

## Recruiting Health Plan Members Receiving Pharmacotherapy Into Smoking Cessation Counseling

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**Background:** Smokers receiving pharmacotherapy and individualized smoking cessation counseling through telephone quitlines have been found to have higher quit rates than smokers receiving pharmacotherapy alone. Health plans are often positioned to encourage their members to use quitline services in addition to pharmacotherapy.

**Objective:** To determine if healthcare members who were receiving pharmacotherapy increased their participation in smoking quitline services after receiving proactive telephone calls or postcards.

**Study Design:** Randomized controlled trial.

**Methods:** Health plan members filing pharmacotherapy claims were identified weekly from health plan pharmacy claims data and randomized to 1 of the following 3 conditions: control, recruitment postcard, or recruitment telephone call by a nurse quitline counselor. Enrollment of study members into the quitline program was tracked for 1 month after randomization.

**Results:** During 5 months, 625 individuals were identified for participation in the study, with the following enrollment into the program: 0% to the control group, 1.3% to the postcard group, and 20.6% to the telephone call group ( $P < .001$  for significance by group). Although costs for the telephone intervention were the most expensive, it was also the most cost effective, given its success in enrolling members into the program.

**Conclusions:** Proactive telephone calling by smoking cessation nurse counselors to smokers receiving pharmacotherapy may be an effective method of enrolling smokers into a cessation quitline. Health plans should consider proactive telephone recruitment to improve use of quitline services.

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Smoking continues to be the number one cause of preventable death in the United States and is a significant public health problem.<sup>1</sup> Effective methods are available to assist smokers with cessation, including pharmacotherapy (nicotine replacement therapy or bupropion hydrochloride) and group or individual behavioral counseling. Investigations of the effect of brief physician advice have yielded quit rates of approximately 10% at 1 year.<sup>2</sup> Pharmacotherapy, in addition to brief physician advice, can boost these results to 15% to 25%.<sup>3-5</sup> However, the addition of behavioral counseling

along with pharmacotherapy demonstrates the highest quit rates of 25% to 36% at 1 year.<sup>6,7</sup>

Although many smokers attempting cessation use some type of adjunctive pharmacotherapy, many do not access telephone quitline services that are available to them. Previous research identifies that only 2.4% of smokers with partial health insurance coverage and 10% of smokers with full coverage will use smoking cessation services, including a behavioral program and nicotine replacement therapy, within 1 year.<sup>8</sup> Methods for encouraging participation in quitline programs are needed. Recruitment methods can make a difference in the overall participation in a program. Most recruitment strategies are passive, in which subjects are informed about the availability of a program through advertising, such as newsletters, television, and newspapers, and the participant makes the initial contact to the program for enrollment. In contrast, proactive recruitment occurs when the program identifies eligible subjects and contacts the subjects directly (through mail, electronic communication, or, most commonly, telephone calls) to offer services.<sup>9</sup> Passive approaches typically result in lower participation levels,<sup>10</sup> and passively recruited study samples tend to be different from proactively recruited samples. Passively recruited participants are more likely to be ready to change, more highly educated, and predominantly female.<sup>11</sup>

Research regarding proactive strategies reveals that they are an effective method of recruiting targeted groups to services.<sup>12,13</sup> Prochaska et al<sup>9</sup> found that 80% of smokers who were proactively “cold-called” by telephone participated in a smoking cessation intervention,

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and Lando et al<sup>14</sup> found that smokers were receptive to proactive telephone calls offering assistance with quitting. Britt and colleagues<sup>15</sup> found high acceptance of proactive telephone calls for smoking cessation, even among smokers not yet contemplating quitting, with 86% of all contacted smokers accepting at least 1 telephone counseling call. "Telephone outreach procedures may be a useful channel for increasing the proportion of smokers recruited into treatment," conclude Lando and colleagues.<sup>14,p45</sup>

Because proactive strategies are typically much more effective in recruiting participants than passive strategies, they also tend to be more cost effective. Previous studies<sup>16,17</sup> of the proactive activities of quitlines have found the additional costs to be inexpensive. Yet, for proactive identification of smokers to occur, there must be a mechanism in place to identify a target group. Identification of smokers using nicotine replacement therapy or bupropion through pharmacy claims may be a strategy to identify smokers ready to quit in a health plan population, and quitline participation can increase their success with cessation.

