

Family Physicians' Utilization of a Brief Smoking Cessation Program Following Reinforcement Contact after Training: A Randomized Trial¹

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Background. Previous studies have examined methods of delivery of brief interventions and reinforcement contact and their effects on physicians' utilization of smoking cessation interventions. In this study the objectives were: (1) to determine the ongoing utilization by family physicians of a brief smoking cessation intervention 6 months after a training workshop and (2) to examine the effect of reinforcement contact on physician utilization. A supplementary aim was to assess point prevalence abstinence among patients identified as ready to quit smoking.

Methods. This was a randomized controlled trial of family physicians (98 in the Contact and 100 in the Noncontact group). Training was conducted in a 2-hr workshop. Doctors in the Contact group received three brief telephone calls at 2 weeks, 2 months, and 4 months after training. Main outcome measures were: (1) utilization, determined by responses to a mailed questionnaire about use of the program, and (2) the number of booklets distributed by full-time doctors, collected by practice secretaries or research assistant.

Results. At 6 months 88% of physicians (93% of the Contact group and 84% of the Noncontact group, $P = 0.06$) were current users of the smoking cessation intervention. Full-time physicians in the Contact group distributed significantly more booklets (40.1) over 6 months than those in the Noncontact group (32.8) ($P < 0.05$). Twenty-one percent of patients reported not smoking at follow-up at an average of 9.9 months after intervention.

Conclusions. Most doctors continued to use the program 6 months after training and reinforcement contact encouraged greater recruitment of patients. © 1998 Academic Press

Key Words: family physicians; smoking cessation; brief advice; utilization; reinforcement.

INTRODUCTION

Evidence from randomized trials over the past 15 years in Australia [1-5] and elsewhere [6-8] has shown that family physicians who intervene with smoking patients significantly influence their smoking behavior. Abstinence rates were highest in interventions that were of longer duration and had follow-up booster sessions [9]. However, despite these positive results from effectiveness trials, family physicians have a relatively low rate of identifying smokers and of intervening in routine clinical practice [10,11].

Methods for delivering smoking cessation interventions to family physicians, such as by courier, academic detailing, and mail, have been evaluated [12,13]. Doctors are more likely to provide stop smoking interventions if they receive more training [14-20]. Reinforcement feedback following training has been shown to produce desirable changes in the behavior of medical practitioners [21]. Other follow-up procedures have been used, such as posttraining letters [22] and reminder stickers in patients' notes [20].

The challenge now is to disseminate smoking cessation interventions to doctors and to increase their rates of continued use in daily medical practice. This is the first study in Australia to investigate doctors' long-term use of a smoking cessation intervention following training and to evaluate the effect of reinforcement contact by a medical peer.

The main aims of the study were: (1) to determine the ongoing utilization by family physicians of a brief smoking cessation program called Smokescreen for the 1990s [23], 6 months following a training workshop, and (2) to examine the effect of reinforcement contact via follow-up phone calls. A supplementary aim was to assess the effectiveness of the intervention with patients who identified themselves as ready to quit.

SUBJECTS AND METHOD

There were 198 of 4,365 (5%) of family physicians who accepted invitations to training workshops. Using a system of random numbers, the 198 family physicians who participated in a workshop to be trained in

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smoking cessation techniques were randomly allocated to the Contact group ($n = 98$), which received reinforcement contact from the medical practitioner trainer, or the Noncontact group ($n = 100$), which did not receive reinforcement. The sample size of 198 was sufficient to ensure that a standardized effect size of 0.30 or greater between the two groups at 80% power would be statistically significant after allowing for a projected loss to follow-up of 25% [2].

Ethical approval to conduct the study was given by the ethics committee of the university.

Training and Reinforcement Contact

Between 1991 and 1992 family physicians were invited by mail to attend a 2-hr workshop to be trained in a brief smoking cessation intervention. Workshops were conducted throughout metropolitan Sydney and in country centers in New South Wales by one of the authors (C.M.), a medical practitioner peer. At the workshop, all participating doctors purchased a kit of materials. This consisted of 200 patient booklets, a manual of the program for the doctor, a flipover of colored photographs to facilitate counseling, a poster, 200 stickers for patients' notes, a desk card to assist in allocation to the readiness to quit groups, and a copy of *Become a Non Smoker* [24] (a self-help manual for patients).

