

A Randomized Trial to Increase Smoking Intervention by Physicians

Doctors Helping Smokers, Round I

Thomas E. Kottke, MD; Milo L. Brekke, PhD; Leif I. Solberg, MD; John R. Hughes, MD

Sixty-six physicians were randomized to three groups to conduct a 1-month campaign to help their patients stop smoking. The workshop group received free patient education materials and a 6-hour training workshop. The materials group received free patient education materials, and the no-assistance group received nothing. A telephone interview was completed with 89% of the 6767 eligible adult patients seen during the month of the campaign. The brief training program and patient education materials marginally increased the smoking intervention activities of volunteer physicians in private practice. Both workshop and materials physicians asked 54% of their smoking patients to stop; no-assistance physicians asked 40%. One year later, 36% of patients who had not even been asked by their doctors if they smoked reported that they had tried to stop smoking. If the physician had asked the patient if he or she smoked, the probability of a quit attempt was 47%. Patients who had been asked if they smoked were more likely to claim to have stopped (13%) than patients who had not been asked (9%). However, the proportion of patients claiming continued abstinence (range, 12% to 14%) was not related to the group of the physician.

(*JAMA*. 1989;261:2101-2106)

SMOKING is a major contributor to morbidity in the population of the United States.¹ The negative effects of tobacco cost \$54 million in 1984² and have been estimated to be responsible for approximately 10% of all deaths and a similar proportion of health care costs.³ Therefore, an effective smoking cessation program may be one of the more important activities that a health care organization can develop. A decade ago,

Russell et al⁴ documented that a physician could make a significant impact on smoking cessation rates simply by advising patients to quit smoking and giving them a smoking cessation brochure. Meta-analysis of smoking cessation trials indicates that no single intervention strategy is particularly more effective than all others; rather, intervening through multiple modalities and multiple therapists over the longest possible time and largest number of circumstances will yield the greatest effect.⁵ While office-based interventions have a great potential to help patients stop smoking, physicians are almost uniformly pessimistic about the effectiveness of their efforts.⁶ This pessimism needs to be overcome if doctors are to effect smoking cessation interventions.

Because many physician-based trials have been moderately successful and because giving a moderately successful intervention to the majority of patients would have more effect on the population than giving a highly successful intervention to only a few patients, the task of Doctors Helping Smokers was to be the development and testing of a program to help physicians incorporate currently identified smoking cessation interventions into their practice routine. The hypothesis to be tested during Round I was that physicians trained in a workshop would be more effective in helping their smoking patients quit than would similar volunteer physicians who received only patient education materials or a group of physicians that received no assistance.

METHODS

Physician Recruitment and Randomization

In November 1984, the 1110 physicians whose names appeared on the mailing list of the Minnesota Academy of Family Practice were each sent a recruitment brochure, and a randomly selected two thirds of these physicians were sent a recruitment letter with the brochure. The recruitment brochure included facts about smoking that stressed the importance and effectiveness of the physician as a giver of smoking cessation advice. It also listed the trial goals, the three groups to which a physician might be assigned, and the end point of the trial. Finally, it included the names of the investigators and a tear-off postcard so that the physician had a mechanism with which to indicate

From the Cardiovascular Division, Department of Medicine, Mayo Clinic, Rochester, Minn (Dr Kottke); Brekke Associates, Minneapolis, Minn (Dr Brekke); the Department of Family Practice and Community Health, University of Minnesota, Minneapolis (Dr Solberg); and the Departments of Psychiatry, Psychology, and Family Practice, University of Vermont, Burlington (Dr Hughes).

Reprint requests to the Cardiovascular Division, Mayo Clinic, Rochester, MN 55905 (Dr Kottke).

interest in the study. If a letter accompanied the brochure, it stated that smoking is the single most important cause of death and disability among the physician's patients and that a brief message from a physician could help up to 30% of smoking patients stop within 1 year. The letter also reiterated the brochure's description of the study and expressed appreciation for the reader's interest in the study. The different types of recruitment materials had absolutely no effect on physician response rates; details of this trial are reported elsewhere (T.E.K., L.I.S., Shirley Conn, MSN, et al, unpublished data, October 1988).