A major health plan based in the midwestern United States was interested in increasing the use of quitline services among members who smoke. The objective of this study was to determine if proactive recruitment of health plan members filing a claim for smoking cessation pharmacotherapy was effective in increasing participation in quitline services. The costs associated with such recruitment are also calculated. This study may serve as a model for other health plans in applying proactive outreach measures.

## METHODS

### Subjects

Study subjects were health plan members of a large open-access health insurance company serving nearly 5 million covered lives. These subjects had filled a prescription for smoking cessation pharmacotherapy. Subjects were enrolled in a preferred provider organization or a traditional fee-for-service insurance plan and had pharmacy benefit coverage through these plans (a subset of the total insured population). Pharmacy benefits for smoking cessation included bupropion and nicotine replacement products, such as the nicotine patch, gum, inhaler, and spray. Members who did not have health plan coverage for pharmacotherapy or otherwise made out-of-pocket purchases for over-the-counter nicotine replacement products were not considered as subjects for this study. Persons were considered ineligible for participation in the study

if they (1) were a member of the health plan's health maintenance organization (excluded because of recent receipt of postcard mailings encouraging quitline participation), (2) lacked an address or telephone number on file, (3) were previously enrolled in the quitline program, or (4) were a patient of a provider enrolled in a larger ongoing study of smoking cessation interventions. Because members included in the study had already filled a prescription for smoking cessation pharmacotherapy, this group appeared to have inherent motivation to quit smoking.

### Study Design and Procedures

The study was approved by the University Committee for Research Involving Human Subjects at Michigan State University. The study design was a randomized controlled trial. A priori sample size calculations assuming a 3% baseline enrollment rate indicated that 134 subjects were needed in each group to detect a 10% absolute difference between the control and each intervention group with 80% power and a significance level of  $P < .05$ . Identification of subjects was done by a weekly query to the insurance plan's pharmacy claims database. Members with a claim for smoking cessation pharmacotherapy were listed. This list was then cross-checked with the relevant databases, and members were eliminated if they were found to have 1 or more of the ineligibility criteria. The remaining members were considered eligible for study participation and were randomized to 1 of the following 3 conditions: control (usual procedure, ie, passive recruitment in which smokers learn about the quitline from providers or newsletters and self-contact the quitline), recruitment postcard, or recruitment telephone call by a nurse quitline counselor. The randomization to conditions was a 2:1:1 ratio, with the recruitment telephone call condition having twice the assigned sample size to accommodate the expected modest contact rate. Subject identification began in March 2003 and continued until at least 134 subjects were identified for each group, which occurred in July 2003.

### Intervention

The control group received no direct contact other than the typical communications, such as the quitline telephone number listed in the health plan newsletter. There were 2 intervention groups, the postcard group and the telephone call group. The postcard group was sent 1 of 2 postcards normally used by the health plan to encourage participation in the quitline containing 1 of the following 2 motivational messages: "Want an extra \$2000 next year?" or "Quit smoking! No charge. No hassle. No joke." Each included the quitline tele-

phone number to call and messages about the programs being free of charge and offering 24/7 telephone-based enrollment, nurse counselor support, and educational tools.

The telephone call group received a personal call from a smoking cessation quitline nurse. No letters were sent, so the telephone call was effectively a “cold call” from the quitline nurse. The content of the call included a brief motivational message, description of the quitline program, and an invitation for the member to enroll. The quitline program is based on a model of counselor support and relapse prevention. Participants are offered 1 of 2 levels of participation and were offered the option of selecting participation in level 1, in level 2, or not at all. Level 1 requires the participant to set a quit date within the next 14 days and includes an intake session and 6 sessions at intervals of 1, 3, 7, 14, 30, and 60 days after the quit date, with follow-up at 90, 180, and 360 days after the quit date. This follows the typical relapse curve after attempts at smoking cessation.<sup>6</sup> Level 2 is for participants not ready to set a quit date within the next 14 days, and participants are instead sent educational materials and receive a series of telephone callbacks (at which time participants enter level 1 or drop out). For both levels, all follow-ups and contacts are conducted by telephone.

