

Smoking Status Identification: Two Managed Care Organizations' Experiences With a Pilot Project to Implement Identification Systems in Independent Practice Associations

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Objective: To determine whether managed care organizations (MCOs) can effectively promote the sustained use of smoking status identification systems among independent practice associations.

Study Design: Quasi-experimental design measuring smoking status documentation before and after an intervention.

Methods: A chart review of the MCOs' patients at 4 participating primary care clinics determined the baseline for smoking status documentation before intervention. Baseline data were unavailable from a fifth participating clinic. Two quality improvement personnel were sent by the MCOs to help the clinics chose and implement a system for identifying smoking status. All of the clinics chose a sticker system. The change in smoking status documentation was assessed by chart reviews of patients enrolled in the MCOs who were seen during the period between 3 and 16 months after implementation of the system.

Results: Following the intervention, a significant increase in smoking status documentation was noted among participating clinics. The proportion of patients whose smoking status was identified and documented by any method increased from 50% to 87% ($P < .01$) at the 4 clinics with baseline data. By clinic, the increase varied from 6% to 60%. The sticker system was the method by which most patients' smoking status was documented (77%). There were no controls, so the influence of outside factors, including a regional smoking cessation campaign that coincided with this study, cannot be quantified.

Conclusions: Managed care organizations may be an effective change agent for implementing the guidelines for tobacco use and dependence treatment.

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Tobacco use is the most common cause of preventable death and disease in the United States.^{1,2} Cessation rates for tobacco use increase with even brief counseling by a healthcare provider, and more intensive counseling increases this intervention's effectiveness. Evidence-based guidelines from the US Public Health Service recommend that physicians pro-

vide counseling and behavioral therapies for all smokers based on the "5 A's": *ask, advise, assess, assist, and arrange follow-up*.³ Adherence to these guidelines is low; physicians identify only about half of their patients who smoke, advise fewer than half, and assist and arrange follow-up with only a small percentage.^{4,5} Because of this, the Committee on Clinical Preventive Service Priorities has identified "assessing adults for tobacco use and providing tobacco cessation counseling" as the highest priority among preventive services.⁶

Approaches that have been used to improve guideline adherence include education, influence by peers, and systematic changes in the environment of care.⁷ One of the most effective interventions is a reminder system that prompts physicians to perform preventive services.^{8,9} Reminder systems for tobacco cessation counseling may use problem lists, progress notes, stamps, stickers, or Post-it Notes to identify the smoking status of a patient and prompt further counseling. Unless the patient is identified as a current smoker through one of these mechanisms, counseling is not likely to occur.

Despite their effectiveness, reminder systems have not been widely incorporated into clinical office procedures.⁴ Clinics may need to be persuaded or encouraged to implement reminder systems by other organizations involved in healthcare delivery.

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This study evaluates 2 MCOs' efforts to increase the identification of patient smoking status among individual practice associations.

METHODS

Design

Two MCOs in Vermont—The Vermont Health Plan and Blue Cross and Blue Shield of Vermont—initiated a pilot program to improve smoking cessation counseling in the independent primary care practice associations (hereafter referred to as “clinics”) that provide care for patients covered by their health plans. A survey was mailed to 199 clinics, asking about their systems to identify and counsel patients who smoke. Fifty-seven clinics (28%) responded to the survey. From these, 1 clinic from each of 5 geographic regions in Vermont was randomly recruited to participate in the pilot project. According to postintervention smoking status data, the proportion of adult patients seen at the clinics who were smokers averaged 25.3% (range 20% to 30%) compared to a prevalence of 21.8% among all adults in Vermont.¹⁰

The evaluation study used a quasi-experimental pretest, posttest design with each clinic as a designated unit of analysis, as the clinics were the target of the intervention.

