Published in final edited form as:

Patient Educ Couns. 2012 March ; 86(3): 414–419. doi:10.1016/j.pec.2011.06.016.

Oncology Healthcare Providers' Implementation of the 5 A's Model of Brief Intervention for Smoking Cessation: Patients' Perceptions

Vani Nath Simmons^{1,2,3,*}, Erika B. Litvin³, Marina Unrod¹, and Thomas H. Brandon^{1,2,3}

¹Department of Health Outcomes and Behavior, H. Lee Moffitt Cancer Center & Research Institute, Tampa, USA

²Department of Oncologic Sciences, University of South Florida, Tampa, USA

³Department of Psychology, University of South Florida, Tampa, USA

Abstract

Objective—Health care providers (HCPs) can play an important role in promoting smoking cessation and preventing relapse. Public Health Service guidelines recommend the “5A's” model of brief intervention. The goal of the current study was to examine cancer patients' perceptions of 5A's model implementation by their oncology HCPs.

Methods—This study included 81 thoracic and 87 head and neck cancer patients at a large NCI-designated comprehensive cancer center. Patients completed questionnaires assessing perceptions of their oncology HCPs' implementation of the 5A's model of brief intervention.

Results—Results indicate partial implementation of the 5A's model. The majority of patients reported that their providers had asked about smoking and advised them to quit, however; only half reported that their interest in quitting had been assessed, and few reported assistance in quitting or follow-up. Delivery of the 5A's was greater among patients who requested cessation advice from their HCPs.

Conclusion—The current findings suggest a need to increase adherence to the 5A's in the oncology setting.

Practical Implications—Efforts to increase smoking cessation treatment provision by HCPs may improve the rate of cessation among cancer patients, and ultimately translate into better long-term cancer treatment outcomes.

Keywords

tobacco use; smoking cessation intervention; health provider intervention; brief clinician intervention

1. Introduction

Approximately 20% of adults in the United States currently smoke cigarettes [1], and tobacco use remains the leading preventable cause of premature death [2], accounting for over 440,000 deaths (20% of all deaths) each year [3]. Cancer accounts for 40% of all deaths attributable to tobacco use [3]. For example, smoking is responsible for 89% of lung cancer mortalities, and also contributes significantly to mortality rates for cancer of the esophagus, larynx, pharynx, bladder, stomach, pancreas, kidney, cervix, and uterus [4].

Smoking cessation reduces morbidity and mortality [5], even among individuals who have already been diagnosed with cancer. Indeed, smoking cessation is medically warranted after a cancer diagnosis because continued cigarette smoking is related to several adverse health outcomes such as increased risk of developing a second primary tumor or other smoking-related diseases [6]. Additionally, research suggests that continued smoking may reduce treatment efficacy of radiation therapy [7] and chemotherapy [8, 9]. Furthermore, continued smoking post-cancer diagnosis also contributes to a greater occurrence of treatment complications (e.g., infection, poor wound healing), exacerbated treatment side effects [10–12], and increased cancer recurrence rates [13].

Among the general population of smokers, most report a desire to quit [14], and about 40% attempt to quit each year [1]. Unfortunately, the majority of cessation attempts end in relapse. Health care providers (HCPs), such as physicians, nurses, and other health care staff, can play a critical role in assisting their patients in quitting smoking and maintaining their abstinence. The important function that HCPs can play in effectively promoting smoking cessation and preventing relapse is highlighted in the Clinical Practice Guideline [15]. It is recommended that HCPs follow the 5A's model of brief cessation intervention: 1) *ask* all patients whether they use tobacco, 2) *advise* all smokers to quit, 3) *assess* smokers' willingness to quit, 4) *assist* smokers with quitting, 5) *arrange* follow-up contact to prevent relapse. Previous research indicates that HCPs, including primary care physicians [16–18], midwives [19], pediatricians (for parents of patients) [20], dentists [21], psychiatrists [22], and psychologists [23] have not followed the 5A's model consistently. Rates of adherence to the first two A's (*ask* and *advise*), is generally very high (often above 70%), but far fewer HCPs appear to *assess* willingness to quit, *assist* with quitting by providing prescriptions or referrals to smoking cessation programs, and *arrange* follow-up. Furthermore, the majority of studies have surveyed HCPs about their own typical behavior, rather than asking patients to recall HCPs' behavior. It appears that when HCPs' responses are directly compared with their patients, patients report receiving fewer of the 5A's than HCPs believe they are performing [18].

