

Tobacco-Cessation Services and Patient Satisfaction in Nine Nonprofit HMOs

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Background: The U.S. Public Health Service clinical practice guideline calls for clinicians and healthcare organizations to identify and treat every tobacco user seen in a healthcare setting. There is little information on the extent of compliance with the guideline's treatment model described by the "5A's" (Ask, Advise, Assess, Assist, Arrange).

Methods: In 1999–2000 a survey was mailed to 64,764 members aged 25 to 75 years, of nine nonprofit HMOs participating in the National Cancer Institute–funded Cancer Research Network. These plans provide medical care to more than 8 million Americans including a minority enrollment of 30%. Smokers were asked about tobacco-cessation treatments received during primary care visits in the past year.

Results: A 70% response rate identified a smoking prevalence of 10% ($n = 4207$). Results indicated that 90% of smokers were asked about smoking, 71% were advised to quit, 56% were assessed for their willingness to quit, 49% received assistance interventions, and 9% had follow-up arranged. Treatment was provided more often to smokers who asked for help and/or intended to quit. Few and only modest associations were found between other patient characteristics and receipt of 5A's cessation services. In contrast to widely reported concerns about smokers' resistance to tobacco interventions, smokers who received treatment were more satisfied with health plan services.

Conclusions: Results demonstrate substantial clinician compliance with the first two steps—Ask and Advise. Greater efforts are needed in providing the more effective tobacco treatments—Assist and Arrange. Compliance with the guideline is associated with greater patient satisfaction.

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Introduction

Cigarette smoking continues to be the principal cause of premature death in the nation and a major cause of medical expenditures and lost productivity.¹ Currently, 46.5 million adults in the United States smoke,¹ and 70% of smokers see a

primary care provider at least once a year.² In response to strong evidence that advice and assistance from physicians can significantly increase abstinence rates, the U.S. Public Health Service (USPHS) produced a clinical practice guideline in 1996 that called on physicians and healthcare organizations to identify and treat every smoker seen in a healthcare setting.³ The guideline was updated in 2000 and recommends a five-step approach that includes: (1) asking every patient about tobacco use, (2) advising all smokers to quit, (3) assessing smokers' willingness to make a quit-attempt, (4) assisting smokers with treatment and referrals, and (5) arranging follow-up contacts.^{4–6}

Little is known about the extent of compliance with this treatment model, commonly referred to as the "5A's." Surveys of physicians and smokers conducted before the release of the guideline indicated the 5A's treatment model was not widely used.^{7,8} Since that time considerable effort has been made to encourage clinicians to deliver these cessation services and for healthcare organizations to provide system-level support.^{3,4,9} Managed care organizations have been a focus of tobacco-control strategies^{10,11}

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because they provide health care for a large proportion of Americans.¹² Health plan performance on the delivery of advice to smokers is now part of the widely recognized HEDIS (Health Plan Employer Data and Information Set) quality report card.¹³ While smokers' reports of receiving advice from clinicians have increased, reports of assistance and follow-up remain low.^{7,14-17} Moving beyond advice (estimated cessation odds ratio [OR]=1.3) to providing counseling and pharmacotherapy (estimated cessation OR=2.4) can achieve many more clinician-generated quits.^{4,8}

This article describes compliance with the national guideline for tobacco treatment in nine geographically diverse nonprofit HMOs, patient characteristics associated with reports of the 5A's tobacco-cessation services, and the effects of receiving those services on smokers' satisfaction with their health plan.

Methods

The HMOs Investigating Tobacco (HIT) study was conducted within the National Cancer Institute-funded Cancer Research Network, a consortium of research organizations in nonprofit health plans.¹⁸ The nine HMOs participating in the HIT study provide medical care to >8 million Americans including a minority enrollment of 30%, and are distinguished by their longstanding commitment to tobacco control.¹⁹ (See acknowledgments for a list of these plans.)

