Preventive Medicine **31,** 641–648 (2000)
doi:10.1006/pmed.2000.0756, available online at http://www.idealibrary.com on IDEAL®

Cost-Effectiveness Analysis of a Family Physician Delivered Smoking Cessation Program[1]

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Objectives. **The objectives were to present a cost-effectiveness analysis of a smoking cessation program delivered by physicians and compare results to other smoking cessation interventions.**

Methods. **Retrospective effectiveness figures from a previous evaluation of the smoking cessation program were supplemented with estimates based on researched assumptions. Net abstinence rates were determined for smokers, depending on their stage of readiness to quit, that is, "prepared," "contemplative," and "precontemplative," leading to an assessment of the number of smokers achieving abstinence as a result of the Smokescreen intervention. Costs were calculated from the perspectives of smokers, family physicians, organizers, trainers, and all parties combined. Assumptions were varied with a sensitivity analysis.**

Results. **Baseline costs per additional abstainer were $183 based on physicians' intervention costs at 1995 prices. This is the figure most comparable to previously conducted economic evaluations of smoking cessation interventions. Sensitivity analysis varying the perspective and under optimistic and pessimistic assumptions about effectiveness produced a wide variety of estimates. The decision to include or exclude training costs had a particularly important bearing on the estimates. However, under reasonable assumptions the cost per additional quitter compares favorably to smoking and other medical and health care interventions worldwide.**

Conclusions. **The program appears cost-effective when compared to other smoking cessation and health promotion interventions and illustrates the potential for retrospective cost-effectiveness analysis of interventions.**

Key Words: **cost-effectiveness; family physicians; smoking cessation intervention.**

INTRODUCTION

There is clear evidence from randomized trials that family physicians who intervene with their smoking patients significantly influence their behavior, for example, in the United States [*1–3*], the United Kingdom [*4,5*], Canada [*6,7*], and Australia [*8,9*]. There is also increasing evidence that this intervention by physicians is cost-effective relative to other common clinical interventions [*10,11*]. Although physicians still have a relatively low rate of identifying and intervening with smokers in routine clinical practice [*12,13*], they provide more smoking cessation interventions if they receive more training [*6,14–17*].

The objective of this article is to present a cost-effectiveness analysis of a physician delivered smoking cessation intervention called *Smokescreen for the 1990s*, which included substantial training. The novelty of this study is that it is different from other economic evaluations of smoking cessation programs on five counts. First, it is one of the few economic evaluations to our knowledge that includes the costs of the preintervention training workshops for physicians. Second, it presents results from how this affects headline cost-effectiveness figures. Third, it reports cost-effectiveness figures from the perspective of smokers, family physicians, sponsoring health bodies, and all these parties. Fourth, it is one of the few studies that uses smoking patients who were not volunteers, or otherwise self-selected subjects. Finally, it intervenes differently with smokers according to their readiness to change smoking.

[1] This project was funded by the National Drug and Alcohol Research Centre, University of New South Wales, and the Drug and Alcohol Directorate of the New South Wales Department of Health.

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0091-7435/00 $35.00

METHODS

The economic evaluation is based on a previously completed research project that evaluated the utilization of Smokescreen by family physicians in Sydney and New South Wales in 1991–1992 and the abstinence rates among their patients. A detailed discussion of the methods of that research project is described elsewhere [*17*].

The Intervention: *Smokescreen for the 1990s*

Smokescreen for the 1990s is a smoking cessation program based on the "Transtheoretical Model" or the "Stage of Readiness to Change Model" [*19,20*]. Physicians were trained to assess the stage of their smoking patients regarding their desire to quit into precontemplation, contemplation, or preparation stages. Precontemplative smokers were given a "not ready" booklet and invited to return when ready to discuss cessation. Contemplative patients received an "unsure" booklet and a brief motivational interview. Prepared smokers received a "ready" booklet and a program of three visits of cognitive and behavioral strategies and advice on how to use nicotine chewing tablets. Follow-up details of participating prepared smokers were recorded with a bookmark.