One of the investigators telephoned each of the responding physicians. The physicians were read a checklist to determine whether they were willing to complete the tasks required by the trial: attend a 1-day workshop if randomized to the workshop group, give the investigators the names and telephone numbers of consenting adult patients seen by them in their clinic, and respond to a 99-item questionnaire on four occasions. The purpose of the questionnaire was to later link the characteristics of the physicians' practice environments plus their knowledge, skills, confidence, and beliefs about smoking cessation to their performance during the trial. Responses to the questionnaire did not influence the randomization process, and the questionnaire data were not tabulated until the campaign was completed. Physicians who agreed to these stipulations were sent a letter of confirmation and the 99-item questionnaire. When the physician returned the questionnaire, he or she was randomized to one of three groups: workshop, materials, or no assistance.

After the randomization had been initiated, it became apparent that some physicians had given home addresses while others had given work addresses. This had prevented the investigators from recognizing all cases in which multiple physicians from the same group had responded to the recruitment letter. To prevent contamination from having physicians of the same practice in different trial groups, all physicians in the same practice were either moved to the most intense level of intervention to which any of them had been originally randomized or, if not yet randomized at the time this problem was discovered, added to the group to which their partner(s) had been randomized. Ten physicians were moved among groups: four from the materials group to the workshop group, three from the control group to the materials group, one from the no-assistance group to the work-

shop group, and two from the materials group to the no-assistance group. This resulted in the workshop group having the most physicians ($n=27$), the no-assistance group having the least physicians ($n=17$), and the materials group an intermediate number ($n=22$). The original research proposal postulated that a difference in mean cessation rates between the workshop and no-assistance groups would be 5 percentage points. Given 17 physicians in each group and an SD of 0.075, the power to detect this difference at an α value of .05 would be approximately .80.⁷

Physician Training

Physicians in the workshop group were asked to participate in a 6-hour workshop that was given on two occasions. The workshop started in the morning with two presentations of 30 minutes each about the effects of smoking on the progression of chronic disease, and private practice organization to give smoking counseling. These two sessions were followed by a 1-hour presentation on doctor-patient intervention skills, including the use of nicotine chewing gum and a 1-hour introduction to smoking cessation techniques. The afternoon sessions included two 1-hour small-group workshop sessions, one on counseling skills and one on planning the practice for smoking cessation interventions. The final half hour of the day was devoted to summary and discussion.

Physicians in the workshop group and in the materials group received 100 copies of *Quit-and-Win*, a smoking cessation manual that could be used as an instructor's manual, as a self-help guide, or as one part of a comprehensive intervention. The physicians were advised to give a copy to any patient who smoked. They were told that their supply of *Quit-and-Win* booklets would be replenished when required. The no-assistance group received no assistance from the investigators.

The physicians were recruited in November and December 1984, and the two workshops were held in January 1985. All physicians were asked to ask each adult (aged 18 to 70 years) seen during February 1985 if he or she smoked tobacco. They were also asked to advise patients who smoked of the importance of their quitting, ask them to set a quit date, and ask them to return for a follow-up visit.

Assessment of Patient Characteristics and Physician Behavior

At the end of each workday during February 1985, the names and telephone numbers of all adult patients seen

by each physician that day were mailed to the investigators. Those patients were interviewed over the telephone by trained and certified interviewers. If the patient could not be contacted after 13 attempts at different times of the day on different days of the week, the patient was considered lost to follow-up. The questionnaire included 102 items. In addition to demographic questions and questions about the patient's smoking habits, questions about the patient's health status and the patient's visit with the physician were included. Patients were also asked about the prevalence of smoking in their social environment and the support they received from their spouse or others who were emotionally important to them. Third, patients were asked four questions about the extent to which they felt in control of their life, the confidence they felt about handling personal problems, the extent that "things were going [their] way," and the extent to which difficulties were piling up. Finally, patients were asked to give the name and telephone number of a friend or relative who lived at another address but would know of their whereabouts if they should move.

