


Tobacco Cessation Counseling and Medications Provided by Physicians to Tobacco Users During Primary Care Visits

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Abstract

Introduction: The established guidelines for treating tobacco use and dependency is brief provider intervention to assist those willing to quit by providing access to medication and/or behavioral counseling. The purpose of the study is to determine the extent of cessation treatment offered by providers during primary care visits by patients who are current tobacco users, and to examine associations between patient factors and treatment received. **Methods:** Using data from the 2015 to 2018 National Ambulatory Medical Care Survey (NAMCS), we examined tobacco cessation counseling and medications from 4590 visits by patients with current tobacco use. Separate multivariate logistic regressions were used to assess whether the odds of receiving tobacco cessation treatment varied by age, gender, race/ethnicity, and payment source. **Results:** Of visits by current tobacco users, 18.4% included cessation counseling, 5.5% included cessation medication, and 22.1% included at least 1 type of treatment. Visits by patients with Medicare had 44% greater odds of including counseling (CI=1%-205%) and treatment (OR=1.44; 95% CI=1.01-2.06). Visits classified as “other payment type” had 73% greater odds of including counseling (OR=1.73; 95% CI=1.05-2.84). Visits by women had 86% greater odds of including medication (CI=17%-294%). **Conclusions:** Tobacco cessation treatment is underutilized by providers during primary care visits. Further research is necessary to understand and address barriers to providing routine cessation assistance.

Keywords

tobacco cessation, primary care, tobacco, racial disparities, smoking

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Introduction

Tobacco use continues to prevail as the leading cause of preventable disease and death in the United States, accounting for greater than 480 000 deaths per year, or approximately 1 in 5 deaths.¹ Despite a steady decline in smoking over the past 50 years, as of 2019, nearly 20.8% of the adult population continues to use tobacco.² Furthermore, tobacco use persists as one of the main modifiable risk factors amongst the top 4 out of 5 leading causes of death, the 4 being heart disease, cancer, chronic lower respiratory disease, and stroke.³ Preventive care and early intervention, such as physician advising on smoking cessation, play an imperative role in arresting disease development.

The established evidence-based guidelines for treating tobacco dependency is brief physician intervention consisting of advice to quit, assessing the patient’s willingness for cessation and assisting those willing to quit by providing

access to medication and/or behavioral counseling.⁴ FDA-approved cessation medications include bupropion SR, varenicline, and nicotine replacement therapies such as nicotine gum, nicotine inhaler, nicotine lozenge, nicotine nasal spray, and nicotine patch. This physician-delivered tobacco dependence treatment is effective and significantly impacts patient smoking cessation.^{4,6}

While physician advice to quit has increased overall in recent years, there are disparities in receipt of tobacco cessation advice by factors such as gender, age, race, and insurance status.⁷ Previous research indicates men, persons

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aged 18 to 24, and those that are uninsured are less likely to be offered tobacco cessation assistance.⁸⁻¹⁰ Additionally, there is a racial/ethnic disparity in receipt of cessation medication provided by physicians with non-Hispanic Whites being more likely to receive medication compared to all other racial/ethnic groups.⁸⁻¹⁴ The findings are mixed on whether this disparity exists in receipt of cessation counseling provided by physicians. Several studies indicate non-Hispanic African American/Blacks and Hispanics are less likely to receive advice to quit compared to non-Hispanic Whites.^{7-9,14-16} However, more recent studies found non-Hispanic African Americans/Blacks are not less likely, and in some instances are more likely, to receive advice to quit compared to non-Hispanic Whites.¹¹⁻¹³

Our study will examine factors associated with receipt of brief cessation counseling and medication provided by physicians in primary care settings utilizing data from the National Ambulatory Medical Care Survey (NAMCS) from 2015 to 2018. Previous literature on provider-offered assistance in cessation is limited either to a handful of primary care clinics in a single metropolitan area or a network of safety-net clinics whose patient-population is not representative of the population as a whole.^{12,13} Studies that used nationally representative data to examine disparities in receipt of cessation are at least 10 years old.^{8,11,14-17} Therefore, our study will provide a nationally representative update to the existing literature on receipt of tobacco treatment provided by physicians in primary care settings.

