

A Successful Tobacco Cessation Program Led by Primary Care Nurses in a Managed Care Setting

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Abstract

We conducted a descriptive study of a tobacco cessation program sponsored by a health maintenance organization (HMO) and led by primary care nurses. The tobacco cessation program was conducted at 20 primary care clinics in northeastern and central Pennsylvania. We gauged the successfulness of the program by the patients' self-reported quit rates at 1 year. We also examined the association between quit rates and compliance with scheduled counseling visits, the impact of the availability of an HMO pharmacy benefit that supported the costs of nicotine replacement therapy, and the quit rates among patients with HMO insurance versus those with insurance other than managed care. Of 1,695 patients enrolled in the program from July 1993 to March 1996, 1,140 completed 1 year of follow-up. Of these, 348 (30.5%) reported they had quit using tobacco. Among the 810 HMO enrollees who participated in the program, the quit rate was 280 (34.6%); among the 330 non-HMO participants, the quit rate was 69 (20.9%), a statistically significant difference ($P < 0.001$). For all patients, keeping more than four visits with the program nurse was associated with a significantly higher likelihood of quitting (317/751 [42.2%] versus 32/389 [8.2%]; $P < 0.001$). Non-HMO patients were less likely than HMO enrollees to keep four or more visits (165 [50%] versus 586 [72.3%]; $P < 0.001$). We were unable to detect a difference in quit rates among those with and those without a pharmacy benefit (196/577 [34%] versus 84/233 [36.1%]). These data are limited by their descriptive nature and the lack of information about other factors important in determining the quit rate among program participants. Nevertheless, they suggest that HMOs can successfully sponsor nurse-led tobacco cessation programs in multiple primary care settings and achieve

1-year quit rates significantly higher than the 15% quit rate reported in the medical literature. In addition, successfully quitting tobacco use appeared to be associated with use of counseling visits but not with use of a pharmacy benefit to pay for nicotine replacement therapy. Even though tobacco cessation programs have the best chance of benefitting HMO enrollees, patients not enrolled in managed care plans also appear to benefit significantly. This finding has important implications for developing future strategies—including the role of managed care organizations, the need to defray the costs of nicotine replacement therapy, and the best approach to provide counseling to patients—to meet the Healthy People 2000 goal of reducing tobacco smoking.

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Tobacco use is the leading preventable cause of death in the United States.¹ To combat this, Healthy People 2000 has recommended that strategies be developed to reduce cigarette smoking from a current national prevalence of 29% to no more than 15% among adults aged 20 and older.² In response, the US Agency for Health Care Policy and Research sponsored a clinical practice guideline based on previously reported tobacco cessation strategies to aid physicians in helping their patients stop smoking. Its recommendations include having physicians advising all smokers to quit, determining patients' willingness to quit, and, for those who are motivated, providing clinical follow-up and prescribing nicotine replacement therapy.³

Little is known about the impact of smoking cessation efforts by managed care organizations for their enrollees. In the long run, these organizations have a stake in the short- and long-term health consequences of tobacco use among their enrollees and should sup-

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port the use of nicotine replacement therapy as a cost-effective intervention despite its short-term expense. Many managed care insurance plans also have a pharmacy benefit, which could be used to support prescription nicotine replacement therapy.

This report describes the impact of a primary-care-based, nurse-centered tobacco cessation program among patients enrolled in a health maintenance organization (HMO). This approach can achieve significant quit rates and can be used in multiple primary care clinic sites.

... METHODS ...

Setting

Geisinger Health Plan is a not-for-profit group model HMO serving just over 180,000 enrollees in central and northeastern Pennsylvania. It is entirely owned and operated by the Geisinger System, which also operates the Geisinger Clinic. The Geisinger Clinic employs 570 physicians who practice in 67 clinics, serving not only Geisinger Health Plan enrollees but also patients with other types of insurance from a population base of just over 2 million people in 33 counties in Pennsylvania. The Geisinger Clinic does not participate in any other type of managed care insurance plan outside of Geisinger Health Plan. Eighty-two percent of Geisinger Health Plan enrollees have a pharmacy benefit, which provides all prescription medications on a monthly basis with a variable co-pay up to \$10.