Study Design and Patients

Each month between September 1999 and August 2000, a 29-item questionnaire was sent to random samples of health plan members who were aged 25 to 75 years, had at least 1 year of plan enrollment, and had made a primary care visit in the previous 3 months ($n = 64,764$). Using the method proposed by Dillman²⁰ that includes an initial mailing followed in turn by a reminder postcard, a second mailing, and telephone calls to nonrespondents, an attempt was made to identify 500 smokers in each HMO. The survey methodology was described in detail elsewhere.²¹ The Institutional Review Board at each HMO approved the study protocol.

Measures

The questionnaire assessed demographics, health status, outpatient utilization, smoking history, and reports of tobacco services received at healthcare visits during the past 12 months. Smokers were asked whether they asked a clinician for help with cessation in the past year, if they intended to quit smoking, how often they thought physicians should address smoking, and their satisfaction with their HMOs' health promotion services.

Reports of the 5A's tobacco treatments were ascertained by asking current smokers if they were asked about tobacco use at their last outpatient visit (ask), and if they were advised to quit (advise) or asked about their interest in quitting (assess) in any visits during the past 12 months. Assistance (assist) was identified by asking whether during the previous year clinicians provided self-help cessation materials or information

about classes and counseling programs, showed a video about quitting, made a referral to a cessation specialist, or offered pharmacotherapy (nicotine replacement or bupropion). Finally, smokers were asked whether a clinician arranged a follow-up visit or phone call about quitting (arrange).

Data Analysis

Provision of the 5A's was obtained from unadjusted frequencies of reports from smokers across all health plans. While the HIT study HMOs shared a history of tobacco control, they differed in many aspects, including size and complexity, provider characteristics, level of system support for clinicians, geographic location, and so on. To help control for influences that may be related to outcomes of interest, health plan membership was included in all multivariate analyses. Effects of patient characteristics (gender, age, race/ethnicity, education, health status, number of outpatient visits, cigarettes smoked per day, whether a smoker asked for help) on reports of advice and assistance were examined with logistic regression models that included tests of the overall effect of health plan membership. We did not include intention to quit because intentions may have been influenced by receipt of services instead of predicting them. Adjusted frequencies of reports of assistance interventions and patient satisfaction were derived from fitted logistic regression models that included gender, age, race/ethnicity, education, health status, number of outpatient visits, number of cigarettes smoked per day, whether a smoker asked for help, intention to quit, and health plan membership. Specifically, for each individual, nine probabilities were obtained based on his/her own characteristics and membership in each of the health plans and averaged to obtain adjusted probabilities. In these models, we included an asked for help by intention to quit interaction term for adjustment purposes. When satisfaction was the outcome, the model also included each 5A cessation-service and interaction terms for both asked for help and intention to quit by each of the 5A's. To test for a trend in satisfaction, we created a linear term (coded 0 "no service" to 5 "follow-up") from the highest 5A received.

In all analyses, smokers who reported any of the 5A's cessation services were assumed to have been asked about smoking. Data for patients' characteristics were missing for <2% of cases. We performed both complete case analyses and analyses with imputed missing values using the mean or modal response category as appropriate. Results were equivalent in all analyses and, thus, we chose to use imputed data and include all subjects in analyses. Analyses were conducted in 2003 and 2004 using SAS, version 8.2 (SAS Institute Inc., Cary NC, 2002).

Results

A response rate of 70% (41,677/59,907) was obtained after adjusting for undeliverable surveys and surveys mailed to ineligible members. Slightly more than 10% of respondents described themselves as current smokers. Forty-four smokers did not recall having made an outpatient visit in the previous 12 months and were excluded from these analyses. Among health plans, the number of smokers ranged from 399 to 528 (total $n = 4207$), while smoking prevalence ranged from 8.2% to 13.7%.

