
Improving Smoking Cessation Counseling by Family Practice Residents

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Background. While programs to train residents in smoking cessation counseling skills have been devised, few have assessed trainee behavioral changes in practice settings where residents were blind to the evaluation of their behavior. This study assessed the effectiveness of a training program in smoking cessation counseling and chart-prompting system in increasing the frequency and quality of counseling by residents at three clinic sites.

Methods. Twenty-eight residents participated in a training program that included epidemiology, discussion of attitudes, counseling techniques, videotaped examples, and small group role play. The chart-prompting system was implemented at two clinics 1 month after training. Patient exit interviews, during which information on resident counseling on smoking cessation was obtained, were conducted before training, after training, at 3-month follow-up, and at 6-month follow-up. Questionnaires assessing knowledge, attitudes, and self-perceived counseling behaviors were completed by resi-

dents at pretraining, posttraining, and 6-month follow-up periods.

Results. Interviews with 517 smokers were analyzed. Results showed an increase in counseling at 3-month follow-up but a regression toward baseline at 6 months. Counseling improved at clinics where chart prompting was initiated. The number of counseling behaviors decreased when the number of patients seen increased. Whether a patient received counseling was positively associated with prior contact with the physician. There was no correlation between resident self-perception and patient report.

Conclusions. A training program in smoking cessation counseling and a chart-prompting system did not result in a lasting change in resident behavior. System factors may play an important role in long-term behavior change.

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Health authorities in recent years have encouraged more active physician involvement in antismoking campaigns, pointing out that physicians have annual contact with 38 million of the 50 million smokers in the United States.¹⁻³ Primary care physicians, in particular, have a unique opportunity to influence and to support their patients in a way that is not available to other providers. Numerous surveys have shown that, while almost all physicians believe smoking to be one of the most significant risks to their patients' health, less than one third of physicians offer a systematic approach to quitting in their practices.⁴⁻⁷ One reason cited for this discrepancy is lack of medical training in this area.⁸

Ockene et al⁹ developed a resident training program in patient-centered smoking cessation counseling. Residents who received this training felt more prepared and more successful in counseling their patients to stop smoking and used better counseling skills in role plays with simulated patients. In a 1-year follow-up, Quirk et al¹⁰ found that the positive effect of the original training had been maintained.

In a similar study, Giovino and his colleagues¹¹ reported a positive change in resident attitude and an increase in the cessation rates of patients of trained residents compared with patients of untrained residents. Strecher et al¹² evaluated the effectiveness of a tutorial in brief counseling skills and a chart-based reminder system and found that the chart prompt alone was not as successful as the tutorial alone or the tutorial and the chart prompt in increasing counseling frequency and the physician perceived level of preparedness and perception of success.

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In the studies of Ockene⁹ and Quirk¹⁰ and colleagues, however, the increase in counseling skills was assessed by videotaped role plays and not by assessment of actual behavior in clinical settings. In the investigation of Giovino and co-workers,¹¹ patients did not report any difference in the use of counseling skills between the trained and untrained residents. In the study conducted by Strecher and colleagues,¹² physician self-report was the primary determinant of change in counseling behavior, although patient exit interviews were used to corroborate physician self-report.

While these studies suggest that training can have a positive effect on resident attitudes, use of counseling skills, and the number of patients who stop smoking, important questions remain: do residents trained in smoking cessation counseling actually counsel patients more often and more effectively in practice, and is this behavior change sustained? Our study measured the effectiveness of a brief training program in smoking cessation counseling and a chart-prompting system in (1) increasing the frequency and quality of smoking cessation counseling by family practice residents, and (2) maintaining this change over a 6-month period. Since there is a large body of literature suggesting that prompting cues or other office systems increase the likelihood that the desired physician behavior will occur, our use of a chart prompt was to determine whether it would enhance maintenance of a newly learned behavior.¹³⁻¹⁷

Methods

The study was conducted with 28 first-, second-, and third-year family practice residents at the University of Nebraska Medical Center. Residents were assigned to one of three outpatient clinic sites located in metropolitan Omaha.

