
Chapter 3

Training of Physicians in Training

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Training of Physicians in Training

Editor: Thomas E. Kottke

INTRODUCTION If physicians in training, particularly residents, are to become effective smoking cessation interventionists, the following questions must be answered:

- Can smoking cessation experts train residents to deliver effective smoking cessation advice?
- Can residents be trained in smoking cessation techniques effectively by nonspecialists?
- What sort of environment is required if residents are to be trained in smoking cessation techniques?

The two papers in Chapter 3 focus on these issues. In the first paper, Goldberg and colleagues demonstrate that after just a few hours of training, residents can successfully help their patients stop smoking. These residents were in the training programs of the Department of Internal Medicine and Department of Family Practice at the University of Massachusetts. Their training consisted of a 1-hour small-group session and a brief period for residents to receive feedback on individual performance. The residents were trained to use one of three interventions with each patient: advice only, counseling, or counseling plus prescription of nicotine-containing gum. According to data collected from 1,224 trial participants, the 6-month rates for smoking cessation increased significantly in proportion to the intensity of the intervention the residents delivered. Counseling plus prescription of nicotine-containing gum was more effective than was counseling alone; and both of those interventions were more effective than was advice alone.

In the second paper, Strecher and colleagues describe how medical education generalists can successfully transfer smoking intervention skills to residents. They also demonstrate that prompting residents to intervene is not enough if the residents do not know what the intervention should be. Recognizing that most residency programs would devote only minimal time to training physicians in the delivery of smoking interventions, Strecher and coworkers tested two interventions—a prompt on the medical record and a two-session tutorial for the resident—in a design that compared the effects of a control group, a group that received the prompt alone, a group that received the training alone, and a group that received both the prompt and the training. The ability of the interventions to increase both the frequency of counseling and the number of techniques used to help the patient was tested in 11 primary care training programs.

While frequency of counseling was increased by both the tutorials and the prompts, the increase in counseling associated with the prompts alone (5 percentage points) was not statistically significant. In addition to increasing the frequency of counseling, the tutorial doubled the number of intervention techniques used by the residents.

Both papers demonstrate that residents can be trained to give successful smoking intervention advice only if adequate resources and priority are devoted to the task. Even though the chief of medicine and the training program directors supported the program at the University of Massachusetts, educating the 196 residents was, in the words of Goldberg and colleagues, "a formidable and demanding organizational task." A full-time project coordinator was needed both to recruit residents to the training sessions and to reschedule the sessions when the residents did not attend. Goldberg and coworkers also found that it was "essential" for a research assistant to be present in each clinic to assure that the interventions were delivered as indicated. Likewise, support by all individuals, from the department chairs to the clinic staff, was considered essential for success.

Strecher and colleagues shared these experiences: Arranging for followup of the initial tutorial session required a concerted effort, and integration of the prompt form into the medical record proved difficult. They concluded that without the commitment of a faculty member at each site, the program would have failed.

The message from these two papers is clear and consistent: While resident physicians need prompting, they need more than prompting alone if they are to help their patients stop smoking. However, the necessary skills can be acquired in as little as 2 hours. Furthermore, the training can be provided by faculty generalists; experts in smoking cessation are not required. It is very clear, however, that neither training in smoking cessation nor the interventions that result from such training will diffuse into training programs spontaneously because serious attention to smoking is not currently on the medical agenda. If doctors are to be trained in the skills to deliver smoking cessation counseling, and if they are to believe that dealing with smoking is not an optional activity, adequate time, along with the necessary human and fiscal resources, must be devoted to the task.

Interventions for Smoking Prevention and Cessation

Robert Goldberg, Judith K. Ockene, Katherine Kalan, and Jean Kristeller

PURPOSE OF THE PROJECT The goals of the randomized clinical trial reported here were (1) to develop and evaluate a structured educational program for training medical residents (and, secondarily, attending physicians) to intervene with their patients who smoke cigarettes and (2) to evaluate, using a randomized clinical trial design, the effect of three physician-delivered smoking intervention approaches (advice only, counseling, and counseling plus nicotine-containing gum) in combination with two followup approaches (minimal, maximal) on the 6-month smoking cessation rates of an ambulatory outpatient population. In addition, the investigators examined the effect of these intervention approaches on patients' long-term smoking behavior at 12, 18, and 24 months after randomization.

RATIONALE AND SPECIAL REQUIREMENTS Physicians have contact with at least two-thirds of all smokers annually. Therefore, the majority of the 50 million current adult smokers in the United States could potentially be reached by physicians during the course of ongoing medical care. This high patient-physician contact rate, even if coupled with only a small absolute effect on smoking prevalence, could produce substantial changes in smoking behavior in the general population of smokers.

A number of earlier clinical trials demonstrated that physicians' provision of simple advice to stop smoking could increase the quit rates of patients seen in a general medical population (Ewart et al., 1983; Handel, 1973; Li et al., 1984; Porter and McCullough, 1972; Russell et al., 1979; Wells et al., 1984; Wilson et al., 1982). Recent randomized clinical trials have consistently demonstrated that physicians who are prompted to intervene, or who receive special training to assist smokers during the course of regular medical encounters, have a greater effect on the smoking behavior of their patients than that of physicians not so trained or prompted (Cohen et al., 1987; Cummings et al., 1989; Kottke et al., 1988; Ockene et al., 1991; Wilson et al., 1988).

Physicians indicate that their willingness to intervene with smokers in their practice would be enhanced if they felt confident of their ability to have a positive effect on patients' smoking habits. Medical school and residency training programs, however, do little to foster the development or maintenance of skills in this area. Residency programs in particular offer little or no opportunity for training in communication skills and behavioral intervention for problems such as unhealthy lifestyle behaviors.

Given that physicians can have a potentially substantial impact on a large group of smokers, questions remain as to whether there is yet more that the physician can offer the smoker within the context and constraints of usual medical care. In particular, little investigative work has been carried out to adapt the successful behavioral counseling approaches of psychologists and health educators to the physician-patient encounter. Questions also remain as to whether the physician's role in smoking cessation could be augmented with additional counseling by health counselors who are not physicians. The present trial was carried out among resident physicians in training to address these concerns and others.

TARGET AUDIENCE Medical residents in training, from the Departments of Internal Medicine and Family Practice affiliated with the University of Massachusetts Medical School, were targeted as the physician study sample during each of their postgraduate years. These residents were selected for the following reasons:

Residents

- The physicians were at a stage in their careers where training is a natural accompaniment to their career and practice aspirations. Residents expect to be taught novel approaches to lifestyle and lifestyle-related problems that could be incorporated into their eventual clinical practices. As this is a logical training point, any positive findings drawn from this study in the training of physicians in smoking cessation techniques and of their effective use of such techniques could be assimilated easily into other training programs and medical practice settings.
- Physicians in training are young and energetic, and typically they welcome participation in research projects, provided that their involvement does not consume too much time and does not detract from other areas of their training and from patient care responsibilities.
- The structured environment of ambulatory care teaching clinics, which are organized under the aegis of a medical school, provides an ideal setting for the conduct of such a randomized trial and for data collection and monitoring.

Patients Patients attending five ambulatory clinics (two internal medicine and three family practice) affiliated with the University of Massachusetts Medical Center were recruited for this study. Each of the clinics was located within a 25-mile radius of the University of Massachusetts Medical Center. Participating patients averaged 35 years of age; slightly more than half (57 percent) were female; 91 percent were white; their average level of education was 12.5 years; and they smoked, on average, slightly more than one pack of cigarettes per day.

RECRUITMENT PROCEDURES

Medical Residents

The time slot for training residents in internal medicine was taken from their daily noon educational sessions, which are carried out on a regular basis throughout the academic year. Originally, letters were sent by the Chief of Medicine from the Department of Internal Medicine to reinforce the importance of the study and the key role of participation by residents. Further support for the residents' participation in the study was provided by the director of the residency training program, who, on a number of occasions, discussed the importance of training in smoking intervention and of the overall study. The director provided members of the study staff with the time needed for training sessions. In addition, each of the directors from the clinics where the study took place supported the training activities of the study and allocated clinic time for residents to be trained as needed.

Residents in the Department of Family and Community Medicine were recruited through the directors of their training program and trained in a relatively similar fashion. An appropriate amount of time was allocated from their clinical responsibilities for attending the group training sessions and the individual feedback session. Reflecting the success of the training program and genuine interest and commitment to learning new smoking intervention techniques, a large proportion of the attending physicians in the participating primary care clinics requested and received training in smoking intervention.

Despite the support of key persons involved in the educational training of the internal medicine and family practice residents, recruitment and training of the 196 house officers over the 4 years of the project turned out to be a formidable and demanding organizational task. A full-time project coordinator spent a considerable portion of her time in the first years of the project writing letters to residents who missed the training sessions to inform them of the future training dates and times; placing telephone calls to all eligible residents to encourage them to attend the training sessions; and coordinating the pretraining assessments, group training, and individual tutorial sessions. Although it was impossible to examine systematically the extent of time spent by the project staff in recruiting residents to the smoking intervention training sessions, it was estimated that the project coordinator spent approximately half of her time on such activities. Residents who were unable to attend the group training sessions were provided individual teaching sessions. The important structural elements in facilitating resident attendance were (1) keeping the training sessions relatively brief (less than 1 hour at a time) and task oriented and (2) providing a free lunch as an incentive for residents to attend the training sessions. Later sections of this paper describe approaches to recruitment that were particularly helpful, as well as those approaches that might have been modified in light of the experience from this trial.

Patients

To facilitate the recruitment of patients to this study, as well as monitor the delivery of the various smoking interventions by the residents, a research assistant was placed at each of the participating clinics. Each of the respective

research clinic assistants was placed in a highly visible and accessible area of the clinic to enhance recruitment activities. This person determined the eligibility of potential study participants, obtained informed consent, and randomized each eligible and consenting subject to the study.