The impact of brief intervention by HCPs may be particularly potent in the oncology setting because cancer patients look to their providers for support [24]. Moreover, after a patient is diagnosed with cancer, motivation and interest in smoking cessation significantly increases; thus a window of opportunity opens and remains open into the period of survivorship for providers to intervene and assist in the quitting process [25]. Indeed, as compared to the general population among which most relapse occurs within one week [26], in cancer patients relapse appears to be delayed, with most relapse occurring at between one and six months [27, 28]. Surprisingly, despite the potential acute detrimental health impact of continued smoking for cancer patients, there has been limited research on smoking cessation and relapse prevention interventions for this population [29]. Furthermore, very little previous research has examined the manner in which cancer patients and their oncology HCPs communicate with each other about smoking cessation and relapse in the oncology setting and how oncology HCPs' adherence to the 5A's model compares to HCPs in other settings. One previous study that surveyed cancer patients regarding their oncology

physicians adherence to the 5A's found that only 37.1% reported that physicians discussed smoking, 56.2% were advised to quit, 19.1% were given prescriptions for nicotine replacement, 17.1% were given self-help materials, 5.2% were helped to set a quit date, and only 2.9% reported receiving a follow-up letter [30]. This study included patients with all cancer sites, including those not typically considered smoking-related, and data were collected from 1990–1999, prior to the development and popularization of the current 5A's model.

In a previous qualitative study [31], we hypothesized that patients with cancers most strongly associated with smoking (e.g., lung, head/neck) may be especially receptive to brief intervention, and that HCPs would exhibit high levels of cessation intervention when the diagnosis has an established smoking-related link. However, consistent with previous research by Conroy et al., our results identified a discrepancy between lung and head/neck cancer patients' and HCPs' responses such that HCPs believed that they spent more time discussing smoking and placed more emphasis on cessation than patients perceived [18]. The goal of the current study was to replicate and extend these findings by collecting quantitative data about lung and head/neck cancer patients' perceptions of 5A's model implementation by their oncology HCPs. Data were collected in the context of a larger study examining trajectories and predictors of smoking relapse in lung and head/neck cancer patients following surgical treatment. As noted by Tong et al. [32], a focus on physicians for delivering the 5A's is necessary but not sufficient; efforts should be extended to other health professionals. Thus, we examined patients' reports of overall rates of adherence separately for oncology physicians and staff. We also examined whether adherence rates differed as a function of: whether patients reported asking HCPs for advice about smoking and patients' smoking status on the day of surgery (abstinent vs. smoking). We hypothesized that patients who asked HCPs about smoking would report that HCPs had implemented more components of the 5A's model. Prior research has demonstrated increased cessation with greater adherence to the 5A's model, thus we also predicted that patients who were abstinent on the day of surgery would be more likely to report that their providers had completed the 5A's.

2. Methods

2.1. Participants

Patients were recruited from the thoracic and head and neck clinics at a large NCI-designated comprehensive cancer center in the southeast. Inclusion criteria were age 18 or greater, diagnosis of lung or head and neck cancer, and a history of smoking at least 10 cigarettes per day for at least one year prior to diagnosis. Given the primary objective of the larger study, eligible patients also had quit smoking after diagnosis (confirmed biochemically via carbon monoxide breath sample), or were currently smoking but intended to make a quit attempt prior to or immediately following surgery. Patients who had maintained their smoking abstinence for greater than six months were excluded due to a reduced risk of smoking relapse.

2.2. Procedure

Medical records of all thoracic and head/neck clinic patients scheduled for surgery were pre-screened for eligibility. Patients whose records lacked smoking information or indicated that they were currently smoking or recently quit were approached in person and screened by a trained research assistant. Those who qualified and were interested in participating were enrolled in the larger study. Three percent of patients ($n = 11$) screened were excluded because they did not express an intention to quit smoking. Patients were compensated \$25 for completing the baseline questionnaire packet, from which the data for the current study

were obtained. Each patient received a unique ID number to ensure that their questionnaire could not be identified by HCPs.

