

Smoking Cessation Interventions in Rural Family Practices: An UPRNet Study

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BACKGROUND. Primary care physicians are urged to offer smoking cessation counseling to their patients. Many studies have sought to determine which smoking interventions are most effective in medical office settings. As a result, routine identification of smokers, brief counseling, referral to smoking cessation programs, and nicotine replacement therapy are advocated. The context of patient visits during which smoking cessation advice is given, however, has received little attention. The objective of this study was to determine if patients' reasons for visits and self-reported readiness to quit smoking are associated with likelihood and type of smoking cessation intervention offered by family physicians.

METHODS. The study was conducted in the Upper Peninsula Research Network (UPRNet), a voluntary association of family physicians in 15 medical clinics located in rural areas of northern Michigan. Practice coordinators administered a 1-page exit questionnaire to every other adult patient seen by a participating physician immediately after the office visit. Clinicians were blinded to the specific purpose of the questionnaire. During the study, 2317 questionnaires were administered, yielding information on 455 smokers.

RESULTS. The overall rate of physicians' providing any smoking cessation intervention at any type of visit was 47%. There was a significant association between frequency of smoking cessation intervention and reasons for visits ($\chi^2=10.46$, $P=.01$). There was a statistically significant difference between stages of readiness to quit and frequency of smoking cessation intervention offered ($\chi^2=26.5$, $P<.001$). Clinicians offered smoking cessation interventions to smokers in the precontemplative stage significantly less often than to smokers in the contemplation, preparation, or action stages.

CONCLUSIONS. UPRNet practitioners vary the frequency of smoking cessation interventions according to patients' reasons for the medical visit and their readiness to quit smoking.

KEY WORDS. Smoking cessation; physicians, family; rural health; ambulatory care. (*J Fam Pract* 1997;44:578-585)

Cigarette smoking is one of the most preventable causes of death and morbidity in the United States, yet nearly 25% of adults in this country continue to smoke. According to various health promotion agencies, 70% of smoking patients report that firm, supportive messages from their personal physicians can act as an important motivating factor to quit smoking.¹ In a meta-analysis, Kottke et al² found that family physicians can have a significant impact on smoking behavior by identifying smokers in their

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practices and encouraging them to quit. Cummings and associates³ reported that physician counseling against smoking is as cost effective as several other preventive medical practices and should be a routine part of health care for patients who smoke.

In the publication *Healthy People 2000*, the Department of Health and Human Services set a goal of increasing to at least 75% the proportion of primary care providers who routinely advise cessation and provide assistance and follow-up for all of their patients who use tobacco.⁴ Additionally, the American Academy of Family Physicians and the National Cancer Institute have developed prompter systems to remind clinicians to ask smokers about their habits at every visit. The basic intervention plan consists of asking all patients about smoking,

advising smokers to stop, assisting patients who want to stop now by helping them establish a quit date, providing self-help materials, prescribing nicotine gum or patches, and arranging follow-up visits.¹

Nevertheless, Manley and colleagues⁵ found that in studies of highly motivated physicians and those involving the use of chart reminders, smoking cessation advice was given only 50% of the time. Anda⁶ and Frank⁷ and their colleagues found that the probability of a smoker's reporting ever being advised by a physician to quit smoking is less than 50%. Physicians' lack of training and confidence in smoking cessation techniques and lack of adequate mechanisms for reimbursement have also been cited as reasons for low rates of physician smoking interventions.^{8,9}

Solberg and associates¹⁰ have discussed the discrepancies between the potential of physician smoking cessation advice and the actual practice of smoking cessation activities. With respect to these discrepancies, the authors of the current study believe that smoking cessation interventions may not be appropriate for all visits, especially when physicians' and patients' physical and emotional energy is directed toward more urgent issues, such as acute care and unstable chronic medical problems. The context of the office visit, especially the patient's reason for the visit, may have a large influence on the discussion of smoking cessation; it may affect the patient's readiness to receive smoking cessation advice and ultimately the physicians' inclination to attempt intervention.

Little research is available about how the context of patient visits affects the provision of smoking cessation advice by primary care physicians. Based on our own personal experience and conversations with other family physicians, we speculated that busy family physicians take a selective approach to offering smoking cessation advice, being more likely to offer advice at routine health examinations.