Table 1. Characteristics of smokers from nine HMOs ($n = 4207$)^a

Characteristics	<i>n</i>	%
Gender		
Female	2685	63.8
Male	1522	36.2
Age (years)		
25–40	1310	31.1
41–54	1800	42.8
≥55	1097	26.1
Race/ethnicity		
African American	400	9.5
Asian	231	5.5
Hispanic	292	6.9
Other ^b	339	8.1
White, non-Hispanic	2945	70.0
Education		
High school or less	1623	38.6
Tech school/some college	1722	40.9
College graduate	862	20.5
Self-reported health status		
Excellent/very good	1561	37.1
Good	1843	43.8
Fair/poor	803	19.1
Outpatient visits in past year		
1–2	1325	31.5
3–5	1527	36.3
≥6	1355	32.2
Cigarettes smoked per day		
0–9	1022	24.3
10–19	1517	36.1
20+	1668	39.6
Intending to quit within 6 months	2857	67.9
Asked clinician for help with quitting in past year	1126	26.8
Satisfaction rating HMO: Excellent/very good	1971	46.9

^aUnadjusted frequencies of reports of cessation services received during outpatient visits in the past year. Smokers identified by surveys sent to random samples of health plan members. Number of smokers per plan ranged from 399 to 528.

^bOther race/ethnicity includes American Indian, Hawaiian, mixed race, and unspecified.

Characteristics of Smokers

The majority of respondents were female, aged <55 years, white, had more than a high school education, reported at minimum good health, and made at least three outpatient visits in the previous year. Forty percent smoked a pack or more of cigarettes per day; nevertheless, more than two thirds intended to quit within the next 6 months, and more than a quarter had asked a clinician for help with quitting in the previous year. Almost half were very satisfied with their HMO's health promotion services (Table 1). As expected, characteristics of smokers differed among plans.

Reports of the 5A's Tobacco-Cessation Services

During outpatient visits in the previous year, most smokers (90%) were identified (asked), over two thirds (71%) were advised to quit, and about half were

assessed for their willingness to quit or received assistance for quitting (56% and 49%, respectively), but few (9%) had follow-up arranged (Figure 1). Subgroup analyses found that follow-up was more common among smokers who received assistance (17.6% vs 1.5%, $p < .0001$). Most smokers (82%) wanted their physicians to address smoking often or at every visit, and the majority (76%) did report advice at their most recent visit, while 52% reported advice at every visit in the past year. Among the health plans, reports of advice ranged from 67% to 82% while reports of assistance ranged from 42% to 63%.

Patient characteristics were associated with only small to modest differences in reports of cessation services, with one exception, asking for help. Importantly, these differences were substantial for the most effective 5A's, advice and assistance. Among smokers who asked for help, 81% reported advice and 81% reported assistance, compared with 67% and 37%, respectively, among those who did not ask. Consequently, multivariable models examining whether patient characteristics predicted reports of advice or assistance were tested separately for smokers who did and did not ask for help (Table 2). Among smokers who asked for help, older age increased the likelihood of reports of advice, and race/ethnicity (white, non-Hispanic) and better health predicted reports of assistance. Among smokers who did not ask for help, older age, heavier smoking, and health plan predicted advice, and younger age, poorer health, heavier smoking, and health plan predicted assistance.

Assistance Interventions Reported by Smokers

Table 3 displays reports of assistance interventions adjusted for patient characteristics and health plan membership by whether smokers asked for help. More than half (57%) of all smokers reported receiving an intervention. Most commonly, smokers reported offers

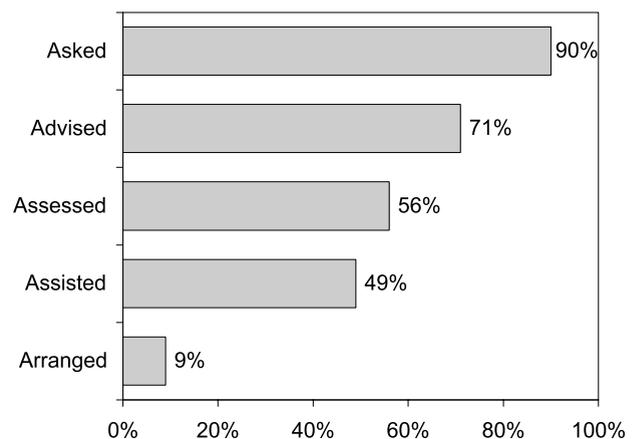


Figure 1. Percent of smokers in nine HMOs reporting 5A's cessation services received in 12 months of outpatient visits ($n = 4207$).