In the head and neck clinic, patients were approached in the waiting room during their pre-operative appointment and, if interested, given a brief screening questionnaire. Those who qualified were taken to a private exam room to provide informed consent and a breath sample to confirm their smoking status. Patients then returned to the waiting room to complete the baseline questionnaire packet for the larger study, which included the measures relevant to the current study (described below), as well as other brief questionnaires that assessed potential emotional (e.g., depressive symptoms), cognitive (i.e., fear of cancer recurrence), and physical (i.e., pain, fatigue) predictors of relapse.

Due to differences in how the clinics operated, it was not possible to enroll thoracic clinic patients at a pre-operative appointment; instead they were approached for screening in their hospital rooms, generally within two to three days following surgery, although they could be enrolled at any time before discharge (the mean length of hospital stay for thoracic patients was 6.9 days). Those who were interested and qualified provided informed consent and a breath sample to confirm their smoking status. They were then given the baseline questionnaire packet and a research assistant returned to their room later to collect the completed packet.

2.3. Measures

2.3.1. Demographics and smoking behavior—We assessed demographic variables and current smoking status and history including: age at smoking initiation, number of cigarettes smoked per day, years smoked, quit attempts in the past year and lifetime, quitting motivation, other smokers in the household, current or past smoking cessation treatment received, whether the patient had asked their doctor(s) or other medical staff for “information about smoking or advice about quitting smoking”, and the items from the Fagerström Test for Nicotine Dependence [33], reworded to reflect pre-quitting level of dependence for those patients who had already quit at the time of enrollment.

2.3.2. Five A's—Patients were first asked whether their oncology HCPs' had talked with them about smoking and if so for how many minutes (0, <1, 1–2, 3–5, or >5 minutes). They rated the helpfulness of these discussions on 5-point scale (1 = not at all helpful, 5 = extremely helpful). Patients also rated how much they trusted their HCPs.

Patients then completed 6 questions regarding each step of the 5A's model. Five questions (one for each A) asked patients to report whether their oncology HCPs “did any of the following at your visits” to the cancer center: “asked whether you smoke?” (*Ask*), “advised you to quit smoking?” (*Advise*), “asked if you were interested in quitting smoking?” (*Assess*), “wrote you a prescription for medication to help you quit smoking, such as Zyban or Chantix?” (*Assist*), and “arranged a follow-up visit or phone call about your progress in quitting smoking?” (*Arrange*). A sixth question, relevant to the fourth A (*assist*), asked patients to identify from a list of options (e.g., nicotine replacement products, counseling) which, if any, HCPs suggested they use. Patients reported on physicians and other medical staff (nurses, physician assistants, etc.) separately. Instructions stated that their answers would not be shared with their HCPs and would be used for research purposes only.

2.4. Data analysis

Statistical analyses were performed using SPSS 18.0. Patient report of delivery of each of the 5A's by physicians and staff are reported as frequencies. Comparisons of adherence to

the 5A's model were made for physicians and staff using t-tests for continuous variables and Cochran's Q test for dichotomous variables.

3. Results

3.1. Demographics and smoking characteristics

Patient demographics and smoking characteristics are shown in Table 1. There were no significant differences on demographics or smoking characteristics by smoking status on the day prior to surgery (all p 's > .05).

3.2. Discussions about smoking

More patients reported that their physicians (75.4%) had talked with them about smoking than had other staff (56.9%), $Q(1) = 23.44, p < .001$. Fifty percent of patients who discussed smoking with physicians and 47.8% who discussed smoking with staff reported that these discussions lasted at least 3 minutes or more as recommended by the guidelines. Overall, patients found their discussions with physicians and staff a little helpful. There were significant differences in patients' helpfulness ratings of their discussions with physicians ($M = 2.26, SD = 1.77$) versus staff ($M = 1.61, SD = 1.30$), $t(155) = 5.09, p < .001$. There were no significant differences in how much patients trusted physicians ($M = 4.50, SD = .73$) versus staff ($M = 4.44, SD = .74$), $t(150) = 1.61, p = .11$.

3.3. Total 5A's

A total numerical score representing implementation of the 5A's model was computed by summing patients' number of "yes" responses to the six 5A's questions (*ask, advise, assess, two assist questions, arrange*) indicating completion by physician or staff (range 0–6). The mean total 5A's score was 2.69 ($SD = 1.32$). Exploratory analyses were conducted to determine if receipt of the 5A's differed across a number of patient characteristics. Results suggest that patient-reported adherence did not differ by sex, age, marital status, race, ethnicity, educational attainment, income, or the nicotine dependence level of the patients ($ps > .05$). Almost all patients (93.0%) reported that they were *asked* by physicians and/or staff if they smoked, 76.1% were *advised* to quit, 46.1% were *assessed* for interest in quitting, and 40.2% indicated that HCPs *assisted* them by suggesting at least one treatment. Eleven percent reported that they actually received a prescription from an oncology HCP, and 3.6% reported that a follow-up visit or phone call was *arranged* to monitor their progress in quitting.

