



Tobacco Cessation Counseling Among Underserved Patients: A Report from CaReNet

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- **OBJECTIVES** The purpose of our study was to determine the frequency of smoking cessation counseling in relation to insurance status in a practice-based research network.
- **STUDY DESIGN** We administered a modified National Ambulatory Medical Care Survey (NAMCS), with an additional payment category to identify uninsured patients, quarterly to 100 random patients at each practice site for 1 year.
- **POPULATION** The study population included the patients at the 7 practices within the Colorado Research Network (CaReNet), associated with the Department of Family Medicine, University of Colorado Health Science Center.
- **OUTCOMES MEASURED** We measured the prevalence of smoking and the frequency of cessation counseling.
- **RESULTS** Of 2773 visits analyzed, 1443 were made by adults who were either was uninsured (39%), had Medicaid (22%), or had private or a health maintenance organization insurance (private/HMO; 40%). Smoking prevalence was significantly greater in uninsured patients (30%) and Medicaid patients (31%), compared with private/HMO patients (22%) ($P = .008$). However, those smokers with private/HMO insurance were more likely to receive tobacco counseling (50%) than Medicaid (41%) and uninsured (25%) patients ($P < .001$). After controlling for potential confounders, this difference remained significant.
- **CONCLUSIONS** Although smoking is more common among Medicaid and uninsured patients, these smokers are less likely to receive counseling. Possible explanations for this disparity include lack of access to cessation interventions or lower quality of care for underserved patients. This finding may have implications for achieving national public health goals on smoking cessation.
- **KEY WORDS** Tobacco use cessation; counseling; insurance coverage; medically underserved; physician's practice patterns. (*J Fam Pract* 2002; 51:65-69)

KEY POINTS FOR CLINICIANS

- Prevalence of smoking is greater in patients who are uninsured or who have Medicaid insurance.
- Advice on smoking cessation is given less frequently to these same patients.
- Not providing cessation counseling is a missed opportunity in underserved patients.

Among underserved populations, the burden of tobacco is substantial. There is a clear association between poverty and high rates of tobacco use,^{1,3} and smoking is more prevalent among the uninsured (39%) than those with insurance (23%).⁴ Smoking cessation interventions can be successful among low-income and minority patients, especially when tailored to these populations.^{5,8} Tobacco counseling, including simple advice to quit, has been shown effective in primary care.⁹⁻¹¹ Since disadvantaged patients, including 63% of the uninsured,¹² are commonly seen in primary care settings, primary care providers are in a unique position to impact tobacco use in underserved patients.

Previous research on cessation counseling rates in low-income patients has yielded conflicting results. Taira and colleagues¹¹ demonstrated that cessation advice by primary care providers was given more frequently to low-income groups. However, this study's results were based on a written patient questionnaire, and recall may have been a significant limitation. Another study examined physician-reported

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rates of tobacco cessation counseling, and found that cessation was addressed more frequently with health maintenance organization (HMO)-insured patients (30%) than Medicaid patients (24%).¹³ However, this analysis did not differentiate between primary care providers and specialists, and neither of these studies identified low-income uninsured patients.

It thus remains unclear whether this effective intervention is routinely provided to underserved patients, including the uninsured, in primary care settings. Using a provider survey instrument that clearly identified medically indigent patients, this study examined the frequency with which primary care providers address tobacco use with their Medicaid-insured and uninsured patients compared with those with private or HMO insurance.

METHODS

This study was conducted in the 7 primary care practices in the Colorado Research Network (CaReNet) in 1998 and 1999. CaReNet is a state-wide primary care, practice-based research network founded in 1997 with a particular focus on disadvantaged populations, including rural people, minorities, and the urban poor. The practices in CaReNet are affiliated with the University of Colorado Department of Family Medicine. Of the 7 practices, 4 are family medicine residency sites, 2 are federally-funded community health centers, and 1 is a clinic for the medically indigent. The provider mix in CaReNet includes 56% residents (residents average approximately 3 half-day clinics weekly), 21% full-time clinical faculty, 7% private physicians, and 15% other providers (nurse practitioners, physician assistants, and so forth). At the time of our study, none of the practices had a comprehensive tobacco cessation program on site. Colorado Medicaid recipients were eligible for a limited amount of smoking cessation products (this benefit required prior authorization), but Medicaid did not cover comprehensive programs.

A modified version of the 1994 National Ambulatory Medical Care Survey (NAMCS) was administered in each CaReNet practice. The NAMCS instrument is a physician survey that collects information about an ambulatory visit; it has been used by the National Center for Health Statistics since 1973 to analyze trends of ambulatory care. In the context of our study, the key modification was the addition of "uninsured" in the Expected Source of Payment category. This category included patients who were in 1 of several programs that discount charges on the basis of income, thus covering some of the costs of care. All providers received detailed instructions on

completing this modified NAMCS form.

