

PRACTICE OBSERVED

Practice Research

Controlled trial of three different antismoking interventions in general practice

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Abstract
Of 6052 adult patients who consulted their doctors in six Oxfordshire general practices between October 1980 and February 1981, 2110 (35%) were smokers. The smokers were allocated to one of four study groups—a control (non-intervention) group; a group that received verbal and written antismoking advice from the general practitioner; a group that received this advice and also a demonstration of exhaled carbon monoxide; and a group that received the advice plus the offer of further help from a health visitor.

After one year 72% of smokers replied to a postal follow up questionnaire: 11% of the control group claimed to have stopped smoking compared with 15% in the group that received advice alone, 17% in the exhaled carbon monoxide group, and 13% in the health visitor group. Validation of these findings by assays of urinary concentrations of cotinine showed that between

24% and 40% of subjects may have misreported their smoking habits, but there was no indication that the rate of misreporting was higher in the intervention groups than in the control group.

Giving advice routinely against smoking has a useful effect, and showing an immediate, personal, and potentially harmful consequence of smoking using a CO-inometer may improve this, particularly in lower socioeconomic groups.

Introduction
The value of advice against smoking given routinely during general practice consultations in helping people to stop smoking is uncertain. Of the seven published studies, only four incorporated a control group¹⁻⁴ and, of these, only two suggested that routine antismoking advice had an appreciable beneficial effect.^{5,6} Even so, the largest study, a randomised controlled trial in which over 2000 general practice patients in London participated, showed that the combination of verbal advice from the doctor with written advice in the form of a booklet and a warning from the doctor that the patient's progress would be monitored increased the rate of self-reported stopping of smoking one year later from 10.3% in a non-intervention control group to 14.1%.⁷ The effect of advice was to increase the number of patients attempting to stop smoking without increasing the success among those who tried.

In this trial, however, as well as in two of the three other controlled studies, the outcome was calculated only on the basis of patients traced at follow up. This may have exaggerated any beneficial effect of advice on stopping smoking since non-respondents to postal follow up tend to be less successful than respondents.⁸

As antismoking advice given during routine consultations in

general practice is potentially a cheap and practical way of influencing a substantial proportion of smokers, we decided to conduct a further large controlled trial to confirm that such intervention is effective, and to determine whether the most effective "advice package" used in the London study could be improved.⁹

METHOD
IDENTIFICATION OF PATIENTS
Six general practices in Oxfordshire, in which most of the doctors and health visitors had expressed an interest in participating in further research on smoking in a previous survey,¹⁰ provided patients for the study. Eligible patients were identified by means of a questionnaire entitled "Updating of practice records" (questionnaire A), which was distributed by the reception staff to all adults over 16 years of age who were attending to see a doctor for the first time during the recruitment period. Patients who were collecting prescriptions or attending to see a nurse or to make appointments and those who were accompanying a patient who was a child were not given a questionnaire. Pregnant women who were attending antenatal clinics were eligible, but those bringing children to infant welfare or immunisation clinics were excluded. Also excluded were patients seen on home visits or at Saturday morning surgeries which, in each of the six practices, were explicitly stated to be for emergency cases only.

RECRUITMENT AND TREATMENT ALLOCATION
The recruitment phase of the study began in October 1980 and continued until February 1981. Recruitment sessions were supervised by one of us (KJ or GF), who was present in the practice reception area but did not advise patients to give up smoking.

Eligible cigarette smokers seen during the recruitment phase were allocated to a trial group according to their day of attendance by reference to a scheme that provided for a balanced treatment sequence over the four week cycle. Each doctor was provided with a small desktop card reminding him of the "treatment" to be given to smokers seen on that day, but at all times doctors were free to withhold advice to "treated" patients or give advice to patients allocated to the non-intervention control group if they thought this was necessary. For example, some women smokers attending an antenatal clinic on a control day might have received advice to stop smoking.

The recruitment procedure is summarised in fig 1. Completed questionnaires A were collected by the trial supervisor and if the patient was a non-smoker, or smoked a pipe or cigars only, or the allocated trial group was "control" nothing further was done. On days when smokers were to receive advice they were asked to complete a further series of questions about their smoking habits (questionnaire B) and told that the doctor would want to discuss their answers during the consultation. For their part, the doctors were asked to give verbal advice that they thought appropriate, but each was given a copy of some suggestions as to what "best advice" might constitute (see appendix). Completed questionnaire B were returned to the supervisor after the consultation, and the patient was asked to answer four of the questions again (questionnaire C) to determine whether attitudes to smoking had changed since the consultation. Whether doctor had been seen, whether advice had been given, and whether questionnaire B had been completed before the consultation were noted at this time.