At the end of each workshop, doctors completed a brief questionnaire asking about demographic and practice characteristics. Doctors in the Contact group ($n = 98$) received three brief (2-, 3-min) telephone calls during surgery hours at 2 weeks, 2 months, and 4 months after the workshop from the physician trainer (C.M.) who spoke directly to the physicians. There were 96 physicians who received three calls and 2 who received only two calls as they were away on holidays. Following a prepared script, doctors were asked how they were going with the Smokescreen program and whether there were any problems. These calls were designed to encourage uptake and continued use of the program. Doctors in the Noncontact group ($n = 100$) received no further contact.

Brief Intervention for Smokers

The Smokescreen program was specifically designed for family physicians and has been taught to over 6,000 doctors in Australia and New Zealand. The revised version, Smokescreen for the 1990s [23], is based on the Stages of Readiness to Change Model [25,26]. Smokers were asked "How do you feel about your smoking?" or shown a desk card, which incorporated cartoon illustrations and descriptions of each of the three smoking groups. Categorization was based on the subsequent response and negotiation between doctor and patient. Our criteria for categorizing patients are compatible

with the Stages of Change as we discussed this with one of the developers of the model, Wayne Velicer.

"Not ready" (preparation) smokers were defined as being not interested in quitting at present. They were given a booklet and were invited to return when "ready" to discuss smoking. "Unsure" (contemplation) smokers were uncertain or ambivalent about their smoking. They received a booklet and were motivated using brief motivational interviewing (weighing up the pros and cons of smoking) and discussion of their concerns about quitting and the health effects of smoking. "Ready" (preparation) smokers were offered a personalized program of three visits consisting of cognitive and behavioral strategies and use of nicotine chewing tablets and received a booklet.

Follow-Up of the Family Physician

Utilization among physicians was measured in two ways. (1) Doctors completed a self-report questionnaire, mailed at 6 months, which inquired about their current and future use of the program. (2) Each doctor was assessed according to the number of interventions provided to patients, which in the present study was determined by the number of booklets given to smokers in the three categories ("not ready," "unsure," "ready") over the 6-month study period. Each "ready" booklet had a numbered bookmark inserted in it on which the doctor recorded the smoker's name, address, and phone number, the date, and whether consent was given for follow-up in the study. Once completed, this was placed in the back of the booklet box. A research assistant, who was blinded to the study group to which the doctor was allocated, contacted each family practice secretary at 1 and 6 months following attendance at the workshop. Secretaries were paid US\$15.00 on each occasion to count the number of booklets remaining in the box and to forward the bookmarks containing patient information by mail.

Follow-Up of the Patients

One year after the training workshops, patients recruited to the "ready" intervention during the first 6 months of the physicians' use of the program were contacted by the research assistant by telephone to determine smoking status. The time elapsed since recruitment varied for each patient depending on when they were recruited opportunistically throughout the 6-month period following training (mean 9.9 months; SD 2.0; range 5–13 months). Patients' self-reports of abstinence (point prevalence) were verified by an expired carbon monoxide reading of less than 14 ppm during a home visit by a research assistant. A control group of smokers was not part of the study design, as medical practitioners' utilization is the primary focus of study following randomization.

Statistical Analysis

Differences between the Contact and Noncontact groups on demographic and family practice characteristics were analyzed using the Pearson χ^2 test for proportions and the two-tailed *t* test for independent samples for continuous data. A one-tailed *t* test was used for assessing differences between the groups of physicians on the number of booklets distributed, due to the underlying directional hypothesis. For all comparisons α was set at the 0.05 level of significance.

RESULTS

Table 1 presents the demographic and practice characteristics for all physicians recruited to the study ($n = 198$) and for those in the Contact ($n = 98$) and Noncontact ($n = 100$) groups separately. None of the differences observed between the two study groups reached statistical significance. Of the 198 doctors in the study, 181 (91%) returned the follow-up questionnaire at 6 months (95% of the Contact group and 87% of the Noncontact group). Seventeen family physicians could not be contacted at follow-up as they had retired, had died, had moved, or were on holiday. There were 93% of respondents who thought that the workshop was sufficient training for them to begin using the program.