Patient Outcomes

Recruited prepared smokers were contacted by telephone at 12 months post-physician training to determine smoking status. Figure 1 shows the initial numbers of prepared, contemplative, and precontemplative smokers—a total of 6,529. Figure 1 also shows the follow-up procedure with prepared smokers. Of the initial 1,804 prepared or "ready" smokers 840 dropped out because of missing bookmarks—the most common reasons for this were patients did not want an intervention, physicians forgot to fill in details, and bookmarks were lost, were illegible, or incorrectly completed. Of those with bookmarks (964) a further 236 were lost to follow-up—the most common reasons were could not be located, requested no follow-up, deceased, refused, or had no telephone. For those successfully followed-up (40%), the time elapsed since recruitment to the program varied with a mean of 9.9 months (SD = 2) and a range of 5–13 months. This occurred because patients were recruited opportunistically throughout the 6-month recruitment period and the study endpoint was fixed following physician training.

Patient's self-reported point prevalence abstinence was verified by expired carbon monoxide readings of <14 ppm. Validation for the vast majority of smokers was carried out within 24 h. A small number in rural areas were validated within 7 days of claiming to have quit. Even so, these subjects, in common with all others, were unaware they would be asked for biochemical validation and therefore had no incentive to change their behavior in the period up to a week between their cessation claim and validation. The study abstinence rate was 22% (159/728), adjusted to 21% after applying the validation failure rate of 5%. Deceased patients were treated as being continuing smokers.

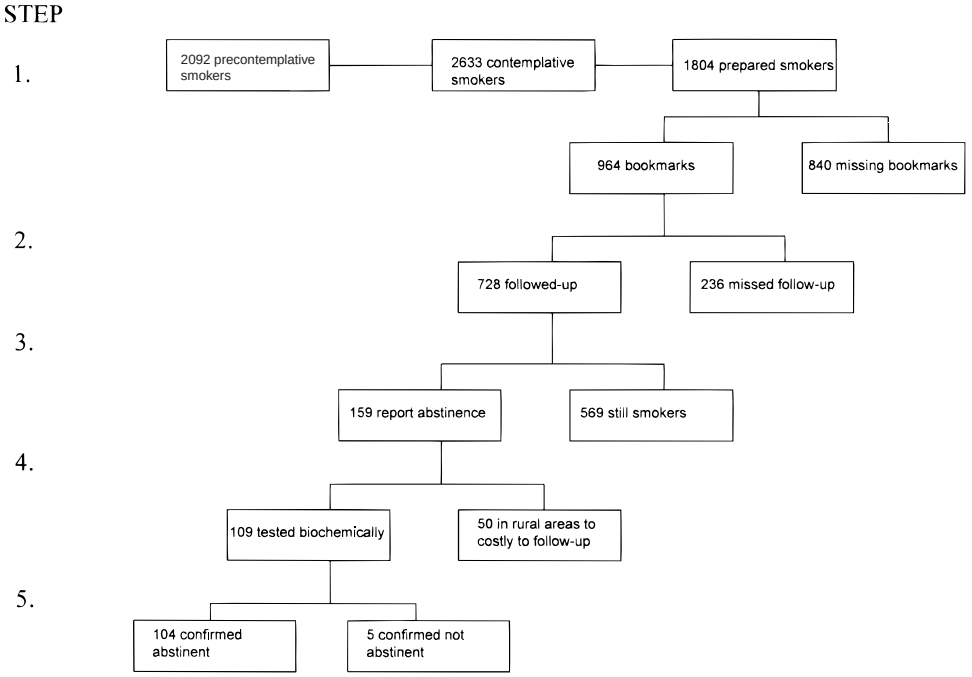

FIG. 1. Step diagram of smokers.

TABLE 1

Baseline Assumptions about Effectiveness of *Smokescreen* with "Ready" Smokers

Step	Decision
2	For patients without bookmarks (n = 840): All assigned an abstinence rate half that of the step 5 verified abstinence rate of 21% (adjusted for natural abstinence rate).
3	For patients with bookmarks subsequently missing follow-up (n = 236): (i) Those unwilling to be followed-up after intervention—Natural abstinence rate of "ready" smokers (n = 35). (ii) Those not followed up due to refusal—Continuing smokers (n = 7). (iii) Remainder—Step 5 verified abstinence rate (adjusted for natural abstinence rate) (n = 194).
4	For patients too distant for biochemical validation (n = 50): Step 5 verified abstinence rate (adjusted for natural abstinence rate).