In addition to the reason for visit, physicians are pragmatic and may not attempt smoking cessation with patients who they know from prior experience may not be ready to quit. One factor critical to successful cessation is the patient's readiness to quit. Prochaska's definitive work on the stages of smoking cessation has provided a model to identify a smoker's readiness to quit.¹¹⁻¹² Prochaska has shown that people proceed through distinct stages of change when addressing addictive behaviors such as

smoking. The stages are "precontemplation," in which the smoker has no intention to quit smoking within the next 6 months; "contemplation," in which the smoker is seriously planning to quit within 6 months; "preparation," in which the smoker is intending to quit within 1 month; and "action," which indicates the smoker has successively altered smoking behavior for a period of 1 day to 6 months; and "maintenance," in which the smoker quit smoking more than 6 months ago.

Prochaska's studies have shown that the best predictor of a person's ability to quit smoking is movement to a more advanced smoking-cessation stage. Since we suspected that family physicians are more likely to invest energy and time with patients in advanced stages of readiness, the research questions selected for this study were: (1) is there an association between the patient's reason for the visit and the likelihood and kind of smoking cessation advice offered by the clinician? and (2) is there an association between the patient's stage of readiness to quit and the likelihood and kind of smoking cessation advice offered by the clinician?

METHODS

The study was conducted in 13 of the 15 practices of the rural Upper Peninsula Research Network (UPRNet), a voluntary association of family physicians and their office staffs who participate in rural primary care research. Ten of the fifteen practices are in towns of 2500 or less, and the remaining five are in communities of 20,000 or less, all located in the northern one half of the state. Eight network clinics are private practices, one is a teaching practice of Michigan State University College of Human Medicine, and six are community health centers. The number of health care providers in each clinic ranges from one (three clinics) to seven at the three largest clinics, for a total of 62 doctors, physician assistants, and nurse practitioners. Combined, the practices have approximately 300,000 office visits per year. The advisory council of UPRNet and the Institutional Review Board of Michigan State University approved this study.

A cross-sectional design was used, involving the administration of a questionnaire immediately after an office visit. Before the data-collection period, clinicians received a letter briefly explaining that their patients would be completing questionnaires

on health habits, how the questionnaire would be used, and that the results would be shared with the clinicians at the completion of the study. The clinicians were not informed of the exact nature of the questionnaire so that they would not be inclined to offer advice more frequently than usual, thus biasing the results.

Practice coordinators, usually a nurse or receptionist, were trained to administer the study in their practices so that clinicians would not be involved in the operational aspects of the study. During a 9-month period, the questionnaires were distributed to patients 18 years or older at the 13 participating clinics. The actual start dates for questionnaire administration varied according to individual clinic schedules. The practice coordinators administered questionnaires 2 days a week during the study period and to every other patient who saw a participating clinician. The coordinators kept a tally sheet so that each clinician would eventually enroll at least 70 patients. Based on a 20% prevalence rate determined from pilot testing, the authors estimated that 4500 questionnaires would be needed to enroll 900 smokers. It was further estimated that 20% to 50% of these smokers would receive some type of smoking cessation intervention, yielding 180 to 450 usable questionnaires. Alpha level was set at .05.

Designed by the researchers, the questionnaire included the following items: demographics, questions regarding reason for the visit, patients' current smoking status and readiness to quit, and type of smoking cessation intervention, including advice, self-help pamphlet, follow-up smoking cessation visits, nicotine patch or gum and referral to smoking cessation group counseling, or no intervention. The expectation was that patients might receive more than one intervention and that these patients could be compared with those who received only one intervention.

Patients were asked to select one of the following reasons for the medical visit: illness, recheck or follow-up visit for illness, injury, routine physical examination, routine Papanicolaou (Pap) smear and pelvic examination, prenatal visit, counseling, smoking cessation, or other problem (please specify). These nine reasons were selected to allow for easy and accurate patient response. For statistical analysis, they were collapsed into a smaller number of categories. To check congruence between the reason for visit listed by the patient and that noted

by the clinician, a 10% random sample of the smoker questionnaires was audited by reviewing clinicians' chart notes.

An adaptation of Prochaska's model¹² was used to assign smokers to a stage of readiness to quit smoking. Researchers did not use Prochaska's 32-item questionnaire in its entirety because of its length and format. Instead, the current study included three fundamental questions from the original transtheoretical model that the current researchers felt would not violate the validity of the model: "Did you try to quit smoking in the past year?" Respondents who answered affirmatively were classified as being in the *action* stage of readiness to quit. "Are you planning to quit smoking in the next month?" Respondents who answered affirmatively were classified as being in the *preparation* stage. "Are you planning to quit smoking in the next 6 months?" Respondents who answered affirmatively were classified in the *contemplation* stage. Smokers who answered negatively to all three of the above questions were classified in the *precontemplation* stage.