Based on the results of a pilot project which demonstrated that nurses could manage smoking cessation counseling and follow-up, the Tobacco Cessation/Tobacco Prevention Program was established in July 1993. Since then, nurses, physician assistants, and

nurse practitioners from any primary care clinic in the Geisinger System have been invited to daylong classes that provide training in the smoking cessation methods used in the pilot study. These classes are held semi-annually. During the duration of time covered in this report, eight classes were held, training 61 healthcare professionals from 20 primary care sites. The medical directors at each of the clinics in the Geisinger System were ultimately responsible for deciding if any of their personnel could be trained in smoking cessation. No fee or internal transfer of funds was charged to the clinics for the cost of training these personnel, which was entirely underwritten by the HMO.

Training and Certification of Tobacco Cessation Counselors

The training class consists of a series of didactic sessions led by nurses who participated in the original pilot project. These sessions open with background information on the pharmacology and epidemiology of tobacco smoking, then focus on previously identified strategies for smoking cessation. These strategies are assessing motivation to quit, helping the patient identify barriers to quitting and developing strategies to overcome them,⁴ setting a quit date,⁵ personalizing the message for the patient,^{6,7} discussing obstacles to quitting,⁶ and providing follow-up visits.^{5,8,9} Personnel also are trained in managing nicotine replacement therapy by tailoring the three available doses of nicotine patches (21 mg, 14 mg, and 7 mg) to individual patient needs.¹⁰ The training program ends with on-site direct observation of counseling sessions by the trainers.

After completing the training session, the counselors are certified by the HMO as a patient resource for supervising nicotine replacement therapy. To maintain certification, a smoking counselor must treat at least 25 patients over 1 year. If this requirement is not met, the counselor is no longer certified, and the nicotine replacement therapy available through the counselor is no longer available through the pharmacy benefit. Since the program started, 26 counselors were unable to maintain their certification.

Follow-up and Patient Incentives

Patients were notified of the existence of the tobacco cessation program through a variety of mechanisms, including referral to the program whenever patients requested nicotine replacement therapy from their physician, posters announcing the program in waiting rooms at participating sites, and descriptions of the program in HMO-sponsored educational newsletters. Patients could refer themselves at any time with-

Table 1. Mean Age and Sex of Patients With and Without a Pharmacy Benefit

	With Benefit (N = 577)	Without Benefit (N = 233)
Mean age* (y)	43.1	46.2
Sex (%)†		
Male	51.1	48.9
Female	48.9	51.1

*Statistically significant difference ($P = 0.0006$)

†Not statistically significant by chi-square analysis

out authorization of the referral by the HMO. However, if counseling was not available in their assigned primary care provider's office, authorization from their physician was required to receive counseling from a primary care site that did offer the program.

Follow-up for patients who agreed to enter the tobacco cessation program was arranged through one-on-one appointments through a total of six visits. During the first visit, the counselor establishes a baseline, introduces the patient to the program, and incorporates the principles outlined above. This appointment lasts 45 minutes. Return appointments of 20 minutes each are scheduled at 1 week, 3 weeks, after the quit date, followed by 3 additional monthly visits for a total of six visits. A claim for \$22 is generated for every visit and forwarded to the patient's medical insurance. Enrollees in the HMO incur no out-of-pocket expenses; each claim is paid and credited to the participating primary care site. For patients not enrolled in the HMO, the claim is processed like any other bill and universally results in nonpayment by the insurance company, making the patient responsible for the bill.

Two financial incentives were instituted for enrollees of the HMO. Patients were required to complete a minimum of four visits with the smoking cessation counselor. If this requirement is not met, the patient receives a bill for the visits made, either \$22, \$44, or \$66, depending on how many appointments were kept. Participation was also linked to the pharmacy benefit for HMO enrollees who had it. To receive a prescription for the nicotine replacement therapy, patients were required to enter the program, otherwise nicotine replacement therapy was not covered. Likewise, unless the minimum of four visits were made, patients were billed for the nicotine replacement therapy used up until the time they dropped out of the program.

Once a patient enters the program, counseling and follow-up are managed independent of day-to-day physician input other than relying on the physician to supervise prescription of the nicotine replacement therapy. Nicotine replacement therapy is primarily governed by a protocol that links the initiation of therapy to an assessment of the degree of nicotine addiction. Subsequent dosing and tapering is governed by a clinical assessment of the patient by the counselor. All smoking cessation encounters are documented in the office medical record using a standard format and signed by the patient's physician.

Data Collection and Analysis

At each visit, counselors complete a data sheet for each patient that is forwarded to the HMO. These

data include demographic information and self-reported quit rates. Follow-up inquiries about quit rates 1 year after entry were made by the HMO with up to three sequential mail surveys. Patients who did not respond to these surveys were contacted by telephone whenever possible.