Table 2. Significant predictors of smokers' reports of advice and assistance^a

Characteristics	Advice				Assistance				
	Asked for help (n = 1126)		Did not ask for help (n = 3081)		Asked for help (n = 1126)		Did not ask for help (n = 3081)		
	OR	CI	p	OR	CI	OR	CI	p	
Age (per decade)	1.29	1.15–1.47	<0.0001	1.07	1.01–1.14	<0.05 ^b	0.90	0.86–0.96	<0.001
Race/ethnicity (white)							1.60	1.14–2.26	<0.01
Health status							1.19	1.02–1.39	<0.05
Cigarettes (per 10/day)				1.22	1.13–1.33	<0.0001	0.88	0.81–0.95	<0.0001
Overall health plan effect							1.24	1.16–1.34	<0.0001

^aLogistic regression models included gender, age, race/ethnicity, education, health status, number of outpatient visits, cigarettes smoked per day, and health plan membership.

^bSignificant *p* values bolded.

CI, confidence interval; OR, odds ratio.

of pharmacotherapy (38%), information about classes or counseling (37%), and self-help materials (30%). Less than a fifth reported referral to a cessation specialist, and few (4%) were shown a video presentation. Compared with those who did not ask, smokers who asked for help were six times more likely to report any assistance (OR=6.41, confidence interval [CI]=4.24–9.69). Smokers who intended to quit were about a third more likely to report any assistance (OR=1.35, CI=1.16–1.58).

5A's Tobacco-Cessation Services and Patient Satisfaction

Table 4 provides the percentage of smokers who were very satisfied with health plan services by whether they asked for help, as adjusted for patient characteristics and health plan. Satisfaction was lowest among smokers who reported they did not receive cessation services (36%) and highest among those who reported assistance (50%) or follow-up (56%). Satisfaction ratings were lower among smokers who asked for help. Higher satisfaction was associated with reports of successively more intensive 5A's cessation services whether or not smokers asked for help or intended to quit. Smokers who had follow-up arranged were more than twice as likely to be very satisfied than smokers who were identified, but reported no additional cessation service (OR=2.23, CI=1.82–2.71).

Discussion

This paper presents the most comprehensive assessment yet available on the delivery of cessation services recommended by the USPHS clinical practice guideline for tobacco. Reports from this large sample of smokers in nine geographically diverse HMOs indicate a high level of compliance with the first two steps of the 5A's—identifying smokers and advising them to quit. Moderate compliance also was demonstrated for the third and fourth steps—assessing smokers' readiness to quit and assisting with cessation interventions. Smokers who asked their clinicians for help were highly likely to receive treatment. Furthermore, smokers who reported treatment for tobacco use were more satisfied with their HMO's services whether or not they intended to quit.

Almost all smokers who responded to the survey were identified over the course of a year of outpatient visits, and 76% reported that they were asked about smoking at their last visit. These results are comparable to recent reports^{16,22,23} and are better than earlier findings.^{7,14,15,24,25} Almost three fourths of smokers reported advice to quit at least sometime in the past year, and approximately half reported advice at every visit. While these results fall short of national goals, they surpass findings from representative samples of U.S. adults that <50% of smokers report advice in the past

Table 3. Adjusted percentages of smokers who reported assistance interventions^{a,b}

Interventions for smoking cessation ^c	Asked for help with quitting					
	Yes		No		Total	
	% ± 2SE	n	% ± 2SE	n	% ± 2SE	n
Offer of pharmacotherapy (nicotine replacement or bupropion)	54.3 ± 0.6	615	17.7 ± 0.5	490	38.1 ± 1.2	1105
Information about classes or counseling	52.4 ± 0.4	570	24.4 ± 0.2	739	36.6 ± 0.8	1309
Self/help materials	43.0 ± 0.8	476	19.7 ± 0.3	588	30.1 ± 0.8	1064
Referral to a cessation specialist	26.8 ± 0.4	279	8.4 ± 0.4	231	18.4 ± 1.0	510
Video presentation	5.8 ± 0.8	56	3.2 ± 0.6	64	4.4 ± 0.6	120
Any assistance	80.8 ± 0.3	906	38.2 ± 0.4	1139	57.1 ± 1.0	2045
Total sample		1126		3081		4207

^aReports of assistance interventions received during outpatient visits in the past year.

