completely (Centers for Disease Control and Prevention, 2016). More than 50% of smokers have contact with a healthcare provider annually, providing important opportunities for counseling and treatment. However, when smokers visit a healthcare provider's office, many leave without ever being asked, advised, assessed, or assisted with smoking cessation. Cessation interventions should be offered to all tobacco users during each healthcare visit, regardless of the reason for the visit (Greenwood et al., 2012).

Recommendations from the U.S. Public Health Service's Clinical Practice Guidelines recognize that using multiple systems to identify smokers, advise, and assess readiness to quit and refer them to an established quit line increases delivery of cessation support for patients (Greenwood et al., 2012). The Public Health Service recommends that clinicians identify and document tobacco use status and treat every tobacco user seen in a healthcare setting using the 5A's model: Ask, Advise, Assess, Assist, and Arrange (Cato, Hyun, & Bakken, 2014).

Treatment Model

The 5 A's model of behavior change counseling has been frequently applied to smoking cessation and research has shown that trained healthcare practitioners can produce 1 year quit rates averaging 12-15% using this approach (Payne et al., 2012). For patients willing to quit smoking, the 5A's method is the recommended strategy to identify, document, and treat each tobacco user (U.S. Department of Health and Human Services Agency for Healthcare Research and Quality, 2017). *Ask* the patient at every visit if there is desire to quit smoking. *Advise* all smokers to quit offering brief, nonjudgmental advice. *Assess* readiness to quit. *Assist* with treatment options and referrals to appropriate smoking cessation programs and support groups. Finally, *arrange* follow up visits with patients, refer when appropriate, and offer praise when the patient is successful (Chaney & Sheriff, 2012).

The electronic medical record (EMR) is an effective way to identify the smoking status of patients and facilitate continuity of care. Healthcare organizations now receive incentives for demonstrating meaningful use of the EMR by reporting smoking status (U.S. Department of Health and Human Services Agency for Healthcare Research and Quality, 2017). This has helped to increase assessment of smoking status but records show the advising, assisting, and arranging are undocumented as these items can easily be bypassed in the EMR if these fields are not mandatory.

Research has shown that tobacco cessation interventions are the most cost-effective health promotion interventions to reduce morbidity and mortality. However, these interventions are underutilized (Lenz, 2013; Sarna, Wewers, Brown, Lillington, & Brecht, 2001). The most frequently cited barriers that healthcare providers identify are lack of time, knowledge, and skills along with unfamiliarity with counseling resources. Many

providers feel that cessation counseling is not their role and often not within the scope of the visit. Lengthier office visits tend to reflect the occurrence of tobacco treatment whereas single visits limit the nature of the evaluation that can be conducted. In addition, healthcare provider's perception of the patient's willingness to quit is frequently cited as a barrier to assisting and arranging cessation interventions (Cato et al., 2014; Lenz, 2013; Payne et al., 2012; Sarna et al., 2001; Weaver et al., 2012).

Nurses are in a unique position to facilitate smoking cessation for their patients. Nurses spend more time with patients focusing on health promotion and disease prevention and can reach smokers in a variety of settings when compared to other healthcare professionals (Chaney & Sheriff, 2012). Unfortunately, the literature has identified a gap in nurses' knowledge regarding how to appropriately screen and counsel smokers and suggests that nurses are not properly educated to assist with the treatment of this addiction (Barr, Houston-Miller, Hasan, & Makinson, 2013; Wewers, Kidd, Armbruster, & Sarna, 2004).

Purpose

The literature and current evidence-based guidelines reinforce that patients should be screened for smoking behavior at every visit and even brief interventions can increase overall patient tobacco abstinence (Lenz, 2013). Patients who are counseled by nurses, including short counseling interventions, are almost twice as likely to attempt quitting than patients not counseled by a nurse (Chaney & Sheriff, 2012). While the role of smoking cessation in both the primary and outpatient care settings has been discussed frequently in the literature, the role of smoking cessation counseling in the ambulatory surgical setting is lacking. Smoking is a well-known risk factor for post-operative complications and

morbidity. Smoking cessation prior to surgery is likely to reduce these risks and the pre-operative area provides an excellent opportunity to counsel patients (Haskins, Amdur, & Vaziri, 2014; Thomsen, Villebro, & Møller, 2014). This study aims to add to the literature by improving provider assessment and documentation in the peri-operative period. The purpose of this study is to examine whether implementation of an evidence-based protocol using the 5A's model facilitates provider assessment and documentation of smoking cessation education, intervention, and referral in current smokers in the ambulatory surgical setting.

