Tobacco Use and Tobacco Treatment Referral Response of Patients With Cancer: Implementation Outcomes at a National Cancer Institute–Designated Cancer Center

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QUESTION ASKED: What are the practice and patient outcomes of a cancer center’s new population-based, proactive tobacco cessation treatment program?

SUMMARY ANSWER: Nearly all patients were screened for tobacco use, but only 17% of patients who reported tobacco use accepted an offer of assistance with tobacco cessation.

WHAT WE DID: This study is a retrospective review of electronic medical record data from 26,365 adult patients seen at a National Cancer Institute–designated cancer center during the first 18 months after implementation of a tobacco cessation treatment program. Analysis was conducted with deidentified data pertinent to patients’ tobacco use and, among current users, patients’ treatment referral response.

WHAT WE FOUND: The percentage of patients screened for tobacco use rose from 64% preprogram implementation to 99% postprogram implementation. Current (past month) tobacco use was observed in 21% of patients; cigarettes were the most popular product. Only 17% of patients who used tobacco accepted a referral to a tobacco treatment specialist; among those who declined, the majority were not ready to quit (66%) or wanted to quit on their own (27%). Multiple demographic variables were associated with tobacco use and treatment referral response outcomes.

BIAS, CONFOUNDING FACTORS: All tobacco use data were self-reported and are therefore subject to the limitations of response bias. Additionally, the reliance on a single cancer center hampers the ability to generalize without qualification to cancer centers and patients with cancer at large, as the unique attributes of the study site might have biased the results.

REAL-LIFE IMPLICATIONS: Implementation of a population-based, proactive tobacco cessation program can lead to high rates of tobacco use screening and extend the reach of evidence-based treatment. The challenge is that many patients with cancer may not be ready to quit and/or engage with tobacco treatment when first offered. This suggests that frequently asking about tobacco use and repeatedly offering tobacco cessation treatment are necessary components of care delivery to patients with cancer.

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abstract

PURPOSE Smoking after a cancer diagnosis is linked to cancer-specific and all-cause mortality, among other adverse outcomes. Yet, 10%-20% of US cancer survivors are current smokers. Implementation of evidence-based tobacco treatment in cancer care facilities is widely recommended, yet rarely accomplished. This study focuses on the early outcomes of a population-based tobacco treatment program integrated within an National Cancer Institute–designated cancer center.

METHODS AND MATERIALS The sample consists of 26,365 patients seen at the cancer center during the first 18 months of program implementation. The study is a retrospective chart review of patients’ tobacco use and, among current users, patients’ treatment referral response.

RESULTS More than 99% of patients were screened for tobacco use. Current (past month) use was observed in 21.05% of patients; cigarettes were the most popular product. Only 17.22% of current users accepted a referral for tobacco treatment; among current users who declined, the majority were not ready to quit (65.84%) or wanted to quit on their own (27.01%). Multiple demographic variables were associated with tobacco use and treatment referral response outcomes.

CONCLUSION Despite cancer diagnosis presenting a teachable moment for tobacco cessation, patients with cancer may not be ready to quit or engage with treatment. Clinically proven strategies to increase motivation, prompt quit attempts, and encourage treatment use should be key components of tobacco treatment delivery to patients with cancer.