Effectiveness Issues

Prepared smokers. The figures above apply to 40% (728/1,804) of all prepared smokers seen. Decisions are required about how effective Smokescreen was for the remaining prepared smokers who missed follow-up or biochemical validation. We make conservative assumptions. In Table 1 we assume that quit rates for smokers without bookmarks at step 2 in Fig. 1 are half that of smokers with bookmarks (this assumption is varied in the sensitivity analysis later).

In step 3 of Fig. 1, 236 smokers missed follow-up for a variety of reasons. Richmond *et al.* [*17*] made the decision to count only those who refused to be contacted after initially agreeing to follow-up as continuing smokers (n = 7), while the others were assumed to have a rate similar to those followed-up. We are more conservative, allocating those who missed follow-up for various reasons on the basis of Table 1.

"Natural" abstinence rates. In order to avoid overestimating the net effectiveness of Smokescreen, it is important to know how many smokers would have been abstinent at follow-up without intervention. Viswesveran and Schmidt [*21*] conducted a metaanalysis of 41 smoking cessation studies with control groups and found an average control group quit rate of 6%. We regard this an estimate of the "natural" quit rate among all smokers. This accords with Velicer's judgment of how quit rates at 10 months translate to our situation (personal communication). Similar rates at 10 weeks rather than 10 months were found in a Dutch study where a control group was split into precontemplators, contemplators, and prepared smokers [*22*]. However, these smokers were recruited through different means than in the current study: in particular, a prize was offered to those willing to take part and smokers were asked to first telephone and then write in to become part of the study and were targeted according to self-assessed stage of change before recruitment. In addition, no validation of stated quit rates was undertaken. Djikstra *et al.*'s [*22*] control group is therefore very different from ours and smokers in general. In particular they were volunteers—and hence it is not surprising that they have higher natural abstinence rates.

Contemplative and precontemplative smokers. In the patient intervention phase of the study a total of 6,529 interventions were completed. Of these 4,725 (72%) were delivered to nonprepared smokers, 2,633 (40%) to contemplators, and 2,092 (32%) to precontemplators. This accords well with the proportions of such smokers found in another Australian study [*23*]. In the absence of abstinence rates for nonprepared smokers, we must rely on estimates of abstinence rates from other sources, a tactic that previous economic evaluations of smoking cessation have adopted for the entire evaluation [*24–26*].

Effectiveness Estimates: Prepared Smokers

(a) Those followed-up. For those 728 patients followed-up (Fig. 1), the abstinence rate was 21%, which, when adjusted for a natural abstinence rate of 8%, results in a net abstinence rate of 13% (a net number of 95 abstinent).

(b) Those not followed-up. Of those 236 who "missed" follow-up, 194 (82%) are due to reasons that are unlikely to affect abstinent rates and these are assumed to have the net abstinence rate of 13%, as above (an additional 25 abstinent). The remainder of the 236 either requested no follow-up (n = 35) or refused contact at follow-up (n = 7). Smokescreen is assumed to have led to no additional net abstainers from this group.

(c) Smokers without bookmarks. Eight hundred forty of the original 1,804 prepared smokers were without bookmarks for various reasons. In order to reflect this general lack of effort by physicians and enthusiasm of smokers, a net abstinence rate for the intervention which is half that (6.5%) for those with returned bookmarks is assumed (an additional 55 abstinent).

Effectiveness Estimates: Nonprepared Smokers

For the 2,633 contemplative smokers who received a brief intervention, we assume a small additional net effect due to Smokescreen—one-quarter that of Smokescreen's net effect with prepared smokers (3.25%, an additional 86 abstinent). For precontemplating smokers who received a booklet only, we assume that Smokescreen has no additional effect over the natural abstinence rate (2%) in the short-run.

Effectiveness Estimates: All Smokers

Summing the figures above gives an estimate of 261 smokers who are abstinent as a result of the Smokescreen intervention who would otherwise not be. This figure is used in the derivation of our cost-effectiveness ratios below.