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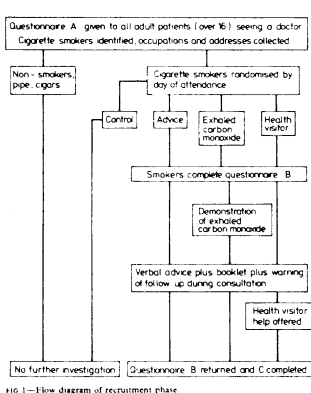


FIG 1—Flow diagram of recruitment phase.

quies from patients in the study, as several had previously expressed the fear that they had inadequate knowledge to give appropriate advice. Each health visitor was also provided with a log sheet on which to record inquiries.

FOLLOW UP PROCEDURE
All cigarette smokers who were originally recruited to the study were sent a reply paid postal questionnaire covering letter one year after the index consultation. Non-responders were sent up to two reminders at intervals of two weeks. An attempt was made to trace patients through the Oxfordshire Family Practitioner Committee, and the follow up sequence was started again if a new address was obtained.

RESULTS

PREVALENCE OF SMOKING
Of the 6052 eligible patients seen (2225 men and 3827 women), 2110 (820 men and 1290 women) admitted to smoking cigarettes at the time of the index consultation. The overall smoking prevalence of 35% was similar to the rate of 39% found in a national sample of over 22 500 people surveyed in 1980.¹¹

BALANCE OF STUDY GROUPS
The four study groups were balanced with respect to the age and sex distributions of the patients, but, despite randomisation, there was a significant imbalance of social classes (p<0.01) whereby the advice group was weighted towards higher socioeconomic groups and the health visitor group towards lower ones, compared with the control and exhaled carbon monoxide groups. There were no appreciable differences in cigarette consumption, type of cigarette smoked, duration of smoking, or desire or intent to stop among patients allocated to the three "active treatment" groups.

OUTCOME OF FOLLOW UP
A one year questionnaire was returned by 72% of the smokers and the response rate did not vary appreciably among the four groups.

Attempts to stop smoking—Of the control patients who returned a questionnaire at one year, 64% reported that they had attempted to stop or reduce smoking. The corresponding figures in the three other groups were 70% (advice), 72% (exhaled carbon monoxide), and 68% (health visitor). These data provide no statistically significant evidence of any effect of intervention on the frequency of attempts to stop or reduce smoking.

Stopping smoking—Table I gives the numbers of patients who reported that they were no longer smoking at the time of the one year follow up, and the results of the trial are shown in fig 2. Non-respondents were assumed not to have stopped smoking but, despite this conservative assumption, a significant difference between the "treatment" groups is apparent (p<0.05). Pooling the results for the

TABLE I—Number of patients who reported that they had stopped smoking at one year follow up (624 non-responders assumed not to have stopped smoking)

Study group	No in group	No (%) who reported not smoking
Intervention:		
Exhaled carbon monoxide	512	27 (5.3)
Health visitor	528	61 (11.5)
All intervention groups	1040	88 (8.4)
Control	560	27 (4.8)
Total	2100	295 (14.0)

Comparison of all four groups: χ^2 5.3, 3 df, p<0.05. Comparison of pooled intervention groups with control group: χ^2 5.8, 1 df, p<0.02. Both values adjusted for effect of social class.

TABLE II—Rates (%) for stopping smoking by social class* and "treatment" group†

Treatment group	I, II, III non-manual		IV manual		IV-V	
	Patients	Patients stopping	Patients	Patients stopping	Patients	Patients stopping
Control	121	9.1	176	8.5	136	11.5
Advice	176	22.8	183	22.3	124	10.5
Exhaled carbon monoxide	121	19.8	185	19.8	107	15.0
Health visitor	106	18.9	153	14.4	122	8.2
Total	484	17.8	657	12.2	492	11.2

*Social class based on occupation of head of household; 477 patients excluded (head of household unemployed, pensioner, or engaged in home duties).

three groups that received "active treatment" shows a clear increase in stopping smoking compared with the non-intervention control group (p<0.02). Table II gives the data on stopping smoking, classified both by "treatment" group and by social class. It is apparent that the influence of intervention is most impressive in social classes I to III non-manual, while there is no indication of a beneficial effect of any "treatment" other than exhaled carbon monoxide in social classes IV and V.

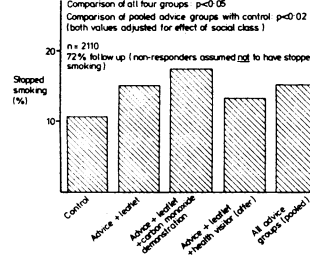


FIG 2—Self reporting of stopping smoking by patients at one year follow up.

Yield of successful attempts—In view of the conclusion by Russell *et al* that advice acted only to increase the number of attempts made to stop smoking and not the success rate among those who did try,⁷ we examined our data to determine the proportion or "yield" of attempts that resulted in stopping successfully. When the three active intervention groups were considered together there was a 60% increase in the number of attempts resulting in success, while the exhaled carbon monoxide group had almost twice the yield of the non-intervention control. These differences were highly significant (p<0.01, corrected for social class).

