Undertreatment of Tobacco Use Relative to Other Chronic Conditions

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Tobacco use remains the leading preventable cause of death in the United States.[1,2] Practice guidelines have recommended that physicians address tobacco use with all smokers, and many effective treatments for tobacco dependence are available.[3] These treatments include behavioral counseling (individual, group, telephone) and medications (nicotine patch, gum, lozenge, nasal spray and inhaler, varenicline, bupropion).[3] However, US physicians provide these evidence-based treatments at low rates. In 2001–2003, they offered smoking cessation counseling to smokers at only approximately 20% of office visits and prescribed smoking cessation medication at fewer than 2%.[4]

Tobacco screening and brief intervention have been identified as 1 of the most clinically and cost-effective preventive interventions.[5] Using a composite measure of clinically preventable burden and cost effectiveness, the National Commission on Prevention Priorities ranked tobacco screening and intervention at 10 (highest score), higher than screening for hypertension (8), cholesterol (7), obesity (5), depression (4), and diabetes (2).[5]

Tobacco use, usually in the form of smoking, bears many similarities to other chronic conditions that contribute to increased cardiovascular risk, such as diabetes, hypertension, and hyperlipidemia. These conditions each show periods of good control and poor control.[6,7] For each condition, multiple effective treatments are available, including medication and behavioral therapy.[7] However, physicians appear to be more likely to treat other chronic conditions than to treat tobacco dependence. For example, the prevalence of treatment of hypertension increased from 60% to 70% between 1999–2002 and 2005–2008, and the prevalence of hypertension remained constant.[8] Similarly, the prevalence of individuals with elevated low-density lipoprotein cholesterol remained constant, and the prevalence of treatment from 1992–2002 to 2005–2008 increased from 28% to 48%.[9] No such

Objectives. We compared the likelihood that a tobacco user would receive treatment with the likelihood that an adult with another common chronic condition would receive treatment for that condition at an office visit.

Methods. We analyzed data from the 2005–2007 National Ambulatory Medical Care Survey to compare the proportion of US office visits at which tobacco users and individuals with hypertension, hyperlipidemia, diabetes, asthma, or depression received condition-specific treatment. We calculated the odds that a visit for a comparison condition would result in treatment relative to a visit for tobacco dependence.

Results. From 2005 to 2007, 38 004 patient visits involved at least 1 study condition. Tobacco users received medication at fewer visits (4.4%) than individuals with hypertension (57.4%), diabetes (46.2%), hyperlipidemia (47.1%), asthma (42.6%), and depression (53.3%). In multivariate analyses, the odds for pharmacological treatment of these disorders relative to tobacco use were, for hypertension, 32.8; diabetes, 20.9; hyperlipidemia, 16.5; asthma, 22.1; and depression, 24.0 (all *P*s < .001). Patients with hypertension, diabetes, or hyperlipidemia were also more likely to receive behavioral counseling.

Conclusions. Alternate models of engagement may be needed to enhance use of effective treatments for tobacco use. (*Am J Public Health.* 2013;103:e59–e65. doi:10.2105/AJPH.2012.301112)

increase in the prevalence of treatment of smoking has been documented.[4,10]

Of note, smoking does differ in several important ways from these other conditions. For example, smokers can quit without using any cessation medication or counseling; unassisted behavioral change alone may mitigate, but generally does not cure, common chronic conditions such as hypertension, diabetes, or hyperlipidemia. In addition, smokers can purchase effective over-the-counter medications, such as nicotine patches or gum. Nonprescription medications are unavailable for the treatment of these other chronic conditions.

In this study, we compared the rates at which a nationally representative sample of physicians treated tobacco use with the rates at which they treated 3 other major risk factors for cardiovascular and cerebrovascular disease (hypertension, hyperlipidemia, and diabetes), as well as 2 other chronic conditions, asthma and depression, that are exacerbated by smoking or more common in smokers. Our hypothesis was that tobacco use would be

much less likely to be treated than the other chronic conditions.