Assessing Physician Behavior Change in Response to the Recruitment Program

To test whether the recruitment period affected physician behavior toward the smoking patient, the clinics were requested to supply the visit dates in the previous year for all patients who claimed to have quit smoking in the 3 months prior to February 1985. Visit dates during the previous year were also requested for a 20% sample of current smokers. These data were used to determine whether patients seen by the physicians after the physician recruitment period but before the February 1985 campaign were more likely to have quit smoking than patients not seen by a physician during this period.

Assessment and Verification of Patient Behavior

Patients who declared at the baseline survey that they smoked were scheduled for reinterview 1 year later. If the original telephone number was wrong, out-of-order, or disconnected, or if the interviewer team was unable to contact the patient, the clinic was called for an updated telephone number or current information on the respondent. If this proved fruitless, the friend or neighbor named in the baseline questionnaire was contacted. If this person did not know of the subject's whereabouts, an attempt was made to locate the patient through directory assistance. If this

failed, the patient was considered lost to follow-up. The domains addressed by the 1-year follow-up questionnaire were very similar to those addressed by the baseline questionnaire.

Except in the presentation of the results of cotinine verification, patients who either could not be contacted or refused to be interviewed were assumed to be continuing to smoke and were assumed not to have made any cessation attempts. Patients who claimed to have become and remained nonsmokers during the year following the February 1985 campaign were offered \$15 if they would submit to a venipuncture within 5 days to test for cotinine in the blood. Patients who failed to keep the appointment for cotinine analysis were rescheduled for venipuncture up to four times. After four failures, these patients were considered to be continuing to smoke. Serum cotinine levels were measured using a standard technique.⁸

Data Analysis

The physician was the unit of analysis in this study, and the behavior of the physician was measured from the interview responses of his or her patients who were seen during the intervention period. The attribute of each group of physicians is the average of the attributes of the individual physicians in that group. Multivariate regression was used to adjust for potentially confounding effects of differences among the groups of doctors and their patients.

Data that are presented as proportions were analyzed with χ^2 analysis. Data reported as means and SDs were analyzed with analysis of variance with 2 and 63 *df*. Life-table analysis was used to examine relapse patterns of the patients who attempted to quit smoking. *P* values greater than .10 are reported only as nonsignificant.

RESULTS

Physician Characteristics

Sixty-six of the 109 physicians who returned postcards indicating interest in the trial were able to participate in the intervention trial (Table 1). The workshop group had approximately twice the proportion of women physicians in comparison to the other two groups, but this variation was not statistically significant. Neither the mean age of the physicians, the size of the clinics, nor the patient load on the physician differed significantly among the three groups. The higher proportion of physicians in the no-assistance group who were in practice in a metropolitan area was not significant. On the aver-

Table 1.—Attributes of Physicians Randomized Into Round I of Doctors Helping Smokers Trial

Attribute	Physician Treatment Group			P*
	Workshop	Materials	No Assistance	
No. of physicians	27	22	17	...
Female, %	22.2	9.1	11.8	Not significant (NS)
Physician age, y	37.9 ± 9.7	39.5 ± 7.7	44.3 ± 11.7	NS
No. of physicians per clinic	8.7 ± 9.2	9.2 ± 6.5	8.8 ± 10.6	NS
No. of patients seen per day	13.6 ± 4.9	16.2 ± 8.4	11.6 ± 3.0	NS
Clinic location, %				
Metropolitan	37.0	36.4	64.7	} NS
Nonmetropolitan but ≥5000	22.3	37.2	33.5	
Town <5000	40.7	36.4	11.8	
Average No. of patients interviewed per physician	89.9 ± 31.5	95.0 ± 40.3	90.4 ± 35.1	NS
Average No. of smokers interviewed per physician	25.7 ± 13.0	28.0 ± 14.6	24.5 ± 11.4	NS

**P* values for percentages are based on χ^2 analysis. *P* values for means (\pm SD) are based on analysis of variance.

Table 2.—Patient Reports of Physician Activity During the Cessation Campaign Period of Round I of Doctors Helping Smokers Trial*