A required, 3-hour, resident training program in smoking-cessation counseling was devised based on the Physician-Delivered Smoking Intervention Program developed by Ockene and associates⁹ and the five stages of readiness for change identified by Prochaska and colleagues.¹⁸ Two sessions lasting 1½ hours each were held 1 month apart. Table 1 indicates the content of those two sessions.

Resident knowledge, attitudes, and self-perceived counseling behaviors were measured by questionnaire before training, immediate posttraining, and at 6 months posttraining. Questions were taken from the works of Ockene et al⁹ and Strecher (personal communication, 1989) and assessed for accuracy and face validity by content experts in smoking cessation and by family physicians. The resulting questionnaire was then pilot tested at three remote family practice sites.

Table 1. Training Session Content for Family Practice Residents in Smoking Cessation Counseling

Session	Content
1	<ul style="list-style-type: none"> • Epidemiology of smoking • Research results of physician intervention • Small group discussion of resident attitudes and experiences • Introduction of brief counseling technique with videotaped example • Handouts covering Session 1 content
2	<ul style="list-style-type: none"> • Review of brief counseling technique and second videotaped example • Introduction of the Five Stages of Readiness for Change • Role play of brief counseling technique in small groups with faculty facilitator • Handouts covering Session 2 content

Telephone exit interviews were the primary data-gathering method. This blinded the residents to the research nature of the training and minimized the likelihood that they would change their behavior as a result of knowing they were being evaluated. The interviews were covertly conducted with all patients seen in the clinics by each resident during four data-gathering periods: pretraining, posttraining, 3 months posttraining, and 6 months posttraining. Each data-gathering period lasted approximately 4 to 5 weeks. Daily clinic logs were used to identify each resident's patients, and telephone contact was initiated within 48 hours with all English-speaking adults over 17 years of age. When patients could not be reached by telephone within 3 days of their office visit, a questionnaire and self-addressed, stamped, return envelope were sent to the patient. One follow-up mailing was conducted. Duplicate contacts were discarded.

Each patient was asked about the physician's use of six smoking counseling behaviors during the patient's most recent visit (advice to quit, assessment of motivation, discussion of barriers and resources, methods for quitting, self-help materials, follow-up appointment). To reduce potential bias, questions about physician smoking counseling behaviors were asked within the context of a larger questionnaire ostensibly asking about patient satisfaction and preventive medicine practices.

One month after the last training session and immediately following the posttraining data-gathering period, a chart-prompting system was initiated at two of the clinics (Southroads and Harvey Oaks) and remained in place until the end of the study. This consisted of the placement of a smoking status sticker on each patient's progress note at the time of the patient's visit.

Statistical Methods

Overall counseling behavior was scored on a scale of 0 through 6, corresponding to the implementation of six smoking-counseling behaviors taught during the training sessions. Residents' perceptions of their own counseling behavior were measured on a 4-point Likert scale ranging from "never" or "rarely" to "always" or "almost always."

Resident knowledge was measured by the resident's score on a 20-point test. Resident attitudes were measured by 10 questions rated on a 7-point Likert scale ranging from "strongly disagree" to "strongly agree." A composite average was calculated to give an attitude score. Resident knowledge and attitudes were compared before and after the intervention using the paired *t* test.

Resident evaluation of the program and its component parts was based on three Likert scales asking for overall opinion, opinion about the value of individual parts of the training, and opinion as to their ability to apply the concepts.

To analyze the effect of the intervention and other variables on resident counseling behavior, residents were considered as the unit of analysis, and the average number of counseling steps taken (or the percent of patients counseled at all) by each resident during each session was considered as the dependent variable. Because there was an unequal number of smokers corresponding to each resident, and because several residents were away during each data-gathering session, use of a repeated measures analysis was not possible. Therefore, assuming independence across sessions, the effect of the intervention and chart prompting over time were analyzed as a two-way analysis of variance (ANOVA) with the Dunnett one-tailed test for comparison of each postintervention session to the original preintervention session. The association of resident counseling behavior with number of patients seen per clinic session was investigated by analysis of covariance. The chi-square test was used to determine the association between counseling (counseled vs not counseled on that visit) and prior physician contact (the patient having seen this physician on a previous visit). The correlation between resident self-perceived counseling behavior and patient-reported counseling behavior was investigated using Pearson correlation and a chi-square test. The association of resident year of training with counseling was evaluated by ANOVA.