Methods

Sample and Setting

This study used a convenience sample of all registered nurses and nurse practitioners working in pre-surgical testing (PST) and ambulatory surgery at St. Catherine of Siena Medical Center, a 296-bed community hospital in Smithtown, NY. A quality-improvement project was conducted to determine if provider assessment and documentation of smoking cessation, education, intervention, and referral in current smokers in the ambulatory surgical setting increases after implementation of the 5A's model.

Design

Most patients presenting for surgery are required to have pre-surgical testing at the hospital. Patients are seen by a registered nurse or nurse practitioner during pre-surgical testing and the visit duration is usually 30 minutes. On the day of surgery patients are admitted through ambulatory surgery and are seen by a nurse practitioner before proceeding to the operating room. Standard of care involves reviewing the nursing history,

which includes a smoking assessment at each encounter. Some minor procedures do not require pre-surgical testing and these patients have their history obtained via phone assessment by a registered nurse. These charts were included in this study since counseling and referral information could be provided over the phone. Inpatients needing surgery were not included in this study as they do not present to PST. Approval was obtained by the institutional review board of St. Catherine of Siena Medical Center.

A three-month retrospective chart review was conducted on all current smokers, aged 18 years or older who presented to PST and ambulatory surgery. Data was collected from the electronic medical record and was password protected. Demographic data including patient's age (years), sex, and admitting diagnosis were the variables of interest. Current smokers were identified as every day, someday, or light smokers. Current smokers are individuals who have smoked more than 100 cigarettes in their lifetime and were smoking at the time of the interview (Centers for Disease Control and Prevention, 2018). The EMR was reviewed to determine the current assessment and documentation rates of: smoking history, readiness to quit, the provision of counseling, and whether patients were referred to appropriate cessation resources. Smoking history requires nurses to enter a number for packs per day and number of years smoked. Readiness to quit and provision of counseling are both yes/no questions in the EMR. Documentation of the provision of cessation and referral materials is entered in the comments section of the social history.

Procedures

All 14 registered nurses and 12 nurse practitioners, certified in either adult or family practice, voluntarily participated in this study. All staff members attended a brief educational in-service and were trained on the 5A's model of smoking cessation. Study

objectives were outlined and staff were provided with current documentation rates of smoking history, assessment of readiness to quit, provision of counseling and referral materials. Current smoking statistics, barriers to assessment, and the guidelines for treating tobacco use and dependence were highlighted (Fiore et al., 2008). Nurses were instructed to follow the 5A's model for patient-centered counseling (Chaney & Sheriff, 2012). For each patient identified as a smoker, nurses were instructed to: *ask* the patient about tobacco use and have them quantify use; *advise* the patient to quit in a clear, strong personalized manner based upon personal health risks; *assess* their willingness to make a quit attempt; *assist* in the patient's quit attempt by providing them with written materials and referring them to cessation resources in the community; and *arranging* follow up visits with their primary care or specialty physician for further assistance (Glasgow, Emont, & Miller, 2006). Brochures in both English and Spanish regarding the health hazards of smoking and local phone numbers of cessation support groups were given to each staff member and were placed in each patient exam room for convenient distribution to patients. Patients counseled over the phone were referred to the New York State Smokers' Quit line and instructed to follow up with their primary care physician for additional assistance (New York State Smokers' Quitline, 2017). Patients requiring an interpreter were assisted via telephone interpreters per hospital policy.

After all staff were trained, a three-month prospective chart review was conducted on all current smokers presenting to PST or ambulatory surgery. All patient and staff identifiers were removed prior to each chart review. The electronic medical record was reviewed for documentation of: smoking history, readiness to quit, provision of counseling, and provision of cessation and referral materials. Demographic data including

age, sex, and admitting diagnosis was collected on every current smoker. Statistical analysis was performed using SPSS version 25. Descriptive statistics were run on demographic data, smoking history, readiness to quit, provision of counseling and cessation/referral materials to summarize documentation rates both pre-and post-in-service. Chi square analyses were performed to determine if a significant difference existed between pre and post in-service documentation rates. Power was determined by the number of charts collected over two, 3-month periods in both departments with an alpha value of .05 with 80% power and 95% confidence intervals.

Results

Each three-month chart review yielded 233 charts retrospectively and 215 charts prospectively. The demographic distribution of smokers in both groups was normally distributed and is detailed in Table 1 (insert table 1 here). Charts were reviewed for documentation of: number of packs per day and years smoked, patient's readiness to quit, if counseling was given, and whether the patient was given cessation and referral materials.

The number of charts reviewed is an adequate representation of the number of smokers seen in the pre-surgical testing and ambulatory areas. The majority of patients who presented had admitting diagnoses of musculoskeletal, neurological, urologic, cardiac, gastrointestinal, and others. These results may not be generalizable to other hospitals that focus on more specialized care.