NATURE OF THE PROGRAM The entire training and research protocol of the Physician-Delivered Smoking Intervention Project was approximately 3 hours in length (Ockene et al., 1988 and 1991; Quirk et al., 1990). One-half hour was devoted to pretraining assessments of residents' baseline knowledge, attitudes, and skills. Two hours were devoted to formal group training, which included some discussion of the research protocol, and one-half hour to individual posttraining assessment and protocol review with members of the study staff. Thus, the actual resident training took approximately 2 hours.

A total of 196 internal medicine and family practice residents affiliated with the University of Massachusetts Medical School participated in the study and attended the training sessions, held about 2 weeks apart during regularly scheduled teaching times. Generally, residents were trained in groups of 10; however, because of their schedules, it sometimes became necessary to conduct the training sessions in smaller groups. In the first 2 years of the study, 66 residents were trained each year; in the final 2 years, only new incoming interns, 32 each year, were trained. It was necessary to conduct 18 training sessions to completely train the 66 eligible residents during the first year of the study. In the second year, after determining that residents were generally available during the scheduled noon conference hour, the investigators reduced the number of training sessions to 14. In subsequent study years, after the training protocol was well established in the curriculum, there was an average of eight training sessions annually.

Sessions typically were offered during the residents' regularly scheduled noon conference teaching hour, during which the residents are exposed to daily lectures from all clinical departments. Lunch was provided free to the participating residents. Two weeks prior to the training sessions, each resident received a letter from the residency director and study investigators to inform them of the upcoming training and the importance of their participation. To encourage the residents' participation in the trial, several reminders of the training session were sent close to the time of actual training; on the day prior to training, notes were placed in the residents' mailboxes; and on the morning of the training session, study staff members telephoned residents to confirm the meeting time and place and further encourage them to attend.

During the project's training sessions, residents were trained in three physician-delivered interventions: provision of personalized advice to assist patients in stopping smoking; use of brief, patient-centered behavioral counseling; and use of the behavioral counseling approach plus the prescription of nicotine-containing chewing gum. The educational methods used in the

residents' training included the following: a slide presentation reviewing epidemiological findings on the risks associated with smoking; discussion of the benefits of cessation in both healthy persons and those with chronic disease; and discussion of smoking as an addictive behavior. In addition, the residents observed each of the smoking interventions via a videotaped, simulated interaction that demonstrated the smoking cessation techniques. The residents then practiced each quit-smoking approach by first critiquing a simulated encounter between two residents and then through role-playing, with each resident playing the role of physician or patient. The videotape and role-playing exercises were used in both sessions. At the second training session, evaluation of nicotine dependency and appropriate prescribing practices for nicotine gum were discussed. Residents were also informed of the importance of followup contacts in the counseling and the counseling-plus-nicotine-gum interventions and the need to keep within the intervention protocol to which the patients were randomly assigned.

The final half-hour training session was completed with each resident individually. During this session, the resident was videotaped using the counseling approach with a surrogate patient and the videotape was reviewed and feedback given by a project instructor. At this final session, a member of the study staff reviewed the study protocol with each resident and addressed questions concerning the project and the resident's role in it.

The patient-centered counseling intervention emphasized the use of guided questioning of patients by residents, as related to the following content areas (see Appendix A):

- Desire and motivation to change smoking behavior;
- Past experience with smoking cessation;
- Factors that inhibit smoking behavior change (barriers or problems);
- Resources for change (strengths) and methods for dealing with factors that may interfere with the smoking cessation or reduction plan; and
- A plan for change.

In each of the content areas of the counseling protocol, the counseling skills of the residents were assessed in the areas of eliciting and providing information as well as in eliciting and responding to patients' feelings.

At the completion of the individual training session, each resident was provided with a \$25 gift certificate to use toward the purchase of books or other educational materials at the university bookstore. In addition, each resident's name was placed into an annual lottery from which one resident was eventually chosen and given a further financial incentive.

**SMOKING
INTERVENTION
APPROACHES**

The three physician-delivered interventions consisted of the conditions described in the following sections (Ockene et al., 1988 and 1991; Quirk et al., 1990).

Advice Only

Patients assigned to the advice-only condition received a brief smoking cessation message from the resident physician that personalized each patient's risk of smoking and encouraged each patient to stop smoking. For example, the resident might say to the patient, "Stopping smoking is particularly important for you because you have high blood pressure and an elevated cholesterol level, and stopping smoking could help reduce your risk of heart disease." Interested patients were also offered a list of available smoking cessation resources in the community. Although participating physicians were asked not to extend further smoking interventions or counseling to patients randomly allocated to this condition, if the patient initiated questions about how to stop smoking or requested specific help, such as a prescription for nicotine-containing gum, the residents were free to respond as they believed was clinically appropriate. A sample of the script recommended for use by residents for patients randomized to the advice-only intervention and the particular aspects of this intervention are presented in Appendix B.

Counseling

In addition to receiving the minimal advice-only intervention, each patient randomized to the counseling condition received behavioral counseling. As previously described, this intervention approach explored a number of patient-centered areas related to behavior change. Through open-ended questions, the resident elicited information about the patient's desire and motivation to change smoking behavior, past experiences with stopping, problems that might inhibit the change, current concerns, resources available for changing smoking behavior, and interest in developing a personalized plan for cessation and followup. Trained residents were taught to structure the counseling approach around these specific behavior-related content areas and were provided with model questions, such as "How do you feel about your smoking?", "Have you ever stopped smoking before?", and "How were you able to stop smoking in the past?" A sample script for the counseling intervention and guidelines for its use are shown in Appendix B.

The sequence of questioning developed for use by the residents has a cognitive and behavioral theoretical basis with the principal focus on the development of positive self-efficacy in the patient. In other words, the counseling intervention helps patients to identify the personal skills and resources necessary to stop smoking and to feel confident of their ability to stop smoking and their commitment to do so. This approach was chosen because previous studies of smoking behavior change have shown that when an individual believes it is possible to make the desired change, there is greater likelihood that such change will occur. Residents were also trained to provide simple behavioral self-management recommendations (such as taking a walk after dinner instead of smoking a cigarette) and to be supportive of the patient's cessation and/or tapering efforts. A written agreement or a plan

for change in the patient's smoking behavior was formulated between the patient and physician as a form of contracting between the two parties. The plan for change included a quit date, if deemed appropriate, and other changes in smoking behavior such as changing brands or tapering the number of cigarettes smoked each day. A copy of the agreement was given to the patient along with a list of community resources and an NCI-produced self-help booklet, "Quit for Good."

Patients were requested to schedule a followup appointment with the resident within 2 weeks or a followup telephone call if a visit was not possible. At that time, the physician was to address changes in the patient's smoking behavior and intervene appropriately. Trained residents were also provided with a single page of suggested responses to patients' concerns about stopping or reducing smoking (Appendix C). The responses were important because physicians often reported feeling at a loss when patients expressed feelings or concerns that the physicians were not prepared to address. The recommended responses helped to increase the physician's own feelings of efficacy. Although it was impossible to assess systematically the amount of time residents spent in each of the intervention approaches, the interventions were designed to be relatively brief and to be incorporated into a regular medical care encounter.

Counseling Plus Prescription Gum Patients randomly assigned to the counseling-plus-gum condition received the basic patient-centered counseling intervention and also were offered nicotine-containing chewing gum as a resource to aid in the cessation process. Patients interested in using the gum and willing to set a specific quit date were provided with a prescription for up to three boxes of the gum at no charge. Patients who were not ready to stop smoking were informed that they could request the gum at any time during the course of the project once they agreed to stop smoking. As part of the training program, residents were taught about how to instruct patients in the proper use of the gum and how best to respond to concerns that patients might raise about using the gum. After seeing their physicians, patients were seen for several minutes by a clinic assistant associated with the study, who instructed them more fully in the use of the gum.

Followup to Intervention In addition to the three physician-delivered intervention approaches, patients were further randomized to two followup conditions, as described below.

Maximal Followup Patients randomized to the maximal-followup condition received telephone calls from trained counselors (master's-level psychologists or health educators) at approximately 1, 2, and 3 months after the initial physician contact and randomization. The same counselor made all three telephone calls to a single study participant. Personalized letters followed each counseling call and were keyed to the patient's smoking status as determined by the previous call. Patients were congratulated for any changes they had made in their smoking behavior and encouraged to continue to work toward complete

cessation. The calls were somewhat structured and were keyed to information from the baseline questionnaire and to changes in smoking status. The counselor used a series of open-ended questions similar to those the physicians used in the patient-centered counseling approach, provided behavioral recommendations, and negotiated a smoking cessation or maintenance plan with the patient, as appropriate.

Minimal Followup When patients were assigned to the minimal-followup condition, no further counseling contact was provided. All patients, whether in the maximal- or minimal-followup group, were informed of the initial 6-month telephone monitoring calls at the time of their initial physician visit. They were informed also that they would be called to determine changes in their smoking status at 12, 18, and 24 months after randomization.

SPECIAL RESOURCES AND PROCEDURES As noted previously, a research assistant was placed at each of the participating clinic sites to facilitate the recruitment of patients and oversee the physician-delivered interventions. These assistants were essential because they reminded the clinic staff, physicians and nurses, that they were participating in the study. The research assistant delivered a sealed intervention packet to the resident who would be intervening with the enrolled and randomized patient. The resident then broke the seal of the intervention package, which contained a brief suggested script that could be tailored for use with each randomized patient. This script reduced the need for recall on the part of the intervening physician and standardized the delivery of the assigned intervention. The packet also contained all appropriate support materials, such as the list of available community resources and self-help materials to be used with each randomized patient.

To further support the participation of residents in this study, and to emphasize the importance of the counseling techniques and their relevance for use with other lifestyle-related problems, interested attending physicians at the respective clinics were also informed of the goals and objectives of the study and were trained in the various quit-smoking intervention approaches.