METHODS

The National Ambulatory Medical Care Survey (NAMCS) is a multistate random-sample survey of 3000 physicians working in offices and community health centers conducted annually by the Centers for Disease Control and Prevention. It includes data on approximately 30 patients per physician over a 1-week period.[11,12] The basic sampling unit for the NAMCS is the physician–patient visit. NAMCS uses a multistage probability design that involves samples of primary sampling units, physician practices within primary sampling units, and patient visits within practices. Primary sampling units are geographic segments composed of counties, groups of counties, or county equivalents within the United States. The physician sample is drawn from master files of all US physicians maintained by the American Medical Association

and the American Osteopathic Association. As a multilevel national sample of outpatient visits, NAMCS provides an excellent means of assessing physician practice nationwide. Data abstracted from NAMCS have been shown to have good agreement with data obtained by direct observation of office visits.[13]

We examined pooled data from the 2005–2007 NAMCS. We included all visits by patients aged 18 years or older and examined these outcomes: (1) prescription of condition-specific medications to individuals with 1 of 6 chronic conditions, including tobacco use, and (2) provision of condition-specific counseling or health education for each condition.

We identified patients with the conditions of interest by using primary and secondary diagnostic codes from the *International Classification of Diseases, Ninth Revision, Clinical Modification* (*ICD-9-CM*), as well as checkboxes located on the NAMCS form (question 1g or 1h for current tobacco use and Question 5b for the comparison conditions).[14] *ICD-9-CM* codes were, for hypertension, 401.0–405.9; diabetes, 250.0–250.9; hyperlipidemia, 272.0–272.9; asthma, 493.0–493.9; depression and mood disorder, 296.0–296.99, 300.4, and 311; and tobacco dependence, 305.1.

Measures

Pharmacotherapy. The NAMCS records medications prescribed or provided at each visit. For tobacco use, we counted all Food and Drug Administration–approved medications: nicotine gum, patch, lozenge, spray, inhaler, varenicline, and bupropion.[3] (Bupropion is also indicated for the treatment of depression, but if it was prescribed for a smoker, we considered it a tobacco-related medication.) We took medications specific to the treatment of the comparison conditions (Table 1) from the National Drug Code Directory, used in the 2005 NAMCS, and the Multum Classification of Therapeutic Classes, used in NAMCS from 2006 onward.

Counseling. NAMCS records whether patients received health education or counseling, categorized as none, asthma education, tobacco use or exposure, diet or nutrition, exercise, weight reduction, growth or development, injury prevention, stress management, and other. We counted patients with asthma who

received asthma education as having received behavioral counseling. Smokers who received counseling on tobacco use or exposure were recorded as having been counseled. We recorded patients with hypertension, diabetes, or hyperlipidemia as having received behavioral counseling if any of the following were present: diet or nutrition, exercise, or weight reduction. Behavioral counseling was not defined for depression because none of the available responses were evidence-based therapies for depression.

Statistical Analysis

We calculated the characteristics of the study population for each condition as means for continuous variables (age, number of prescriptions/patient, number of diagnoses/patient) and as frequencies or percentages for categorical variables (all others). All statistical estimates presented in the results are weighted to reflect national estimates. NAMCS weights accommodate the complex multistage probability design and adjust for nonresponse (a physician either did not see any patients during the sample week or did not assess visits for patients he or she did see during the sample week). For select variables (date of birth, gender, ethnicity, race, and whether the patient

had been seen before by the physician or practice, i.e., was an established patient), the NAMCS data center imputes item nonresponse using a hot deck approach, randomly assigning values from patient records with similar characteristics, on the basis of physician specialty, geographic region, and *ICD-9-CM* diagnosis.[11]

We assessed the proportion of visits at which patients received any condition-specific medication and the proportion of visits at which patients received condition-specific behavioral counseling. We then performed a more conservative sensitivity analysis, comparing the proportion of visits at which smokers received any treatment (medication or counseling) with the proportion of visits at which patients with comparison conditions received medication only. We estimated unadjusted and adjusted odds ratios with 95% confidence intervals (CIs) using a weighted logistic regression with generalized estimating equations to evaluate rates of receiving a prescription for participants in each condition compared with smokers. The generalized estimating equations method in a weighted logistic regression accounts for intraclass correlations for participants who have both conditions. Thus, the method is more robust than an ordinary logistic model when needed to explain