3.4. Physicians versus staff

Numerical scores representing implementation of the 5A's model for physicians (range 0–6) and staff (range 0–6) separately were also computed by summing patients' number of "yes" responses to the 5A's questions for each type of provider. Overall, patients reported that physicians ($M = 2.50, SD = 1.38$) implemented the 5A's to a greater degree than staff ($M = 1.83, SD = 1.42$), $t(166) = 6.09, p < .001$. Also, more patients reported that staff (19.4%) did not complete any of the 5A's than did physicians (7.4%), $t(166) = 3.08, p = .002$. No patient reported that staff completed all of the 5A's, and two patients reported that physicians completed all of the 5A's.

Comparisons between physicians and staff for each of the 5A's are shown in Table 2. Patients were more likely to report that physicians (87.4%) than staff (71.9%) asked their smoking status, $Q(1) = 15.36, p < .001$, advised them to quit (72.5% for physicians, 53.3% for staff), $Q(1) = 23.27, p < .001$, and assisted them with quitting by writing them a prescription (10.2% for physicians, 2.4% for staff), $Q(1) = 11.27, p = .001$. There were no

differences between physicians and staff with regard to assessing interest in quitting and arranging follow-up (all p 's > .05).

3.5. Effect of requesting assistance

We compared reported rates of 5A's completion by physicians and staff as a function of whether or not patients reported that they had asked HCPs for information about smoking or advice about quitting. Consistent with our hypothesis, patients who asked for advice reported that doctors completed more of the 5A's ($M = 2.96$, $SD = 1.29$) than patients who did not ask for advice ($M = 2.27$, $SD = 1.36$), $t(164) = -3.14$, $p = .002$ (see Table 3). Patients who requested assistance also reported that staff completed more of the 5A's ($M = 2.19$, $SD = 1.50$) versus ($M = 1.64$, $SD = 1.36$), $t(164) = -2.32$, $p = .02$. Overall, patients who asked for information or advice about smoking were more likely to report that both physicians and staff advised them to quit, assessed their interest in quitting, and provided assistance by suggesting a treatment (all p 's < .05). Regarding treatment, patients who asked for information or advice were more likely to report that physicians recommended either NRT or non-nicotine medication (i.e., Bupropion or Varenicline), and that staff recommended either NRT or psychological treatment.

3.6. Patient smoking status

We also compared reported rates of 5A's completion by physicians and staff as a function of patients' smoking status on the day of surgery. Because all patients were smoking at time of cancer diagnosis and HCPs had an opportunity to implement the model prior to study enrollment, we predicted that abstinent patients would report that HCPs had completed more of the A's than patients who were smoking. Contrary to our hypothesis, there were no differences in abstinent ($M = 2.35$, $SD = 1.27$) and non-abstinent ($M = 2.73$, $SD = 1.49$) patients' 5A's total scores for physicians, $t(163) = -1.73$, $p = .09$. Non-abstinent patients did report that staff completed more A's ($M = 2.27$, $SD = 1.53$) than abstinent patients ($M = 1.55$, $SD = 1.26$), $t(163) = -3.29$, $p = .001$. More specifically, patients who were smoking were more likely than abstinent patients to indicate that staff advised them to quit, suggested a treatment, and arranged follow-up, and that both physicians and staff assessed their interest in quitting (all p 's < .05).

4. Discussion and conclusion

4.1. Discussion

Similar to previous research in primary care and other health settings, patients in the current study reported that their oncology HCPs implemented the first two A's (*ask* about smoking status and *advise* to quit) at very high rates, with much lower rates (<50%) for the last three A's (*assess*, *assist*, *arrange*). Given that smoking is highly relevant to the etiology, treatment, and prognosis of the cancers in these patients, the reported rates of assistance with smoking cessation in this setting is troubling. There is recent evidence of discomfort expressed by medical students with assisting patients with a quit plan and arranging follow-up suggesting a need for improved tobacco control curricula [34].