PRODUCTS OF THE PROJECT Samples of the counseling intervention approach used in this study and sample scripts of the intervention protocols are provided in Appendixes A and B, respectively. In addition, physician responses to patients' concerns that might be commonly raised when they are asked to stop or reduce the number of cigarettes they are presently smoking are outlined in Appendix C. The responses that could be used by the trained residents were developed so that the residents would feel more secure and comfortable in replying to the most typical concerns that patients had in terms of stopping or reducing the number of cigarettes they were currently smoking. During the initial role-playing exercises involving residents, members of the research staff became aware of the need to emphasize that the residents did not have to be experts about all factors that would assist patients in making the behavioral changes necessary to stop smoking.

However, the residents clearly felt more comfortable with delivery of the various smoking interventions once they had several responses that they could draw upon to allay patients' concerns.

This study developed a training package that includes a facilitator's manual, 47 slides, a 35-minute videotape, structured role-plays, and training materials that integrate the physician-delivered smoking intervention approaches of advice, counseling, and prescription of nicotine polacrilex (Nicorette) into a unified intervention algorithm. An office practice management kit also was developed as part of the study and is included in the training package.

STUDY RESULTS Pretreatment and posttreatment measurements showed that residents exhibited significant positive change in the three skill areas of providing information, eliciting information, and eliciting and responding to feelings expressed by patients with respect to smoking cessation (Ockene et al., 1988; Quirk et al., 1990). Overall scores, based on a point scale from 0 (no evidence of the skill) to 3 (highly appropriate use of the skill), showed significant changes after training in providing information (1.23 to 1.48), eliciting information (0.95 to 1.74), and eliciting and responding to feelings (0.47 to 1.03) (all $p < 0.001$). Significant differences also were observed in the application of these skills to a number of content areas. In the complete pretraining and posttraining resident data, residents showed improvements after training in assessing patients' desire and motivation to change their smoking behavior, in questioning patients about their previous experiences with smoking changes, in identifying factors that might inhibit any changes in their patients' smoking status, and in helping patients identify and use available resources for changing their smoking behavior. Residents also showed significant improvements after training in formulating specific plans for change with their smoking patients. Baseline measurements conducted at the commencement of the trial indicated that participating residents thought that in general it was very important to help both healthy and sick patients to stop smoking and that formal training in smoking cessation was very important (mean=4.3 on a 1- to 5-point scale). Favorable changes in residents' knowledge of the risks of smoking cigarettes and attitudes toward smoking and smoking cessation also were observed over the course of the study.

What Worked And Why

Physician Changes

From the patients' perspective, those in the behavioral counseling and counseling-plus-nicotine-gum conditions were significantly more likely to report that their physician had been very helpful in their efforts to alter their smoking behavior than were those individuals assigned to the advice-only group. These differences were seen regardless of the patients' success or lack thereof in quitting smoking.

For assessing maintenance of counseling skills, a subsample of residents was selected to examine changes in residents' long-term counseling behavior (Quirk et al., 1990). Although the findings from this small and select sample

of residents call for cautious interpretation, the surveyed residents continued to exhibit positive and measurable changes in the three general skill areas at 1 year after training completion. In spite of the inherent difficulties in identifying particular aspects of the training sessions that may have facilitated the effective training of residents (given the different staff involved, training conditions, group dynamics, and other factors), the use of role-playing seemed to be particularly effective in opening up residents and in giving them experience in administering the program interventions.

Although the investigators had some initial trepidation about the use of role-playing with residents and the likelihood of getting residents actively involved in such exercises, it became readily apparent that, in an appropriate context, residents were receptive to role-playing. They enjoyed the interactive exchange of playing patient and provider, and they became demonstrably more comfortable in the delivery of the various smoking intervention approaches. Role-playing became a highly informative educational approach in that, by observing the study staff as well as other residents and then delivering the intervention themselves, residents were able to provide and receive feedback on those approaches and techniques that could assist their patients with smoking cessation.

Patient Smoking Cessation According to data from 1,224 trial participants, 6-month cessation rates increased significantly as the intensity of the physician-delivered intervention increased ($p < 0.005$) (Ockene et al., 1988). Among patients randomized to the advice-only condition, 9.1 percent reported cessation for at least 1 week at the time of the 6-month telephone contact. Patients receiving the behavioral-counseling and counseling-plus-gum interventions reported 1-week cessation rates of 11.9 percent and 17.4 percent, respectively. Comparable differences in adjusted cessation rates were seen when multiple regression analysis was used to control for a variety of potentially confounding baseline characteristics. The adjusted findings revealed that patients in the counseling-plus-gum group demonstrated almost twice the likelihood of quitting (95-percent confidence intervals=1.2, 3.2) as those in the advice-only group; whereas patients in the counseling group demonstrated a likelihood of quitting 1.6 times that of patients in the advice-only group (95-percent confidence intervals=1.0, 2.6). However, no significant differences were observed in the 6-month cessation rates of randomized patients according to type of followup (minimal phone followup was 11.2 percent; maximal phone and letter followup, 13.9 percent).

A similar pattern of increasing quit rates with increasing levels of physician intervention was observed for continuous abstinence from smoking of greater than 3 months reported at the time of the 6-month followup contact. Of the advice-only patients, 5.9 percent had been completely off cigarettes for at least 3 months at the time of the 6-month monitoring calls; the rates were 9.2 and 13.2 percent for patients in the counseling and counseling-plus-nicotine-gum interventions, respectively ($p < 0.005$).

How soon patients stop smoking after contact with a physician provides additional information about the immediate impact that the physician can have on patients' smoking behavior. The length of time between the physician visit and initial successful cessation suggested that the more intensive the physician intervention, the greater the likelihood for early cessation. For example, approximately 15 percent of smokers in the counseling-plus-gum group reported having stopped smoking within a day of their initial physician visit, compared to 11 percent in the counseling group and 4 percent in the advice-only group ($p < 0.001$).

The length of time that patients abstain from cigarettes immediately after being seen by a physician is another measure of initial physician impact on patients' smoking behavior. The results of this trial suggest that the more intensive the physician-delivered intervention, the longer the period of abstinence after the initial contact.

A trend for an intervention effect was observed for the maintained self-reported abstinence rates at the time of the 12-month telephone followup. That is, 6.2 percent of patients who received physician advice only reported not smoking at both the 6- and 12-month contact points after baseline randomization. The proportion of patients who reported not smoking for at least 1 week prior to the telephone contact at each of these two followup assessment points was 8.1 percent for patients in the counseling group and 10.6 percent for those in the counseling-plus-nicotine-gum condition.

No significant differences were observed, however, for the 12-month, 1-week point prevalence cessation rates among the three physician-delivered intervention groups. Among patients randomized to the advice-only group, 15.2 percent reported being abstinent from cigarettes for at least 1 week; the corresponding percentages for patients in the counseling and counseling-plus-nicotine-gum groups were 12.9 and 16.7 percent, respectively. The absence of a main effect is attributable primarily to an increased number of "new stoppers" in the advice condition. It is highly probable that this higher prevalence of new cessation in the advice condition is a crossover effect rather than a result of the delayed impact of the brief advice-only intervention. "Crossover" means that patients in the advice-only group who continued to see their study physician probably ended up receiving more intensive counseling between the time of the 6- and 12-month followup contacts, resulting in higher rates of cessation.

After the residents saw their patients for the initial study contact, they were not restricted to their original intervention condition. With the exception of the project stickers that identified patients participating in the study, there were no identifiers placed on the patients' charts to indicate their original randomized condition. In spite of there being no observed trends in 1-year quit rates related to intensity of smoking intervention, and possible subsequent confounding between randomized groups in the subsequent use of the various smoking interventions, it was encouraging to note the high

quit rates in the advice group, suggesting a clearly positive effect of physician advice on patients' long-term quit rates.

Integration of the Training Model Although the integration of the physician-delivered smoking intervention training into the residency program was not a measured trial outcome, it was clearly necessary if the trial was to be successfully implemented. This report, especially the last section, indicates how such integration was facilitated. It is also of note that even after the study ended, the residency program directors strongly supported the continued teaching of the project protocol. All incoming medical residents at the University of Massachusetts Medical School have come to expect such training as part of their residency program.

What Did Not Work and Why As is consistent with most population-based clinical trials, efforts to recruit the projected number of patients to the study fell behind the projected schedule. This was caused by operational factors as well as the unexpected low rate of current cigarette smoking among the populations surveyed. Also, early in the trial it became apparent to the investigators that they would need a multiplicity of institutional resources, recruitment techniques, and variations in the methods by which residents would be taught the various smoking intervention approaches. For example, the provision of training without lunch or refreshments did not work; nor did training sessions lasting more than an hour, as the training began to impinge on the residents' clinical responsibilities. In the early training aspects of the trial, residents may have suffered information overload as the investigators attempted to condense a lot of information into a limited timeframe. The investigators soon realized that they had to keep the resident training simple and understandable without presenting excessive didactic material, and they realized the need for considerable role-playing in the three quit-smoking intervention approaches. It is certainly likely that the cultural norms and milieu of the residents' environment are influential in the adoption of, or failure to adopt, training in smoking intervention or other lifestyle intervention techniques. It is clearly important not only to obtain the support and enthusiasm of those involved in the daily clinical training of medical residents, but also to create a receptive and open environment in which residents can be shown the importance of such training and foster its encouragement among peers.

Problems With Implementation The results of this study confirm and extend current knowledge of the beneficial impact that physicians can have on the smoking behavior of their patients. The study demonstrated that patients who received brief, patient-centered, behavior-oriented counseling, with or without the prescription of nicotine gum, were considerably more likely to change their smoking behavior than were patients who were provided brief advice to stop smoking. The impact of these interventions on quit rates was seen immediately after intervention and at 6 months after randomization. It was also evident in terms of the length of time patients were able to continue abstaining from cigarettes.