TABLE 1—Medication Classes Prescribed at Each Visit by Condition, Defined by National Drug Code and Multum Categorization Schemes: National Ambulatory Medical Care Survey, 2005–2007

Condition	Medication Classes
Hypertension	Agents for hypertensive emergencies, angiotensin-converting enzyme inhibitors, peripherally acting antiadrenergic agents, centrally acting antiadrenergic agents, beta blockers, calcium channel blockers, diuretics, vasodilators, angiotensin II inhibitors, antihypertensive combinations, aldosterone receptor agonists, renin inhibitors, insulin
Diabetes	Sulfonylureas, nonsulfonylureas, cholesterol absorption inhibitors, α-glucosidase inhibitors, thiazolidinediones, meglitinides, miscellaneous antidiabetic agents, antidiabetic combinations, dipeptidyl peptidase 4 inhibitors, amylin analogs
Hyperlipidemia	Fibric acid derivatives, bile acid sequestrants, cholesterol absorption inhibitors, antihyperlipidemic combinations, hydroxymethyl-glutaryl-CoA reductase inhibitors, miscellaneous
Asthma	Methylxanthines, adrenergic bronchodilators, anticholinergic bronchodilators, bronchodilator combinations, inhaled corticosteroids, mast cell stabilizers, antiasthmatic combinations, upper respiratory combinations, leukotriene modifiers
Depression	Selective serotonin reuptake inhibitors, tricyclics, monoamine oxidase inhibitors, phenylpiperazines, tetracyclics, selective serotonin norepinephrine reuptake inhibitors, miscellaneous
Tobacco use	Nicotine patch, nicotine gum, nicotine lozenge, nicotine nasal spray, nicotine inhaler, varenicline, bupropion

a within-subject correlation. Covariates adjusted in the multivariate models were all nominal: patient age (18–34, 35–64, 65 years or older), gender, race, ethnicity, expected source of payment (i.e., insurance status), whether the patient was new or established, physician specialty type (medical, surgical, primary care), and, in the medication model, counseling for other behavioral risk factors (yes or no whether reported any counseling for tobacco use or exposure, asthma education, weight reduction, diet or nutrition, or exercise) provided during the visit. We fit separate models for prescription of medication and for provision of counseling for health behaviors (tobacco use or exposure, weight reduction, asthma education, diet or nutrition, exercise) provided during the visit, with tobacco use as the reference category.

We performed all analyses using SAS version 9.2 (SAS Institute, Inc., Cary, NC) and SUDAAN Version 10.0 (Research Triangle Institute, Research Triangle Park, NC) with statistical significance set at P values less than .05 using a 2-tailed test. A sample size of at least 5000 patient visits per chronic condition would provide more than 95% power to detect differences as small as 4% at the .05 significance level. We used the scheme by Bennett et al.[15] for reporting results of survey research.

RESULTS

From 2005 to 2007, 3128 providers contributed data on 72 671 patient visits, representing 794 638 providers and 2 298 188 013 patient visits nationwide. Of these visits, 53.1% were made by patients with at least 1 of the conditions studied. Among the visits by patients who had any of the conditions, 54.2% had 1 of the conditions studied, 30.4% had 2 conditions, 11.9% had 3 conditions, 2.9% had 4 conditions, 0.5% had 5 conditions, and 0.1% had all 6. All conditions had cases identified by either checkbox or diagnostic coding. We identified most cases by checkbox, in these proportions: tobacco, 99.7%; hypertension, 100%; diabetes, 100%; hyperlipidemia, 98.9%; asthma, 100%; and depression, 98.4%. Characteristics of the study population are given in Table 2. Across all conditions, participants were largely female and White. Compared with the other conditions, tobacco

users were more likely to have Medicaid or no insurance and were less likely to be an established patient (defined as someone for whom the provider or anyone in the office had provided care for in the past).