Variable	Physician Treatment Group			P
	Workshop	Materials	No Assistance	
No. of physicians in group	27	22	17	...
Patient reports being asked if he or she smokes	58.3 ± 24.1	61.0 ± 29.0	51.4 ± 24.9	Not significant (NS)
Smoking patients report				
Being asked to quit	54.3 ± 17.3	54.9 ± 20.0	39.7 ± 14.2	<.025
Agreeing to quit smoking	27.6 ± 14.5	25.5 ± 12.9	17.1 ± 8.1	<.025
Being asked to set quit date	18.5 ± 14.9	9.6 ± 19.5	5.4 ± 17.3	<.005
Being given follow-up appointment	10.3 ± 12.7	6.9 ± 10.1	3.8 ± 5.5	NS
Receiving supportive materials	36.9 ± 16.9	36.4 ± 15.7	10.6 ± 7.7	<.0001

*Figures represent average (\pm 1 SD) of the proportion of patients with the attribute for each physician in the group.

age, 90 patients of each physician in each group were interviewed, and approximately 25 patients of each physician currently smoked.

Interview Rates

Telephone interviews were completed with 6053 patients, 89.4% of the patients whose names were submitted by the participating physicians. Only 3.3% of the patients refused to be interviewed. The remainder had no telephone, had an incorrect telephone number for which no correct one could be established, could not be reached after 13 attempts, or were ineligible for the study because of age, language problem, or being too ill to talk on the telephone.

Approximately 27% (1653) of the patients declared they were currently smoking. This proportion did not vary significantly among the three physician treatment groups. Over 87% of the patients smoking at baseline were interviewed 1 year later. Follow-up rates for patients of physicians in the

workshop, materials, and no-assistance groups were 86.8%, 87.5%, and 86.8%, respectively.

Patient Attributes

The average age of the patients was slightly over 40 years, and two thirds of the patients were women. The average cigarette consumption for patients who smoked was just under one pack per day. On the average, patients who smoked rated their desire to quit smoking as 6.4 on a scale from 0 (least) to 10 (greatest). About 14% of the patients who had been smoking a year prior to the baseline interview claimed to have quit smoking by the time of that interview. While a higher proportion of the patients of physicians in the no-assistance group had at least some education beyond high school (51.8% vs 42.1% for patients of physicians in the workshop group and 42.9% for patients of physicians in the materials group [*P*<.001]), the distributions for the other variables did not differ significantly among the patients in the three groups.

The Effect of Physician Recruitment Efforts on Baseline Patient Smoking Cessation Efforts

Six percent of the patients who had smoked in the previous year quit smoking between the time their physician had been recruited to the trial and the start of the February 1985 campaign. While the probability of patients stopping smoking was almost 9% if they had visited their doctor and 5% if they had not, only 7% of the patients had visited their doctor in the 3-month physician recruitment period before the trial. The effect on baseline quit rates attributable to the patients' visiting the doctor immediately before the campaign was only 0.2%.

Physician Behavior During the Intervention

Slightly over half of the patients interviewed reported that they had been asked if they smoked when they went to see their physicians during the campaign (Table 2). The proportion did not vary significantly by intervention group.

Patients who smoked and saw physicians in the workshop or materials groups were significantly more likely than smoking patients who saw physicians in the no-assistance group to report that their physician had asked them to quit smoking. Likewise, patients who smoked and saw physicians in the workshop or materials groups were more likely than patients who smoked and saw physicians in the no-assistance group to report agreeing to quit smoking. Almost 20% of patients seen by physicians in the workshop group reported that they had been asked to set a quit date. The respective figures for patients seen by physicians in the materials and no-assistance group were 10% and 5%. While the difference did not quite reach significance, a greater proportion of patients seen by physicians in the workshop group were given a follow-up appointment than patients seen either by physicians in the materials group or by physicians in the no-assistance group. One third of the patients seen by physicians in the workshop and materials groups reported that they had received printed materials about smoking cessation. The figure for patients seen by no-assistance group physicians was 11%.