Following education on the 5A's model, all areas of nursing documentation increased with the most notable improvements in assessing readiness to quit, providing counseling, and providing patients with referral and cessation materials. Figure 1 compares the documentation rates before and after the in-service. (Insert Figure 1)

A chi square analysis was run to determine if a significant relationship existed between patients' readiness to quit and provision of counseling. In both chart reviews a relationship existed between both variables. Counseling was higher when patients expressed a readiness to quit and those not ready to quit were less likely to have received counseling. Prospectively, 69.3% of patients ready to quit received counseling and 30.7% of patients not ready also received counseling. These results as shown in table 2 were found to be statistically significant with p=.008 on a Fisher's exact test. (Insert table 2)

A chi square analysis was run to determine if a significant relationship existed between patients' readiness to quit and referral to local cessation resources. Crosstabulation from the retrospective data identified 94 charts with documentation of both variables. Prior to the in-service, only 3% of the patients willing to quit were given referrals. Zero referrals were given to patients not willing to quit. These results were not significant with p=.276 on a Fisher's exact test. Crosstabulation of the prospective data identified 102 charts. In contrast to the retrospective data, referrals were given to 76.3% of patients ready to quit and 23.7% of patients not ready to quit were also given referrals following nursing education on the 5A's method. These results are significant using a Fisher's exact test with p=.035. These results demonstrate an increased number of referrals given to patients who were both ready and not ready to quit smoking following nursing education on the 5A's model. Furthermore, it shows an improvement in the assisting and arranging aspect of the model which had previously been missing in the documentation. These results are demonstrated in table 3. (Insert table 3)

Discussion

The current study investigated the impact of the 5A's model on increasing provider assessment and documentation of smoking history, readiness to quit, provision of counseling, and provision of cessation materials. In contrast to previous studies focused on primary care or outpatient settings, this study was conducted in the ambulatory surgical setting where interactions are short but predominantly nurse driven. Following the in-service, documentation rates in all areas increased. These results demonstrate clinical significance and encourage educating nurses and nurse practitioners on the 5A's method and the availability of local cessation resources to increase smoking assessment and patient cessation counseling. The most notable improvement was seen in the provision of referral and cessation materials to patients. This may suggest that while counseling rates did show some improvement, nurses may be more comfortable referring their patients to local support groups or other providers than counseling the patients themselves.

These findings support the current literature which suggests cessation documentation and referral is underutilized due to lack of provider knowledge, skills, and unfamiliarity with counseling resources. Understanding the reported barriers to discussing smoking cessation and implementing the last three A's is important to improving cessation treatment. This study demonstrates that brief educational in-services can be effective at increasing smoking cessation counseling and intervention (Lenz, 2013; Payne et al., 2012; Sarna et al., 2001; Weaver et al., 2012).

Limitations

This study focused on improving provider assessment and documentation of smoking interventions in patients seen in the ambulatory surgical setting. There is limited follow up with these patients to assess if any of their interventions were effective in

prompting patients to quit. Further studies are needed to see if patients counseled during pre-operative teaching encounters follow through with cessation. Similarly, nurses were not surveyed on their knowledge and beliefs of smoking cessation counseling during this study. A survey conducted pre/post educational in-service would lend additional support to the 5A's method increasing nurses' knowledge and skills regarding smoking cessation counseling.

The magnitude of missing documentation may be representative of other pre-surgical testing or ambulatory surgery departments. Hospitals that do not enforce a "hard-stop" in the electronic medical record on all aspects of smoking documentation may have similar findings. Missing documentation implies that nurses are not fully assessing smoking status during each encounter. It is possible that patients previously documented as smokers may have quit smoking between interim visits and the lack of assessment is not capturing this data.

Implications for Nursing

The literature discusses the gap in nurses' knowledge and skills training to provide effective cessation counseling. With nurses comprising the majority of healthcare professionals, more emphasis needs to be placed on smoking cessation counseling in the nursing curriculum in both the undergraduate and graduate levels. The 5A's method is a brief intervention which focuses on enhancing smokers' motivation to change and connecting them with appropriate resources to help them quit successfully. When nurses provide the appropriate advice, the likelihood of smoking cessation increases by approximately 50%. (Doolan & Froelicher, 2006). With nurse facilitated smoking

cessation counseling, the possibilities exist to drastically cut healthcare expenditures and deaths related to smoking.