The mail survey consisted of a single page and asked about current tobacco status. Respondents were asked to mark the appropriate answer regarding their tobacco use, including "do not use any tobacco" versus "smoke," "chew," or "dip." Quit rates were point prevalence and calculated by dividing the number of patients marking "do not use any tobacco" by the total number (including nonrespondents) who completed 1 year of follow-up.

... RESULTS ...

A total of 1,695 patients entered the tobacco cessation program from July 1993 through March 31, 1996. Of these, 1,140 (67.3%) completed 1 year of follow-up, and 348 (30.5%) reported they had quit using tobacco at 1 year. Of the 330 patients who completed 1 year of follow-up and were not enrollees of Geisinger Health Plan, 69 (20.9%) reported quitting tobacco use.

Table 2. Quit Rates for Health Maintenance Organization Members (N = 810)

Use at 1 Year	Number	Percentage
Quit	280	34.6
Status not determined	91	11.2
Continued to use tobacco	439	54.2

Table 3. Quit Rates for Patients With and Without a Pharmacy Benefit*

	With Benefit (N = 577) Number (%)	Without Benefit (N = 233) Number (%)
Quit	196 (34.0)	84 (36.0)
Status undetermined	68 (11.8)	23 (9.9)
Continued to use	313 (54.2)	126 (54.1)

*Differences not statistically significant by chi-square analysis

A total of 810 of the 1,140 patients (71%) completing 1 year of follow-up were enrollees of the Geisinger Health Plan HMO. The mean age of this group was 43.9 years (range, 14 to 79 years). Four hundred seven patients (50.2%) were men and 403 (49.8%) were women. Five hundred seventy-seven patients (71.2%) had a pharmacy benefit. The mean age and sex of patients with a pharmacy benefit and those without are shown in Table 1. Patients without a pharmacy benefit were slightly older than those with a pharmacy benefit (mean age, 46.2 versus 43.1 years), but there was no significant difference in sex. Most of the 810 HMO enrollees (795 or 98%) smoked tobacco, while the remainder either chewed (11 or 1.4%) or dipped (4 or 0.5%).

Of the 810 HMO members, 280 (34.6%) reported they had stopped using tobacco at 1 year (Table 2). Of the 795 patients who smoked tobacco, 274 (34.5%) of smokers reported quitting at 1 year. We were unable to determine tobacco use status for 91 patients (11.2%), and the remainder (439 or 54.2%) reported they continued to use tobacco.

Among the 577 HMO members who had a pharmacy benefit, 196 (34%) reported quitting tobacco at 1 year, 68 (11.8%) were lost to follow-up, and 314 (54.4%) continued to use tobacco (Table 3). Of the 233 members without a prescription benefit, 84 (36.1%) reported no tobacco use at 1 year, 23 (9.0%) were lost to follow-up, and 125 (54.1%) continued to use tobacco.

Quit rates were not significantly different between those with a pharmacy benefit and those without such a benefit.

Of the 810 HMO enrollees, 586 (72.4%) kept a minimum of four visits (Table 4). The difference in this rate between those with the pharmacy benefit (427 or 74%) and those without the benefit (151 or 67.7%) was not statistically significant. However, the confirmed quit rate among the 586 patients who completed the minimum of 4 visits was 260 (44.4%). Among HMO enrollees, only 20 of the 224 patients (8.9%) who did not complete 4 or more visits quit using tobacco. The difference in quit rates between those who kept four or more visits and those who did not was statistically significant ($P < 0.001$).

Among the 330 patients without HMO insurance, 165 (50%) kept a minimum of four visits with the nurse counselor (Table 4). This lower rate of visits compared with that for the HMO enrollees was statistically significant ($P < 0.001$). Even among non-HMO patients who were successful in quitting tobacco, the rate of follow-up was significantly lower than that for the HMO patients (82.6% versus 92.9%; $P < 0.001$).

The number of patients counseled and the quit rates at each of the 20 primary care sites participating in the program are shown in Table 5. The number of patients counseled at each site varied from a high of 210 to as few as 2. Quit rates ranged from a high of 61.1% to as low as 0%.

... DISCUSSION ...