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INTRODUCTION

The 2014 US Surgeon General’s Report on Smoking articulates that cigarette smoking of patients with cancer plays a causal role in adverse outcomes. Smoking after a cancer diagnosis is causally associated with higher rates of all-cause mortality; cancer-specific mortality; and second primary plus increased risk of recurrence, poor treatment response, and severe toxicity. Those who smoke are more likely than nonsmokers to have postsurgical complications, longer hospital stays, and return to the operating room. Patients with cancer who smoke also report worse quality of life than former and never smokers. Smoking undermines health of patients with cancer. Many US patients with cancer smoke postdiagnosis. In one large recent study (n = 33,525), 16% of patients with cancer reported smoking. Similarly, other population-based surveys (n = 2,060-2,527) have found that 9%-19% of patients with cancer smoke. Prevalence estimates are higher if one focuses on individuals who were smoking at cancer diagnosis. To summarize, 10%-20% of people with a history of cancer smoke, with higher rates in subgroups of the patient population.
The tobacco treatment program was prospectively standardized. The American Association for Cancer Research has a policy statement that includes universal assessment and documentation of tobacco use as standard of care. Furthermore, the American Association for Cancer Research policy statement says that cancer care providers should receive training in tobacco treatment and be incentivized for treatment referral and delivery. There are several approaches to tobacco treatment delivery, including the 5 As (ie, Ask, Advise, Assess, Assist, and Arrange), Ask Advise Refer (AAR), and Ask Advise Connect models. While the 5 As model predicated treatment delivery on patients’ willingness to quit, the AAR and Ask Advise Connect models do not, although there are distinctions between how providers refer versus connect patients with treatment. Model differences aside, widespread delivery of tobacco treatment would promote health of patients with cancer. Unfortunately, the results of US cancer care provider surveys found that although 90% ask about tobacco use and 80% advise tobacco cessation, only 40%-45% provide treatment assistance, and a recent literature review found similar results. Clearly, patients with cancer do not uniformly receive the high-quality, population-based tobacco treatment recommended by the foremost cancer care organizations.

To improve cancer care facilities’ provision of evidence-based tobacco treatment, the National Cancer Institute (NCI) launched the Cancer Center Cessation Initiative. Since 2017, 52 NCI-designated cancer centers have received funding to create or expand existing tobacco treatment programs. This implementation science study focuses on one of these cancer centers, one that follows the AAR model and promptly offers tobacco treatment to anyone who reports tobacco use. First, this study will describe rates of tobacco use screening plus rates of tobacco use of patients with cancer and their decision to decline versus accept a tobacco treatment referral. Second, this study aims to identify correlates of tobacco use and referral response of patients with cancer.

METHODS AND MATERIALS

Sample

The sample (N = 26,365) consisted of all outpatients age ≥ 18 years seen at Markey Cancer Center in Lexington, Kentucky, between July 1, 2018, and December 31, 2019, the first 1.5 years of program implementation. Patients are drawn from the cancer center’s four outpatient clinics: breast, gynecology, hematology, and other disease site.

Procedures

The tobacco treatment program was prospectively standardized, and this study is a retrospective review of patients’ deidentified EMR. In the six months before program implementation, tobacco use was documented 64.0% of the time. Implemented as standard of care for outpatient visits, new intake procedures required clinical service technicians to ask all adults about their tobacco use and document all responses in the EMR. Questions allowed patients to be classified as never, former, or current (past month) tobacco users. Information about tobacco product was obtained if applicable. Patients identified as current tobacco users received an offer of assistance with tobacco cessation. Patients who accepted the offer were automatically e-referred to the Psych-Oncology Service where tobacco treatment specialists (TTSs) were charged with arranging treatment and follow-up (eg, providing counseling and making pharmacotherapy recommendations). If a TTS was available that day, they would meet the patient in clinic and make a treatment plan. If not, the TTS would make at least two attempts to contact the patient via phone to discuss their treatment options. Patients who declined the referral while in clinic were asked for a rationale and advised to consider tobacco treatment in the future. Procedures for this retrospective chart review, which include waivers of Health Insurance Portability and Accountability Act authorization and informed consent documentation, were approved by the University of Kentucky Institutional Review Board (Protocol 52059).

Measures

Data extracted from patients’ EMR included the following: (1) demographic characteristics (age, sex, race, ethnicity, relationship status, and insurance), (2) clinical parameters (tobacco products, clinic and distress rating [0 = no distress to 10 = extreme distress]), and (3) tobacco use outcomes. Tobacco use outcomes included rates of (1) lifetime, past, and current tobacco use; (2) tobacco use by product type; (3) tobacco treatment referral response among current tobacco users; and (4) reasons for decline (reportedly already in treatment, wants to quit on their own, or not ready to quit), among the relevant subsample of current tobacco users. Implementation outcomes are current tobacco use, referral response, and reason for decline.