Table 1 lists the classes of medication queried for each condition. The medication classes were defined by the National Drug Code and Multum categorization schemes. Of note, some of these medications may be prescribed for conditions other than the ones in this study. We assigned them to the comparator conditions if they were mentioned for patients with those conditions. The only major change in medication availability occurred in 2006, with Food and Drug Administration approval of varenicline for tobacco dependence. In 2007, 88 prescriptions (2 913 673 prescriptions in the weighted population estimate) were written for varenicline, representing 3.2% of all visits for tobacco use and accounting for most of the growth in tobacco dependence treatment between 2005 and 2007.

From 2005 to 2007, the proportion of visits by patients at which a medication was recorded were, for hypertension, 57.4%; diabetes, 46.2%; hyperlipidemia, 47.1%; asthma, 42.4%; depression, 53.3%; and tobacco use, 4.4% ($P < .001$). Tobacco users were much less likely to receive medication than those with other conditions.

From 2005 to 2007, the proportions of patients receiving behavioral counseling were, for hypertension, 24.5%; diabetes, 28.0%; hyperlipidemia, 32.0%; asthma, 7.0%, and tobacco use, 21.5%. In unadjusted analyses, patients with asthma were less likely to receive behavioral counseling for that condition than individuals with the other conditions.

Table 3 displays the unadjusted and adjusted odds of receipt of a condition-specific medication. Compared with smokers, individuals with hypertension, diabetes, hypercholesterolemia, asthma, or depression were considerably more likely to receive a medication for that condition (all Ps < .001). In a more conservative sensitivity analysis, we compared the rate of medication prescription for the comparison conditions with the rate of any treatment (counseling or medication) for tobacco use. In this analysis, patients with hypertension (adjusted odds ratio [AOR] = 4.1; 95% CI = 3.5, 4.8),

diabetes (AOR = 2.7; 95% CI = 2.3, 3.1), hyperlipidemia (AOR = 2.2; 95% CI = 1.9, 2.5), asthma (AOR = 2.1; 95% CI = 1.8, 2.6), and depression (AOR = 3.3; 95% CI = 2.8, 3.8) had higher odds of being prescribed medication than tobacco users did of receiving any treatment, including a prescription or counseling.

Table 4 displays the adjusted odds of receiving counseling for participants in each condition, in multivariate models that adjust for age, gender, race, ethnicity, expected source of payment, type of patient (new or established), and type of provider (primary or not). Patients with hypertension (AOR = 1.2; 95% CI = 1.03, 1.4), diabetes (AOR = 1.4; 95% CI = 1.2, 1.7), or hyperlipidemia (AOR = 1.5; 95% CI = 1.3, 1.8) were more likely to receive behavioral counseling than did smokers (all Ps < .05). Smokers were more likely to receive counseling for tobacco use than were asthmatics for asthma (AOR = 0.3; 95% CI = 0.2, 0.4).

DISCUSSION

Tobacco use is a common treatable behavior that causes disease in virtually every organ system and remains the leading preventable cause of death in the United States.[1] It is as prevalent as other major cardiovascular disease risk factors such as hypertension, diabetes, and hyperlipidemia. Asthma and depression are other common chronic conditions treated by office-based clinicians. All of these conditions, including tobacco use, have multiple evidence-based treatments, including medication and behavioral therapies. Hence, one might expect tobacco dependence to be treated by US physicians as often as are other major chronic diseases. Our data indicate that it is not.

In this analysis of outpatient adult visits to US physicians over 3 years, physicians were less likely to treat tobacco dependence than they were to treat 5 other common chronic conditions. Specifically, physicians were less likely to prescribe evidence-based medication for tobacco use and less likely to provide health education for tobacco use relative to hypertension, diabetes, and hyperlipidemia. Rates of tobacco counseling dropped slightly from 1994 to 2003[4] and were virtually unchanged from 1995 levels.[10]

TABLE 2—Population Characteristics: National Ambulatory Medical Care Survey, 2005–2007