The efficacy of interventions for improving delivery of the 5A's in health care settings has been demonstrated [35, 36]. A study conducted in primary care clinics demonstrated the utility of electronic health records and provider feedback for facilitating documentation and implementation of the 5A's [35]. Additional research has aided in the identification of institutional and administrative level barriers in adoption and implementation of the 5A's (e.g., time constraints, inadequate training in counseling smokers) [37]. Application of these findings to improving smoking cessation treatment in the cancer setting is needed.

Patients indicated that physicians were more likely than staff to advise cessation, recommend treatments, and write prescriptions for cessation medications suggesting a need for increased training of oncologic HCP staff. Notably, clinical practice guidelines recommend that *all clinicians* who have contact with patients should implement the 5A model. Indeed, recent research conducted by An et al. [38] concluded that being advised to quit by two or more types of health professionals increased cessation attempts and readiness to quit. The authors highlight a need for “activating multiple parts of the healthcare system to increase cessation rates”.

Significant differences in patients’ perceptions of HCPs’ implementation of the model were found as a function of whether patients had asked for information or advice about smoking; whether patients were smoking at the time they underwent surgery, and patients’ clinic/ diagnosis. Compared to patients who did not request assistance, patients who indicated that they asked HCPs for advice about smoking reported that both doctors and staff performed the 5A’s at greater rates. It is noteworthy, however, that not all patients who requested assistance were provided help. Overall, these findings suggest that patients may benefit from public health messages that emphasize the importance of initiating smoking cessation discussions with HCPs. Unrod et al. [36] utilized a brief computer-tailored report that summarized smoking-related information and recommendations that was provided to patients to facilitate communication between patients and providers. Results suggest that this approach was effective in improving physicians’ implementation of the 5A’s. Importantly, to increase the number of patients who ask their HCPs for help with quitting smoking in an oncology setting, attention must be paid to addressing communication barriers such as the stigma experienced by cancer patients with smoking-related cancers [31].

Patients who were smoking at the time of surgery were more likely than abstinent patients to report that they were advised to quit by staff, assessed for interest in quitting, assisted with quitting, and received follow-up. This finding may be more a function of the study’s limitations with regards to timing and specificity of the questions rather than an indication that implementation of the model does not help patients achieve and maintain abstinence. All patients were smoking at the time they were diagnosed with cancer and therefore HCPs had an opportunity to implement the model at some point prior to study enrollment. However, patients who had quit by the time of study enrollment may not have remembered if their HCPs implemented the model because eligibility criteria for the larger study included patients who had been abstinent for up to six months. It is important to note that once patients had maintained consistent abstinence, only the last “A” (arrange follow-up to monitor progress) would be relevant.

4.2. Limitations

This study had several limitations that must be acknowledged. First, patients were recruited from a single cancer center and therefore the generalizability of our findings is uncertain. Importantly, cancer centers may differ in the training and emphasis on the 5A’s model. Our findings illuminate a need to increase adherence to the 5A’s in this oncology setting and underscore the need for extending this research to other cancer centers.

Second, we wanted to be sensitive to patients’ time constraints and ability to complete lengthy questionnaires. Many were experiencing pain or fatigue related to their cancer diagnosis and/or treatment. Therefore, we were limited in how many questions we could include in the baseline questionnaire. Patients were asked to report whether any physicians or staff had implemented the 5A’s at any of their visits to the cancer center, but were not asked about specific HCPs or visits. Therefore, we could not determine at which visit the HCPs implemented the 5A’s model. We are also not able to ascertain which HCPs (surgeons, physician assistants, etc.) or how many of their HCPs implemented the model.

Also, patients were recruited at the time of their surgical treatment and there may have been variability in the number of previous visits to the hospital and thus opportunities for implementation of the 5A's model. It is likely that patient reports represented their most recent visit(s). Future research should assess the timing and frequency of 5A's model implementation following diagnosis.