Intervention

Each of the clinics received a training visit from 2 quality improvement personnel from the MCOs, a licensed practical nurse (LPN) and a respiratory therapist. The LPN had received training in smoking cessation from the American Lung Association. During the visits, physicians and office staff were offered a choice of 2 identification systems: a smoking identification stamp for use on progress notes, or a chart sticker that indicated whether the patient currently smoked. The quality improvement personnel trained the office staff to use the selected system, then contacted each office to address questions or problems at 2, 4, and 16 weeks following initial training. Staff members were instructed to use the selected system for all patients, not just those covered by the MCOs. This simplified the process for the office staff, and extended the potential benefit to all of the clinic patients.

Outcome Measure

The outcome measure was medical record documentation of smoking status of the patient in a sample of charts of adult patients (≥ 18 years old) covered by the MCOs. Patients in the MCOs gave prior consent to have their charts reviewed by quality improvement personnel at the time of enrollment. We determined the baseline documentation of smoking status by each clinic from a sample of charts of patients seen within the 6 months prior to implementation of the intervention. These charts were reviewed as part of routine quality assurance monitoring conducted by the MCOs. We determined the postintervention documentation of smoking status from a sample of charts of patients seen between 3 and 16 months after the implementation date. In one of the participating clinics we failed to obtain data on the clinic's baseline documentation of smoking status. Therefore, statistical analyses were based on the remaining 4.

We considered a chart to have adequate documentation of smoking status if 1) the initial history and physical indicated the patient was a lifetime non-smoker; 2) the smoking status was listed in the problem list; 3) the smoking status was indicated in a progress note in the year prior to implementation; or 4) a sticker or stamp indicating smoking status was on the chart. We defined the performance measure of smoking status documentation as the ratio of reviewed patient charts that had documentation as defined by the above criteria over the total number of charts reviewed. The summary performance measure of smoking status documentation was the average of each clinic's proportion of charts with documented smoking status.

Statistical Methods

The unit of analysis was the clinic, but the units of

Table 1. Characteristics of Participating Clinics*

Participating Clinic	Number of Providers	Geographic Location in Vermont	Smoking Prevalence [†]
1	8 (3 MDs, 5 PAs)	Northwest	35%
2	4 (2 MDs, 1 NP, 1 PA)	Southeast	23%
3	3 (3 MDs)	Southwest	27%
4	5 (4 MDs, 1 DO)	Central	24%

*PA indicates physician assistant; NP, nurse practitioner; DO, osteopathic physician.

[†]Smoking prevalence determined from postintervention chart review.

observation were the medical records of individual patients.¹¹ Since the documentation in patient charts from a single clinic cannot be considered an independent event, a random-effects model was used to include the effect of the clinic. A logistic regression model with a random clinic effect, assumed to follow a normal distribution,¹² was used to compare the proportion of patient charts that included any smoking documentation before and after the intervention. The model was fit using maximum likelihood, using a quasi-Newton optimization of a likelihood approximated by adaptive Gaussian quadrature.¹³ All tests were 2-sided, with α equal to 0.05. The analysis was performed using the SAS NLMIXED procedure (SAS Institute, Cary, NC, version 8).

RESULTS

Two clinics that were contacted about participation during the initial recruitment declined and were replaced by two other clinics. The physicians at 1 of these clinics felt that they did an adequate job of addressing tobacco use and considered the smoking status sticker intrusive and stigmatizing. At the other clinic, personnel did not believe they could implement a new system at that time due to competing demands and priorities. Each of these clinics was replaced by another in the same geographic region. All of the participating ambulatory care clinics were classified as independent practice associations (Table 1).

Baseline Documentation

The proportion of charts with documentation of smoking status at baseline averaged 50% among the 4 clinics (Table 2). None of the clinics used stickers or stamps prior to our intervention. Instead, baseline documentation consisted of written comments in the progress notes, history and physicals, and problem lists. The clinic with the highest ratio of smoking status documentation (94%) recorded this information in the progress note for 59% of the charts, the history and physical for 29% of the charts, and the problem list for 6% of the charts.