One concern that physicians expressed about delivering smoking interventions was that they might offend and alienate patients who are not yet ready to quit, particularly if the physicians do more than offer brief advice. However, in this trial the patients rated physicians as substantially more helpful when they offered counseling or counseling plus nicotine gum than when they simply gave advice to stop smoking. This was true whether the patients went on to quit or not. As most smokers go through several stages of readiness to change their smoking status (Prochaska and DiClemente, 1983), it is important that physicians feel confident in exploring smoking issues with smokers who are not highly motivated to quit. Patient-centered counseling is designed to minimize defensiveness on the part of the smoker and it can be used repeatedly, thereby taking advantage of another characteristic of usual health care—intermittent contact over extended periods of time with a regular health care provider.

Conversely, the results of this study do not support the use of followup telephone counseling by ancillary staff to facilitate changes in patients' long-term smoking behavior. This result was surprising because it did not fit the pattern observed by Kottke and colleagues (1988). Although the telephone counselors were well-trained and skilled, no face-to-face contact had occurred between the study patients and the counselors, and patients may have perceived their calls as impersonal, intrusive, or unwarranted.

The results of the present study suggest also that resident physicians can be successfully trained in the delivery of patient-centered, behavioral counseling for smoking cessation. Residents demonstrated enhancement of not only their attitudes toward smoking cessation approaches, but also their ability to affect favorably their patients' smoking behavior. A further mark of success for the training program was that it was requested by, and extended to, attending physicians working in the clinics in which the study was carried out.

**QUESTIONS
TO RESOLVE**

Despite the encouraging results of the present study (Ockene et al., 1988 and 1991; Quirk et al., 1990), a number of questions remain unanswered and warrant further investigation. Is the effectiveness of patient-centered counseling attributable to the greater amount of time spent by the physician or to the *manner* of counseling? Can the counseling techniques used in this study be taught readily in other settings and to physicians at other levels of professional development? There are also unanswered questions about how best to use the clinic environment to foster smoking prevention and cessation among patients attending the clinic and how best to prompt the resident physicians to deliver the smoking intervention.

Another major set of questions has to do with identifying the necessary and effective followup of patients who smoke. Perhaps telephone counseling followup would increase cessation efforts when offered by someone known to the patient, or if the patient were able to decide whether or not to receive such additional counseling.

Although no data are available to address this question, another important area for future research is whether this type of brief, patient-centered counseling can be used by physicians to intervene effectively with other behavioral risk factors such as physical exercise (Harris et al., 1989) and lowering cholesterol (Report of the National Cholesterol Education Program, 1988). Given that the authors have shown that residents can be trained to deliver effective quit-smoking messages to their patients, it is hypothesized that physicians in training and practicing physicians might also use such approaches in helping patients to modify their intake of saturated fat and total fat and to find effective ways to increase their energy expenditure on a long-term basis. Finally, the authors do not know how best to maintain the quit rates observed in this trial, given the minimal interaction that occurred between patient and physician.

There are a number of additional issues related to physician training. Support from the department chairs, directors of the residency training programs and clinics, and the staffs of clinics at which the study took place was considered essential in successfully training the residents, recruiting patients, and carrying the study to completion. Attending physicians in the clinics also were perceived as agents of support and sanction for the residents' activities.

There remain unanswered questions as to whether one can assess the stages of readiness for the adoption of training in smoking intervention in a physician sample, and whether efforts should be aimed specifically at residents who are seriously contemplating or eager to get such training. The receptivity to training is expected to be quite high among such physicians, whereas those physicians who are in a precontemplation stage for receiving and adopting such training might be initially bypassed. Such targeting of physicians might result in more effective and efficient recruitment, as well as training, of health care providers in smoking cessation techniques.

The optimal timing for the various training activities involved in educating residents in the use of such counseling techniques is unknown. Meals and additional incentives (e.g., gift certificates or possibly continuing medical education credits for attending physicians) should most definitely be provided as a means to recruit and retain the parties involved. Questions also remain as to when and if resident or attending physicians might need additional maintenance or booster training sessions to reinforce and bolster their smoking intervention efforts. At present, the authors' training program has been incorporated into the medical residents' curriculum, providing a further institutionalization of the program.

The most effective ways to train resident physicians remain to be determined. For example, should members of a study staff train key physicians who will in turn be responsible for training their residents (training the trainers)? Or, on the other hand, might self-training materials be used by targeted personnel and might use of these materials be considered adequate training?

WHAT MIGHT BE DONE DIFFERENTLY Although, in general, it was thought that the recruitment and training of physicians for this trial were satisfactory, particularly as the study investigators accrued experience with methods that might or might not work for recruiting the physicians and study sample, the logistics were quite formidable. The principal investigator and project coordinator are key to the successful recruitment and retention of physicians, and these individuals must be highly visible and approachable. Early and continued involvement of the director of the residency training program and the chair of the medical department from which residents are recruited is also essential to the successful conduct of such a trial. In addition, it is extremely important to identify and involve key clinic staff from each of the participating clinics at which residents practice early on, so that the residents' role in the study will be fostered and obstacles minimized.

With regard to the structure of training sessions, the study showed that between 6 and 10 participants was the ideal number, so that each individual resident could successfully role-play each of the interventions to be used. In addition, within several months after the physician has become involved in such a trial, regardless of the number of patients treated with the intervention, booster training sessions should be developed to maintain a high degree of competency for the various smoking interventions. More attention should be directed also to the training of residents in smoking relapse prevention, as this was a problem that affected the study's 12-month findings.

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Effects of Two Realistic Interventions To Teach Smoking Cessation Counseling To Primary Care Residents: A Randomized Trial¹

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PURPOSE OF THE STUDY The NCI Smoking, Tobacco, and Cancer Program trials of smoking interventions by physicians have demonstrated that smoking cessation counseling by physicians can help smokers quit. How best to disseminate widely effective smoking cessation counseling and increase physicians' use of it remains an issue. Residency training programs offer a natural, though standard, opportunity to teach effective smoking cessation counseling to large numbers of physicians.

The authors developed two realistic, generalizable interventions to increase smoking cessation counseling by primary care resident physicians: the tutorial and the prompt. Both were based on the same minimal-contact smoking cessation counseling protocol, one similar to those used in the STCP Physician Smoking Trials. The tutorial used a "training of trainers" approach in conjunction with the familiar tutorial format to teach smoking cessation counseling to residents. The prompt used a chart-based reminder to teach residents smoking cessation counseling by prompting and guiding them to do counseling.

The investigators then used a randomized factorial design to determine changes in residents' counseling practices and their patients' cigarette smoking after the two interventions. The trial evaluated the effectiveness of the tutorial and the prompt across 11 residency training programs and 3 primary care specialties: internal medicine, family medicine, and pediatrics. This paper summarizes previously published results and examines the utility of

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training in smoking cessation counseling as well as barriers that impede implementation of such training (Campbell et al., 1991; Kenney et al., 1988; Strecher et al., 1991).

TRAINING PROGRAM What constitutes a realistic intervention to increase the use of smoking cessation counseling by residents in primary care training programs? A realistic intervention should address two questions:

Background: Defining Realistic Interventions (1) What is an effective and generalizable smoking cessation counseling protocol that physicians can use in a practice setting? and (2) What are the most effective and generalizable ways to teach, reinforce, and remind physicians to use the smoking cessation counseling protocol?

The smoking cessation counseling protocol that resident physicians use with their patients who smoke should reflect the realities of clinical practice. Busy physicians involved in ongoing patient care need simple, efficient, and effective counseling skills. A number of studies have shown that minimal-contact smoking cessation counseling programs can be effective (Cohen et al., 1987; Cummings et al., 1989; Janz et al., 1987; Kottke et al., 1989; Wilson et al., 1988).

Most residency training programs likely would provide only minimal time for residents to learn the protocol and develop their counseling skills. Given the extensive curricula of such programs, training in smoking cessation counseling would be provided most easily through already planned seminars or in another seminar format. Although interactive sessions would be better for teaching counseling skills, seminars are the method of choice in many residency programs.

An alternative to seminar teaching would be use of a prompting system that reminds physicians to perform routine clinical and preventive procedures. By enhancing the prompt, the system could guide counseling as well as remind physicians to perform the counseling, and physicians would learn smoking cessation counseling by doing. Such teaching would not impose on residency curricula. Because either manual or computer systems can be developed and maintained in most settings, the training would also be generalizable.

Given a seminar-based teaching intervention, it seems likely that a faculty physician associated with the residency program or the institution would have to do the teaching. Because the faculty physicians would probably have little or no formal training in smoking cessation counseling, a training-of-trainers approach would be appropriate and generalizable. Physician teachers would be centrally trained in the smoking cessation counseling protocol. Their training would be extensive, involving expertise in smoking cessation counseling, general behavior change and relapse prevention counseling, and medical education/adult learning strategies.

Finally, teaching resident physicians to do smoking cessation counseling presents unique challenges. Residents' pessimism about the effectiveness of smoking cessation counseling makes them reluctant to undertake counseling in their busy practices. Any training approach for smoking cessation counseling must attempt to convince residents of the importance and effects of smoking cessation counseling by physicians. Residents are also adult learners who receive instruction while actively caring for patients. Teaching must be succinct and relevant to their immediate experience.

Using these principles, the authors developed two interventions to promote minimal-contact smoking cessation counseling by physicians: a tutorial and a prompt. A detailed description of both interventions and their development is available elsewhere (Campbell et al., 1991).