Finally, HCPs were not surveyed regarding their own behavior in the current study; rather, patients reported on their memories of HCPs' behavior. Previous research suggests a discrepancy between HCPs' and patients' reports of HCPs' behavior [18, 31], such that HCPs may believe that they implement the 5A's model to a greater degree than patients perceive. Research utilizing objective coding of recorded patient-provider interactions suggests that HCPs' actual frequency of 5A's implementation may fall somewhere in between HCP's reports and patients' reports. Most importantly, patient perception may not accurately reflect HCP behavior, and recall of their communication with HCPs may also be influenced by other factors such as smoking and disease status. Indeed, in the current study some patients initially denied that their HCPs had talked with them about smoking, but subsequently reported that in fact HCPs did ask whether they smoked and/or advised them to quit. This suggests that some patients did not attach much significance to these events and underscores the importance of communication style in addition to content alone. Direct observation research of patient-provider communication in the oncology setting could further elucidate these communication patterns.

4.3. Conclusion

Patients with smoking-related cancers (e.g., head/neck, lung) may be especially receptive to brief intervention because motivation and interest in smoking cessation significantly increases after diagnosis of cancer [25, 31]. In addition, intervention with this population has significant public health implications, given the high morbidity and mortality associated with continued smoking after diagnosis [6, 7]. Findings from the current study highlight the need to improve patient-provider communication on smoking within the oncology setting. Specifically, with less than half of the cancer patients reporting being assisted with cessation, the findings underscore the need for increased provision of cessation interventions among this population.

4.4. Practical implications

The current findings suggest a number of potential target areas for increasing adherence to the 5A's, and in particular the last three A's, by the HCP. Namely, training and intervention efforts are needed to increase treatment provision by HCP staff, as well as initiation of smoking cessation discussion by patients with their HCPs. Such interventions may improve the rate of cessation assistance that cancer patients receive, and ultimately translate into better long-term cancer treatment outcomes.

Acknowledgments

This study was funded by National Cancer Institute grant R03 CA126409. The authors would like to thank Riddhi Patel for her valuable contribution to this study.

References

1. Thorne SL, Malarcher A, Maurice E, Caraballo R. Cigarette Smoking Among Adults - United States, 2007 (vol 57, pg 1221, 2008). Morbidity and Mortality Weekly Report. 2008; 57:1281.
2. USDHHS USDoHaHS. The Health Consequences of Smoking: A Report of the Surgeon General. 2004.