Utilization by Family Physicians

Table 2 shows the proportion of physicians within each group who considered themselves either current, former, or never users of the Smokescreen program

during the last 2 months of the 6-month study period. More of the Contact group considered themselves current users (93%) when compared to the Noncontact group (84%), but statistical comparison only approached significance ($P = 0.06$). By 6 months, 12% had stopped using the program or had never used it at all.

When asked if they would continue to use the Smokescreen program in the future, 85% of the Contact group and 75% of the Noncontact group responded positively. This difference did not reach statistical significance. The most common barriers to utilizing the program were too busy (54%), patients not responsive (23%), too time consuming (14%), only hardcore smokers left in the practice (14%), and lack of confidence (14%).

The following comparisons are restricted to a subset of physicians who were working full time (83 in the Contact group and 78 in the Noncontact group), because of the comparability of workload and therefore the comparability of opportunities to see smoking patients. The groups did not differ in the proportion of physicians working full time.

Table 3 shows the mean number of booklets distributed by full-time physicians in the Contact and Noncontact groups for each category of readiness to quit. The Contact group distributed a significantly greater mean number of total booklets to smoking patients than the Noncontact group over the 6-month study period ($t = 1.73$; $P < 0.05$). In addition, the Contact group also distributed significantly greater numbers of "unsure" booklets during the 1-month period ($t = 1.68$; $P < 0.05$), during the 2- to 6-month period ($t = 1.91$; $P < 0.05$), and overall ($t = 2.09$; $P < 0.05$). There was a tendency for mean numbers of "not ready" booklets to be slightly greater for the Contact group than the Noncontact group. The number of "ready" booklets distributed to patients was similar for both groups.

There were 51% of the medical practitioners in the Contact group who thought the reinforcement phone calls were motivating or encouraging, 11% found them informative, 13% felt they were irritating, and 23% gave some other response.

TABLE 1

Demographic and Practice Characteristics for the 198 Physicians at the Beginning of the Study

Variable	Contact group ($n = 98$)	Noncontact group ($n = 100$)	Overall ($n = 198$)
Sex (% male)	75	72	73
Working full time (%)	90	85	87
In metropolitan areas (%)	44	44	44
In solo practice (%)	35	30	33
Used other quit smoking program for patients (%)	55	62	58
Smoking status (%)			
Never smoker	65	73	69
Ex-smoker	32	25	28
Current smoker	3	2	3
Age [mean (SD)]	41.8 (9.4)	43.2 (8.8)	42.5 (9.1)
Years as a GP [mean (SD)]	12.8 (9.0)	13.3 (8.7)	13.0 (8.8)
Estimated No. of patients seen per week [mean (SD)]	149 (57)	136 (56)	143 (57)

TABLE 2

Family Physicians' Self-Reported User Status of the Smokescreen Program during the Last 2 Months of the 6-Month Study Period

	Contact group ($n = 93$) %	Noncontact group ($n = 88$) %	Overall ($n = 181$) %
Current user	93*	84	88
Former user	5	15	10
Never user	2	1	2

* $P = 0.06$.

TABLE 3

Mean (SD) Number of Booklets Distributed to Patients by Full-Time Physicians in the Contact and Noncontact Groups for Each Category of Patient's Readiness to Quit over the 6-Month Study Period

Type of booklet by time period	Contact group (<i>n</i> = 83)	Noncontact group (<i>n</i> = 78)	Total (<i>n</i> = 161)
Not ready			
1 month	4.2 (5.3)	3.2 (5.2)	3.7 (5.3)
2-6 months	8.9 (11.7)	6.7 (10.9)	7.9 (11.3)
Overall	13.2 (14.1)	10.1 (13.3)	11.7 (13.8)
Unsure			
1 month	5.4 (5.8)* [CI 4.4 to 6.4]	4.1 (4.1) [CI 3.3 to 4.9]	4.8 (5.1)
2-6 months	11.3 (9.5)* [CI 9.6 to 13.0]	8.5 (8.8) [CI 6.9 to 10.1]	9.9 (9.2)
Overall	16.7 (12.7)* [CI 14.4 to 19.0]	12.7 (11.6) [CI 10.5 to 14.9]	14.8 (12.3)
Ready			
1 month	3.1 (2.7)	2.8 (3.4)	2.9 (3.0)
2-6 months	7.2 (6.5)	7.2 (7.1)	7.2 (6.8)
Overall	10.2 (8.1)	10.0 (9.4)	10.1 (8.7)
Total booklets			
1 month	12.7 (11.0)	10.1 (9.6)	11.4 (10.4)
2-6 months	27.4 (19.9)	22.4 (21.9)	25.0 (21.0)
Overall	40.1 (25.9)* [CI 35.4 to 44.8]	32.8 (27.8) [CI 27.6 to 38.0]	36.6 (27.0)

Note. 90% confidence intervals are given only where mean comparisons are significantly different.