**Data Collection**

Subjects in the telephone call group were asked additional questions by the nurse. This included the member’s reason for not signing up for the program (if he or she did not enroll); whether the member had already quit smoking (7-day quit) and, if yes, his or her success with this attempt to quit; the type of smoking cessation product used; and the member’s rating of his or her value placed on and confidence in quitting smoking (score range, 1, not important or not confident, to 10, very important or very confident). Nurses made up to 4 contact attempts, calling at different times of day and leaving messages before considering the member a non-contacted subject. Consent to use the data was obtained verbally by the nurse during telephone call contacts. Enrollment into the quitline program was tracked for 35 days after the data pull.

**Data Analysis**

Enrollment rate differences between the control and intervention groups were compared using the Fisher exact test. Any further differences between the groups were compared using the Fisher exact test for categorical variables and the 2-tailed unpaired *t* test or the 2-sample Wilcoxon signed rank test for continuous variables, as appropriate. All analyses were conducted

using SAS statistical software, version 8.02 (SAS Institute Inc, Cary, NC).

To calculate costs, the resource costs were used for the proactive interventions. The mean annual salary and benefit costs were applied to 39.5 hours of the nurse’s time (\$54 600) and to 33.5 hours of administrative staff time (\$72 602 for an analyst and \$26 000 for a clerk), while actual costs were used for supplies (\$0.31 per mailed postcard and \$1.25 per mailed educational materials package, which included a coping tips booklet, personal diary, and “Clearing the Air” brochure). Costs were categorized as fixed or variable, an important difference in that the latter costs are incurred and change with the intervention levels. Because the quitline program was already purchased, available, and staffed, its cost represented a fixed cost. Increased use of the program associated with the interventions did not result in an incremental, marginal cost increase relative to the control group, although in the long run, more volume would be expected to generate higher mean costs.

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**RESULTS**

**Subjects**

For all members in the study, the mean ± SD age was 49.1 ± 12.6 years, and the sex distribution was 50.4% female and 49.6% male. There was no significant difference by group in age or sex. Additional demographic data were not available. Most claims were for bupropion (366 claims [58.6%]), followed by nicotine inhaler (138 claims [22.1%]), nicotine patch (101 claims [16.2%]), and nicotine nasal spray (20 claims [3.2%]).

For those in the telephone call group, among 146 contacted, the sex distribution was 50.6% female, with a mean age of 48.8 years. Bupropion was again the most common pharmacotherapy (77 claims [52.7%]), followed by nicotine inhaler (38 claims [26.0%]), nicotine patch (24 claims [16.4%]), nicotine nasal spray (7 claims [4.8%]), and a combination of 2 products (7 claims [4.8%]).