The Cost of Smokescreen

We have provided as comprehensive and realistic a costing as possible, in notable contrast to many other cost-effectiveness studies of smoking cessation [*27*]. Costs are included for the workshop organizers, physician attendees, and final physician users of Smokescreen and patients. Assumptions were made and value judgments reached on some issues. This is a consequence of the imprecise nature of costing. All costs are in 1995 U.S. dollars to facilitate comparison with other published studies. Costs were reflated by GDP deflators to 1995 domestic prices using data from IMF [*28*] and then converted to U.S. dollars via GDP Purchasing Power Parities (PPPs) from OECD [*29*].

Workshop Costs

The physician training workshops for Smokescreen included a 2-h interactive session incorporating the use of videos and slides, fully described elsewhere [*17*,*30*], and an hour for dinner. There were 29 workshops attended by 429 physicians and 71 other health care professionals. The workshops were costed from the perspectives of the organizers and the attendees. Costs to the organizers included administration, invitations, postage and secretarial support, travel costs, trainer salary, trainer accommodation when appropriate, costs of room and equipment hire, and dinner and drinks. Costs to the physicians were travel and opportunity costs of time. We did not include the costs of the other health professionals attending, since the intervention was designed for family physicians. Detailed costings can be provided by the authors on request.

There were 198 of the 429 attending physicians who purchased the Smokescreen kit and were willing and eligible to participate in the study and be followed-up to assess their effectiveness. We assume that the attrition seen here ($n = 231$) reflects "natural wastage" that would be duplicated in any further training situation. Therefore, we include the costs of training the additional physicians in our analysis.

- On this basis, total costs for the workshops were estimated at \$85,182, of which \$30,927 (36.3%) was incurred by the organizers, and \$54,234 (63.7%) by the physicians in terms of travel and opportunity costs of attendance. We assume that the physicians who took part in the evaluation incurred these costs in the ratio of their number to total physician attendees at the workshops (198/429), a total of \$25,031.

However, the issue of attrition is more complex than this. It seems reasonable to assume that some physicians lost to attrition may have changed their practice as a result of attending the workshop. We return to this in the sensitivity analysis later.

Intervention Costs: Physicians

The costs of the intervention to the physician consist of the opportunity costs of the time taken to intervene with patients and the cost of the kit. For smoking patients there are travel costs and opportunity costs of attendance.

- Each of the 198 physicians in the study purchased a kit at \$67 per kit, a total of \$13,180.

For the nonprepared smokers the cost of the intervention, a brief talk and delivery of a pamphlet, is assumed to take an extra 2 min on top of the time of a usual consultation for the precontemplative smokers and 4 min for the contemplative smokers (including a motivational interview). All timings are based on a pilot study undertaken in one of the author's medical practice (C.M.), and participants in the workshop were advised these were reasonable for the respective interventions. Given the numbers of smokers in these groups, this implies the equivalent of an extra 279 consultations of 15 min for precontemplative smokers and 702 consultations for contemplative smokers.

- At an average consultation fee in 1991 for a 15-min consultation of \$16, this implies total opportunity costs of \$16,040 for intervening with nonprepared smoking patients.

We assume it took 5 min to deliver the intervention to prepared smokers in the initial opportunistic consultation (an addition of 601 consultations) but there are also the additional costs of the extra visits. While the program specified an extra two visits per smoker, this did not occur in all cases [*17*]. In fact, an average of 0.296 visits were made per smoker, a total of 534 for the 1,804 prepared smokers in this study.

- For the 1,804 "prepared" smokers in the study, this implies a total opportunity cost to the physician of \$18,559.

Intervention Costs: Smokers

Few significant extra costs are incurred for an individual smoker in the nonprepared categories, since the intervention is delivered during an opportunistic visit. Given the 2- and 4-min assumptions used above at an average hourly earning of \$9.40 per hour, the 2,092 precontemplative smokers would incur an opportunity cost of \$655 by taking part in the intervention and the 2,633 contemplative smokers, \$1,649.

- The total opportunity cost for nonprepared smokers is \$2,305 for taking part in Smokescreen.

Prepared smokers incur the costs of an extra 0.296

TABLE 2

The Costs of *Smokescreen*

Costs	Bearers of cost				
			Smokers		
	Organizers	Physicians	Precontemplative	Contemplative	Prepared
Fixed costs[a]					
Training	$30,927	NA	NA	NA	NA
Smokescreen kit	NA	$13,180	NA	NA	NA
Variable costs[b]					
Training	NA	$25,031	NA	NA	NA
Intervention	NA	$34,599	$655	$1,649	$23,429
Total costs	$30,927	$72,810	$655	$1,649	$23,429

[a] Fixed costs are those that remain static within a given discrete training program despite the number of physicians trained or patients intervened with.