VALIDATION OF SMOKING HISTORIES
A sample of 122 (41%) of the 295 self described ex smokers was selected for home visit, but 24 of these were not available for interview because of absence from home on three separate evenings (13 cases), changed address (seven cases), or refusal (four cases). Although 90% of visits were completed within three months of the one year questionnaire being returned, 40 patients admitted to having begun smoking again, at least intermittently, since the postal inquiry. Forty six of the 58 patients who denied relapse provided a urine specimen.

Data derived from a study of men attending the British United Pipe Smoking Association (BUPA) Medical Clinic in London were used to determine a concentration of urinary cotinine which distinguished current smokers from non-smokers. By using a cut off concentration of 100 ng/ml all of the 148 current cigarette smokers attending BUPA were correctly identified, and only two of 221 non-smokers were wrongly classified. Our 46 patients who claimed not to smoke and who provided a urine specimen had a urinary cotinine concentration of 100 ng/ml or greater (see table III). Since it is possible that the patients who were "unable" to provide a specimen may have guessed the reason for this request the most conservative assumption is to regard all of these patients as continuing smokers. But a maximum of 40% of the 58 patients who stated that they had not relapsed may have been continuing smokers. This proportion, however, did not differ significantly between the "treatment" groups (χ^2 0.73, 3 df, p>0.5). Accordingly, although

DISCUSSION

Advice against smoking given during routine consultations in general practice is a cheap and simple method of reaching a very large proportion of smokers, given that two thirds of the population consults a general practitioner at least once every year.¹² The results of this study confirm that such intervention has a useful effect. In both this study and in the previous study in London advice was given in the doctor's own style and at his discretion.⁷ Nevertheless, the studies differ in that they led to opposite conclusions as to the effect of advice. Whereas the London group concluded that the main effect was to increase the number of attempts,⁷ the Oxford results show a difference specifically in the proportion of attempts that were successful. Our generous definition of an "attempt" as any effort made "to stop or reduce smoking" may, however, have clouded the issue. It seems unlikely that two thirds of the smokers made a serious attempt to reduce their smoking over the year, and this figure may partly reflect changing social attitudes obliging smokers to be seen at least to be trying to stop.

Table IV gives a comparison of the rates of self reported complete stopping of smoking in the three largest controlled trials of the effect of giving routine antismoking advice. The

TABLE III—Comparison of results of trials of the effect of advice against smoking (percentage of self reported stopping rates at one year)

Study	Interventions compared				
	Control	Questionnaire	Verbal advice	Full advice*	Health visitor†
London ⁷	10.3	14.0	16.7	19.1	—
Oxford ⁹	—	8.0	7.9	7.5	—
Oxford ¹³	14.1	—	—	20.6	25.3

*Verbal plus written advice plus warning about follow up. †Response rate as per self-reported rates for each study are based on responders. ‡Responders pooled results for groups receiving advice on single and multiple occasions. §Full advice in this study did not include a warning about follow up.

DISCUSSION

The true status at the time of postal follow up of those who later admitted "relapse" cannot, of course, be ascertained. Our analysis is therefore limited to those who claimed persisting abstinence at interview; this is the key group of patients in the assessment of the effectiveness of the antismoking campaign. The results for the biochemical validation of stopping were not in principle surprising, the extent of the misreporting falling within the range that has been reported previously.^{13,14} Moreover, it was reassuring to discover that the estimated proportions of people who misreported their smoking habits were similar in each of the study groups, so that the relative differences in stopping rates between the groups were maintained.

Intensive follow up, including home visits by health visitors, was associated with a very high rate of stopping smoking (62%) in a study of patients who had had a myocardial infarction.¹⁵ In the current trial, however, only six out of 521 patients took up the suggestion that they might contact a health visitor for further advice. The low success rate of the health visitor group cannot simply be due to the social class imbalance between the "treatment" groups because the pattern was apparent in all but one of the social classes (see table II). One possible explanation for the findings is that few patients were acquainted with health visitors or their role and therefore the impact of the antismoking intervention was diminished by the confusion caused by the mention of this extra person. Alternatively, there is the possibility that doctors saw their own antismoking role being eroded through sharing it with a health visitor and gave less effective advice themselves. Whatever the explanation, this modification of the standard "advice package" may be regarded as a failure. By contrast, some patients were so affected by the demonstration of exhaled carbon monoxide that they added comments concerning it on the follow up questionnaire one year later. Also, there was a suggestion that this method was effective in the lower social class groups, among which smoking is common and which have been most resistant to other antismoking measures in the past.¹⁶

Thus our findings have confirmed the value of simple advice against smoking given in general practice and shown that demonstrating to patients the concentration of carbon monoxide in their breath has an added benefit. Alternatively, the magnitude of the effect, even with the best of the intervention strategies investigated, was modest; they were all simple, cheap, and safe. Widespread implementation might have a major effect on preventing heart disease and lung cancer by cigarette smoking.

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