Our data demonstrate that a nurse-led tobacco cessation program sponsored by a

Table 4. Quit Rates for Patients Who Kept Four or More Visits and Those Who Kept Fewer than Four Visits

	Four or More Visits Number (%)	Fewer Than Four Visits Number (%)
HMO Enrollees		
Total Group (N = 810)	586 (72.3)	224 (27.7)
Pharmacy Benefit**		
Present (N = 577)	427 (74.0)	150 (26.0)
Absent (N = 223)	151 (67.7)	72 (32.3)
Quit Status†		
Quit (N = 280)	260 (92.9)	20 (7.1)
Status Undetermined (N = 89)	73 (82.0)	16 (18.0)
Continued to Use (N = 441)	188 (42.6)	253 (57.4)
Non-HMO Enrollees‡		
Total Group (N = 330)	165 (50.0)	165 (50.0)
Quit Status		
Quit (N = 69)	57 (82.6)	12 (17.4)

*HMO = health maintenance organization. Unable to establish the presence or absence of a pharmacy benefit for 10 HMO enrollees

†Occurrence of four or more visits not significantly different by chi-square analysis for those with the pharmacy benefit versus those without.

‡Occurrence of four or more visits significantly different by chi-square analysis for those who quit versus those who did not quit and were lost to follow-up ($P < 0.001$)

§Occurrence of four or more visits significantly different by chi-square analysis for non-HMO patients who quit versus HMO enrollees who quit ($P < 0.001$).

managed care organization can result in significant quit rates in multiple primary care settings. The overall quit rate of 30.5% compares favorably with the 1-year success rates of up to 15% for counseling and nicotine replacement therapy reported in a recent review of this topic.¹¹ Moreover, our high quit rate was achieved in multiple primary care clinics, which has not been previously reported.

Although smokers clearly incur greater medical costs compared with nonsmokers,¹² few reports published in the peer-reviewed medical literature have examined the impact of managed-care-sponsored efforts at tobacco cessation. One important study¹³ in a group practice HMO found that a series of nurse-directed interventions could result in biochemically verified tobacco quit rates of 6.9% to 7.6% compared with physician-centered rates of 3.9%. Another report¹⁴ showed that personal counselors using the telephone to conduct ongoing counseling in addition to workbooks, a buddy system, nicotine replacement therapy, and letters achieved a quit rate of 34% at 6 months after entry into the program. A report from an independent practice association setting¹⁵ noted a quit rate of 43%, but this was not from 1-year follow-up data and was confined to those who appeared to be using their nicotine patch therapy correctly. Other reports^{16,17} are primarily descriptive and note innovations such as relying on pharmacists to assist in smoking cessation strategies.

We believe the sponsorship of a primary-care-based tobacco cessation program is a compelling option for office-based physicians confronting the need to incorporate tobacco cessation efforts into their practice. Most healthcare professionals are aware of the dangers of tobacco, yet vary in having the resources for and interest in being active advocates for tobacco cessation. Our report shows that an entity outside a local clinic, such as a managed care organization, can be a catalyst for a successful broad-based tobacco cessation program.

We believe the option of having primary care sites identify one non-physician individual for HMO-

sponsored tobacco cessation training tends to select enthusiastic healthcare workers who are especially committed to locally battling tobacco smoking. The successful leadership of healthcare professionals such as nurses in tobacco cessation counseling and follow-up is not new.^{18,19} Because a healthcare professional may need 10 to 15 minutes to provide counseling and nicotine replacement education for a smoker,²⁰ healthcare systems may find that primary care nurses, physician assistants, and nurse practitioners who assume primary responsibility for this vital component of tobacco cessation are an attractive, less costly alternative to physicians. Although physicians can be successful agents for tobacco

Table 5. 1 Year Quit Rate Among 810 Program Participants by Clinic

Clinic	Number Counseled	Unknown Status Number	Number Using Tobacco	Number Quit	Percentage Quit
1	4	0	3	1	25.0
2	13	0	12	1	7.7
3	3	0	3	0	0
4	126	17	75	34	27.0
5	2	0	1	1	50.0
6	210	23	121	66	31.4
7	8	1	4	3	37.5
8	27	3	13	11	40.7
9	34	5	12	17	50.0
10	69	11	33	25	36.2
11	49	6	23	20	40.8
12	41	3	26	12	29.3
13	34	6	15	13	38.2
14	14	1	5	8	57.1
15	18	2	5	11	61.1
16	9	0	4	5	55.6
17	8	0	4	4	50.0
18	58	6	28	24	41.4
19	38	5	22	11	28.9
20	45	0	31	14	31.1
TOTAL	810	89	440	284	35.1

cessation efforts,²¹⁻²³ those with a busy office-based primary care practice may not have sufficient time to conduct regular face-to-face counseling and follow-up for smokers.