Minimal-Contact Counseling Both interventions taught physicians a minimal-contact smoking cessation counseling protocol based on work by Strecher, by investigators in the STCP Physician Smoking Trials, and by other researchers in the field (Cummings et al., 1986; Gritz, 1988; Kottke et al., 1988; Ockene, 1987; Strecher et al., 1985). According to the protocol, the physician first assessed the patient's motivation to quit smoking. If the patient did not express an interest in quitting, the protocol suggested that the physician attempt to motivate the patient to quit by discussing the health, social, and financial benefits of quitting smoking and by setting a goal toward quitting. If the patient was motivated to quit, the physician was to explore the patient's obstacles to quitting, consider the use of nicotine gum, set a quit date, write a prescription for a quit date, and give the patient self-help materials. Whether or not the patient was motivated to quit, the protocol had the physician follow up on the counseling.

The Tutorial The tutorial consisted of two sessions in smoking cessation counseling that could be incorporated into ongoing residency training. The sessions were based on seven principles of adult education adapted from Gagne and Briggs (1979):

- Gaining the resident's attention,
- Making clear the objectives,
- Presenting material in varied ways,
- Providing guidance,
- Having the resident practice,
- Providing feedback on performance, and
- Assessing performance.

The initial 1-hour session included a 10-minute slide presentation/lecture on smoking and smoking cessation; a 10-minute presentation of the minimal-contact smoking cessation protocol, incorporating a handout flowsheet; a 10-minute videotape demonstrating two successful counseling interactions; and a 20-minute group discussion and evaluation. The videotape presented one interaction with a motivated patient and one with an unmotivated patient. Approximately 2 weeks after the initial session, residents attended individual or small group followup sessions to discuss their initial attempts to counsel patients.

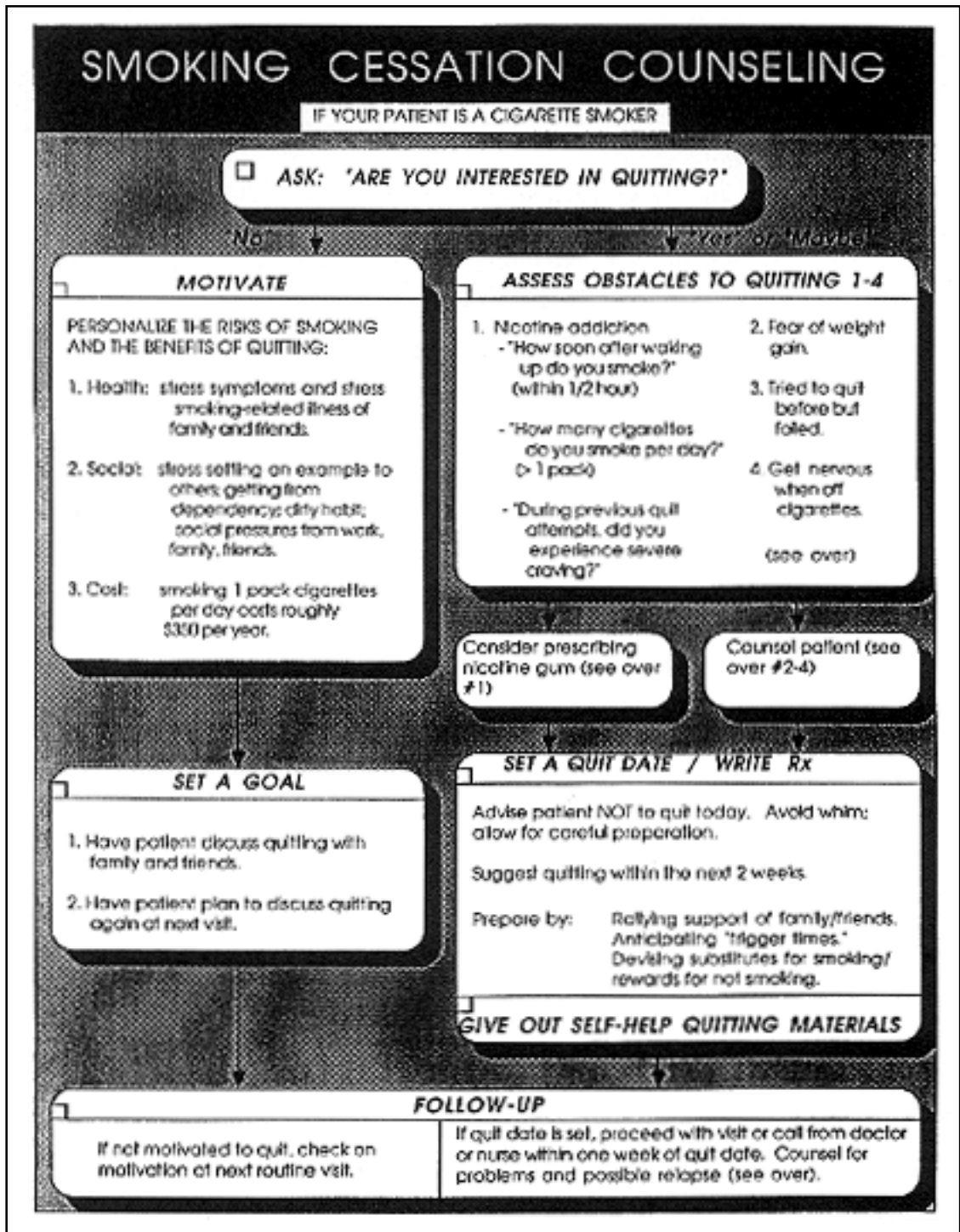
In both sessions, the tutorial attempted to counter residents' pessimism about the effectiveness of smoking cessation counseling by emphasizing that a 10- to 15-percent quit rate among all smokers seeing a physician each year—a success rate difficult for the individual physician to discern—would generate nearly a half-million new nonsmokers each year and could save thousands of lives. The tutorial for pediatric residents was identical to that for internal medicine and family practice residents, except that pediatricians were taught to counsel the patient's parents rather than the patient.

A clinic director or a faculty member involved in the residency training program conducted the tutorial at each site. The trainers were fellows in the University of North Carolina Faculty Development Program. As part of the program, each of the fellows had received training in smoking cessation counseling, general behavior change, and medical education/adult learning. The fellows and the program faculty developed the smoking cessation protocol and the two interventions, designed the randomized trial to evaluate the interventions' effects, and authored this study. Thus, the current study approximates the training-of-trainers approach—although the physician trainers in this study were probably more involved and committed to the interventions than other faculty members would be.

The Prompt The prompt provided chart-based reminders for physicians to counsel patients to stop smoking and to guide physicians in that counseling (Figure 1). At patient check-in, clinic nurses identified patients who were smokers. Nurses then attached a one-page flowsheet summarizing the minimal-contact counseling protocol to the front of the medical chart. The prompt was identical to the flowsheet used in the tutorial. In pediatric residency programs, nurses determined which parents smoked and placed the prompt on the charts of their children.

EVALUATION The authors used a randomized factorial design to determine the effects of the two realistic teaching interventions, alone and in combination. To investigate the generalizability of the interventions, the investigators tested them in 11 residency training programs representing three primary care specialties.

Figure 1
Smoking cessation counseling flowchart



Source: UNC Faculty Development Program. Copyright University of North Carolina, Chapel Hill; used with permission.

Figure 1 (continued)

1: PRESCRIBING NICOTINE GUM

RATIONALE: Nicotine gum supplies nicotine (the possible basis of addiction) without carbon monoxide or carcinogenic tars. Nicotine from gum is released slowly (if gum is chewed slowly) without sharp nicotine bolt produced through cigarette smoking.

GUIDELINES FOR USE OF GUM:

- Quit smoking before using gum.
- Chew gum slowly (about one chew for every normal puff interval), keeping taste and tingle at minimal level.
- Use for craving -- about 10-15 pieces per day.
- Taper from gum and stop using gum after 3 and 6 months (withdrawal from gum has been difficult for some patients).

2-4: OBSTACLES TO QUITTING**2. FEAR OF WEIGHT GAIN:**

- 2/3 of quitters gain weight; only 1/3 gain weight and keep a significant amount of weight.
- Weight gain can be prevented by a modest diet and exercise.
- Patient may crave sweets -- warn about this.
- Compulsive eating may suggest nicotine withdrawal -- patient may respond to nicotine gum.

3. FAILED IN PRIOR ATTEMPTS TO QUIT:

- Most successful quitters require several tries.
- Circumstances of relapse should be studied to prepare for next try.

4. NERVOUSNESS:

- May be a sign of nicotine withdrawal (see #1).
- Tranquilizers are not effective in breaking smoking habit.

RELAPSE

Indicate that most successful quitters required several tries -- many people need to **LEARN HOW TO QUIT**.

Analyze relapse experience ("When and where did you smoke your cigarette?"). Have smoker develop strategy for coping with that experience.

Recycle smoker into new quit date and schedule follow-up.

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Clinical Setting And Target Audience The trial took place in 11 primary care training programs: 6 in internal medicine, 3 in family medicine, and 2 in pediatrics. The programs were distributed across three university medical centers (University of North Carolina at Chapel Hill, East Carolina University School of Medicine, and Bowman Gray School of Medicine) and four university-affiliated community hospitals (Charlotte Memorial Hospital, Charlotte, North Carolina; New Hanover Memorial Hospital, Wilmington, North Carolina; Moses Cone Memorial Hospital, Greensboro, North Carolina; and the Geisinger Medical Center, Danville, Pennsylvania).

All residents who saw patients in the ambulatory care setting at least one-half day per week throughout the study period were eligible for the trial. Those who did not complete a pretest questionnaire were dropped from the trial. Adult patients were people aged 17 to 75 who were making a return visit to a study physician and who reported smoking five or more cigarettes in the preceding 7 days. At the two pediatric sites, parents of patients, rather than the patients themselves, were eligible.