3. Adhikari B, Kahende J, Malarcher A, Pechacek T, Tong V. Smoking-Attributable Mortality, Years of Potential Life Lost, and Productivity Losses - United States, 2000–2004. *Morbidity and Mortality Weekly Report*. 2008; 57:1226–8. [PubMed: 19008791]
4. Peto, R.; Lopez, AD.; Boreham, J.; Thun, M.; Heath, C. Mortality from Smoking in developed countries, 1950–2000. 1995. (revised 2006)
5. Anthonisen NR, Skeans MA, Wise RA, Manfreda J, Kanner RE, Connett JE. The effects of a smoking cessation intervention on 14.5-year mortality: a randomized clinical trial. *Ann Intern Med*. 2005; 142:233–9. [PubMed: 15710956]
6. Kawahara M, Ushijima S, Kamimori T, Kodama N, Ogawara M, Matsui K, et al. Second primary tumours in more than 2-year disease-free survivors of small-cell lung cancer in Japan: the role of smoking cessation. *Br J Cancer*. 1998; 78:409–12. [PubMed: 9703291]
7. Browman GP, Wong G, Hodson I, Sathya J, Russell R, McAlpine L, et al. Influence of cigarette smoking on the efficacy of radiation therapy in head and neck cancer. *N Engl J Med*. 1993; 328:159–63. [PubMed: 8417381]
8. Dasgupta P, Kinkade R, Joshi B, Decook C, Haura E, Chellappan S. Nicotine inhibits apoptosis induced by chemotherapeutic drugs by up-regulating XIAP and survivin. *Proc Natl Acad Sci U S A*. 2006; 103:6332–7. [PubMed: 16601104]
9. Zhang J, Kamdar O, Le W, Rosen GD, Upadhyay D. Nicotine induces resistance to chemotherapy by modulating mitochondrial signaling in lung cancer. *Am J Respir Cell Mol Biol*. 2009; 40:135–46. [PubMed: 18676776]
10. Arcavi L, Benowitz NL. Cigarette smoking and infection. *Arch Intern Med*. 2004; 164:2206–16. [PubMed: 15534156]
11. Gritz ER, Vidrine DJ, Lazev AB. Smoking cessation in cancer patients: Never too late to quit. *Evidence-Based Cancer Care and Prevention: Behavioral Interventions*. 2003:107–40.
12. Zavallos JP, Mallen MJ, Lam CY, Karam-Hage M, Blalock J, Wetter DW, et al. Complications of radiotherapy in laryngopharyngeal cancer: effects of a prospective smoking cessation program. *Cancer*. 2009; 115:4636–44. [PubMed: 19569250]
13. Stevens MH, Gardner JW, Parkin JL, Johnson LP. Head and neck cancer survival and lifestyle change. *Arch Otolaryngol*. 1983; 109:746–9. [PubMed: 6639443]
14. Centers for Disease C, and Prevention (CDC). Cigarette smoking among adults: United States, 2000. *Morbidity and Mortality Weekly Report*. 2002; 51:642–5. [PubMed: 12186222]
15. Fiore MC, Jaen CR, Baker TB, Bailey WC, Bennett G, Benowitz NL, et al. A Clinical Practice Guideline for Treating Tobacco Use and Dependence: 2008 Update - A US Public Health Service report. *Am J Prev Med*. 2008; 35:158–76. [PubMed: 18617085]
16. An LC, Bernhardt TS, Bluhm J, Bland P, Center B, Ahluwalia JS, et al. Treatment of tobacco use as a chronic medical condition: primary care physicians' self-reported practice patterns. *Prev Med*. 2004; 38:574–85. [PubMed: 15066360]
17. Chase EC, McMenamin SB, Halpin HA. Medicaid provider delivery of the 5A's for smoking cessation counseling. *Nicotine Tob Res*. 2007; 9:1095–101. [PubMed: 17978983]
18. Conroy MB, Majchrzak NE, Silverman CB, Chang Y, Regan S, Schneider LI, et al. Measuring provider adherence to tobacco treatment guidelines: a comparison of electronic medical record review, patient survey, and provider survey. *Nicotine Tob Res*. 2005; 7 (Suppl 1):S35–43. [PubMed: 16036268]
19. Abatemarco DJ, Steinberg MB, Delnevo CD. Midwives' knowledge, perceptions, beliefs, and practice supports regarding tobacco dependence treatment. *J Midwifery Womens Health*. 2007; 52:451–7. [PubMed: 17826707]
20. Dake JA, Price JH, Jordan TR. Pediatricians' practices regarding smoking cessation among parents of their patients. *Am J Health Behav*. 2006; 30:503–12. [PubMed: 16893313]
21. Hu S, Pallonen U, McAlister AL, Howard B, Kaminski R, Stevenson G, et al. Knowing how to help tobacco users. Dentists' familiarity and compliance with the clinical practice guideline. *J Am Dent Assoc*. 2006; 137:170–9. [PubMed: 16521382]
22. Price JH, Ambrosetti LM, Sidani JE, Price JA. Psychiatrists' smoking cessation activities with Ohio community mental health center patients. *Community Ment Health J*. 2007; 43:251–66. [PubMed: 17235699]