* $P < 0.05$.

Patients' Abstinence

A total of 964 correctly completed booklets were collected, representing 53% of the "ready" booklets that were distributed. Although all "ready" booklets contained booklets to be completed by family physicians, there were a number of reasons why not all booklets were available: some patients indicated they were "ready" to quit smoking and were given a booklet, but did not wish to receive any further assistance from the general practitioner; doctors were too busy or forgot to fill in the details on the booklets; booklets were lost in surgeries or in the post; booklets were incorrectly completed; or the handwriting was illegible.

There were 728 (76%) of the patients with booklets who were followed up around 12 months after the medical practitioner workshops, at a mean of 9.9 months after patients received the intervention from their doctor. The remaining 24% of patients ($n = 236$) were not followed up for the following reasons. There were 161 who could not be located or contacted (as they had no phone), had moved, were on holidays, or were deceased. There were 68 who requested no follow-up at the time of recruitment and 7 had refused involvement at the follow-up point.

A total of 159 patients reported abstinence from smoking at follow-up. One hundred nine (69%) of these self-reported nonsmokers were biochemically vali-

dated, while 31% were not validated as they lived in country regions too far for research assistants to travel. Five failed to produce a carbon monoxide reading below 14 ppm and were counted as continuing smokers. The failure rate for validation overall was 4.6%.

Best-case scenario for abstinence rates. A best-case scenario assumes that only the 7 patients refusing contact at follow-up were continuing smokers. This results in an abstinence rate of 21.8% (159 of 728), which was adjusted down to 20.9% when applying the validation failure rate.

Worst-case scenario for abstinence rates. A worst-case scenario assumes that all 236 patients who could not be contacted were continuing smokers. This results in an abstinence rate of 16.5% (159 of 964), which was adjusted down to 15.8% when applying the validation failure rate.

DISCUSSION

The findings from our study confirm those of others that show that when given appropriate training, a majority of family physicians will continue to use new skills to assist smokers to quit [27]. The 2-hr workshop was an effective training intervention as 93% of doctors reported that the workshop gave them sufficient training to use the program and only 14% of doctors reported a lack of confidence in administering the program. Most doctors (88%) in our study reported continuing use of the program at 6 months (93% of the Contact group and 84% of the Noncontact group) and most intended to use the program in the future (80%). Our results are higher than those reported in a meta-analysis of physician surveys that found utilization was 50 to 60% for smoking cessation advice [28] and another study that reported 59% of family physicians were giving patients smoking cessation advice at 6 months [27].

In addition to self-reported utilization, we also report that reinforcement feedback after training (three very brief phone calls in 4 months) among full-time physicians was shown to significantly increase the distribution of booklets to patients. That is, full-time doctors who received contact distributed significantly more booklets over the 6-month period compared with doctors in the Noncontact group. On average physicians recruited 11 patients over all readiness categories in the first month following training and 25 more over the next 5 months. The reduced recruitment rate of patients over time partly reflects the physician's waning enthusiasm, as well as the gradual reduction in the number of new smokers who present to family physicians.

Our study is novel in that it is the first to measure the long-term utilization of a smoking cessation intervention by family physicians 6 months after a 2-hr

training workshop. Other studies have looked at use of a smoking cessation intervention by internists in the short term only from 6 to 14 weeks after training [29], have examined different outcome measures such as patient reports of time spent counseling [20], have not studied family physicians, but residents [18], or have not provided workshop training for all physicians [27].

Our study is also the first to demonstrate the effect of brief reinforcement contact delivered by phone calls from a physician peer. One study examined the effect of immediate corrective feedback, but only among two family physicians [21], and others have used reminder stickers on patients' files [20] and letters sent following training [22].