Methods

This study used pooled data from the 2015 to 2018 National Ambulatory Medical Care Surveys (NAMCS). The NAMCS is a nationally representative probability sample survey of physician office visits in the United States that is collected annually by the National Center for Health Statistics. Note that no data was released for 2017, therefore only 2015, 2016, and 2018 survey data are included. Physician office visits include outpatient visits in freestanding, office-based practices, including health maintenance organizations (HMOs), and non-federal government clinics. NAMCS uses a 2-stage sampling design, by first selecting the physicians, and next selecting patient visits. Physicians are instructed to record patient visits during a randomly assigned reporting week. More details about NAMCS can be found at https://www.cdc.gov/nchs/ahcd/about_ahcd.htm#NAMCS.

In this study, we limited visits to those of current smokers, ages 18 and up in survey years 2015, 2016, and 2018. Individuals who identified as “non-Hispanic other” for race/ethnicity were excluded due to NAMCS guidance on adequate sample records needed per group to obtain stable estimates. The final, unweighted sample consisted of 4590 patient visits.

Tobacco cessation treatment was defined 3 separate ways for this study: (1) tobacco cessation counseling, (2) tobacco cessation medication, and (3) counseling and/or medication. Tobacco cessation counseling was defined as physician notation that smoking cessation counseling was provided or ordered at the visit. Receipt of medication to assist in tobacco cessation was defined as physician notation that a smoking cessation medication had been prescribed, ordered, supplied, or continued for a patient. Drugs included in the class of smoking cessation agents were bupropion, nicotine replacement therapies (eg, nicotine patch, nasal spray, inhaler, or gum/lozenge), and varenicline (reference The Ambulatory Care Drug Database System). Identifying both tobacco cessation counseling and medication captures any ongoing treatment for smoking cessation. Three dummy variables were created to indicate whether the patient had received any tobacco cessation counseling, was prescribed a smoking cessation medication, and whether the patient received any type of treatment, defined as either tobacco cessation counseling and/or medication.

Patient characteristics included in the analyses were age, race/ethnicity, sex, and payment type. In this study, we limited the sample to current smokers, ages 18 and up. Individuals who identified as “non-Hispanic other” for race/ethnicity were excluded due to an inadequate number of records by treatment group, as advised by NAMCS documentation. The racial/ethnic groups used for analyses were non-Hispanic white, non-Hispanic black, and Hispanic. For the tobacco cessation medication treatment outcome, the non-Hispanic black and Hispanic groups were combined in order to provide adequate sample records. Insurance type included the following categories: private insurance, Medicaid, Medicare, self-pay/uninsured, and “other.” The self-pay/uninsured group includes individuals with “self-pay” or “no charge/charity” listed as their payment type. The “other” group includes individuals who had blank or missing payment information, “worker’s compensation,” or “other” listed as their payment type.

All data analyses were performed in Stata, version 12.0. Separate multivariate logistic regression was used to assess whether the odds of receiving tobacco cessation treatment (tobacco cessation counseling, tobacco cessation medication, and counseling and/or medication) varied by patient characteristics. All logistic regression models used Stata’s survey procedures to allow for nationally representative estimates, and for standard errors to correctly account for the complex sampling strategy of the NAMCS, with 95% confidence intervals (CIs) calculated by using these weights for all estimated odds ratios (ORs).

Results

Unweighted patient characteristics for the sample of current smokers are shown in Table 1. A total of 4590 patient visits

Table 1. Unweighted Sample Characteristics, 2015 to 2018.