Factors Related to Attempts to Quit Smoking and to Claims of Successful Cessation

The difference in cessation attempts between lowest and highest educational level was 17 percentage points (Table 3). An 11-percentage point gradient in

Table 3.—Factors Related to Smoking Cessation Attempts During the Year of Follow-up and Related to Claimed Abstinence at the Time of Follow-up Interview

Variable	% Reporting a Cessation Attempt	P*	% Claiming Abstinence	P
Patient Attributes				
Education				
<High school	35.2	<.05	8.8	<.05
High school	46.5		11.0	
Vocational school	42.7		15.1	
Some college	54.7		15.8	
College graduate	48.1		15.6	
Advanced degree	52.5		20.0	
No. of cigarettes per day at baseline				
1-9	51.6	<.10	27.1	<.0001
10-19	48.2		10.7	
20-29	43.9		9.9	
30-39	46.9		8.3	
40+	38.3		7.8	
Desire to quit smoking at baseline				
Low (0-3)	29.5	<.0001	7.2	<.0001
Medium (4-6)	35.6		7.6	
High (7-10)	59.1		16.3	
Patient-Physician Interaction During the Intervention Campaign				
Patient asked if he or she smokes				
Yes	47.2	<.0001	13.1	<.05
No	36.1		9.2	
Patient asked to quit smoking				
Yes	49.6	<.0001	12.8	Not significant (NS)
No	38.2		11.1	
Patient agreed to quit smoking				
Yes	59.5	<.0001	16.0	<.01
No	39.1		10.7	
Patient asked to set a quit date				
Yes	56.9	<.0001	9.8	NS
No	42.3		12.3	
Patient given printed materials				
Yes	52.3	<.0001	11.9	NS
No	40.3		12.0	
Patient given follow-up appointment				
Yes	52.6	<.10	10.3	NS
No	43.4		12.1	
Attributes of the Patient's Social Environment Reported at Follow-up				
Spouse support for cessation				
Low	42.6	<.0001	3.1	<.001
Medium	51.9		8.5	
High	61.0		19.1	
Support for cessation by nonspouse significant other				
Low	45.8	<.0001	6.2	<.0001
Medium	56.1		12.6	
High	61.1		19.1	
Reported smoking rates among acquaintances				
Low	60.1	<.05	19.4	<.0001
Medium	52.0		12.5	
High	52.5		9.4	

*P values represent results of χ^2 analysis of 2 x n contingency tables with 1 df.

the same direction was present for cessation success. Daily cigarette consumption at baseline strongly predicted both cessation attempts and success. Cessation attempt rates declined 13 percentage points and success rates declined 19 percentage points with increasing cigarette consumption. Desire to quit smoking at baseline was associated with a 30-percentage point difference in cessation attempts between those with a low desire and those with a high desire. A 9-percentage point dif-

ference was present for claims of successful cessation.

Patients who reported being asked to quit smoking reported more cessation attempts but not more success. Patients who agreed to quit smoking at baseline were significantly more likely to report that they had tried to quit smoking (a difference of 20 percentage points) and were more likely to report successful cessation at follow-up (a difference of 5 percentage points). Asking the patient to set a quit date, giving the patient

Table 4.—One-Year Follow-up Smoking Patterns Among Patients Smoking at Baseline of Round I of Doctors Helping Smokers Trial*

Variable	Physician Treatment Group			P
	Workshop	Materials	No Assistance	
No. of physicians in group	27	22	17	...
% of patients reporting an attempt to quit smoking (>24 h without smoking)	43.2 ± 15.8	44.0 ± 9.6	44.4 ± 12.6	Not significant (NS)
Duration of cessation, d	53.3 ± 33.4	66.7 ± 63.1	74.2 ± 35.8	NS
Month of quit attempt†	7.4 ± 1.6	7.8 ± 1.2	8.2 ± 2.0	NS
% of patients reporting not smoking at time of interview	11.8 ± 7.7	12.0 ± 7.4	14.3 ± 6.5	NS
Cotinine analysis, % (n)	(660)	(593)	(400)	NS
Currently smoking	74.6	75.9	72.8	
Interview not completed	13.2	12.5	13.2	
Cessation verified	5.5	5.4	5.0	
Failed confirmation	1.5	0.8	0.8	
Refused confirmation	3.2	4.4	6.8	
Moved out of area	0.8	0.2	0.2	
Using gum or snuff	1.2	0.8	1.0	
Insufficient serum	0.0	0.0	0.2	
Total	100.0	100.0	100.0	