Variable	All Patients, No., %, or Mean (SD)	Tobacco Use, No., %, or Mean (SD)	Hypertension, No., %, or Mean (SD)	Diabetes, No., %, or Mean (SD)	Hyperlipidemia, No., %, or Mean (SD)	Asthma, No., %, or Mean (SD)	Depression, No., %, or Mean (SD)
Visits	72 671	8733	19 756	6477	10 849	5842	8410
Weighted visits	2 298 188 013	263 956 329	654 777 246	279 036 573	373 724 166	209 965 632	235 085 370
Female	61.1	53.7	56.6	54.0	52.3	63.0	70.1
Race							
White	85.1	85.8	83.1	81.7	86.0	87.0	90.6
Black or African American	9.9	10.5	12.0	12.5	7.9	9.3	6.4
Asian	3.7	2.3	3.8	4.2	4.8	2.7	1.7
Native Hawaiian or other PI, AI, AN	1.1	0.9	1.0	1.4	1.0	0.9	0.8
> 1 race	0.2	0.4	0.1	0.2	0.2	0.1	0.4
Ethnicity, Hispanic or Latino	10.7	7.6	9.8	12.8	9.4	8.6	8.2
Age, y	54.1 (0.35)	48.3 (0.47)	63.9 (0.29)	62.9 (0.29)	63.2 (0.29)	57.4 (0.57)	51.7 (0.39)
Insurance							
Private	50.6	50.7	39.8	36.3	43.9	42.7	49.1
Medicare	27.0	17.5	42.6	41.4	40.6	34.9	24.0
Medicaid or SCHIP	8.6	14.7	8.9	12.7	7.2	12.8	13.3
Worker's compensation	1.6	2.6	0.6	0.5	0.3	0.5	1.0
Self-pay, no charge, or charity	5.1	8.3	2.8	3.2	2.7	3.5	7.1
Other, missing, or unknown	7.1	6.2	5.3	5.9	5.4	5.6	5.6
Major reason for visit							
New problem (< 3 mo, onset)	30.1	32.9	25.4	23.7	25.8	32.0	23.9
Chronic problem, routine	34.8	33.9	44.5	47.0	46.2	38.2	48.9
Chronic problem, flare up	9.0	10.6	9.5	9.5	8.2	13.4	12.3
Pre- or postsurgery	7.8	7.8	6.9	6.5	5.0	5.0	3.5
Preventive care	16.2	13.5	12.0	11.7	12.8	9.6	9.7
Missing	2.1	1.3	1.7	1.7	1.9	0.5	0.5
Established patient	86.3	83.8	90.5	90.0	92.6	89.9	90.8
Physician specialty							
Primary care	52.4	60.3	58.4	56.7	67.9	60.8	54.8
Surgical care	23.1	20.6	19.8	23.1	11.2	14.0	9.2
Medical care	24.6	19.1	21.7	20.2	20.9	25.2	35.9
Currently enrolled in disease management program, %	7.4	7.4	13.3	15.4	15.2	10.8	14.8
Health education given or prescribed	35.1	45.4	41.8	43.7	49.0	40.6	44.6
No. of diagnoses per patient	2.60 (0.01)	2.61 (0.02)	2.70 (0.01)	2.74 (0.01)	2.78 (0.02)	2.71 (0.02)	2.66 (0.02)
No. of prescriptions per patient	2.37 (0.06)	2.49 (0.08)	3.56 (0.08)	3.80 (0.10)	3.91 (0.09)	3.72 (0.12)	3.27 (0.09)
Proportion of visits with prescription written	72.6	76.4	83.0	80.7	86.5	86.0	87.0

Note. AI = American Indian; AN = Alaskan Native; PI = Pacific Islander; SCHIP = State Children's Health Insurance Program.

A compelling argument has been made that tobacco use should be reframed as a chronic disease and treated as are other chronic conditions such as diabetes.[3,6,7] Our study suggests that this has not occurred. Possible explanations include provider and patient skepticism about the efficacy of treatment and providers' lack of knowledge about smoking cessation treatment, lack of time, and fear of alienating smokers.[16] The inadequate and time-limited reimbursement for counseling or medication by public and private health insurers, compared with that for other chronic conditions examined here, also likely contributes. Pharmacotherapy for tobacco dependence treatment, especially nonprescription nicotine replacement therapy, is poorly reimbursed in the United States.[7] In 6 states, Medicaid provides no coverage at all for tobacco dependence medication or counseling,[17] which limit physicians' enthusiasm for prescribing it and patients' interest in accepting the prescriptions.