	Frequency mean (n=4590)	Percent (%) standard deviation
Age (in years)	52.3	16.3
Sex		
Female	2393	52.1
Male	2197	47.9
Race-ethnicity		
Non-Hispanic white	3702	80.7
Non-Hispanic black	453	9.9
Hispanic	435	9.5
Insurance type		
Private	1981	43.2
Medicaid	765	16.7
Medicare	1271	27.7
Self-pay	208	4.5
Other	365	8.0
Tobacco cessation counseling		
Received counseling	648	14.1
Did not receive counseling	3942	85.9
Medication		
Cessation medications	221	4.8
No cessation medications	4369	95.2

Pooled data from the 2015 to 2018 National Ambulatory Medical Care Surveys (2017 NAMCS data have not been reported). Visits are limited to those by current smokers ages 18 and over.

met the inclusion criteria. Of these total visits, 14.1% (n=648) received tobacco cessation counseling, and 4.8% (n=221) received cessation medications. Weighted, nationally representative patient characteristics by treatment type are shown in Table 2. Using weighted estimates, there were approximately 250018981 visits by current smokers meeting the inclusion criteria in survey years 2015, 2016, and 2018. During the same years, weighted estimates show that 18.4% of visits by current smokers received tobacco cessation counseling, approximately 5.5% of visits by current smokers received smoking cessation medication, and 22.1% of visits by current smokers received at least 1 type of treatment (counseling and/or medication).

Adjusted odds ratios for tobacco cessation treatment are presented in Table 3, for each of the 3 treatment outcomes (tobacco cessation counseling, tobacco cessation medication, and counseling and/or medication). For tobacco cessation counseling, there were no significant differences observed by age, sex, or race/ethnicity. Type of insurance was associated with receiving tobacco cessation counseling. Compared to visits by those with private insurance, those with Medicare had 44% greater odds of receiving tobacco cessation counseling (OR=1.44; 95% CI=1-2.05). Similarly, those visits classified as “other payment type” for insurance had 76% greater odds of receiving counseling (OR=1.76; 95% CI=1.07-2.92). The “other payment” group included worker’s compensation, other payment, missing payment information, and unknown. No significant

differences were seen for visits by individuals with Medicaid or those uninsured compared to those visits with private insurance.

For tobacco cessation medication, there were no significant differences observed for age, race/ethnicity, or insurance type. Sex was significantly associated with medication being offered or continued during those visits. Compared to visits by men, visits by women had 86% greater odds of receiving some type of tobacco cessation medication (OR=1.86; 95% CI=1.17-2.94). The any treatment group (which includes those who received counseling, medication, or both) had no significant differences by age, sex, or race/ethnicity. Type of insurance was associated with receiving any treatment. Compared to visits by those with private insurance, those with Medicare had 44% greater odds of receiving tobacco cessation treatment (OR=1.44; 95% CI=1.01-2.06). Similarly, those visits classified as “other payment” for insurance had 73% greater odds of receiving counseling (OR=1.73; 95% CI=1.05-2.84).

Discussion

Our study found a large majority of tobacco users are not receiving tobacco cessation assistance (77.9%), which includes counseling (81.6%) and medications (94.5%) in primary care settings. This is concerning as the Clinical Practice Guidelines indicate healthcare providers should be providing this assistance at every visit.⁴ Previous research

Table 2. Weighted Frequencies (%) of Visit Characteristics for Current Smokers by Treatment Type, 2015 to 2018.

	Counseling (sample n=648)	Medication (sample n=321)	Any treatment (sample n=812)	Total (sample n=4590)
Total	46 096 302	13 672 847	55 352 012	250 018 981
Sex				
Female	23 367 016	9 210 775	29 577 537	134 631 808
%	50.7	67.4	53.4	53.9
Male	22 729 285	4 462 072	25 774 476	115 387 174
%	49.3	32.6	46.6	46.2
Race-ethnicity				
Non-Hispanic white	35 883 174	11 513 771	43 739 003	192 233 393
%	77.8	84.2	79.0	76.9
Non-Hispanic black	5 291 501	—	6 405 857	28 863 462
%	11.5	—	11.6	11.5
Hispanic	4 921 626	—	5 207 152	28 922 127
%	10.7	—	9.4	11.6
Non-White	—	2 159 076	—	—
%	—	15.8	—	—
Insurance type				
Private	16 181 153	4 625 259	19 459 182	104 483 050
%	35.1	33.8	35.2	41.8
Medicaid	6 722 520	2 154 957	8 203 583	39 082 326
%	14.6	15.8	14.8	15.6
Medicare	15 413 037	4 217 889	18 019 573	65 375 405
%	33.4	30.9	32.6	26.2
Self-pay	2 444 399	1 098 705	3 502 658	19 189 100
%	5.3	8.0	6.3	7.7
Other	5 335 192	1 576 038	6 167 017	21 889 101
%	11.6	11.5	11.1	8.8

Pooled data from the 2015 to 2018 National Ambulatory Medical Care Surveys (2017 NAMCS data have not been reported).