Data Analysis

Descriptive statistics describe the sample and implementation outcomes. Binomial (current tobacco use and referral response) and ordinal (reason for decline) logistic regression models were fit to examine the relationship between the implementation outcomes and covariates (demographic and clinical characteristics). Covariates were entered simultaneously into regression equations to assess their independent association with each implementation outcome; see the Data Supplement (online only) for more information. Model-adjusted odds ratios (ORs) and 95% CIs are reported. Statistical analyses were performed using SAS 9.4 (SAS Institute, Cary, NC).

RESULTS

Sample Characteristics

Table 1 details the sample’s (N = 26,365) demographic and clinical characteristics. Patients represent an array of...
was the primary type of insurance (44.24%, n = 7,631). The mean age was 59.32 ± 14.34 years. The average distress level was 3.28 ± 3.12, with 24.7% (n = 6,504) reporting clinically significant distress.  

Table 2 presents the sample’s tobacco use characteristics. Nearly all (99.3%, n = 26,183) patients’ tobacco use status was documented in the EMR. Lifetime tobacco use was reported by 43.82% (n = 11,551) of patients, and cigarettes were most popular (91.52%, n = 10,571). Current tobacco use was observed in 48.04% (n = 5,549) of lifetime users or 21.05% (n = 5,549) of the full sample. Seventy-six percent (n = 4,250) of current users actively declined the offer of tobacco treatment, and another 6.18% (n = 343) of current users were nonresponders or passive refusers. Of those who declined, most (65.84%, n = 2,798) were not ready to quit.

**Associations With Implementation Outcomes**

**Current tobacco use.** Patients from the gynecology clinic (OR = 1.22; 95% CI, 1.04 to 1.43) and other clinic (OR = 1.73; 95% CI, 1.53 to 1.95) were more likely to use tobacco than patients from the hematology clinic (Table 3). Males were almost twice as likely as females to use tobacco (OR = 1.75; 95% CI, 1.58 to 1.94). Racial and ethnic minorities were less likely than Whites to use tobacco (OR = 0.76; 95% CI, 0.65 to 0.90). Compared with patients in a relationship, those who were single (OR = 1.41; 95% CI, 1.26 to 1.58) and those who were divorced, separated, or widowed (OR = 1.67; 95% CI, 1.50 to 1.86) were about one-and-a-half times more likely to use tobacco. Regarding insurance, compared with self-pay patients, those with Medicaid were nearly twice as likely to use tobacco (OR = 1.94; 95% CI, 1.47 to 2.55), whereas those with managed care or private insurance were much less likely (OR = 0.65; 95% CI, 0.48 to 0.85). As age increased, patients were less likely to use tobacco (OR = 0.70; 95% CI, 0.71 to 0.87; OR = 0.30; 95% CI, 0.26 to 0.35). Finally, those with distress scores ≥ 6 were nearly twice as likely to use tobacco than those with no distress (OR = 1.84; 95% CI, 1.66 to 2.05).

**Referral decline.** Neither clinic, race and ethnicity, relationship status, insurance type, age, nor distress were associated with patients’ decision to decline or accept tobacco treatment (Table 3). Males were more likely to decline than females (OR = 1.59; 95% CI, 1.26 to 2.00), and patients with distress scores ≥ 6 were less likely to decline treatment (OR = 0.61; 95% CI, 0.48 to 2.05).

**Reason for referral decline.** Neither race and ethnicity, relationship status, insurance type, nor age were associated with reasons for decline (Table 3). Relative to hematology clinic patients, those from the other clinic were less likely to report not being ready to quit (OR = 0.69; 95% CI, 0.54 to 0.89) and patients from the gynecology clinic were less likely to report not being ready to quit or preferring to quit without assistance (OR = 0.57; 95% CI, 0.32 to 0.99).