Results

During the four data-gathering periods (pretraining, posttraining, 3 months, 6 months) a total of 3073 patients were seen by the residents at the three clinic sites. Completed telephone surveys were obtained on 2029

Table 2. The Effect of Chart Prompting and an Educational Intervention on Smoking Cessation Counseling by Residents

	Number of Counseling Steps Taken	% of Patients Counseled
Pretraining* (all clinics)	1.45 (± 0.94)	50 (± 27)
Posttraining (all clinics)	1.91 (± 1.70)	53 (± 38)
3-month posttraining follow-up		
Clinics with chart prompting†	2.96 (± 1.17)	76 (± 19)
Clinic without chart prompting	1.52 (± 1.11)	50 (± 24)
6-month posttraining follow-up		
Clinics with chart prompting	1.97 (± 1.82)	56 (± 33)
Clinic without chart prompting	1.37 (± 1.00)	33 (± 19)

*Multiple comparisons by Dunnett's one-tailed test showed a significant difference between the pretraining and 3-month posttraining sessions, $\alpha = .05$.

†Chart prompting was conducted at Harvey Oaks and Southroads clinics. Chart prompting was not part of the intervention at the University of Nebraska Medical Center.

patients (66%). Of the remaining 1044 patients, 3% refused to complete the interview and the rest could not be reached by telephone. The two sets of mailed questionnaires raised the total response to 2317 (75% of the sample). Of these, 651 patients (28%) were smokers. After discarding duplicate contacts, there was a total of 517 smokers' surveys available for analysis.

An overall increase in smoking counseling behaviors by residents occurred at 3-month follow-up. However, this increase regressed toward baseline levels by 6 months (Table 2). It was found that the session effect (pretraining, immediate posttraining, 3-months posttraining and 6-months posttraining) was not significant ($P = .19$) while the chart-prompting effect was significant ($P = .039$). The interaction of session and chart prompting was not significant. It should be noted that the power to detect an average increase of one counseling step was only about 0.60 for the session effect.¹⁹ Resident counseling improved at the clinics where chart prompting was initiated. The Dunnett one-tailed test for multiple comparisons revealed that the residents were significantly more likely to counsel patients at the 3-month posttraining session.

The number of smoking counseling behaviors performed by a resident tended to decrease with an increasing number of patients per clinic session ($P = .06$). Whether a patient was counseled was positively associated with the resident having had prior contact with that patient ($\chi^2 = 11.0$; $P = .0009$). There was no significant correlation between the resident self-perception of counseling behavior and the report of the patient. Finally, there was no significant association of counseling with year of training.

Resident knowledge before and after the interven-

tion was not significantly different (69% vs 71%). Overall resident attitude was also not significantly changed, although the one measure of self-perceived counseling ability, "I'm not confident I can counsel," improved significantly (3.3 to 2.3; $P = .027$).

Overall resident evaluation of the program was 3.28 on a Likert scale with 1 indicating poor and 4 indicating excellent. On a scale on which 1 indicated most valuable and 10 indicated least valuable, evaluation of the individual components of the training ranged from 3.74 (concept of patient readiness) to 6.12 (role playing). Overall, they scored their ability to apply the material as 2.15 on a scale in which 1 indicated "very easy to apply" to 4, "very difficult to apply."

Discussion

In medical education, it is very tempting to believe that the teaching of important knowledge or training in a valuable technique will readily translate into the use of that knowledge or technique on a regular basis in patient care. Much of our research into physician counseling for smoking cessation is based on the premise that, if physicians know that something is important to their patients' health and know how to do the procedure, they will do it.