Each CaReNet practice collected data on a total of 400 patient visits in 1-week cycles (100 patients per cycle), quarterly, for 1 year. We used the typical NAMCS protocol of collecting data on every second patient presenting for medical care during the study period.¹⁴ The anonymous visit survey forms were coded using standard NAMCS nomenclature. Only patients aged between 13 years and 65 years were included in this analysis because there are almost no uninsured people older than 65 years. To identify patients with private insurance, the options "Private/commercial" and "HMO/other prepaid" were combined (hereafter referred to as "Private/HMO").

For the present study, we examined the impact of patient insurance on 2 primary outcomes: (1) patient smoking status, and (2) whether smokers received smoking cessation counseling. Each provider coded smoking status as "Yes," "No," or "Unknown." Only patients with a known smoking status (90% of sample) were included in the present analysis. For those patients coded as smokers, we determined whether providers checked the "Smoking Cessation" box.

Analysis

To examine the association between insurance group and study outcomes, we used chi-square tests to determine whether insurance group and other patient demographics (sex, age, ethnicity, and race) were reliably associated with smoking status and cessation counseling. Next, for each primary outcome, we conducted multivariate analyses to examine the effect of patient insurance, while controlling for other important demographic factors (ie, those with P values ≤ 0.20 in univariate analyses,¹⁵ as well as additional factors that may account for variability in this relationship. These factors included duration of visit, whether the patient had been seen before in the practice, and whether the patient had at least 1 of the chronic conditions listed on the NAMCS form (hypertension, depression, obesity, or hypercholesterolemia). Because initial random effects analyses revealed no significant practice site effects on the frequency of tobacco use and cessation counseling, all analyses include patient-level data.

The Colorado Multiple Institutional Review Board approved our study design.

RESULTS

Description of Sample

CaReNet providers completed NAMCS forms on 2773 patient encounters of 2800 eligible visits (99%

TABLE 1
DEMOGRAPHIC CHARACTERISTICS OF CARENET STUDY SAMPLE

Characteristics	N	%*
Sex		
Female	1063	74
Male	380	26
Age		
13-17	75	5
18-44	886	61
45-64	482	33
Ethnicity †		
Hispanic	369	26
Non-Hispanic	1068	74
Race ‡ †		
Asian-Pacific Islander	10	< 1
Black	104	7
Indian-Eskimo-Aleut	32	2
White	1282	89
Insurance Status		
Uninsured	560	39
Medicaid	311	22
Private/HMO	572	40

*Percentages may not add to 100 because of rounding.
 † Ethnic background is missing for 6 patients.
 ‡ Race is missing for 15 patients.
 § For all remaining analyses, we have re-coded race into "white" or "non-white."

TABLE 2
LOGISTIC REGRESSION RESULTS: RELATIONSHIP OF PATIENT FACTORS WITH LIKELIHOOD OF SMOKING

Patient Factor	Odds Ratio for Smoking (95% CI)	P
Insurance		
Uninsured*	1.00	
Medicaid	1.01 (0.73 – 1.4)	.937
Private/HMO	0.55 (0.41 – 0.73)	< .001
Sex		
Female*	1.00	
Male	1.22 (0.92 – 1.6)	.164
Ethnicity		
Hispanic*	1.00	
Non-Hispanic	2.1 (1.5 – 3.0)	< .001
Patient Seen Before		
Yes*	1.00	
No	1.6 (1.1 – 2.3)	.011
Duration of Visit		
	1.00	.990
Chronic Disease		
None*	1.00	
One or more	1.6 (1.2 – 2.0)	.001

CI denotes confidence interval.
 *Reference group.

completion rate). For this study, of the 2773 encounters, 1443 remained after excluding patients younger than 13 or older than 65 years, and those with sources of payment other than Medicaid, Uninsured, or Private/HMO. As shown in Table 1, CaReNet patients in the present study were demographically diverse, with a high percentage who were Hispanic (26%), female (74%), or low-income (39% uninsured, 22% Medicaid).

Univariate and Multivariate Analysis of Smoking

A total of 351 patients in the study sample (24%) were identified as smokers. As expected, smoking was significantly more prevalent in the Medicaid and uninsured groups (Table W1*).

Table 2 presents multivariate logistic regression results showing the significant relationship between insurance and smoking status after controlling for other important demographic and practice variables. Uninsured patients had similar rates of smoking as those with Medicaid; however, smoking among Private/HMO-insured patients was approximately half as frequent as among the uninsured.

In addition to patient insurance, ethnicity and clinical factors predicted whether patients smoked. Non-Hispanic patients were more than twice as likely to be identified as smokers compared with Hispanic patients ($P < .001$). Also, patients who were new to the practice or who had at least one chronic condition were significantly more likely to be identified as smokers ($P = .011$ and $P = .001$, respectively).

Univariate and Multivariate Analysis of Cessation Advice or Counseling

The second primary analysis examined whether insurance is associated with how often smokers are counseled during visits. Out of 351 smokers, 129 (37%) received tobacco counseling during the medical encounter. Private/HMO insurance and duration of visit were the only factors univariately associated with whether a smoker received counseling (Table W2*).