[b] Variable costs are those that vary as a function of the number of physicians or patients.

visits each on average, plus the initial 5-min consultation time. We assume they live on average within 30 minutes round-trip of their physician's office, have a 15-min wait and a 15-min consultation, a total of 1 h. At the above rate this works out at a total opportunity cost of $9.40 per visit. Travel costs are assumed to be a further arbitrary $1.57 per visit.

- Therefore, each average prepared smoker incurs an extra $3.24 in costs due to the intervention, $5,854 for all prepared smokers. Adding in the extra 5-min consultation yields a total cost of $7,267.

However, physicians also suggested that prepared smokers used nicotine chewing gum as an aid to cessation, adding to the costs of the intervention. It was found that 26% of prepared smokers used gum at an average rate of five pieces per day over a mean of 6 weeks during the treatment period, at a cost per 105-piece packet of $17.

- Each average prepared smoker incurs an extra $8.96 in costs due to nicotine gum use, $16,162 for all prepared smokers. Therefore, total costs to prepared smokers are $23,429 and summing across all smokers, total costs are $25,734 per smoker.

Table 2 summarizes our cost estimates for Smokescreen.

RESULTS

The Cost-Effectiveness of Smokescreen

Initial cost-effectiveness estimates are reported in the second column of Table 3—labeled Baseline scenario—from the perspectives of the organizer, the physicians, the smokers, and all parties. Cost-effectiveness is defined as cost per additional abstainer due to the Smokescreen intervention. Ninety-five percent confidence intervals based on the quit rate are also given.

Sensitivity Analysis

We have made several assumptions about the cost and effectiveness of Smokescreen. In order to check the robustness of our results it is conventional to subject such assumptions to a sensitivity analysis. There are three main sources of sensitivity in this study: the exclusion of existing variables; the alteration of existing variables; and the inclusion of new variables.

Exclusion of smokers for whom abstinence is not known. Some may argue that it is not valid to extrapolate the effectiveness of Smokescreen outside of what is strictly known. In other words we should limit the cost-effectiveness analysis to the "hard" evidence. Although we do not share this view we estimate the impact of it below. Restricting the analysis to those we "know" were abstinent (i.e., prepared smokers with bookmarks who were followed-up), we assume that the only abstainers were the 159 prepared smokers measured as such, adjusted down to 151 assuming a 95% chemical validation rate. Ignoring other smokers, this leads to a gross quit rate of 15.7% and a net quit rate of 7.7%, a total of 74 abstainers (assuming a spontaneous quit rate of 8% in prepared smokers as justified above). The 95% confidence intervals around this are 6.0 to 9.4%, implying only 58–91 additional abstainers as a result of Smokescreen. Cost-effectiveness under this conservative assumption from an organizer's point of view is $421 (CI: $340–$533), from the physicians' perspective $984 (CI: $800–$1,255), the smokers' perspective $348 (CI: $283–$444), and society's point of view $1,749 (CI:$1,423–$2,233).

Exclusion of training and workshop costs: A fairer comparison with other studies? One advantage of this study is the inclusion of the training and workshop costs, which makes the cost-effectiveness figures much more realistic than most economic evaluations of smoking cessation [*27*]. However, including the full training costs of the intervention makes comparisons with other programs difficult, since other economic evaluations tend to neglect such costs. Workshop costs account for over 40% of total costs in our case, seriously disadvantaging Smokescreen in relation to other previously

TABLE 3

Variations in the Cost-Effectiveness of *Smokescreen*—Baseline, Optimistic, and Pessimistic Assumptions about Abstinence