*Except for the cotinine analysis, the figures are the average (± 1 SD) of the proportion of patients with the attribute for each physician in the group. Because of the small numbers of patients claiming cessation for each physician, analysis of cotinine data was performed without regard for physician within treatment group. The cotinine data were analyzed in an 8×3 contingency table.

†1 = January, 2 = February, etc.

with cessation attempt rates of 61% ($P < .0001$) and reported abstinence of 19% ($P < .001$). A similar pattern was present for reported support from a nonspouse who was socially significant to the patient.

1-Year Follow-up

One year after the campaign, almost half of the patients in each of the three groups who were smoking at baseline reported that they had quit smoking for at least 24 hours during the previous year (Table 4). The mean duration of cessation was 2 months. The cessation attempts by the patients seen by physicians in the workshop group tended to occur slightly earlier than the cessation attempts by the patients seen by physicians in the other two groups, but the difference was not significant. The average proportions of patients who claimed abstinence at the time of the follow-up survey were not different among the three groups. Cotinine-verified cessation rates did not differ among the groups either. Multivariate adjustment for differences for sex of the physician, sex of the patient, educational status of the patient, number of cigarettes smoked per day, the desire to quit smoking, and practice location affected neither the proportion of patients claiming a cessation attempt nor the proportion of patients claiming sustained abstinence.

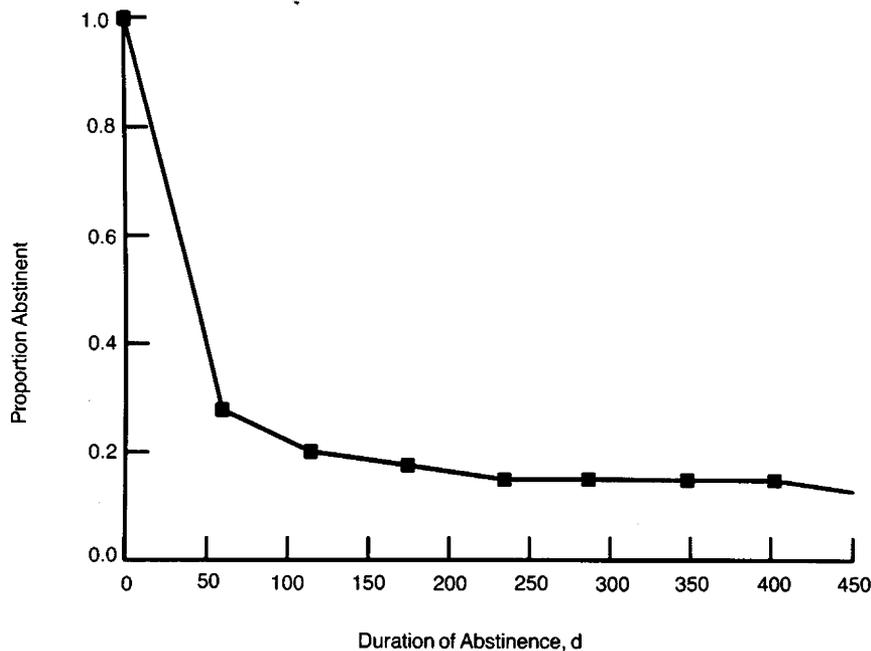
Life-Table Analysis of Patient Relapse

One fourth of the patients who reported that they had quit smoking for at least 24 hours relapsed within 2 days. Half of the group that quit smoking for at least 24 hours relapsed within a week. Sixty-five percent of the group relapsed within 1 month (Figure). If a patient was able to remain abstinent for 180 days, the probability of relapse within the next 180 days was low.