### TABLE 1. Demographic and Clinical Characteristics of the Patient Population (N = 26,365)\(^a\)

| Characteristic, No. (%) | Value |
|------------------------|-------|
| Clinic,  No. (%)       |       |
| Gynecology             | 4,267 (16.18) |
| Breast                 | 4,458 (16.91) |
| Hematology             | 4,842 (18.37) |
| Others                 | 12,798 (48.54) |
| Sex, No. (%)           |       |
| Male                   | 9,604 (36.43) |
| Female                 | 16,761 (63.57) |
| Race, No. (%)          |       |
| Native American        | 19 (0.07) |
| Hawaiian or Pacific Islander | 24 (0.09) |
| Asian                  | 182 (0.70) |
| Black or African American | 1,579 (6.08) |
| White                  | 24,150 (93.05) |
| Ethnicity, No. (%)     |       |
| Latinx                 | 417 (1.58) |
| Non-Latinx             | 25,249 (95.77) |
| Missing                | 699 (2.65) |
| Relationship status, No. (%) |       |
| Separated              | 262 (1.58) |
| Widowed                | 1,575 (9.44) |
| Divorced               | 2,135 (12.80) |
| Single                 | 3,041 (18.23) |
| Married or partnered   | 9,664 (57.95) |
| Insurance status, No. (%) |       |
| Self-pay or others     | 478 (2.78) |
| Medicaid               | 3,062 (17.75) |
| Managed care or private | 6,077 (35.23) |
| Medicare               | 7,631 (44.24) |
| Age, years\(^b\)       | 59.32 ± 14.34, 61 |
| Distress, 0-10\(^c\)   | 3.28 ± 3.12, 3 |

\(^a\)Data are frequencies (percentages) unless otherwise noted.  
\(^b\)Clinic where patient was seen at the time of tobacco use screening. Others denotes a clinic that sees patients with tumors in sites not otherwise specified.  
\(^c\)Race and ethnicity were also combined such that there were White non-Latinx patients (n = 23,374) and racial and ethnic minority patients (n = 2,148). Missing data for this variable are n = 843.  
\(^d\)Missing data for these variables: race and ethnicity (n = 428), marital status (n = 9,688), insurance status (n = 9,117), and distress (n = 11,097).  
\(^e\)Data are means ± standard deviations, medians.
Males were more likely to report not being ready to quit or preferring to quit without assistance than females (OR = 1.96; 95% CI, 1.28 to 2.99). Finally, relative to patients with less distress, patients with more distress were less likely to report not being ready to quit or preferring to quit without assistance (distress scores 1-5: OR = 0.48; 95% CI, 0.30 to 0.79; distress scores 6-10: OR = 0.59; 95% CI, 0.37 to 0.93).

**DISCUSSION**

Previous studies suggest recommendations by the forefront cancer care organizations to conduct population-based tobacco use assessment and provide evidence-based tobacco treatment, which are inadequately met by some cancer care facilities, and smoking rates among some patients with cancer remain high.\(^{17,31}\) This study aimed to determine rates and correlates of tobacco use, tobacco treatment referral decline, and reasons for decline at an NCI-designated cancer center, with the goal of better understanding how to optimize the reach of tobacco treatment in cancer settings. This cancer center’s population-based approach increased the percentage of patients with cancer screened for tobacco use from 64% to 99%. This 50% increase reflects nearly universal documentation of tobacco use status in the EMR, a necessary first step to high-quality tobacco treatment delivery.