The questionnaire was pilot-tested in two network practices. The respondents found the questionnaire easy to understand and were able to fully complete it in a short time. A clinician questionnaire was administered after the data-gathering phase of the study to assess whether the clinician blinding was successful. Data were entered into a Macintosh FileMaker Pro database and then transferred to Statview 4.5 for statistical analysis.

RESULTS

From the 13 participating practices, 2317 questionnaires were collected. Ninety-four (4%) of these were not completed because of patient refusal to participate. Typical reasons given by patients were that they were "too tired, sick, busy, or not enough time." An additional 186 questionnaires were subsequently found to be incomplete and thus were eliminated from the data analysis, leaving 2037 usable questionnaires.

There were 455 smokers, or 22% of the total sample. The average age of smokers was 41.7 years; 68% were women and 32% were men. Average level of education was 12.7 years. Forty-seven percent of the smoking patients reported that clinicians had discussed smoking with them at the current visit and 41% reported being asked by their clinician to quit.

TABLE 1

Smokers' Self-reported Reasons for Medical Visits (n= 455)

Reason	% of Smokers
Recheck	28.7
Acute sickness	20.6
Other problem	16.4
Routine examination	14.2
Papanicolaou smear and pelvic examination	7.9
Prenatal examination	5.5
Injury	5.0
Counseling	1.7

Sixty-three percent of the sample reported attempting to quit smoking in the past year, and 69% said that their clinicians had asked them to quit at some time in the past. Ninety-three percent of the total sample reported having been seen previously by their respective clinicians. Table 1 summarizes the patients' self-reported reasons for the medical visit.

The chart audit of 10% of the smoker sample showed a 93% concordance between patients' self-reported and clinicians' recorded reasons for the visit.

Table 2 summarizes the frequency of smoking cessation interventions offered by clinicians according to the patients' reasons for the medical visit. The reasons for visit were condensed from the original nine categories into four main categories: acute sickness (20.6%) and injury (5%) were combined into

sickness/injury for a total of 25.6%; recheck, 28.7%; routine examination (14.2%), Pap smear and pelvic examination (7.9%); and prenatal visit (5.5%) were combined into routine examination for a total of 27.6%; and counseling (1.7%) was combined with other problem (16.4%) for a total of 18.1%. Visits specifically for smoking cessation advice were eliminated from the analysis because the focus of this study was encounters not specifically designated for smoking cessation intervention.

There was no significant association between type of smoking cessation intervention and reason for visit ($\chi^2=14.5, P>.48$). The total number of smokers in this analysis was 412 because 43 smokers (9% of the total sample) who received more than one smoking cessation intervention were excluded. Various patterns of multiple interventions are shown in Table 3. Twelve different combinations of interventions were used. When compared with reason for visit, no particular pattern was noted.

To compare frequency of intervention with reason for visit, we included the 43 patients who received multiple interventions for a total of 455 smokers (Table 4). There was a significant association between frequency of smoking cessation interventions and reason for visit ($\chi^2= 10.46, P=. 01$). The largest statistical contribution was in the routine examination-intervention cell (Table 4). This finding indicates that clinicians are more likely to provide a

TABLE 2

Type and Frequency of Smoking Cessation Interventions, by Smokers' Reasons for the Medical Visit (n=412)

Reason for Visit	Types and Frequency of Intervention, %*					
	Advice	Pamphlet	Follow-up Visit	Nicotine Patch or Gum	Referral	None
Sickness/injury	19.5	<1.0	<1.0	7.5	<1.0	70.0
Recheck	26.0	<1.0	0.0	7.5	0.0	66.0
Routine examination	32.0	0.0	0.0	7.5	<1.0	60.0
Other	14.5	0.0	0.0	8.0	1.0	76.0
Total	26.0	4.0	2.0	12.0	3.0	53.0

*Totals may not equal 100% because of rounding. Differences are not statistically significant ($\chi^2=14.5, P>.48$).

NOTE: The 412 smokers on which data in this table are based are patients receiving only one smoking cessation intervention in the current medical visit.