^bFrequencies are expected values computed from a model that includes sex, age, race/ethnicity, education, health status, number of outpatient visits in past year, number of cigarettes smoked per day, asked for help, intention to quit, an asked for help by intention to quit interaction term, and health plan.

^cSmokers may have received more than one intervention.

2SE, two standard error

12 months.^{2,8,26} Similarly, they surpass the 1999 national HEDIS average of 64% for reports of advice in the previous year.¹³ Of note, the 1999 HEDIS reports for advice among the HIT study HMOs were similar to results found in this survey, that is, ranging from 67% to 82%. However, the relative ranking of the health plans differed as would be expected given the small sample size and lower response rates in HEDIS reports.²¹

In the relatively few studies that examined tobacco-cessation services beyond advice, rates of assistance do not appear to have improved substantially from the early 1980s when less than a fourth of physicians indicated that they provided smokers with help.²⁷ Recent reports found that about a third or less of smokers received assistance.^{15,16,23,28,29} In contrast, in this study

half of all smokers reported assistance, and adjusted frequencies found more than a third were offered the most effective 5A's cessation interventions—classes/counseling and pharmacotherapy. Although treatment for tobacco use is highly cost-effective and compares favorably with routine medical interventions,^{4,30} few smokers received a follow-up call or appointment for cessation.

Reports of advice and assistance in this study are encouraging; however, improvements are still needed. To identify smokers less likely to receive treatment, we examined the associations between patient characteristics and reports of advice and assistance in multivariable analyses. The strongest predictor of these cessation services was a request for help. Other studies also found

Table 4. Adjusted member satisfaction and reports of the 5A's tobacco/cessation services^{a,b}

Highest 5A's tobacco-cessation service reported ^c	Asked for help with quitting					
	Yes		No		Total	
	Very satisfied ^d % ± 2SE	n	Very satisfied ^d % ± 2SE	n	Very satisfied ^d % ± 2SE	n
None	11.3 ± 2.8	17	37.2 ± 1.4	386	36.1 ± 0.7	403
Asked	30.7 ± 5.6	29	46.0 ± 1.4	357	44.9 ± 1.4	386
Advised	31.9 ± 3.6	74	42.6 ± 1.1	628	41.4 ± 1.0	702
Assessed	40.4 ± 3.1	90	47.6 ± 1.1	548	46.6 ± 1.1	638
Assisted	44.3 ± 1.0	713	54.5 ± 0.8	973	50.2 ± 0.7	1,686
Arranged	52.1 ± 1.8	203	60.0 ± 2.1	189	55.9 ± 1.4	392
Total					46.6 ± 0.5	4,207

^aReports of cessation services received during outpatient visits in the past year.

^bFrequencies are expected values computed from a model that includes gender, age, race/ethnicity, education, health status, number of outpatient visits in past year, number of cigarettes smoked per day, asked for help, intention to quit, each 5A's cessation service, interaction terms for asked for help by intention to quit, asked for help by each of the 5A's cessation services, intention to quit by each of the 5A's cessation services, and health plan.

^cSmokers may have received 1 or more 5A's cessation service, but none higher than the service listed.

^dSmokers who rated their health plan services as very good or excellent were considered very satisfied.

2SE, two standard errors

that advice and assistance were more common when smokers asked.^{23,31,32} This is of concern since only 27% of smokers in this study asked for help, and even among the presumably more motivated smokers planning to quit, only a third requested help. Limiting tobacco treatment to smokers who ask for help overlooks many who are interested in quitting, but are unaware of the services available from their healthcare providers.²³ Other patient characteristics were associated with small to modest differences. Effective tobacco control, however, requires offering cessation services to all smokers. Even light smoking carries substantial health risks,^{33,34} and lighter smokers may be less aware of this danger.³⁵