Three major study findings emerge. First, 20% of adult patients with cancer reported tobacco use. This converges with the upper limits of US population-based survey data\(^{6-9}\) and data from 13 NCI-designated cancer centers, where current smoking rates ranged from 4% to 22%.\(^{32-36}\) In addition to reinforcing concerns about cigarette smoking of patients with cancer, this study highlights the occurrence of noncigarette tobacco use. Although only 1% of patients with cancer in this study engaged in this behavior, other studies have found that 3%-25% of patients with cancer are current users of electronic cigarettes,\(^{37,38}\) a number that may increase with time,\(^{39}\) in part because smokers believe
that these products aid smoking cessation.\textsuperscript{40} Tobacco use is a deeply entrenched behavior that cancer care providers cannot ignore because of fears of upsetting patients or perceptions of inadequate training.\textsuperscript{22,41} The aforementioned tobacco use rates underscore the need to ask every patient at every visit about tobacco use and advise tobacco users to quit consistent with quality health care delivery\textsuperscript{42} and best practices for cancer care.\textsuperscript{17,31} There might even be sufficient reason to extend core items of the Cancer Patient Tobacco Use Questionnaire to include questions about noncigarette tobacco use\textsuperscript{13,17} and to extend eligibility for clinical trials and treatment programs to all patients with cancer who use tobacco, not just those who smoke cigarettes.\textsuperscript{43-45} In trying to reach the target audience for

**TABLE 3.** Association of Tobacco Use and Tobacco Treatment Referral Response of Patients With Cancer

| Characteristic                  | Current Tobacco Use | Treatment Referral Decline | Reason for Treatment Referral Decline |
|--------------------------------|---------------------|-----------------------------|---------------------------------------|
|                                | OR (95% CI)         | OR (95% CI)                 | OR (95% CI)                           | OR (95% CI)                           |
| Clinic or disease site         |                     |                             |                                       |                                      |
| Hematology                     | Ref                 | Ref                         | Ref                                   | Ref                                   |
| Breast                         | 0.92 (0.78 to 1.09) | 1.11 (0.75 to 1.64)         | 0.85 (0.60 to 1.22)                  | 0.81 (0.42 to 1.59)                  |
| Gynecology                     | 1.22 (1.04 to 1.43) | 1.26 (0.88 to 1.79)         | 1.36 (0.97 to 1.88)                  | 0.57 (0.32 to 0.99)                  |
| Others                         | 1.73 (1.53 to 1.95) | 0.84 (0.64 to 1.11)         | 0.69 (0.54 to 0.89)                  | 0.80 (0.48 to 1.35)                  |
| Sex                            |                     |                             |                                       |                                      |
| Female                         | Ref                 | Ref                         | Ref                                   | Ref                                   |
| Male                           | 1.75 (1.58 to 1.94) | 1.59 (1.26 to 2.00)         | 1.23 (0.99 to 1.52)                  | 1.96 (1.28 to 2.99)                  |
| Race and ethnicity             |                     |                             |                                       |                                      |
| White, non-Hispanic            | Ref                 | Ref                         | Ref                                   | ---                                   |
| Minority                       | 0.76 (0.65 to 0.90) | 0.74 (0.53 to 1.05)         | 1.03 (0.74 to 1.43)                  |                                       |
| Relationship status            |                     |                             |                                       |                                      |
| Married or partnered           | Ref                 | Ref                         | Ref                                   | ---                                   |
| Divorced, separated, or widowed| 1.67 (1.50 to 1.86) | 1.08 (0.85 to 1.36)         | 0.91 (0.73 to 1.12)                  |                                       |
| Single                         | 1.41 (1.26 to 1.58) | 1.10 (0.86 to 1.42)         | 0.87 (0.70 to 1.09)                  |                                       |
| Insurance status               |                     |                             |                                       |                                       |
| Self-pay or others             | Ref                 | Ref                         | Ref                                   | ---                                   |
| Managed care or private        | 0.65 (0.49 to 0.85) | 1.02 (0.54 to 1.93)         | 0.79 (0.45 to 1.39)                  | 0.42 (0.10 to 1.74)                  |
| Medicare                       | 1.25 (0.95 to 1.65) | 0.98 (0.52 to 1.85)         | 0.92 (0.53 to 1.61)                  | 0.56 (0.14 to 2.31)                  |
| Medicaid                       | 1.94 (1.47 to 2.55) | 0.87 (0.46 to 1.63)         | 1.09 (0.62 to 1.91)                  | 0.37 (0.09 to 1.49)                  |
| Age tertiles, years            |                     |                             |                                       |                                      |
| < 55                           | Ref                 | Ref                         | Ref                                   | ---                                   |
| 55-66                          | 0.79 (0.71 to 0.87) | 0.87 (0.70 to 1.09)         | 1.12 (0.91 to 1.37)                  | 0.71 (0.49 to 1.02)                  |
| ≥ 67                           | 0.30 (0.26 to 0.35) | 0.82 (0.59 to 1.14)         | 1.35 (0.99 to 1.83)                  | 1.10 (0.58 to 2.07)                  |
| Distress tertiles              |                     |                             |                                       |                                      |
| 0                              | Ref                 | Ref                         | Ref                                   | ---                                   |
| 1-5                            | 1.10 (0.98 to 1.23) | 0.88 (0.66 to 1.17)         | 1.14 (0.90 to 1.45)                  | 0.48 (0.30 to 0.79)                  |
| 6-10                           | 1.84 (1.66 to 2.05) | 0.61 (0.48 to 0.79)         | 0.91 (0.73 to 1.13)                  | 0.59 (0.37 to 0.93)                  |