COMMENT

A cascade of three discrete interventions had to occur successfully for Doctors Helping Smokers to have overall success. The intervention had to change physician behavior, the advocated physician behavior had to stimulate patient smoking cessation attempts, and the patient cessation attempts had to translate into long-term abstinence from smoking.

Doctors Helping Smokers was able to accomplish each of these tasks in part but was unable to achieve the desired end point of a clinically significant increase in the rate of long-term abstinence. Physicians in the workshop and materials groups asked significantly



Duration of abstinence for patients trying to stop smoking. The relapse curve has three phases, an initial rapid phase from 0 to 60 days followed by an intermediate phase and a low-relapse phase. Interventions limited to inducing cessation without attention to relapse are unlikely to significantly affect long-term cessation rates.

educational materials, and giving a follow-up appointment were all associated with an increase in cessation attempts but were not associated with increases in reported abstinence.

While report at follow-up of low spouse support for cessation was associated with cessation attempt rates of 43% and abstinence rates of 3%, report of high spouse support was associated

more patients to quit smoking, significantly more patients agreed to quit smoking, and significantly more patients reported being asked to set a quit date. The differences among the groups were clinically significant: 10 to 15 percentage points in most cases.

Physician action, regardless of the group to which the physician was assigned, also stimulated cessation attempts. Any given action—asking patients if they smoked, asking patients to quit, asking patients to set a quit date, giving educational materials, or giving a follow-up appointment—increased cessation attempts by about 10 percentage points. The simple act of asking a patient if he or she smoked increased sustained abstinence by 4 percentage points, an intervention effect approximately equal to that observed by Russell et al.⁴

The overall intervention appears to have failed to achieve the desired end point for three reasons: First, impact was lost at each level of the cascade; by patient report, physicians asked only half of the patients to quit smoking. Second, the effect of the physician advice on cessation attempt rates was small in comparison with the rates of spontaneous cessation attempts (11% vs 36%). Third, the effect of physician advice on the percentage of the patients who were abstinent at the end of the trial was also small in comparison with the percentage who spontaneously achieved sustained abstinence (<3% vs 11%). Thus, the effect of modest change in physician and patient behavior from the intervention got lost in the “noise” of high spontaneous cessation attempt rates followed by modest rates of sustained abstinence among those who spontaneously attempted cessation.

The results of this trial suggest that physicians' pessimism about changing the smoking habits of their patients is rooted in reality. Advocates of physician-based smoking interventions must rethink what they are asking of physicians if they are to expect the physicians' ongoing involvement in these tasks. This intervention provided the physician with materials and brief additional education, but no education was provided for clinic staffs. Physicians were trained to ask about smoking, advise quitting, request quit dates, and give follow-up appointments but were not taught how to help patients remain abstinent once they attempt quitting. These appear to be crucial omissions in the design of the intervention.

The following opportunities are also available to improve effectiveness:

- The physician acting without help from the clinic system has difficulty

even identifying which patients smoke. Therefore, the American Academy of Family Physicians, Kansas City, Mo, has developed a kit for creating an office system that will cue and reinforce the physician in giving smoking cessation advice.

- Spontaneous cessation attempts are frequent. One third of the patients who were not even asked about smoking by their physician and almost half of all patients reported trying to quit smoking during the year of follow-up. The opportunities for more successful outcomes are present if the physician will work to prevent relapse in the patient who has recently quit smoking. Interventions to increase cessation attempts could increase sustained abstinence by a maximum of 4 percentage points; interventions to prevent relapse could change the rates of sustained abstinence by more than 25 percentage points.

- Interest in stopping smoking may increase over time. One third of patients who reported at baseline a low desire to quit smoking reported at follow-up that they had quit smoking for at least 24 hours. At follow-up, 7% of these patients reported that they were not currently smoking. The patient who is not ready to accept help at one visit may well accept help at a subsequent visit.