Conclusion

Smoking cessation interventions should be offered with each healthcare encounter using the 5A's method yet cessation counseling is inconsistent. Lack of nursing knowledge, skills, and unfamiliarity with available cessation resources are commonly reported barriers. The 5A's method is a brief counseling method and has been shown to be effective at helping patients quit. Nurses encompass the largest proportion of healthcare providers and patients counseled by nurses have been shown to have 50% higher cessation rates. Pre-surgical patient education is provided predominantly by nurses and is an excellent opportunity to provide effective cessation advice and resources for patients. It can assist providers and increase the opportunity for referral to counseling and enhance potential public impact.

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Table 1

Demographic Distribution Among Smokers

	Retrospective	Prospective
Charts Reviewed	233	215
Age (Mean in yrs with SD)	51.15 SD +/-13.71	51.63 SD +/- 14.78
Age Range	18-84	18-87
Sex	49.8% M	54.9% M
Admitting Diagnoses by %	Orthopedic: 22.7 Neurology 9.0 Urology 4.7 Cardiac Cath 11.2 Malignancy 5.2 Gastrointestinal 8.2 Pulmonary 0.4 Gyn 3.9 Vascular 4.7 Obstetrics 3.4 Cosmetic 0.9 Dermatologic 1.7 ENT 7.3 Bariatric 1.3 Pregnancy .9 Other 15	Orthopedic: 27.0 Neurology 10.7 Urology 10.7 Cardiac Cath 9.8 Malignancy 5.6 Gastrointestinal 6.0 Pulmonary 0.9 Gyn 2.8 Vascular 3.7 Obstetrics 0.5 Cosmetic 1.4 Dermatologic 0.5 ENT 6.0 Bariatric 0 Pregnancy0 Other 14.4
Mean Number of Packs Per Day	.75	.69
Mean Number of Yrs Smoked	29.2	28.58

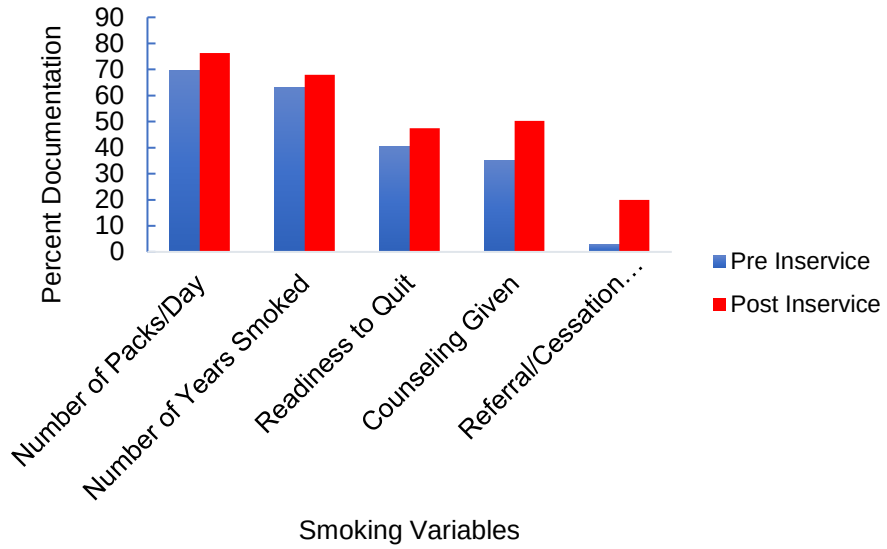

Figure 1. Documentation Rates Pre/Post Inservice. After the nurses were educated on the 5A's model, all areas of documentation increased.

Table 2

Crosstabulation of Ready to Quit with Have they been given counseling[1]

			Have they been given counseling?		
			Yes	No	Total
Ready to quit?	Yes	Count	61	2	63
		% within Have they been given counseling?	69.3%	22.2%	64.9%
	No	Count	27	7	34
		% within Have they been given counseling	30.7%	77.8%	35.1%
Total		Count	88	9	97
		% within Have they been given counseling?	100.0%	100.0%	100.0%

Note. These results are statistically significant using Fisher's exact test with $p<.05$ (.008)

[1] Prospective Data

Table 3

Crosstabulation of Ready to Quit with Referral to Smoking Cessation[1]

			Was pt. given resources & cessation referral?		
Ready to Quit?			Yes	No	Total
	Yes	Count	29	35	64
		% within smoking cessation referral documented	76.3%	76.3%	62.7%
	No	Count	9	29	38
		% within smoking cessation referral documented	23.7%	45.3%	37.3%
Total		Count	38	64	102
		% within smoking cessation referral documented	100.0%	100.0%	100.0%

Note. [1] These results were significant using a Fisher's exact test, $p<.05$ (.035)