Research by Ockene,⁹ Quirk,¹⁰ Giovino,¹¹ and Strecher¹² and colleagues suggests that resident training programs in smoking cessation counseling skills can be effective in changing attitudes and in increasing confidence, counseling skills, and counseling frequency. However, none of these investigations systematically measured counseling behavior in a natural setting with the residents blinded to their evaluation. Ockene et al⁹ and Quirk et al¹⁰ measured behavioral change with videotaped role playing using simulated patients. Giovino et al¹¹ used telephone exit interviews with patients at 3-month follow-up to measure resident behavior, but the findings are limited by long-term patient recall and cross-over of patients between the intervention and control groups. Strecher used physician self-report as his primary indicant of change and noted that there was a definite possibility of contamination between groups.¹² It was our contention that one question still remained: would evaluation of resident behavior with patients in practice settings over time (while residents were unaware that they were being evaluated) show an increase in resident counseling behavior after training?

The results of our study indicate that a brief training program (using repetition of content over two sessions and five teaching modalities: lecture, small group discussion, videotape examples, roleplaying, and written mate-

rials) and a chart-prompting system were unable to effect long-term change in resident counseling behavior.

How are our results explained in light of numerous other studies indicating a positive effect of training on the rate of physician smoking cessation counseling behavior? In nearly all of those studies, the physicians had volunteered for the studies, suggesting some possible interest in the topic or at least openness to behavior change. Although they were blind to the principal outcomes of the study, most had some awareness that their behavior was being evaluated because they had agreed to participate in a research study. Furthermore, many studies offer the physicians office support in addition to training. In the case of Cummings et al, educational materials, prompting cue systems, and some informal training for support personnel in the use of the materials was provided.²⁰⁻²¹ These factors confound the actual effect of training. What these studies and others like them really say is that under supportive conditions, physicians who choose to participate in a training program and know that their behavior may be evaluated in a research study increased their smoking cessation counseling behavior with patients after a brief training program.

Our results support the idea that "systems" factors, as conceptualized by Tarlov, do influence counseling behavior.²² The addition of a chart-prompting cue seemed to be helpful in initially increasing counseling, but the effects appeared transitory. The number of patients seen by a resident on a given day and whether the resident had prior contact with the patient were also important factors. These findings suggest that the time available for counseling and continuity of care strongly influence counseling behavior.

Kottke et al²³ and Lawrence²⁴ speak to the importance of having a system or organization within the practice setting that facilitates and enables the counseling behavior expected of the physician. They argue that without this organization those factors that weigh against accomplishment of the activity will continue to prevail. Solberg et al²⁵ used this idea to show that total modification of the system can lead to increased counseling and increased patient smoking cessation. Solberg's model, while effective, is unlikely to be adopted in all practice settings. Nevertheless, this does not mitigate our need to recognize and consider these factors in developing programs to promote physician behavior change.

There are several limitations to the present study. First, a quasi-experimental design was used instead of a randomized, controlled trial, and we were unable to use a repeated measures statistical analysis because of the nature of the data. Given our desire to implement the training within the natural setting of an actual residency

program, these limitations were considered acceptable in the design.

Second, there was a large number of patients who we did not interview (25%) because we were unable to reach them by telephone and they failed to return mailed questionnaires.

Third, our lack of significant findings may be due to insufficient power to identify true significant results or a lack of an effective intervention.

Finally, our results may not be generalizable to other settings. Ours is an academic setting, and there may be limits within our practice setting that have affected our results.

In spite of these limitations, we believe the findings of our study are valid and important. This study provides an opportunity to clearly look at the behavioral response of residents to a short-term training program in a naturalistic practice setting using short-term patient recall to assess change rather than role playing with simulated patients, or physician self-report.

Future studies should address two primary areas. First, how do system issues such as resident workload, systematic support of counseling behavior in the practice setting, and continuity of care affect the quantity and content of physician counseling? Second, how can we design innovative curricula that will (1) emphasize the importance of counseling for smoking cessation, (2) teach the necessary skills, (3) encourage and reinforce practice of the behavior with patients, and (4) continuously reinforce the message through the years of residency and beyond? Only by considering both system and curricular influences can we come up with resident educational programs that will truly change behavior.

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