Abbreviations: OR, odds ratio; Ref, reference category.

\textsuperscript{a}The two logits are formed by fitting a cumulative logits model where the first logit corresponds to the log odds of not yet ready to quit versus quit on my own or already in treatment and the second logit corresponds to the log odds of not yet ready to quit or quit on my own versus already in treatment. These log odds accumulate probability of least desired to most desired outcome. The model reported is the partial proportional odds or cumulative logits model. When OR estimates appear in the logit 1 column only, this implies that the proportional odds assumption was tenable and only one OR is needed to quantify the effect of this covariate on the ordinal outcome of reason for refusal of treatment. When the proportional odds assumption is not tenable, two sets of ORs are needed for the covariate and are reported separately for the two logits. Therefore, the last two columns provide results from a partial proportional odds model where the proportional odds assumptions held for race and ethnicity and relationship status, but not for clinic, sex, insurance status, age tertiles, and distress tertiles.

\textsuperscript{b}Statistical significance.
tobacco treatment, study results point toward a focus on patients with cancer who are male, are not in a relationship, have Medicaid insurance, and report high distress, consistent with previous studies on correlates of smoking in patients with cancer. The results for disease site or clinic were mixed, so firm conclusions are untenable.

The second key finding is that more than three quarters of tobacco users declined a referral for tobacco treatment that was integrated into the cancer care system. This study’s treatment acceptance rate (17%) is much lower than that in clinical trials for smoking cessation patients with cancer (17%-84%). This rate is also at the lower end of enrollment rates for other cancer centers’ tobacco treatment programs (17%-83%). Even with the undesirable acceptance rate, the population-based approach resulted in the reach of thousands of patients with cancer who use tobacco. The discrepancy between this and previous studies could be due to this tobacco treatment program’s proactive approach (ie, an offer of assistance to every tobacco user) compared with only offering treatment to people who ask for help or report readiness to quit, as is customary in research and some clinical implementation. By offering treatment to all comers, one would expect a high rate of decline or low rate of acceptance, as most tobacco users are interested in quitting eventually but not right now. Indeed, most patients with cancer in this study declined treatment because they were not ready to quit. Patients with cancer who use tobacco experience many barriers to quitting (eg, stress, insufficient knowledge or appreciation of smoking’s impact on cancer outcomes, and regular exposure to others’ tobacco use), so it may be advantageous to offer tobacco treatment alongside interventions for distress, unmet information or practical needs, and inadequate social support. Additionally, a patient-centered approach for those who want to reduce, but not stop tobacco use entirely, may be advisable and could serve as a gateway to eventual abstinence. For patients with cancer who were ready to quit, tobacco treatment referral was often declined because of the desire to quit on one’s own. This result may reflect perceived practical barriers to treatment use (eg, cost and side effects) and/or a preference to rely on one’s internal strength to overcome nicotine dependence. Both issues could undermine engagement of patients with cancer in tobacco cessation.