Trial Design The authors used a randomized factorial design, alone and in combination, to test the two interventions (Figure 2). For the physician pretest, residents completed self-administered questionnaires to provide self-reports on smoking cessation counseling frequency and content, their attitudes, and their training. For pediatric residents, questions were adapted to address counseling of patients' parents.

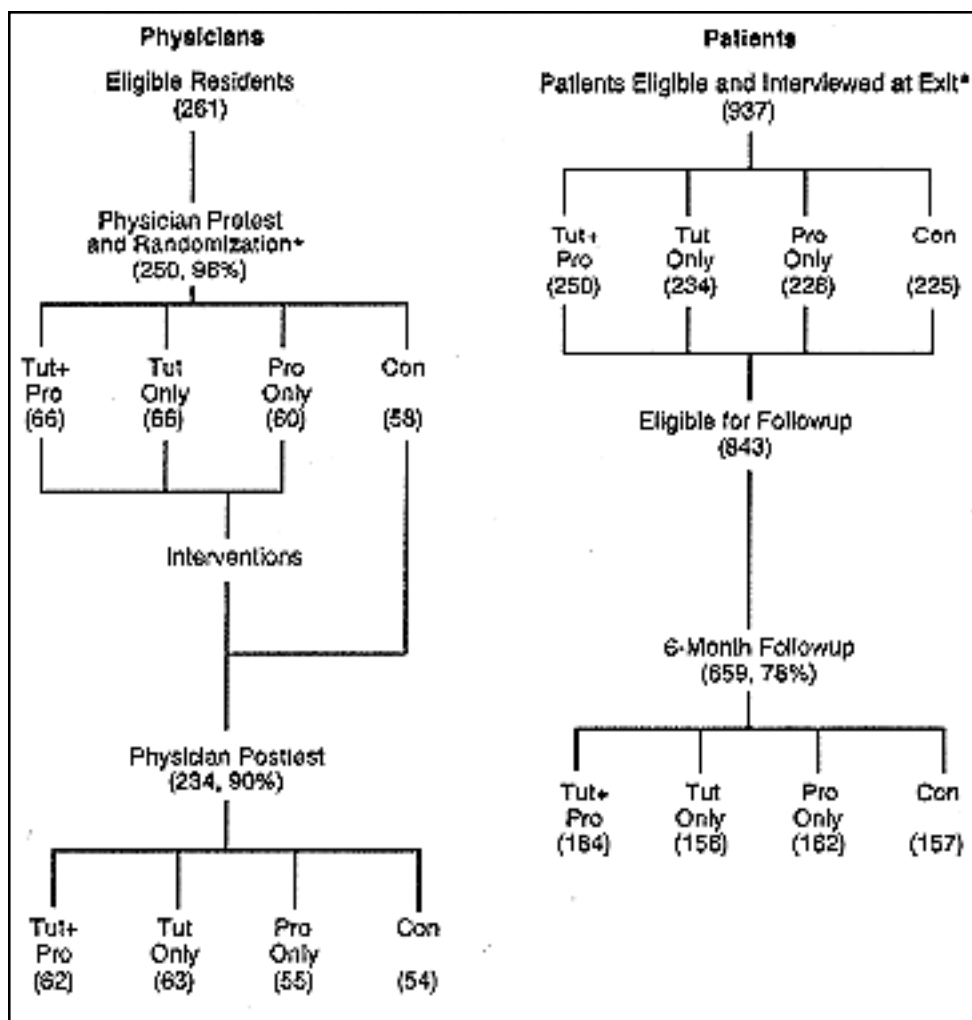
After the pretest, residents were randomly assigned, by clinic half-day session, to one of four groups: tutorial only, prompt only, tutorial plus prompt, and control. The physician posttest was administered 6 months after completion of the tutorials and the start of the prompts.

During the 6 months between the physician pretests and posttests, research assistants at each site used a structured questionnaire to interview patients who smoked and who had just seen a study physician. Patients were asked about their smoking habits and physician advice to stop smoking. Up to 10 patients were interviewed for each physician.

Six months after the initial exit interview, telephone interviewers, who were blind to residents' and patients' group assignments, obtained patient reports on current smoking status. Patients who reported stopping smoking were offered \$15 to return to their clinic site for a short interview during which a breath sample was obtained for biochemical verification of smoking cessation. Patients whose breath samples had carbon monoxide concentrations greater than 8 ppm were considered smokers (Jarvis et al., 1987).

Outcomes The primary outcomes of the trial with respect to physicians were the frequency and content of counseling practices. Frequency was measured as the percentage of return smokers that residents counseled, and content was measured as the number and mix of five specific techniques residents reported using in counseling. The five techniques were setting a quit date, prescribing

Figure 2
Trial design and participation by physicians and patients



* Tut, tutorial; Pro, prompt; Con, control.

Source: Strecher et al., 1991; used with permission of the authors.

a quit date, prescribing nicotine gum, giving the patient self-help material, and providing followup. Residents were considered to have used a technique if they said they used it often or always with their patients who smoked.

Both physician self-report and patient exit interview reports (aggregated by physician) were used for assessing resident counseling practices. Several secondary physician outcomes also were examined, including use of techniques to motivate patients to quit smoking and three attitudes toward smoking

cessation counseling: confidence, perceived preparedness, and perceived success.

The primary patient-related outcome was the patient quit rate, measured by the percentage of each resident's patients who reported they had quit smoking within 6 months of the exit interview. Biochemical testing of expired carbon monoxide was used to verify the patients' self-reported status as ex-smokers. However, because the biochemical test verified the self-report in all but two cases, and because the percentage of patients with biochemical verification varied by patient group, self-reported status was used as the primary dependent variable.

RESULTS

Physician Self-Reports

Of the 261 residents eligible for the trial, 234 (90 percent) completed all phases of the trial, including 157 physicians in internal medicine (67 percent), 52 in family practice (22 percent), and 25 in pediatrics (11 percent). Participation did not differ by study group or site. Individual sites contributed a mean of 21 residents, with a range of 11 to 44.

Pretest Results

Prior to the interventions, all four groups were similar for study outcomes and other selected characteristics. Residents reported that they advised cessation for 63 percent to 70 percent of return patients who smoked cigarettes but used only 0.5 to 0.7 of five specific counseling techniques (Figure 3). About half of the residents reported that they had had smoking cessation training of some kind in the preceding 6 months. The groups did not differ in terms of resident specialty or year of training. Pretest results for trial participants plus residents from two additional pediatric programs have been published else where (Kenney et al., 1988).

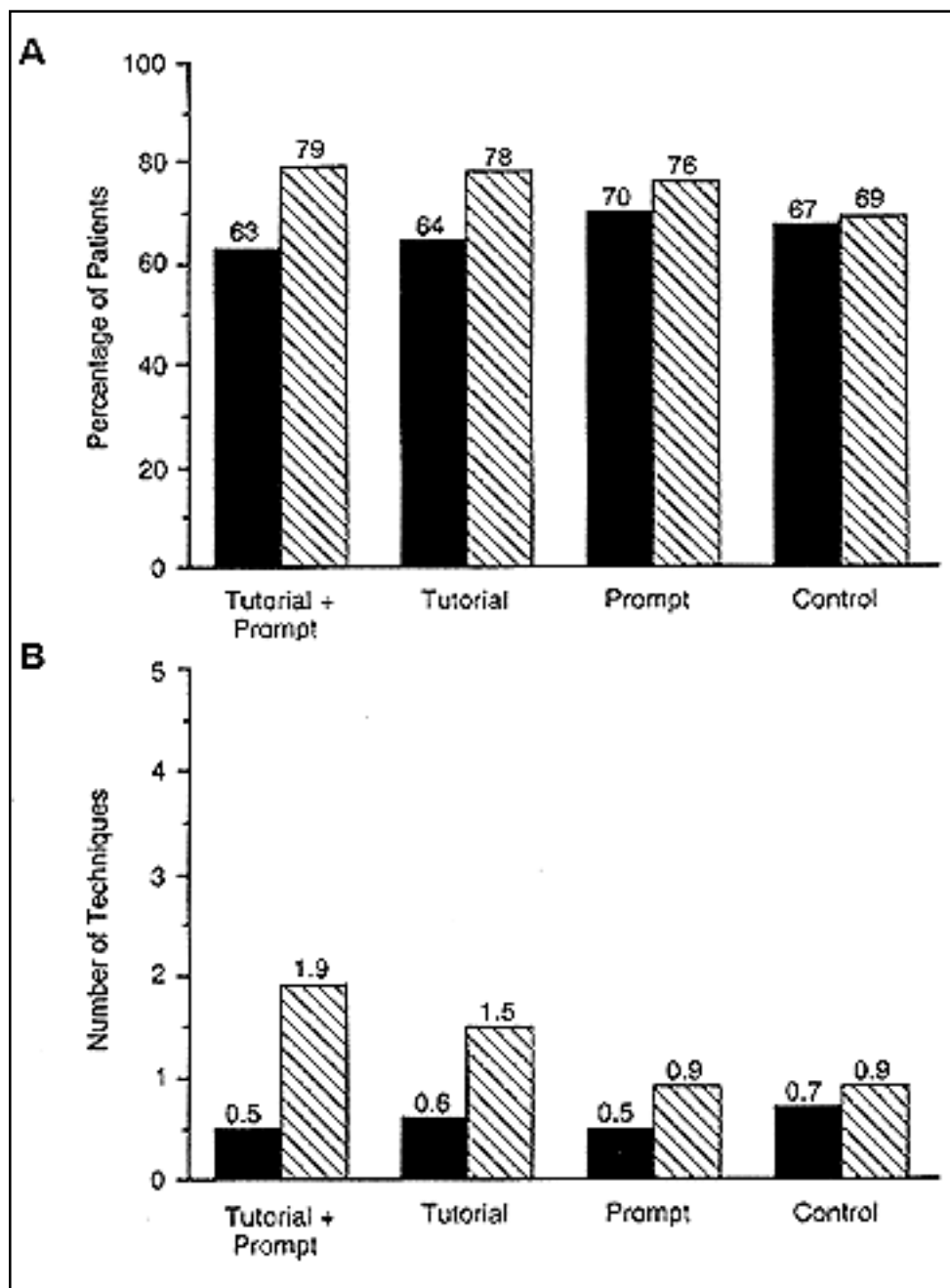
Changes in Counseling Frequency

After the interventions, the self-reported frequency of smoking cessation counseling increased in the tutorial-plus-prompt and tutorial-only groups (Figure 3). Analysis of covariance (ANCOVA) to compare the two interventions showed that only the tutorial produced significantly greater posttest counseling frequency. After adjustment for pretest scores and specialty, the posttest mean frequency for physicians receiving the tutorial was significantly higher than that for nontutorial physicians (76 vs. 69 percent, $p < 0.05$). Counseling frequency also tended to be higher for those receiving the prompt than for those who did not (75 vs. 70 percent), but the difference was not statistically significant. There was no significant interaction between the tutorial and the prompt. Nor was there any significant interaction between either intervention and physician specialty.