TABLE 3

Various Patterns of Smoking Cessation Interventions Recommended to Smokers (n=43)

Intervention	No. of Patients Who Received Intervention											
	N=11	N=6	N=5	N=4	N=3	N=3	N=2	N=2	N=2	N=2	N=2	N=1
Advice	X	X	X	X	X		X	X	X	X		X
Pamphlet		X					X		X	X	X	X
Follow-up					X		X	X	X			X
Patch/gum	X	X		X		X	X		X	X	X	X
Referral			X	X					X		X	

TABLE 4

Frequency of Smoking Interventions, by Patient Self-reported Reason for Visit (n=455*)

	Intervention	No Intervention
Reason for visit	n (%)	n (%)
Sickness and injury	54 (42)	76 (58)
Recheck	66 (45)	80 (55)
Routine examination	84 (57)	64 (43)
Other	36 (38)	59 (62)

*Numbers add to more than 455 because 43 smokers received more than one intervention.

NOTE: Association between frequency of smoking cessation intervention and reason for visit, $\chi^2=10.46, P=.01$

smoking cessation intervention at a visit for a routine examination than during visits for other reasons.

Table 5 presents the association between smoking cessation interventions and patient stages of change to quit smoking. There was no significant association between the specific types of smoking cessation interventions and stages of change to quit smoking ($\chi^2=22.6, P>.09$).

As in the previous analysis, the 43 smokers who received multiple smoking cessation interventions were then included in the sample to compare the frequency of intervention to the stages of change (Table 6). There was a statistically significant difference between stages of change to quit and frequency of smoking cessation interventions offered ($\chi^2=26.5, P<.001$). Table 6 shows that clinicians offered significantly less cessation advice to smokers not considering quitting smoking within 6 months (the "pre-

TABLE 5

Number and Percent of Smoking Cessation Interventions, by Patient Stage of Change (n=412)

Stage of Change	Smoking Cessation Interventions, N (%)					
	Advice	Pamphlet	Follow-up Visit	Nicotine Patch/Gum	Referral	None
Precontemplation	15 (17)	0 (0)	0 (0)	3 (3)	0 (0)	71 (80)
Contemplation	5 (19)	1 (4)	0 (0)	0 (0)	0 (0)	21 (78)
Preparation	8 (35)	0 (0)	0 (0)	0 (0)	0 (0)	15 (65)
Action	63 (25)	1 (<1)	1 (1)	25 (10)	2 (1)	181 (66)
Totals	91 (23)	2 (<1)	1 (<1)	28 (7)	2 (<1)	288 (69)

NOTE: Association between smoking cessation intervention and stage of change, $\chi^2=22.6, P>.09$.

TABLE 6

Frequency of Smoking Interventions, by Patient Stage of Change (n=455*)

Stage of Change	Intervention n (%)	No Intervention n (%)
Precontemplation	20 (22)	70 (78)
Contemplation	20 (49)	21 (51)
Preparation	22 (59)	15 (41)
Action	169 (51)	163 (49)

*Numbers add to more than 455 because 43 smokers received more than one intervention.

NOTE: Difference between stages of change to quit and frequency of smoking cessation interventions, $\chi^2=26.5$, $P < .0001$.

TABLE 7

Frequency of Single and Multiple Interventions, by Patient Stage of Change

Stage of Change	Single Intervention n (%)	Multiple Interventions n (%)
Precontemplation	18 (15)	2 (5)
Contemplation	6 (5)	5 (12)
Preparation	8 (6)	6 (14)
Action	92 (74)	30 (70)
Total	124	43

NOTE: Difference between single and multiple interventions, $\chi^2=7.06$, $P > .07$.

contemplation" stage) compared with those in other stages.

Because of the potential for physicians to be aggressive with patients in more advanced stages of change, patients receiving multiple interventions were compared with those receiving single interventions (Table 7). The difference was nonsignificant ($\chi^2=7.06$, $P > .07$).

Fifty-three of the 62 participating clinicians returned the questionnaire on clinician blinding. The nine nonrespondents included five clinicians who relocated shortly after the study was completed and four locum tenens physicians. The nonrespondents enrolled less than 1% of the smokers. There was no significant difference in frequency of smoking cessation interventions between the eight clinicians most familiar with the study and the eight clinicians randomly selected from the group who were unaware of the specific purpose of the study ($\chi^2=.34$, $P > .56$).