Perspective of	Including training costs			Excluding training costs		
	Baseline scenario	Optimistic scenario	Pessimistic scenario	Baseline scenario	Optimistic scenario	Pessimistic scenario
	Cost per additional abstainer					
Organizer	$118 (CI:$106–$134)	$57 (CI:$53–$63)	$189 (CI:$164–$222)	$0	$0	$0
Physicians	$279 (CI:$249–$317)	$135 (CI:$125–$147)	$444 (CI:$385–$524)	$183 (CI:$164–$208)	$88 (CI:$82–$97)	$291 (CI:$253–$344)
Smokers	$99 (CI:$88–$112)	$48 (CI:$44–$52)	$157 (CI:$136–$185)	$99 (CI:$88–$112)	$48 (CI:$44–$52)	$157 (CI:$136–$185)
All parties	$496 (CI:$443–$563)	$240 (CI:$222–$262)	$789 (CI:$685–$931)	$281 (CI:$252–$320)	$137 (CI:$126–$149)	$448 (CI:$389–$529)

costed interventions. Excluding workshop costs reduces organizers costs to zero and the cost per additional abstainer from the perspective of smokers remains unchanged. However, cost per additional abstainer falls to $183 from the perspective of physicians and to $281 from the perspective of all parties (column 4 of Table 3—Baseline scenario, Excluding training costs). These are the most relevant figures when judging Smokescreen against other smoking cessation interventions.

Changing the abstinence rate due to Smokescreen. As the original Smokescreen study did not collect abstinence rates for nonprepared smokers nor assess the natural abstinence rates for smokers in all categories, we have had to extrapolate to derive the net effectiveness of Smokescreen for these groups. In the optimistic scenario, a better abstinence rate due to Smokescreen is combined with a lower natural abstinence rate, resulting in a net boost to the number of abstainers. In the pessimistic scenario, the converse is the case.

Taking the optimistic scenario first, we assume that all prepared smokers who missed follow-up, for whatever reason, have an abstinence rate of step 5 (see Fig. 1). Further, their natural abstinence rate is identical to that of other smokers. For contemplative smokers, the net effectiveness of Smokescreen is doubled while Smokescreen leads to a net 2% gain in the number of nonsmokers among precontemplators. This leads to a rise in the number of abstinent smokers from 261 to 538. The impact on cost per additional abstainer is presented in Table 3, columns 3 and 6, respectively, depending on the treatment of training costs.

In the pessimistic case we assume that Smokescreen continues to have the same effect for prepared smokers we know nothing about, based on our conservative baseline assumptions set out in Table 1. However, the natural abstinence rate of ready smokers increases by 50 to 12% and the net effectiveness of Smokescreen for contemplative smokers halves to 1.625%. This results in a drop in the number of abstinent smokers from 261 to 164. The impact on cost per additional abstainer is presented in Table 3, columns 4 and 7, respectively, depending on the treatment of training costs.

Finally, it should be noted that the Stages of Change model implies a delayed treatment effect—particularly with precontemplators and contemplators—and that Smokescreen was utilized after the study period (88% of physicians were still using it at 6 months post-follow-up). Since we have little knowledge of the extent of these effects through time, and we are focusing on the immediate costs and effectiveness of Smokescreen in this study, we have not taken them into account. However, these factors do suggest that our optimistic scenario is not as optimistic as it might be.

Inclusion of all physicians attending the workshops. We have alluded to the 231 other physicians who attended the training workshops but who were not included in the original utilization study. Nevertheless, these physicians may have benefited from the training program and may be more effective in intervening with their smoking patients. However, just how effective they are over and above natural abstinence is unknown. What is certain is that the overall costs to smokers and physicians will rise with intervention, as will the number of abstainers. From the organizers' perspective, cost-effectiveness will improve, since the fixed costs of the workshop will be spread over more abstainers. Overall, we would expect Smokescreen to be less effective among these physicians compared to those who agreed to participate in our study, who were probably more motivated. Therefore, cost per abstainer, based on costs to all parties, may be higher than in our baseline assumptions.

DISCUSSION

Is Smokescreen cost-effective? The answer to this depends on two things: how variable the estimates of cost per abstainer are and how these estimates compare to the cost-effectiveness of other smoking cessation interventions and medical therapies. Different decisions about the management of training costs and abstention rates introduce some variability into the estimates of cost-effectiveness. However, this spread seems reasonable, and we believe our pessimistic assumptions are particularly strong. Including training costs increases the baseline cost per abstainer by 75% from the perspective of all parties and also increases the spread of estimates on the basis of optimistic and pessimistic assumptions about effectiveness.