23. Phillips KM, Brandon TH. Do psychologists adhere to the clinical practice guidelines for tobacco cessation? A survey of practitioners. *Professional Psychology-Research and Practice*. 2004; 35:281–5.
24. Arora NK. Interacting with cancer patients: the significance of physicians' communication behavior. *Soc Sci Med*. 2003; 57:791–806. [PubMed: 12850107]
25. Gritz ER, Dresler C, Sarna L. Smoking, the missing drug interaction in clinical trials: ignoring the obvious. *Cancer Epidemiol Biomarkers Prev*. 2005; 14:2287–93. [PubMed: 16214906]
26. Hughes JR, Keely J, Naud S. Shape of the relapse curve and long-term abstinence among untreated smokers. *Addiction*. 2004; 99:29–38. [PubMed: 14678060]
27. Gritz ER, Schacherer C, Koehly L, Nielsen IR, Abemayor E. Smoking withdrawal and relapse in head and neck cancer patients. *Head Neck*. 1999; 21:420–7. [PubMed: 10402522]
28. Walker MS, Larsen RJ, Zona DM, Govindan R, Fisher EB. Smoking urges and relapse among lung cancer patients: findings from a preliminary retrospective study. *Prev Med*. 2004; 39:449–57. [PubMed: 15313083]
29. Cox LS, Africano NL, Tercyak KP, Taylor KL. Nicotine dependence treatment for patients with cancer. *Cancer*. 2003; 98:632–44. [PubMed: 12879483]
30. Schnoll RA, Zhang B, Rue M, Krook JE, Spears WT, Marcus AC, et al. Brief physician-initiated quit-smoking strategies for clinical oncology settings: a trial coordinated by the Eastern Cooperative Oncology Group. *J Clin Oncol*. 2003; 21:355–65. [PubMed: 12525530]
31. Simmons VN, Litvin EB, Patel RD, Jacobsen PB, McCaffrey JC, Bepler G, et al. Patient-provider communication and perspectives on smoking cessation and relapse in the oncology setting. *Patient Educ Couns*. 2009; 77:398–403. [PubMed: 19846270]
32. Tong EK, Strouse R, Hall J, Kovac M, Schroeder SA. National survey of U.S. health professionals' smoking prevalence, cessation practices, and beliefs. *Nicotine Tob Res*. 2010; 12:724–33. [PubMed: 20507899]
33. Heatherton TF, Kozlowski LT, Frecker RC, Fagerstrom KO. The Fagerstrom Test for Nicotine Dependence: a revision of the Fagerstrom Tolerance Questionnaire. *Br J Addict*. 1991; 86:1119–27. [PubMed: 1932883]
34. Geller AC, Brooks DR, Powers CA, Brooks KR, Rigotti NA, Bognar B, et al. Tobacco cessation and prevention practices reported by second and fourth year students at US medical schools. *J Gen Intern Med*. 2008; 23:1071–6. [PubMed: 18612747]
35. Bentz CJ, Bayley KB, Bonin KE, Fleming L, Hollis JF, Hunt JS, et al. Provider feedback to improve 5A's tobacco cessation in primary care: a cluster randomized clinical trial. *Nicotine Tob Res*. 2007; 9:341–9. [PubMed: 17365766]
36. Unrod M, Smith M, Spring B, DePue J, Redd W, Winkel G. Randomized controlled trial of a computer-based, tailored intervention to increase smoking cessation counseling by primary care physicians. *J Gen Intern Med*. 2007; 22:478–84. [PubMed: 17372796]
37. Manfredi C, LeHew CW. Why implementation processes vary across the 5A's of the Smoking Cessation Guideline: administrators' perspectives. *Nicotine Tob Res*. 2008; 10:1597–607. [PubMed: 18988072]
38. An LC, Foldes SS, Alesci NL, Bluhm JH, Bland PC, Davern ME, et al. The impact of smoking-cessation intervention by multiple health professionals. *Am J Prev Med*. 2008; 34:54–60. [PubMed: 18083451]

Table 1

Participant characteristics (means and standard deviations unless specified)

	Total
N	167
Age	58.2 (10.9)
Gender (% male)	57.5
Race (% Caucasian)	95.8
Ethnicity (# Hispanic)	2
Smoking on surgery day (%)	38.2
Cigarettes per day	23.9 (12.2)
Years smoked	38.8 (12.5)
FTND score	5.7 (2.3)
Lifetime quit attempts	4.9 (5.1)
Past year quit attempts	1.6 (2.8)

Table 2

5A's by physician and staff

	Physicians	Staff
<i>Ask</i>	87.4	71.9
<i>Advise</i>	72.5	53.3
<i>Assess</i>	38.9	33.5
<i>Assist</i>		
suggested a treatment	38.9	18.6
suggested NRT	19.2	12
suggested Zyban or Chantix	24.6	7.8
suggested psychological treatment	6.6	5.4
wrote a prescription	10.2	2.4
<i>Arrange</i>	2.4	3

Table 3

5A's by asked for assistance

	Physicians			Staff		
	Asked	Did not ask	<i>p</i>	Asked	Did not ask	<i>p</i>
<i>Ask</i>	88.7	86.7	ns	71.7	71.7	ns
<i>Advise</i>	83	67.3	0.03	66	46.9	0.02
<i>Assess</i>	50.9	32.7	0.03	43.4	28.3	0.05
<i>Assist</i>						
suggested any treatment	54.7	31	0.003	13.3	30.2	0.009
suggested NRT	30.2	14.2	0.02	55	45	0.02
suggested Zyban or Chantix	35.8	18.6	0.02	11.3	6.2	ns
suggested psychological treatment	9.4	5.3	ns	13.2	1.8	0.002
wrote a prescription	15.1	7.1	ns	3.8	1.8	ns
<i>Arrange</i>	3.8	1.8	ns	3.8	2.7	ns