- Smoking is a social behavior, and social support is crucial in the process of becoming and remaining an ex-smoker.⁹ In this study, a supportive social environment had a threefold to fourfold larger effect on abstinence than physician advice. Because social behaviors are “anchored in the ‘social reality’ of the group,”¹⁰ physicians might be more successful if they can make use of the patient's social environment to support nonsmoking. Helping the patient identify family and friends who are willing to provide emotional support for abstinence may be effective. The physician can also use his or her own socially influential professional role to help and support patients who want to quit smoking or have quit smoking; providing help to those who want help lets the physician meet his or her need for patient demand while helping the patient achieve long-term abstinence.

Observations from at least two other sources are important:

- Individualized, ongoing, and intense support for the patient who is quitting or has quit smoking is the element of interventions that produces success.⁵

- Perception of patient demand for a service strongly influences whether a physician will offer the service to a patient.¹¹⁻¹⁵

The failure of the first round of Doctors Helping Smokers to have a significant influence on long-term smoking cessation rates, even though both physician and patient behaviors were influenced by the intervention, suggests that approaches other than brief training workshops or free patient education materials are needed if the physician is to help his or her patients to stop smoking. From the data presented here, it appears that physicians need to be provided with a reinforcing occupational and social environment that will cue them to reinforce their patients' attempts to become, and particularly remain, ex-smokers.

This study was supported in part by National Institutes of Health grant CA38361, National Institute of Drug Abuse grant DA04066, and a National Institute of Drug Abuse Research Scientist Award, DA00109 (Dr Hughes).

References

1. Fielding JE. Smoking: health effects and control. *N Engl J Med*. 1985;313:491-498, 555-561.
2. Rice DP, Hodgson TA, Sinsheimer P, Browner W, Kopstein AN. The economic costs of the health effects of smoking, 1984. *Milbank Memorial Q*. 1986;64:489-548.
3. Luce BR, Schweitzer SO. Smoking and alcohol abuse: a comparison of their economic consequences. *N Engl J Med*. 1978;298:569-571.
4. Russell MAH, Wilson C, Taylor C, Baker CD. Effect of general practitioners' advice against smoking. *Br Med J*. 1979;2:231-235.
5. Kottke TE, Battista RN, DeFries GH, Brekke ML. Attributes of successful smoking cessation interventions in medical practice: a meta-analysis of 39 controlled trials. *JAMA*. 1988;259:2883-2889.
6. Wechsler H, Levine S, Idelson RK, Rohman M, Taylor JO. The physician's role in health promotion—a survey of primary care physicians. *N Engl J Med*. 1983;308:97-100.
7. Snedecor GW, Cochran WG. *Statistical Methods*. 6th ed. Ames, Iowa: Iowa State University Press; 1967:113.
8. Verebey KG, DePace A, Mule SJ, Kanzler M, Jaffe JH. A rapid, quantitative GLC method for the simultaneous determination of nicotine and cotinine. *J Anal Toxicol*. 1982;6:294-296.
9. Venters MH, Solberg LI, Kottke TE, Brekke M, Pechacek TF, Grimm RH. Smoking patterns among social contacts of smokers, ex-smokers, and never smokers: the Doctors Helping Smokers study. *Prev Med*. 1987;16:626-635.
10. Festinger L, Schachter S, Back K. *Social Pressures in Informal Groups*. Palo Alto, Calif: Stanford University Press; 1950:170.
11. Relman AS. Encouraging the practice of preventive medicine and health promotion. *Pub Health Rep*. 1982;97:216-219.
12. Freidson E. *Professional Dominance: The Social Structure of Medical Care*. New York, NY: Atherton Press; 1970:120-121.
13. Freidson E. *Profession of Medicine: A Study of the Sociology of Applied Knowledge*. New York, NY: Dodd Mead & Co; 1970:352.
14. Kottke TE, Foels JK, Hill C, Choi T, Fenderson DA. Nutrition counseling in private practice: attitudes and activities of family physicians. *Prev Med*. 1984;13:219-225.
15. Kottke TE, Blackburn H, Brekke ML, Solberg LI. The systematic practice of preventive cardiology. *Am J Cardiol*. 1987;59:690-694.