To judge whether Smokescreen is really worthwhile it is important to know what else could have been bought with those resources. There are now several reviews of the general cost-effectiveness of smoking cessation interventions [*10*,*27*,*31–38*]. Comparing results across types of intervention, settings, countries, and time periods is always problematic. The present study is also different from other economic evaluations of smoking cessation programs. First, it is one of the few that uses smoking patients who were not volunteers, or otherwise selected subjects. Second, it intervenes differently with smokers according to their readiness to change. And third, it is only the second economic evaluation to our knowledge that includes training costs. For all these reasons it is complex to compare the cost-effectiveness of Smokescreen to other smoking cessation interventions. However, the cost-effectiveness of Smokescreen needs to be seen in some context. With the above caveats in mind Table 4 compares our results with a recent review by Warner [*10*] and other recent studies. All costs were converted to 1995 U.S. dollars.

As can be seen from Table 4, the cost per abstainer using Smokescreen is comparable to the cost-effectiveness of a media program depending on the mix of assumptions. Under all baseline combinations Smokescreen is more cost-effective than a general worksite program. We present five combinations to illustrate how changes in our assumptions affect Smokescreen's relative cost-effectiveness. The most comparable to published figures is probably our lowest figure in the table—baseline results excluding training costs from the perspective of family physicians—since this has been the focus of much published work. However, this depends on our assumptions about the effects of Smokescreen outside the "hard" evidence about quitting and Smokescreen—the net actual quitters among prepared smokers. Assuming that noone else quits, this has the effect of decreasing Smokescreen's cost-effectiveness substantially from $183 to $984 per additional abstainer. It is still cost-effective relative to worksite interventions; however, it suffers in comparison with mass-media programs. Interestingly, Smokescreen is more cost-effective from a societal point of view than a combined intervention using self-help manuals or group programs as reported in the Dutch study [*39*] in Table 4. This comparison is interesting because the Dutch study also included and excluded training and set-up costs as part of the sensitivity analysis. Smokescreen is more cost-effective on a like-for-like basis.

Nonetheless the assumptions about abstention are clearly crucial to the cost-effectiveness of Smokescreen. Further studies of Smokescreen need to be undertaken to replace the need for assumptions with actual evidence. Clearly it would have been better to have designed the study with an economic evaluation component from its inception. Our findings illustrate the potential for retrospective cost-effectiveness analysis of smoking cessation interventions. Using existing data and conservative estimates of outcomes when required, the Smokescreen smoking cessation program appears to be reasonably cost-effective when compared to other smoking cessation interventions.

TABLE 4

Smokescreen Compared to Other Selected Smoking Cessation Interventions (1995 U.S. Dollars)

Study and country	Population	Type of Intervention	Cost per quitter ($)
Australia: This study	Adult smokers visiting physicians	*Smokescreen* program: Perspective of physicians excluding training costs	183
Sweden: Tillgren *et al.* [*36*]	Adults 16 years and over	Mass media	250
Australia: This study	Adult smokers visiting physicians	Smokescreen program: Perspective of physicians including training costs	279
Australia: This study	Adult smokers visiting physicians	Smokescreen program: Perspective of "all parties" excluding training costs	281
Sweden: Tillgren *et al.* [*36*]	Adults 16 years and over	Mass media + county level organizational strategy	290
Australia: This study	Adult smokers visiting physicians	Smokescreen program: Perspective of "all parties" including training costs	496
Netherlands: Mudde *et al.* [*39*]	Adult smokers	Self-help manual and group program. Perspective "all parties" including training costs. Optimistic quit assumptions based on confidence intervals	743
Australia: This study	Adult smokers visiting physicians	Smokescreen program: Perspective of physicians excluding training costs and using only "hard" evidence of abstinence	984
Netherlands: Mudde *et al.* [*39*]	Adult smokers	Self-help manual and group program. Perspective "all parties" including training costs. Pessimistic quit assumptions based on confidence intervals	1,487
U.S.: McGhan *et al.* [*37*]	Blue-collar workers	Worksite smoking cessation program	1,500

Source: Collated from Warner [*10*] and authors' conversion of our study results to 1995 U.S. dollars, as described in text.

ACKNOWLEDGMENTS

David Buck was a research fellow at the Centre for Health Economics, University of York, U.K., during the early stages of the current project. He acknowledges and is grateful for non-financial support.

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