Individual clinical trials examining nicotine replacement therapy have shown that it is most beneficial in helping smokers quit when combined with ongoing counseling and follow-up, either one-on-one or group sessions conducted by a healthcare professional.^{10 11 18 19,24-34} Indirect evidence also indicates that the nicotine patch is not effective when provided without counseling.³⁵ Our data support these findings.

We found that patients who continue with counseling are more likely to quit than those who drop out. The quit rates we achieved also appear to be independent of financial incentives linked to the pharmacy benefit, since quit rates among patients with the pharmacy benefit were no different from those for patients without the benefit. While all HMO participants were liable for a bill for the cost of the appointments over and beyond the pharmacy benefit, our data suggest that the availability of counseling is the most important determinant of successful quit rates, as opposed to financial incentives linked to the costs of nicotine replacement therapy.

Our findings have significant implications for recent market developments in nicotine replacement therapy. Nicotine replacement therapy in the form of gum and a transdermal patch is now available over the counter. (*The Wall Street Journal*, July 5, 1996:B10). Since over-the-counter products usually are not covered by managed care prescription plans, managed care pharmacy benefit managers may initially welcome this development, since prescription nicotine replacement therapy represents a short-term cost that can now be directly assumed by the patient. Our data suggest that this strategy in the managed care setting may be justified. We found that the presence of a prescription benefit was not associated with a higher tobacco cessation rate. Although patients with the pharmacy benefit were slightly older, we do not believe this statistically significant age difference of 3 years was a clinically important factor in determining quit rates. However, our data are limited because, other than sex and age, no other demographic data were available to compare these two populations. Our data on quit rates as a function of the presence of a prescription benefit also were not collected as part of a randomized clinical trial, the optimum method to fully gauge its impact.

Our approach to tobacco cessation is most useful for tobacco users who are committed to quitting tobacco, since this group is intuitively more likely to be motivated to assume the costs of nicotine replacement

therapy. Our tobacco cessation program may have less appeal to those who are contemplating quitting but are unsure⁴ and would find the availability of "free" nicotine replacement therapy the trigger that prompts entry into the program. Other HMOs have used the prospect of free replacement therapy to maximize enrollee participation to good effect.³⁶ Finding the right balance of incentives to maximize participation and increase quit rates in the current marketplace of over-the-counter nicotine replacement is beyond the scope of this article, but is an area ripe for further research.

Our data also show that sponsorship of a tobacco cessation program by a managed care organization in primary care clinics that care for patients with non-HMO insurance can result in considerable success for this population. Compared with the HMO enrollees in this study, non-HMO patients had a lower quit rate, but one that remains comparable to rates reported in the literature.¹¹

Our report is limited by the lack of any demographic or other profile data for the non-HMO patients. However, the lower rate of four or more visits (even among those successful in quitting) is a likely factor in the lower overall quit rate in this group. Non-HMO patients, unlike HMO enrollees, may rely less on their primary care clinic to coordinate all aspects of their medical care. This behavior may have an impact on the likelihood of relying on counseling follow-up for tobacco cessation. Financial disincentives to provide follow-up for non-HMO patients is unlikely since in our group model HMO, these patients represent an additional source of income over and beyond capitation for the involved primary care clinics. Instead, these patients are liable for charges submitted for the counseling visits or may have a non-HMO pharmacy benefit not linked to counseling that could lower the rate of follow-up.

This study is limited in that our data are primarily descriptive and were not collected as part of a prospective trial comparing the tobacco cessation program to usual care. Nothing is known about quit rates outside this managed-care-sponsored program in the Geisinger System. Other than sex and age, little is known about other factors that may have played an important role in achieving these quit rates and that may be a source of bias. Another significant shortcoming is that quit rates are based on patient self-reports and were not confirmed by biochemical methods, such as salivary cotinine or carbon monoxide. However, self-reports are a useful metric that has been used in previous research in this area.^{14,15,35} Furthermore, the quit rates reported herein are quite impressive compared with similarly constructed

interventions reported in the literature, and we believe these data speak for themselves.

... CONCLUSION ...

More research on tobacco cessation programs clearly is needed. Given the importance of promoting tobacco cessation and the availability of nicotine replacement therapy over the counter, the continuing utility of the approach used in our study and its applicability in other healthcare settings remains to be seen. In addition, more work is needed to uncover new strategies in the managed care setting that result in higher quit rates in the context of prepaid financing and the use of the pharmacy benefit.

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... PATIENT OUTCOMES ...

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