Postintervention Documentation

All of the clinics elected to use the sticker system of identification. The ratio of charts with smoking status documentation increased in each of the 4 clinics with baseline data (Table 2). Stickers indicated the smoking status in most cases (77%). The fifth participating clinic (in which baseline documentation was not available), had a postintervention documentation rate of 100%.

Costs

Providing the pilot program cost the MCOs approximately \$1540. This amount included a total of \$478 for 3 hours of staff time per clinic (2 staff members for 1.5 hours) to provide initial training and 1 hour of staff time per clinic for telephone follow-up. The balance was for materials, including the initial purchase of 30 000 stickers (\$707) and 10 stamps (\$350), which exceeded the needs of the 5 participating clinics. Note that the clinics also incurred some cost for the time allotted to train their staff. We estimate that the cost to the MCOs of extending this program to additional clinics would be primarily related to staff time at about \$100 per clinic.

DISCUSSION

This study demonstrates that managed care organizations can be effective agents for implementing smoking identification systems in ambulatory care clinics, even when these clinics are independent practice associations whose staff are not employees of the MCO. In this pilot project, postintervention measurements showed improvement in smoking status documentation sustained for at least 3 months among the 4 clinics with baseline data.

The first recommendation of the US Public Health Service guideline on tobacco use and dependence is to identify the tobacco use status of all patients. Indeed, none of the other recommended interventions (advise, assess, assist, and arrange follow-up) can occur unless this is done. Identification systems on charts can act as a reminder to advise, assess, and assist those patients who are identified as current tobacco users.

Systems designed to improve assistance and treatment of tobacco dependence were not part of this initiative for 2 reasons: First, we wanted to determine whether we could be successful with a necessary but limited step (identification); and second, Vermont's tobacco cessation resources were just being planned at the time of the study.

Implementation of evidence-based guidelines is a challenging problem, as illustrated by the wide variation in adherence to the tobacco use and dependence guideline among primary care clinics.⁵ Solberg et al examined the variables and strategies that influence the success of guideline implementation with a panel of individuals who had extensive experience in implementing guidelines.¹⁴ The panel considered that organizational capability to change had a greater influence on guideline implementation than the implementation strategy itself. This study suggests that incentives for organizational

Table 2. Medical Chart Documentation of Smoking Status Before and After Identification System Intervention*

Clinic	Baseline				Postintervention			
	n	Written [†]	Sticker	Total	n	Written only [‡]	Sticker	Total
1	52	17	0	17 (33%)	29	6	19	25 (86%)
2	20	8	0	8 (40%)	30	4	16	20 (67%)
3	17	16	0	16 (94%)	30	0	30	30 (100%)
4	85	28	0	28 (33%)	30	14	14	28 (93%)
Overall	174	69	0	69	119	24	79	103
Documentation proportion clinics weighted equally				50%				87%

*Documentation of smoking status was considered present if the chart had either written documentation or a sticker.

[†]Written documentation includes any documentation of smoking status in progress note, problem list, or initial history and physical exam.

[‡]"Written-only" differentiates nonsticker documentation methods from documentation using stickers.

change can come from a managed care organization's leadership in guideline implementation.

There were several limitations to this study. First, the clinics that participated in the study did not represent a random sample, and all agreed to participate in the project. Thus, the motivation of the staff to incorporate identification systems may have been higher than average. Second, no additional clinics were monitored during the same time period to control for temporal trends that may have increased smoking status documentation separate of the intervention. During the same time period, Vermont implemented a media campaign as well as a free telephone "quit line" for tobacco users and a network of hospital cessation resources. These resources may have increased the motivation to improve smoking status documentation independent of the MCO intervention. Finally, the performance measure evaluated a process of healthcare (identification of smoking status) and not a health outcome (such as smoking cessation rate). However, a large body of evidence suggests that identification systems do increase cessation rates,³ emphasizing the importance of developing methods to improve smoking status identification. To evaluate implementation methods that address the full range of evidence-based guidelines for treating tobacco use and dependence, larger studies are needed, with monitoring by both process and outcome measures.

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MANAGERIAL

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