Changes in Counseling Content

Self-reported counseling content followed a pattern similar to that for counseling frequency (Figure 3). The use of ANCOVA to control for pretest scores and specialty showed that the mean number of techniques reported by tutorial physicians was double that reported by nontutorial physicians (1.5 vs. 0.7, $p < 0.001$). The number of techniques reported by those receiving the prompt was only slightly higher than those who did not (1.2 vs. 1.0, $p > 0.05$). Again, there was no interaction effect for the two

Figure 3
Physicians' self-reported counseling practices*



* A, frequency: percentage of patients advised to quit. B, content: number of five techniques used. Black bars, pretest; striped bars, posttest.

Source: Strecher et al., 1991; used with permission of the authors.

interventions combined and no interaction between either intervention and physician specialty.

Patient Reports During the 6-month period between the start of the interventions and the physician posttest, 937 exit interviews were conducted with Participation patients at 10 sites, representing 203 of the 250 randomized physicians in the trial. One family medicine site with 24 physicians was unable to participate, and 23 of the 226 remaining physicians did not have any patients interviewed. The mean number of interviews completed per physician was 4.1. There were no significant differences in pretest counseling frequency, content, or attitudes between the 203 physicians with exit interview patients and the 23 without.

The 937 patients included 736 internal medicine patients, 80 family medicine patients, and 121 parents of pediatric patients; their mean age was 45 years. The majority of the patients were female (63 percent), and most patients had less than a high school education (59 percent). About half were nonwhite, and about half were married. One-third of the patients reported they had no insurance coverage. The mean number of cigarettes they smoked per day was 19. Most (69 percent) reported a previous attempt to stop smoking, and 71 percent reported that they smoke a cigarette within 30 minutes of waking. The patients represented approximately 66 percent of the smokers who could have participated in the study. Only 6 percent of the eligible smokers refused to participate. The remaining 28 percent could not be contacted at exit or by telephone within 3 days of the clinic visit.

Frequency and Content Patient exit interviews corroborated the changes indicated by physicians (Table 1). The use of ANCOVA to control for physician specialty showed that the percentage of patients reporting physician advice was significantly higher ($p < 0.05$) for tutorial (62 percent) than for nontutorial physicians (53 percent) and for prompt (62 percent) than for nonprompt physicians (57 percent).

Patient reports also indicated changes in counseling content in the same direction reported by physicians (Table 1). With adjustment for physician specialty, patients reported significantly more counseling techniques used by tutorial physicians than by nontutorial physicians (mean of 0.6 vs. 0.3, $p < 0.05$). Physicians in the prompt group used slightly more techniques than did nonprompt physicians (mean of 0.5 vs. 0.4), but the difference was not significant. More tutorial physicians than nontutorial physicians used each of the five techniques, but the differences were significant ($p < 0.05$) only for prescribing a quit date and scheduling followup. Differences between physicians receiving the prompt and those who did not were small and not statistically significant.

Patient vs. Physician Reports Though patients corroborated the physician reports to a great extent, physicians reported more frequency and content of smoking cessation counseling than did patients. Across all groups, physicians reported giving significantly ($p < 0.05$) more advice (76 percent) than patients

Table 1
Patient reports of physician counseling practices, by study group^a

	Tutorial + Prompt, Percentage (n=55)	Tutorial Only, Percentage (n=51)	Prompt Only, Percentage (n=50)	Control, Percentage (n=47)
Counseling Frequency: Return Patients Advised To Quit ^b	74%	73%	71%	58%
Counseling Content (Mean number of five techniques used per patient) ^c	(0.9)	(0.7)	(0.6)	(0.5)
Sets quitting date	12	9	7	6
Writes quitting-date prescription ^b	9	6	1	2
Prescribes nicotine-containing gum	20	17	15	13
Gives self-help materials	15	10	11	13
Schedules followup visit	51	53	42	37

^a All percentages are mean percentages.

^b ANOVA, $p < 0.05$.

^c ANOVA, $p < 0.10$.

Source: Strecher et al., 1991; used with permission of the authors.

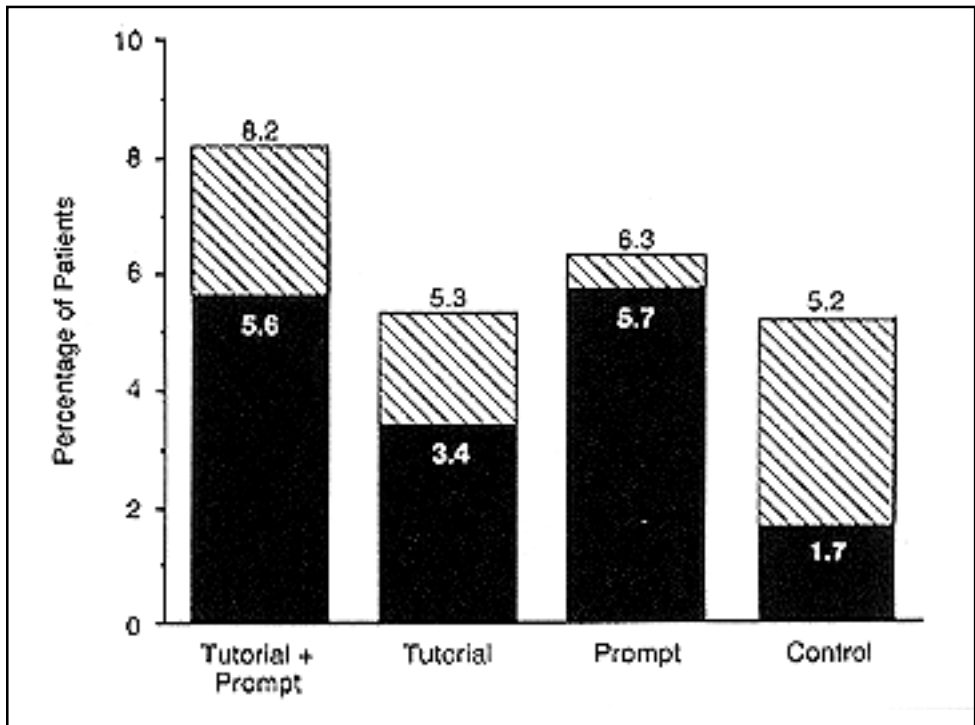
reported receiving (69 percent). Physicians also reported using significantly more techniques than the patients remembered (1.3 vs. 0.7, $p < 0.01$). Because physicians were asked about the counseling they generally provided and patients were asked about counseling received during one specific visit, physician reports would likely be higher than patient reports.

Six-Month Patient Followup Patients without a home telephone (n=78) and patients who died, were institutionalized, or moved out of state (n=16) were excluded from the 6-month followup. Of the remaining 843 patients, 659 (78 percent) were interviewed by phone 6 months after their exit interview, with no differences in followup rate between study groups. According to exit interview data, excluded patients and patients lost to followup were no different from those who remained in the trial with respect to physician counseling frequency, the number of cigarettes smoked per day, or report of a previous quit attempt. However, they were more likely to report that they smoked a cigarette within 30 minutes of waking.

Participation

Patient Quit Rates The rates of patients' smoking cessation in the intervention groups were generally higher than those in the control group, although study group differences were not statistically significant (Figure 4). According to self-reports, quit rates in the intervention groups ranged from 5.3 percent (tutorial only) to 8.2 percent (tutorial plus prompt), compared with 5.2 percent

Figure 4
Six-month rates for patients' smoking cessation*



* Shaded bars, self-reported; black bars, biochemically verified.

Source: Strecher et al., 1991; used with permission of the authors.

for the control group. According to the biochemically verified quit rates, intervention group rates of smoking cessation ranged from 3.4 percent (tutorial only) to 5.7 percent (prompt only), compared with 1.7 percent for the control group.

Self-reported patient quit rates for tutorial physicians, when adjusted for physician specialty, were higher than those for nontutorial physicians (4.9 vs. 3.7 percent), though the difference was not significant. For physicians in the prompt group, self-reported patient quit rates were also higher than those for the control physicians (5.2 vs. 3.4 percent) and were not statistically significant. Biochemically verified cessation rates followed a similar pattern, and there were no statistically significant differences among groups.

Patients undertook smoking cessation in spite of limited contact with physicians. Only 45 percent of all the patients in followup reported having seen their physician during the 6 months after the exit interview, with 67 percent of those patients reporting that the physician gave advice to quit smoking.

Quit Attempt Rates Patient quit attempt rates, the percentage of each resident's patients reporting at least one quit attempt during the 6-month followup period, ranged from 58 percent (tutorial plus prompt) to 50 percent (tutorial only) to 44 percent (prompt only); the rate for the control group was 49 percent. Adjusted for physician specialty, quit attempt rates for patients of the tutorial physicians were higher than those for patients of nontutorial physicians (47 vs. 40 percent), though the differences were not significant. For physicians in the prompt group, quit attempt rates were lower than those for nonprompt physicians (40 vs. 47 percent), but the difference was not statistically significant.