The final key finding concerns correlates of referral response. Patients were significantly more likely to decline tobacco treatment if they were male. This converges with previous studies where male sex predicts patients with cancer declining tobacco treatment. This study also found that patients with higher levels of distress were less likely to decline tobacco treatment, contrary to some research, but possibly consistent with the effective response component of the teachable moment heuristic. No other variables were significantly associated with treatment referral decline, possibly because of difficulties in predicting a high overall rate of refusal. Upon examining covariate associations with reasons for refusal, patients with cancer were more likely to report low readiness to quit or the preference to quit without assistance if they were male, and less likely to report these outcomes if they endorsed higher distress levels or their cancer site was either gynecologic or others (ie, neither hematologic nor breast). Previous studies have not found demographic or clinical variables that reliably predict readiness to quit, but tobacco use variables (eg, nicotine dependence) consistently play a role. To our knowledge, this study is among the first to examine distress level of patients with cancer as a correlate of tobacco treatment acceptance or utilization, with at least one study showing a positive association between negative effect and treatment use. By contrast, depressive symptoms and other markers of distress have demonstrated negative associations with readiness and confidence of patients with cancer to quit. Because many patients with cancer experience distress during the acute period of cancer diagnosis and treatment, integrating psychologic services into cancer care might help patients capitalize on any effect-related motivation to quit while preventing any distress levels that might impede successful engagement in tobacco treatment. As is, further elucidation of demographic and clinical variables tied to tobacco treatment outcomes is important, as it could lead to more targeted offers and tailored interventions.

Implementation outcomes must be viewed in light of the study’s methodology and limitations. First, clinical service technicians were chiefly responsible for screening for tobacco use and offering tobacco treatment. On the one hand, because patients may feel pressure to accept tobacco treatment when asked by physicians or nurses, the referral acceptance rates observed might be especially low because of who asked the important questions. On the other hand, patients in this study might have felt more at ease and perhaps were more honest about their tobacco use and treatment readiness because of less perceived stigma or blame since the person asking about tobacco was not the person providing cancer care. Second, the predictive models are not comprehensive. The study relied on EMR data, so some known predictors of tobacco use and treatment acceptance (eg, nicotine dependence and risk perception) were unavailable for analysis and clinic was not a detailed enough variable to provide definitive answers about the role of disease site in the implementation outcomes. That said, the correlates considered herein are consistent with those in similar studies. Third, there was little racial and ethnic diversity in this sample, which might narrow generalizability to patients who are White, non-Hispanic. Fourth, and also related to the study design, there were sizable missing data for relationship status, insurance, and distress level. Finally, this study lacked...
biomedical validation of tobacco use status, so abstinence rates may be inaccurate.69

Even with its limitations, this population-based study of more than 25,000 adults provides new information about tobacco use, interest in tobacco treatment, and readiness of patients with cancer to quit. The results underscore the need for cancer care facilities to ask patients with cancer about all forms of tobacco use and among patients who report tobacco use, to stress the critical importance of tobacco cessation as an integral component of high-quality cancer treatment. The results of this study further demonstrate the feasibility of population-based implementation of tobacco use screening and proactive offers of tobacco treatment that have potential to reach wide swatches of the cancer patient population and engage people throughout the tobacco cessation process. Tobacco treatment is an integral component of cancer treatment, and this study provides one example of how the goals of the NCI Cancer Center Cessation Initiative could be met.

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AUTHORS’ DISCLOSURES OF POTENTIAL CONFLICTS OF INTEREST
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AUTHORS’ DISCLOSURES OF POTENTIAL CONFLICTS OF INTEREST

Cancer Patients’ Tobacco Use and Tobacco Treatment Referral Response: Implementation Outcomes at a National Cancer Institute–Designated Cancer Center

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