Table 3. Adjusted Odds Ratios (95% CI) of Receiving Tobacco Cessation Treatment, 2015 to 2018.

	Tobacco cessation counseling	Tobacco cessation medication	Any treatment
Age (in years)	1.01 [†] (1.01-1.02)	1.00 (0.99-1.01)	1.01 [†] (1.00-1.02)
Sex			
Female	0.88 (0.68-1.12)	1.86** (1.17-2.94)	1.00 (0.79-1.27)
Male (ref)	—	—	—
Race-ethnicity			
Non-Hispanic white (ref)	—	—	—
Non-Hispanic black	0.95 (0.62-1.47)	—	0.94 (0.60-1.48)
Hispanic	0.92 (0.56-1.5)	—	0.76 (0.48-1.21)
Non-white	—	0.59 [†] (0.32-1.08)	—
Insurance type			
Private (ref)	—	—	—
Medicaid	1.21 (0.79-1.84)	1.24 (0.68-2.25)	1.22 (0.83-1.79)
Medicare	1.44* (1.01-2.05)	1.44 (0.73-2.84)	1.44* (1.01-2.06)
Self-pay	0.83 (0.42-1.63)	1.30 (0.60-2.84)	1.01 (0.55-1.85)
Other	1.76* (1.07-2.92)	1.77 (0.78-3.99)	1.73* (1.05-2.84)

For the outcome “tobacco cessation medication,” the race/ethnicity groups Non-Hispanic black and Hispanic were too small to run individually, so were combined into 1 group for this model. NAMCS advises cell sizes should be at least 30, and these were under 30 as separate groups.

[†]P ≤ .10. *P ≤ .05. **P ≤ .01.

has indicated similar low rates of patient receipt of general cessation assistance (38%),⁸ cessation counseling (35.2%),¹² and medication (7.5%).¹² However, studies where physicians self-report on utilizing cessation treatment guidelines found a large majority (over 90%), are assisting their patients with cessation efforts.^{18,19}

While sociodemographic disparities are well-documented in use of tobacco products, our results were mixed on whether these disparities exist in receipt of tobacco cessation assistance. We found no significant differences for race/ethnicity and age for tobacco users receiving tobacco cessation counseling and/or medication. This finding is consistent with others who found no racial/ethnic differences in receiving advice to quit,¹¹ however, it differs from prior research indicating racial/ethnic minorities are less likely to receive medication.^{11,13} Type of insurance was an indicator for whether a tobacco user received cessation counseling and/or medication, and those with Medicare and “other payment” were more likely to receive counseling or medication. We also found women are more likely than men to receive medication, a finding consistent with others.¹⁰ It is possible bupropion is being prescribed for the treatment of depression, which could account for the discrepancy as women are more likely than men to be diagnosed with depressive disorders, and receive a prescription for antidepressant medication.²⁰

There are many speculated reasons as to why healthcare providers do not provide regular counseling or pharmacologic interventions to patients who use tobacco. The factors which determine, to an extent, the delivery and receipt of tobacco cessation counseling can range from microcosmic interpersonal physician-patient relationships to macrocosmic socio-economic status and system-level issues. One study sampling physicians from internal medicine, family medicine, and surgical specialties identified 3 perceived obstacles to the delivery of cessation. The barriers cited by the sampled group include limited time with patients to provide cessation, receptivity of the patient to the counseling, and associated patient lifestyle issues.²¹ A systematic review of 19 studies on family and general practitioners perception on smoking cessation counseling cited many reasons as to why providers refrain from delivery, including counseling taking up a significant portion of time during a standard visit, counseling being ineffective, and lack of confidence in providing cessation counseling.²² One study found that health status of a patient in part determined whether or not the patient would receive counseling on cessation. Patients with chronic obstructive pulmonary disease (COPD), a disease manifested primarily from smoking, received smoking counseling more frequently than patient-smokers without this diagnosis. In the same study, patients with asthma and cardiovascular disease were just as likely to receive counseling as patient-smokers without these diagnoses.²³