Multivariate results indicate that patient insurance remained the only significant variable after controlling for other factors that might explain whether

*Tables W1 and W2 are available on the JFP Web site, www.jfponline.com.

TABLE 3
LOGISTIC REGRESSION RESULTS: PATIENT FACTORS ASSOCIATED WITH LIKELIHOOD OF RECEIVING SMOKING CESSATION COUNSELING

Patient Factor	Odds Ratio of Receiving Counseling (95% CI)	P
Insurance		
Uninsured*	1.00	
Medicaid	2.1 (1.2 – 3.7)	.011
Private/HMO	3.0 (1.8 – 5.3)	< .001
Seen Patient Before		
Yes*	1.00	
No	1.1 (0.6 – 2.1)	.707
Duration of Visit		
	1.02 (0.99 – 1.0)	.158
Chronic Disease		
None*	1.00	
One or more	1.1 (0.66 – 1.7)	.811

*Reference group.

smokers received counseling. Smokers with Medicaid were more than twice as likely, and Private/HMO-insured smokers were more than 3 times as likely as uninsured patients ($P < .001$) to receive smoking cessation counseling (Table 3).

DISCUSSION

These findings demonstrate that although smoking is more common in CaReNet's Medicaid and uninsured patients, providers gave cessation advice less often to these patients. The actual prevalence of tobacco use may be even greater than we think because providers may underreport it, but our results are similar to national trends.⁴ The decreased rate of tobacco counseling in underserved patients is in contrast to the findings in a study that were based on patient recall,¹¹ rather than the provider-report methodology of NAMCS. However, our counseling results are consistent with a national NAMCS analysis, which found that tobacco use was addressed more frequently with HMO-insured patients than Medicaid patients.¹³ In that study, the overall primary care counseling rate (33%) was similar to that of CaReNet providers (37%). To the best of our knowledge, our finding of a lower rate of tobacco counseling in uninsured patients has not been previously reported.

Our study does not address why providers are less likely to advise Medicaid or uninsured patients to quit smoking. It is possible that tobacco interventions, such as pharmacologic aids and comprehensive cessation programs, may not be available to these groups because of cost. Providers may simply be

reflecting this situation by not addressing cessation. Even so, cost and access barriers do not explain why providers would be less likely to give simple cessation advice to disadvantaged smokers. One possibility is that these findings may indicate a lower quality of care for these patients. Other preventive care measures have been shown to be performed less often in uninsured patients,¹⁶ and several studies have documented a lower quality of care for Medicaid and uninsured patients with chronic diseases.¹⁷⁻¹⁹

Limitations

A major limitation of our study is that the uninsured or Medicaid groups may have included sicker or more complex patients at the surveyed visits, thus there may have been less time to devote to tobacco cessation advice during that clinic visit. Unfortunately, the NAMCS instrument does not readily measure disease severity or case mix. In our analysis, we controlled for the presence of 1 or more chronic diseases (limited in NAMCS to 4 specific conditions), but this is only a crude measure of patient complexity. If patients in one of the payment groups were sicker, they might have had more frequent clinic visits, and tobacco cessation may have been addressed at higher rates over time than were found in this cross-sectional study. However, even in the presence of major morbidities, the uninsured often lack continuity because of their tenuous access to care.

If the payer mix of residents and faculty was significantly different, and residents addressed tobacco use at a different rate than faculty, this could explain some of the counseling differences. Unfortunately, this NAMCS instrument is anonymous and cannot identify the type of provider. Similarly, it is possible that the type of visit (acute care, chronic care, or prevention) may account for some of the findings. However, NAMCS also does not specify type of visit and there may be considerable overlap at any given encounter.

Our study administered NAMCS to the practices that make up CaReNet, and the results are not necessarily generalizable to other populations. There is substantial regional variation in health care access programs for the uninsured²⁰; therefore the uninsured patients in CaReNet may not be representative of uninsured in primary care elsewhere. Also, the demographics of CaReNet include higher percentages of Hispanics and Medicaid recipients compared with a national analysis of primary care trends.²¹ CaReNet more closely resembles community health centers,²²

except CaReNet has a greater number of Hispanic patients and fewer black patients, reflecting the particular demographics of Colorado. However, the smoking prevalence rates we found in the privately insured, Medicaid, and uninsured groups were similar to national patterns.

CONCLUSIONS

Our study argues for the inclusion of a separate payment category that clearly identifies the uninsured in NAMCS and other data collection instruments. Future studies on tobacco counseling rates should be designed to differentiate factors associated with the lower rate of counseling in disadvantaged populations, such as patient complexity, competing demands, lack of access to cessation resources, or lower standards of care. Identification of these factors may be valuable in implementing interventions to improve the rate of counseling for these patients.

If national tobacco goals are to be realized, then socioeconomic disparities in counseling need to be addressed. Our results show that primary care providers can substantially improve the tobacco counseling rate among disadvantaged smokers. As this occurs, the rate of smoking in these patients can be expected to decrease.

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