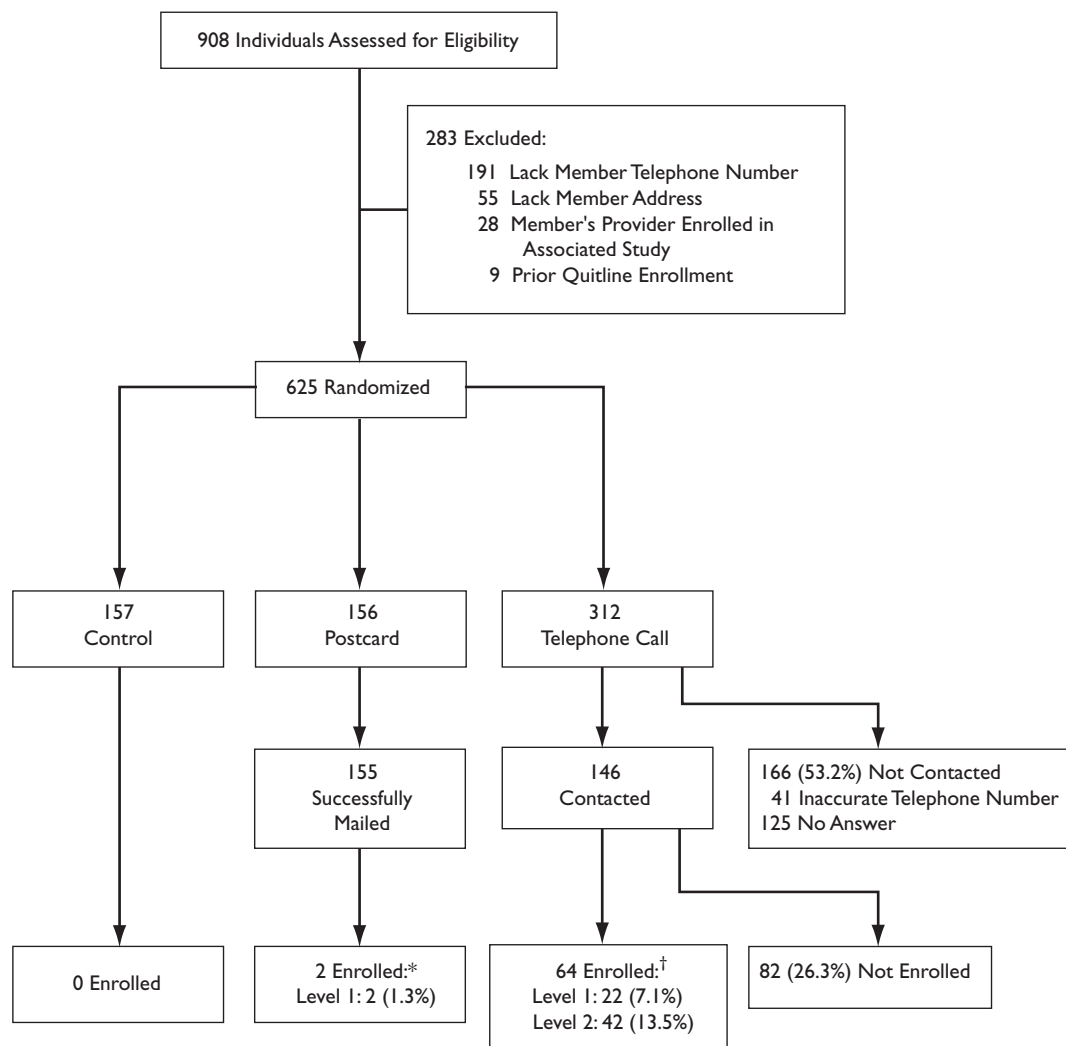
**Recruitment**

The **Figure** outlines the flow of participants through the study, including exclusions, randomization to groups, contact rates, and enrollment into the quitline program. Regarding the contact rate, 155 of 156 postcards that were mailed successfully reached their recipients. The contact rate among the telephone call group was 46.8% (146/312). Of the 166 persons unable to be contacted by telephone, 75.3% (125/166) were due to nonresponse, despite multiple contact attempts.

**Enrollment**

Increased enrollment into the quitline program was

Figure. Subject Flow Diagram



\* $P = .25$ , Fisher exact test (compared with control).

† $P < .001$ , Fisher exact test (compared with control and postcard).

significant by randomization group ( $P < .001$ ). This significance remained when the telephone call group sample size was considered to be 312 (intention to treat) or 146 (contacted). Of those contacted, the enrollment rate was 43.8% (64/146) for any level of the program and 15.1% (22/146) for level 1 only. Of those enrolling, most ( $n = 42$ ) enrolled in level 2 of the program, which provides educational information and periodic telephone callbacks. Level 1 initiates the counseling program, setting a quit date within the next 14 days and a series of telephone counseling calls. The mean  $\pm$  SD time to contact from the prescription fill date to the nurse telephone call was  $15.6 \pm 1.6$  days.

Other data were gathered for those contacted in the telephone call group. Of 146 contacted, 7 declined answering the additional questions, leaving 139 in the expanded data set. As noted in **Table 1**, about half of the group self-reported that they had already quit smoking and were self-identified as “smoke free” by the time of the telephone call. The value placed on quitting was rated as high (mean  $\pm$  SD score,  $9.4 \pm 1.6$ ), as was the confidence in quitting (mean  $\pm$  SD score,  $8.1 \pm 2.6$ ). The enrolled group was significantly older (51.9 vs 48.1 years;  $P = .03$ , paired  $t$  test) than those not enrolling, although there was no significant difference in the sex distribution. Two other factors were significantly predictive of quitline enrollment:

(1) having quit and relapsed vs remaining smoke free at contact (52.9% vs 19.2% enrollment;  $P < .001$ , Fisher exact test) and (2) reporting a lower vs higher confidence in quitting (mean score, 7.7 vs 8.5;  $P = .04$ , 2-sample Wilcoxon signed rank test). Those who had already quit reported higher scores for the value placed on quitting (mean score, 9.8 vs 8.9;  $P = .001$ ) and their confidence in quitting (mean score, 9.0 vs 7.2;  $P < .001$ ). We only measured quit rates in the telephone call group; at 60 days after enrollment, 4 subjects remained in the quitline program and had quit smoking. The quit rate in this group (18.2% [4/22 entering level 1]) was similar to the usual member-reported quit rates for the program.