A final challenge to improved pharmacological treatment of tobacco use may be its

TABLE 3—Odds of Receiving Medication for Other Conditions Relative to That for Tobacco Use: National Ambulatory Medical Care Survey, 2005–2007

Condition	Visits Receiving Condition-Specific Medication, %	OR (95% CI)	AORa (95% CI)
Hypertension	57.4	29.2 (24.8, 34.4)	32.8 (27.2, 39.5)
Diabetes	46.2	18.7 (15.5, 22.5)	20.9 (16.9, 25.8)
Hyperlipidemia	47.1	19.3 (16.0, 23.3)	16.5 (13.5, 20.1)
Asthma	42.4	16.1 (13.2, 19.7)	22.1 (17.4, 28.1)
Depression	53.3	22.9 (19.2, 27.4)	24.0 (20.0, 28.7)
Tobacco use	4.4	1.0 (Ref)	1.0 (Ref)

Note. AOR = adjusted odds ratio; CI = confidence interval; OR = odds ratio.
aVariables included in the model were age, gender, race, ethnicity, expected source of payment, type of patient (new or established), type of physician specialty (medical, surgical, primary), and provision of counseling (except for depression).

conceptualization as a health behavior. In the "5 A's" counseling model recommended for treating tobacco dependence,[3] medication is offered (as an Assist intervention) only when the patient is prepared to change. Motivational enhancement techniques[18] are suggested for smokers who are not ready to quit. These techniques typically include asking the patient whether she or he is ready to change a behavior and tailoring treatment to the readiness to change. By contrast, physicians generally do not ask individuals with diabetes, hypertension, hyperlipidemia, or asthma whether they are ready to treat these conditions. Instead, they are treated, with a plan developed in consultation with the patient. This paradigm of disease management may be appropriate for the comparator conditions examined in this study. This ambiguity may reflect the limits of the applicability of the

chronic disease model to tobacco dependence treatment. Of note, NAMCS does not record readiness to change for any condition and has been shown to underreport counseling for smoking, diet, and exercise, in approximately equal proportions, suggesting the validity of using NAMCS to assess the frequency of counseling for tobacco compared with the other conditions.[13]

Insofar as tobacco treatment is a Grade A recommendation of the US Preventive Services Task Force[19] and many other agencies and organizations, each of these barriers can be eliminated. Evidence-based strategies to increase tobacco dependence treatment in primary care settings include audit and feedback,[20] systems changes to routinize tobacco screening and referral,[21] enhanced access to tobacco dependence medications,[22] and expanded insurance

coverage for pharmacotherapy and counseling.[23] Smokers' satisfaction with their medical care is higher when their physician addresses smoking cessation.[24] Identifying provider champions in clinical settings might enhance tobacco treatment efforts as well.[25] Additional training for medical students[26] and resident physicians[27] in tobacco treatment may help.

Limitations

Strengths of this study include the large, nationally representative sample and a survey that permitted a direct comparison of treatments for different conditions. The analysis also has limitations. First, NAMCS data may underestimate the use of pharmacotherapy for treating tobacco dependence to a greater extent than they underestimate pharmacotherapy for other diseases, because the most commonly used medications for tobacco dependence—nicotine patch, gum, and lozenge—do not require a prescription.[28] Nonprescription medications recommended during a visit can be recorded in NAMCS, and nonprescription drugs such as acetaminophen are recorded frequently.[29] However, nonprescription medications recommended during a visit may be documented less completely than are prescription drugs. Even if this is the case, though, the effect is not likely to be large enough to alter our finding that medication is recommended to smokers at a low rate. In the 2003 Current Population Survey, 43.5% of smokers reported making a quit attempt in the previous year, of whom 32.2% had used any medication, prescription or over-the-counter. Thus, only 14.0% of all smokers used any cessation medication in the previous year. Even if all of them used a nonprescription product, the rate of medication use is still far less than that for the other conditions we studied. Thus, the data from this study suggest that availability of over-the-counter products is insufficient to account for the disparity between prescribing patterns for tobacco use and the comparator conditions.