One limitation of the study is the absence of an untrained physician group followed over the same period, in order to determine the rate of recruitment of smokers to existing smoking cessation methods available in the average medical practice. Nevertheless, we are able to roughly estimate the number of smokers available for recruitment in the average practice. Full-time physicians in the present study were seeing an average of 155 patients a week, which translates to around 8,000 patients per year, which, in turn, reflects a patient base of around 1,400 regular patients [30,31], of whom 80%, or 1,120, attend at least once in 1 year [32]. Approximately 76%, or 851, patients are adults [1]. About 30% of patients attending medical practices in Australia are smokers [33]. Applying this percentage to the adults in an average practice gives 255 smokers attending in a given year or around 128 in 6 months.

Thus, if physicians in the Contact group handed out on average 40 booklets over 6 months, then they have intervened with about a third of their smoking patients. So despite utilizing the program significantly better than their nonreinforced counterparts, physicians who received reinforcement following training still need to improve patient recruitment rates.

Other studies have shown variable rates of medical practitioners' recruitment of smoking patients. A study of minimal intervention showed a recruitment rate of 20.6 patients per doctor over a 4-week period [4]. Another study of brief intervention found that 13 doctors who were experienced in smoking cessation enrolled an average of only 11 smoking patients over a 4-month period [34]. Even the highest rate of recruitment falls short of the estimated number of smoking patients available for intervention.

The most common barrier to use of the program cited by physicians in both groups was being too busy (55%), a commonly noted perception of physicians regarding involvement in preventive services [35,36]. Creating suitable family practice interventions that are brief and flexible is one means of assisting doctors to help their smoking patients. Also, delegating some of the nonclinical work to other staff such as nurses, permitting physicians to focus on very specific brief tasks such

as providing clinical advice, and encouraging staff to follow-up patients are other approaches that limit the time commitment of busy physicians [35]. Indeed, only 15% of doctors in this study specifically reported that the Smokescreen for the 1990s program was too time consuming. Nevertheless, other barriers to prevention are present and influence whether doctors will fight against time constraints and intervene with their smoking patients. Other barriers include lack of support from the health care system, physician training and posttraining evaluation that focuses on acute care rather than preventive care, and views on priorities by patients and policy makers that put urgency before long-term severity [36]. Those who are trained to provide preventive services may not be able to provide preventive services if the work with peers focuses primarily on provision of acute-care services [36]. For example, in Australia there is some pressure on physicians to maintain a "typical" practice, so as not to be investigated for "overservicing" or for providing too many consultations. Such pressure acts against physician involvement in preventive programs.

Another area that needs recognition is the conflict faced by physicians between what patients want and what they need. Physicians are more likely to give advice on smoking cessation if the patient asks for it [36]. As long as priority in general practice is placed on acute care by patients, physicians and those that determine health policy will view preventive services as secondary, and thus omitted, particularly in the context of a demanding, busy practice. Demands and expectations by patients encourage physicians to respond to complaints rather than to initiate recommendations for preventive services [36].

Recently there have been attempts in the United States to overcome barriers of "time, attention, and lack of support" [35] by introducing "organizational" or "systems" changes into prevention programs. An organizational change would be to recruit whole clinics to engage in prevention rather than focusing on individual physicians [35-37]. Such methods show promise in counteracting many of the barriers that inhibit the effective use of preventive programs and may be suitable for the Australian general practice context.

Supplementary analyses of patient data revealed abstinence rates of 21.8 (best case) or 15.8% (worst case) at an average follow-up of 9.9 months. Findings are similar to our previous trial of the 12-month effectiveness of brief interventions among all smokers (19% with the nicotine gum and 18% without the gum) [3]. However, inclusions in the current study are limited to smokers identified as "ready" to quit smoking, who are presumably motivated. Other studies similarly have accessed motivated smokers and have reported 12-month continuous abstinence rates of 6 and 9% (abstinence for placebo and active patch) [7], 5 and 9% (abstinence for placebo and active patch) [8], and 22 and

27% (abstinence after short or long follow-up and the nicotine gum) [34]. Our results seem to confirm that physicians can be effective in helping smokers to quit in everyday practice without the rigors of clinical trial conditions. Success rates are likely to be greater with the use of the nicotine patch, which was not used in this study.

In conclusion, family physicians have shown in this utilization study that they continue to use a brief intervention with smoking patients over a 6-month period following a training workshop and can achieve acceptable abstinence rates with selected smoking patients. Follow-up phone calls after training significantly increase their use of the intervention. These utilization and abstinence rates combined could have a significant public health impact on smoking rates.

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