Provider concerns about smokers' lack of interest in quitting and negative reactions to tobacco interventions are widely reported barriers to treatment.^{16,36–39} Yet, we found that more than two thirds of smokers intended to quit, and most thought physicians should address smoking during most encounters. Further, smokers who received treatment for tobacco use were more satisfied with their health plan whether or not they planned to quit. Importantly, satisfaction increased incrementally with reports of more intensive 5A's services. The association between cessation services and increased patient satisfaction was found in other studies.^{16,23,40,41} These results from HMOs in eight different states provide additional strong evidence that providers' fears of alienating smokers by offering advice and help are unfounded for the great majority of smokers. Interestingly, smokers who asked for help were less satisfied. Lower satisfaction may indicate the need for improved cessation services, as well as disappointment among smokers who wanted to stop smoking, but were unsuccessful in their attempts to quit. Nevertheless, even this group reported higher satisfaction when they received cessation services.

A policy assessment of the HIT study HMOs identified factors that may have contributed to their overall success in providing tobacco services.¹⁹ All plans have adopted their own clinical guidelines for tobacco treatment; have dedicated budgets, staff, and oversight committees for tobacco control efforts; and provide comprehensive coverage for tobacco-related counseling and pharmacotherapy. A recent analysis of the effect of the HIT study health plans' tobacco policies on the delivery of the 5A's highlighted potential strategies for improving compliance with the national guideline.⁴² Plans that provided feedback to physicians regarding their delivery of smoking-cessation services, as well as training and incentives had higher rates of advice and assistance. Reports from smokers in the current analyses suggest the need to educate clinical and administrative staff about their health plan tobacco policies, the cost-effectiveness of tobacco treatments, existing coverage for treatments, and the positive effect that tobacco services have on member satisfaction.

Strengths of this study include geographic diversity, the large sample, and the high response rate. Limitations include potential biases if respondents were more interested in smoking cessation, and thus more likely to respond, recall, and report cessation services. The percentage of smokers identified by the survey was lower than the prevalence of smokers in the health plans, indicating that under-reporting did occur. Respondents under-represented men, and probably younger and minority smokers,²¹ and reflect the characteristics of patients seeking primary care. Results may under-report delivery of cessation services, as they do not include treatments obtained through self-referrals or specialty care, and the survey included only current smokers and not smokers who may have quit in response to receiving treatment.

Data are limited to a single survey and do not include outcomes on smoking cessation. The cross-sectional survey precludes assessment of the direction of associations such as, for example, the association between intentions to quit and reports of services. In addition, we did not ask smokers about their willingness to quit during visits in the previous year. Consequently, we cannot identify reports of cessation interventions among smokers interested in quitting. Analyses do not include unmeasured factors that may influence delivery of tobacco services such as provider^{7,24,43} and visit^{31,44} characteristics. Finally, findings may not apply to other healthcare settings, especially where clinicians have less system support. Nonetheless, results of this survey demonstrate the feasibility and apparent success of promoting the 5A's treatment model in large, complex healthcare organizations with diverse patient populations.

Conclusion

Reports from 4207 smokers found substantial compliance with the USPHS clinical guideline for treating tobacco dependence. While these results are better than previous reports, they call for greater efforts among all smokers, especially for the more efficacious tobacco treatments—assistance and follow-up. Health plans may be able to increase the effectiveness of their tobacco control efforts by encouraging smokers to ask their physicians for help. Importantly, smokers expect to receive the 5A's cessation treatments, and are more satisfied with health plan services when clinicians comply with the national guideline. This should provide encouragement to physicians to treat smokers and an incentive to healthcare organizations to support delivery of tobacco-cessation services.

This study was conducted within the Cancer Research Network (CRN), a consortium of nonprofit HMOs funded by the National Cancer Institute to increase the effectiveness of preventive, curative, and supportive cancer-related interventions. Additional information about the CRN is available at

What This Study Adds . . .

Healthcare organizations are encouraged to adopt systematic approaches such as the "5A's" to address tobacco use but little is known about how extensive this practice has become.

This study among adult members of nine HMOs providing care to a combined total of over 8 million individuals found patients reporting more instances of being asked and advised than of being assisted or having follow-up care arranged.

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Dr. Rigotti does occasional consulting for GlaxoSmith-Kline. No financial conflict of interest was reported by the other authors.

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