DISCUSSION Results from the authors' randomized trial involving 234 residents from 11 training programs and three specialties demonstrated that a training-of-trainers program can be effective in enhancing residents' practices with respect to smoking cessation counseling. Whether used alone or in combination with the tutorial, the prompt—a second intervention that employed a chart-based reminder—had less effect on residents' counseling practices. Although reporting a lower level of activity, patients tended to corroborate physicians' smoking cessation counseling reports; however, only small changes in patients' smoking behavior were found, and differences among experimental groups were not significant.

The trial examined the effects of a preventive health care intervention under conditions generalizable to most residency training programs in North America. A training program faculty member, not smoking cessation experts, conducted the tutorial at each site, and in-place nursing staffs administered the prompt. Residents in the study represented 3 primary care specialties, 4 community hospitals, 3 university medical centers, 82 U.S. medical schools, and 6 foreign medical schools. Because only 10 percent of residents did not complete the trial, it was unlikely that self-selection by physicians affected the results.

As far as the authors know, no previous study of training in smoking cessation counseling has included pediatric residents. The effects of parents' smoking on children's health and subsequent smoking behavior make parental counseling increasingly important (American Academy of Pediatrics, 1986). Although pediatric residents reported counseling frequency and content at lower levels than those reported by the internal medicine and family medicine residents prior to intervention, the pediatric residents' response to the interventions did not differ from that of other residents (Kenney et al., 1988).

Two barriers were encountered in implementation of the intervention. First, arranging for delivery of followup of the tutorial was difficult and required a concerted effort from the faculty. Second, integration of the prompt form into the medical record often proved difficult. A number of sites had stringent policies that tended to restrict the incorporation of new information into the record. The investigators found that both of these barriers could be overcome through the efforts of the on-site faculty member. Organizational

change is often found to result from efforts by a champion for change in the existing system (Orlandi, 1987). Use of on-site faculty also appeared to have a positive influence on participation by residents. Having a faculty member who is the designated smoking counseling “expert” on site allowed residents to easily refer to this person when they encountered interesting counseling experiences.

A number of explanations for low rates of smoking cessation found among patients in the experimental groups are possible. First, the patients included in the study may have been less likely to quit smoking after 6 months than were patients in other settings. Study patients were predominantly black, female, and less educated. Smoking cessation among these patients is less frequent (Novotny et al., 1988). Second, fewer than half of the patients saw their physicians during the 6-month followup period; there was little opportunity for residents to reinforce previous counseling. The total amount of time spent on smoking cessation counseling is exceedingly small in comparison to the time spent in more formal cessation programs and is far outweighed by the number of social reinforcements to continue smoking. Third, because interventions were incorporated into ongoing training programs and residents at each site worked closely with one another, some contamination occurred. Almost two-thirds of the residents who did not receive the tutorial reported awareness of it, although most claimed that such awareness did not change their counseling practices.

Another factor accounting for low cessation rates could have been the intervention itself. Although the intervention was based on commonly recommended smoking cessation strategies, it also was developed so as to minimize expenditure of counseling time. This required minimizing open-ended probes and prolonged discussion about reasons for quitting, past quitting history, or the involvement of significant others in quitting. In other words, efforts to make the counseling strategy convenient for the physician may have also diminished the effectiveness of the strategy.

The authors recommend that future cessation efforts based in physician office practices include more attention to the role of other office staff members and to changes in the office system. Concerted, coordinated efforts from intake nurses, physicians’ assistants, family nurse practitioners, and other health professionals in addition to the physician should minimize time constraints on all office staff while maximizing counseling effectiveness. These efforts may require systematic changes in the way candidates for smoking cessation counseling are identified, approached, and followed. Examples of such systematic efforts have been provided by Cohen and colleagues (1987) as well as Kottke and coworkers (1989).

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APPENDIX A

Smoking Intervention Communication Grid^a

	Physician-Centered -----		>Patient-Centered	
	Information	Reassurance	Closed-Ended Questions	Open-Ended Questions
Provide Advice	Smoking is harmful to your health. As your physician, I advise you to stop smoking.	I believe you can stop smoking.	Do you wonder if smoking is really affecting your health?	How do you think smoking is related to your health?
Assess Motivation	To be a successful ex-smoker, you need to make a serious commitment and make a plan to stop smoking.	You really seem to want to stop smoking.	Have you thought about stopping smoking recently?	How do you feel about trying to stop smoking?
Assess Past Experience	Often there are many things you can learn from your past attempts at stopping.	Being able to stop for a week is a real accomplishment. You made it through the hardest part.	Have you ever stopped smoking in the past?	How did it go the last time you stopped?
Discuss Problems	Certain situations, thoughts, or feelings usually bring on the urge to smoke.	I believe that together we can figure a way for you to deal with the problem situation.	Has your fear about withdrawal kept you from trying to stop again?	What problems do you anticipate coming up if you stop now?
Discuss Resources	Choosing other behaviors to substitute for smoking is easier if you plan ahead.	It sounds like you expect your spouse to be supportive.	What can you do instead of smoking after meals?	What do you believe will enable you to be successful at stopping?
Negotiate Plan	When developing a plan to stop smoking, it is important to choose a "quit" date.	I think that's a very realistic plan.	When will you stop? Could you reduce the amount you smoke to half by the next time we meet?	How do you think you would like to stop?
Arrange Followup	I'd like to set another appointment in 1 or 2 weeks with you to follow your progress.	My staff and I are available to you if the going gets tough.	Is it okay if my nurse calls you in a week or two to see how you are doing?	What kind of followup help from me would be helpful?

^a It is suggested that the topics be addressed in the order shown; the order may be changed, however, to meet the needs of the patient and physician.

APPENDIX B
Outline of the Advice and Counseling
Smoking Intervention Approaches

ADVICE-ONLY INTERVENTION

- Advise patient to stop smoking.
- If requested, give patient list of resources.
- Inform patient of periodic telephone contacts.

Sample Statement:

“I notice that you are a cigarette smoker. Smoking is harmful to your health. In many cases, the harmful effects of smoking can be reversed. As your doctor, I must advise you to stop smoking. If you are interested, I have a list of some programs for stopping smoking available in the community. Someone will be contacting you periodically by phone to see how you are doing.”

COUNSELING INTERVENTION

- Advise patient to stop smoking.
- Use counseling technique to determine most appropriate method for cessation.
- Set agreement with patient for cessation.
- Provide booklet of stopping smoking tips.
- If requested, give patient list of resources.
- Request return visit in 1 to 2 weeks (or phone contact if unavailable) to check progress and reinforce initial visit.
- Inform patient of periodic telephone contacts.

Sample Intervention:

“I notice that you are a cigarette smoker. Smoking is harmful to your health. In many cases, the harmful effects of smoking can be reversed. As your doctor, I must advise you to stop smoking.

“How do you feel about being a cigarette smoker?”

“Have you thought about stopping?”

“What reasons would you have for stopping?”

“Have you ever stopped smoking?”

YES

- When was the last time?
- How did you stop?
- Any problems?
- How long did the problems last?
- What helped you?
- How did you feel? How did you feel about yourself?

NO

- Have you ever made any other changes? How? When? Any problems?

“Would you like to stop smoking?”

“Do you think you could stop now?”

“What would be possible problems or barriers to stopping?”

“What could help you?”

“Would you be willing to develop a plan to stop smoking?”

YES

- Write agreement plan for cessation with patient.
- Give booklet on tips for stopping smoking.
- Request return visit in 1 to 2 weeks (or phone contact if unavailable) to check progress.
- Inform patient that someone will be contacting him/her periodically by phone to see how he/she is doing.

NO

- Give booklet on tips for stopping smoking.
- Request return visit in 1 to 2 weeks (or phone contact if unavailable) to check progress.
- Inform patient that someone will be contacting him/her periodically by phone to see how he/she is doing.

APPENDIX C

Physician Responses to Patients' Concerns

Patient: I am under a lot of stress, and smoking relaxes me.

Response: Your body and brain have become accustomed to the drug effects of nicotine, so you naturally feel more relaxed when you get the nicotine you have come to depend on. But nicotine is also a stimulant that temporarily raises heart rate, blood pressure, and adrenaline levels. After a few weeks of not smoking, most ex-smokers feel less nervous.

Patient: Smoking stimulates me and helps me to be more effective in my work.

Response: Difficulty in concentrating can be a symptom of nicotine withdrawal, but it is a short-term effect. Over time, the body and brain function more efficiently when you don't smoke, because carbon monoxide from cigarettes is displaced by oxygen in the bloodstream.

Patient: I have already cut down my smoking to a safe level.

Response: Cutting down is a good first step toward stopping. But smoking at any level increases the risk of illness. And some smokers who cut back inhale more often and more deeply, thus maintaining nicotine dependence. It is best to stop smoking completely.

Patient: I only smoke safe, low-tar/low-nicotine cigarettes.

Response: Low-tar cigarettes still contain harmful substances. Many smokers inhale more often or more deeply and thus maintain their nicotine levels. Carbon monoxide intake often increases with a switch to low-tar cigarettes.

Patient: I don't have the willpower to give up smoking.

Response: It can be hard for some people to give up smoking, but for others it is much easier than they expect. More than 3 million Americans stop every year. It may take more than one attempt for you to succeed, and you may need to try different methods of stopping. I will give you all the support I can.

Patient: I wish everyone would mind their business about my smoking.

Response: It must be hard to feel like people are nagging you about your smoking. I do not want to add to this. However, I feel as your physician I have a responsibility to help you stay well. I also would like to be able to provide help and support. Is there anything I can do to help?