Another reason not to deliver or effectively deliver cessation counseling is that physicians themselves may smoke or vape, which can create bias toward smoking cessation counseling.²⁴

Many of the barriers discussed are actionable and can be mitigated by implementation of smoking cessation counseling education during medical training. This is not a one-size-fits-all solution, however emphasis on educating physicians-in-training has the potential to address overt barriers such as lack of confidence in delivery of counseling and patient health status. Additionally, limited time as a determination of whether a patient receives counseling can be addressed via physician education, as these barriers do not exist in a vacuum. Cessation counseling may not consume significant time during a standard visit if the physician is able to counsel efficiently and with confidence. Physician education benefiting their patient population is documented in a study citing increased competence and confidence in offering cessation by physicians who attended post-graduate training on smoking cessation practice, versus physicians who did not undergo such training.²⁵ Providing efficient and effective counseling as well as offering pharmacologic treatments to patients has been shown to increase quit rates in comparison to patients who had not received the same caliber of intervention.^{26,27}

Several limitations are worth noting. The NAMCS data captured documented tobacco use status but did not provide information on type of product used. It is unknown if physicians asked specifically about electronic nicotine delivery devices and/or vapes, and if these devices were documented as a tobacco product. Research suggests physicians are less likely to provide cessation assistance to patients using these products,²⁸ and may view them as a harm reduction tool and thus less likely to intervene with patients who vape.^{29,30}

Similarly, NAMCS data documented cessation counseling, but there is no assessment in the quality of the counseling provided. Physicians who choose not to deliver smoking cessation counseling and physicians who do not effectively deliver counseling exist on 2 sides of the same coin. A study sampling both physicians and patients found a difference in perception upon apparent receipt of counseling. Of the physicians who provided smoking cessation counseling, only 15% of their recipients corroborated the statement.³¹ Although the quality of the smoking cessation treatment could not be assessed, this study still shows whether or not it was even offered to the patient during the visit.

Furthermore, it is possible the cessation counseling numbers could be either inflated or understated. NAMCS relies on Medicare’s Merit-based Incentive Payment System (MIPS) for data, so there is a financial incentive for physicians to document that they provided cessation counseling even if it did not occur. Therefore, there is the potential of MIPS to artificially inflate smoking cessation rates.

Contrastingly, tobacco screening and counseling are often under-documented by providers in practice,³² therefore it's possible tobacco screening and cessation assistance occurred without documentation. It is likely not all patients who were using nicotine replacement therapy were documented, as the therapies most utilized (patch and gum/lozenge) are available over the counter, thus, these might have been discussed or recommended to the patient but not noted in the patient record. We were also unable to determine if bupropion was prescribed for smoking cessation or depression.

Additionally, it is unknown if patients asked the provider for assistance with cessation efforts. Studies indicate the likelihood of receiving cessation assistance is significantly affected by whether or not a patient reports asking for help.^{33,34} It is possible that many tobacco users were not offered cessation assistance simply because they did not indicate they were interested in quitting. Finally, approximately 18% of the observations had missing or unknown smoking status indicated in the patient record, thus some visits by current smokers were likely excluded from the sample.

Health professionals' screening for tobacco use, brief advice on tobacco cessation, and referral to tobacco treatment services are associated with improved cessation rates. Tobacco cessation is more cost-effective and has a greater health effect than most other clinical interventions, yet, as our study shows, it tends to be underutilized by providers in primary care settings. Incorporating tobacco cessation education in medical school curricula and post-graduate training can help eliminate barriers for physicians to routinely provide cessation assistance. If more physicians consistently offered smoking cessation assistance during visits, it would have a significant impact on the health of the population.



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