Second, pharmacotherapy for tobacco dependence is approved by the Food and Drug Administration for temporary use as an aid for smokers who are attempting to quit, whereas pharmacotherapy for the comparison conditions is indicated for chronic use.

TABLE 4—Odds of Receiving Counseling for Other Chronic Conditions Relative to That for Tobacco Use: National Ambulatory Medical Care Survey, 2005–2007

Condition	Visits Receiving Behavioral Counseling, %	OR (95% CI)	AORa (95% CI)
Hypertensionb	24.5	1.14 (0.98, 1.33)	1.20 (1.03, 1.41)
Diabetesb	28.0	1.42 (1.20, 1.66)	1.45 (1.21, 1.74)
Hyperlipidemiab	32.0	1.66 (1.40, 1.96)	1.53 (1.27, 1.83)
Asthma	7.0	0.26 (0.20, 0.34)	0.28 (0.21, 0.38)
Tobacco use	21.5	1.0 (Ref)	1.0 (Ref)

Note. AOR = adjusted odds ratio; CI = confidence interval; OR = odds ratio.
aVariables included in model were age, gender, race, ethnicity, expected source of payment, type of patient (new or established), and type of physician specialty (medical, surgical, or primary).
bIncludes health education for diet or nutrition, exercise, or weight reduction.

Pharmacotherapy is recommended for all smokers attempting to quit,[3] and according to the population-based National Health Interview Survey for 2005–2007, more than 40% of smokers attempt to quit each year.[30] If they used medication for the recommended duration of 3 months, pharmacotherapy for tobacco use cessation should have been reported at about 10% of visits sampled by NAMCS, rather than the rate of 4% recorded in this study. Conversely, NAMCS may underestimate the rate of medication treatment of patients with the other chronic conditions compared with tobacco. A physician may not record a medication that a patient takes on a long-term basis for a chronic condition if that medication was not refilled or prescribed at that visit. This is less likely to affect the rates of treatment of tobacco use because of the typically short-term nature of tobacco dependence treatment.

Also of note, we credited the provider for behavioral intervention for hypertension, diabetes, or hyperlipidemia if the patient received counseling for any of the following: diet or nutrition, exercise, or weight reduction. Unlike the tobacco counseling recorded by NAMCS, these treatments are not specific to these conditions, which may have the effect of widening the apparent difference in rates of counseling between tobacco use and these conditions. However, the differences in rates of pharmacological intervention are much more striking, so we believe the different rates of counseling are probable.

Comparing treatment of tobacco use and depression has another limitation. Physicians underdiagnose depression.[31] Depression may be put on a patient's problem list primarily when an antidepressant medication is prescribed to treat it, which would overestimate the prevalence of medication treatment of depression and could overestimate the difference between depression and tobacco use in this study. Overall, however, these factors are not likely to account for the full magnitude of the gap in rates of pharmacotherapy use between tobacco and the comparison conditions detected here.

Conclusions

This study indicates that tobacco use is undertreated by US physicians compared with other common chronic conditions that also cause significant morbidity and mortality and for which evidence-based treatment exists. US clinicians also appear to treat smoking less aggressively than other chronic conditions. The reasons for this are likely multifactorial, but they need to be addressed to improve the health of smokers. Whether the paradigm of disease management can be adapted to the treatment of tobacco dependence is unclear, and we suggest this be considered in future prospective studies. ∎

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Contributors

S. L. Bernstein originated and led the study. J. Dziura and S. Yu conducted the statistical analyses and contributed to writing the article. L. A. Post contributed to study design. N. A. Rigotti contributed to the study design, analysis, and writing of the article.

Human Participant Protection

This study was considered exempt from review by the Human Investigation Committee of Yale University.

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