DISCUSSION

The most striking finding in this study was that smokers in the precontemplation stage received significantly fewer smoking cessation interventions than did smokers in other stages of readiness to quit. Ninety-three percent of those in the precontemplation stage had visited the rural practices more than once, suggesting familiarity with their health care providers. Clinicians did not spend time on interventions with patients who showed little inclination to quit smoking. This finding may help explain why other studies have reported disappointing rates of physician smoking cessation intervention. Perhaps clinicians avoid intervening because of an intuitive or actual awareness of smokers' unreadiness to quit.

The researchers found a significant association between reason for visit and frequency of smoking cessation interventions when all 455 smokers were included in the analysis (Table 4). It appears that smokers are more likely to receive an intervention when they are seeing the clinician for a routine examination. This finding supports the authors' speculation that clinicians may be more likely to provide interventions at visits for routine examinations than at other types of visits, such as those focusing on another medical problem. Even though only 47% of the clinicians in this study discussed smoking at the current visit, approximately 69% of the smoking patients reported that their clinicians had discussed smoking with them at a previous visit. It appears that rural clinicians in this study were aware of their patients' smoking status and, in a majority of cases, addressed this issue during a medical encounter.

Clinicians seem to be slightly more prone to intervene if the smoker is in an advanced stage of quitting. Table 6 shows that only 22% of smokers in the precontemplation stage received interventions, compared with 49% of those in the contemplation stage and 59% in the preparation stage. This trend toward increased intervention did not continue through all stages, however, as only 51% of smokers in the action stage reported an intervention attempt. This percentage may be attributable to the manner in which smokers were classified. Smokers were classified in the action stage if they indicated having tried to quit in the past 6 months. There was no attempt to further define their plans concerning smoking cessation attempts.

Another limitation of this study is the question-

naire's inability to discern patients' specific reasons for the medical visit. Patients were asked to provide descriptive information after indicating the reason for visit, but few provided this information. A comparison of symptoms related to smoking, such as respiratory and cardiac problems, with specific smoking cessation interventions suggested by the clinician would have been useful. Nevertheless, it appears that the primary care clinicians in this rural network are generally aware of the importance of discussing smoking cessation and provide specific interventions to almost one half of the smokers they see.

In a family practice residency program, McIlvain et al¹³ found that 79% of patients reported that their physician counseled them about smoking cessation. Although this counseling appeared to motivate some patients to attempt to quit, the study did not show significant improvement in actual quit rates. The authors of the study pointed out the need for longitudinal studies as well as the need for further research in the area of physician counseling for smoking cessation because of confounding variables such as competing demands within the encounter. The authors pose further important questions regarding the context of patient visits, supportive office systems, messages specifically crafted for patients in different stages of readiness for change, and other preventive health resources.

In a study of 6086 subjects in 45 primary care clinics in the upper Midwest, Woller and associates¹⁴ found that 92% of the smokers reported that their clinician had asked about their smoking status and 86% had been informed about the dangers of tobacco use. This study may have found higher rates because the sample was restricted to adults between the ages of 50 and 68, a patient population that is generally targeted for cancer screening. The study was an historical cohort study in which patients were asked to recall physician behaviors over the past 3 years. The noteworthy conclusion of this study was, "While most clinicians inquire about their patients' smoking status and recommend they quit, there currently exists a deficiency in the translation of these recommendations into concise, explicit instructions on how to quit."

Both studies by McIlvain¹³ and Woller¹⁴ and their associates demonstrate fairly high smoking intervention rates by clinicians. These rates may have been inflated by the particular methodologies used. In the

present study, it is encouraging to find that in the absence of a structured intervention or program, there was a 69% rate of smoking intervention over time among clinicians in rural primary care practices.

Despite reports from the literature that primary care clinicians use smoking cessation interventions less than 50% of the time, the Agency for Health Care Policy and Research (AHCPR) recommends that "it is essential to provide effective cessation intervention for all tobacco users at each clinical visit."¹⁵ The AHCPR provides further specific recommendations:

1. Use office-wide systems to identify all smokers and strongly advise them to quit.
2. Determine the patient's willingness to make a quit attempt and/or provide a motivational intervention to quit.
3. Assist the patient to set a quit date and offer nicotine replacement therapy and skill training.
4. Provide referral, if appropriate, and establish a follow-up contact.

These AHCPR guidelines are more detailed than those of the American Academy of Family Physicians and the National Cancer Institute and specify the importance of determining readiness to quit and delivering the most appropriate intervention to influence a smoker to progress to a more advanced stage of change. Data from the current study suggest that stage of readiness to quit and reason for the office visit may be critical in determining the frequency of smoking cessation interventions by primary care physicians.

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