The literature indicates that smokers using pharmacotherapy and quitline counseling have quit rates of 25% or higher.<sup>6,7</sup> Among those receiving brief physician advice and pharmacotherapy, the quit rates are 15% to 25%.<sup>3-5</sup> Extrapolating to the subjects in this study, we estimate that 25% of the 22 level-1 enrollees and 15% of the 42 level-2 enrollees quit smoking, resulting in 12 smokers who quit in the telephone call group. We estimate that there would have been 0.5 smokers who quit in the postcard group (25% of 2 enrollees).

**Cost Analysis**

The costs associated with the postcard and telephone call interventions per outcome are shown in **Table 2**. The total costs were \$3389 for the postcard intervention and \$4766 for the telephone call intervention. The summary of incremental costs (ie, the variable costs, a portion of the total costs) were \$146.50 for the postcard intervention and \$1523.20 for the telephone call intervention, or \$73.25 and \$23.80 per total program contact, respectively. Although the total investment of personally contacting individuals by telephone call is high relative to the postcard group, the resulting enrollment makes it the less costly way of encouraging participation when evaluated on a cost-per-enrollee basis. To calculate the costs per smoker who quit, 2 methods were used. First, actual quit rates among level-1 enrollees at 60 days after enrollment revealed total costs per smoker who quit of \$1191 and incremental costs per smoker who quit (with the addition of the proactive telephone calls) of \$380.73. All smokers who quit were in the telephone call group. Second, using estimated quit rates based on the literature,<sup>3-7</sup> extrapolated to this study, we would expect higher numbers of quitters, as already noted, of 0.5 in the postcard group and 12 in the telephone call group, reducing the total and incremental costs per smoker who quit in the telephone call group.

**DISCUSSION**

The key findings of this study were that proactive telephone calling of members filing claims for smoking cessation pharmacotherapy can be an effective method of recruiting these smokers into quitline participation. Smokers who have quit and relapsed are more likely to enroll than those who have quit and maintained cessation. Because 95% to 98% of untreated smokers and 70% to 80% of treated smokers will relapse, this finding may prove valuable in understanding how to sustain quit rates.<sup>18,19</sup> The postcard mailing was ineffective in influencing participation in the program.

These results were similar to those found by others. Zhu et al<sup>20</sup> found that proactive telephone counseling was a promising adjuvant treatment for nicotine replacement therapy users. Nicotine replacement therapy users who received follow-up telephone sessions were more likely to succeed in smoking cessation in the long term than those receiving only a single counseling session (25.6% vs 16.1% at 1 year). There was a dose-response relationship between counseling intensity and treatment effect. McDonald<sup>13</sup> found that telephone and other interpersonal recruitment strategies produce results superior to those of media or mail, whether used independently or in combination with one another.

Two thirds of the enrollees were to level 2 of the quitline program, providing educational materials and periodic callbacks, rather than to level 1 of the program, which requires setting a quit date within 14 days.

**Table 1.** Telephone Call Group Data

Variable	No. (%)
<b>Quit status at time of telephone call</b>	
Already quit	73 (52.5)
Not yet quit and no quit date set yet	43 (30.9)
Not yet quit but set quit date	23 (16.5)
Total	139 (100.0)
<b>If already quit, status of quitting efforts</b>	
Smoke free	47 (64.4)
Few slips	12 (16.4)
Relapse	5 (6.8)
No answer	9 (12.3)
Total	73 (100.0)
<b>Reason for not enrolling in program</b>	
Already quit and doing well	42 (52.5)
Don't need a program to help me quit	19 (23.8)
No time	10 (12.5)
Don't like programs	5 (6.3)
Other reasons	4 (5.0)
Total	80 (100.0)

**Table 2.** Cost Analysis

Costs	Postcard Group (\$)	Telephone Call Group (\$)
<b>Summary of total costs</b>	3389.00	4766.00
<b>Summary of incremental costs</b>	146.50	1523.20
<b>Total costs per outcome</b>		
Single-session contact (level 2)*	—	113.47
Program enrollment contact (level 1) <sup>†</sup>	1694.63	216.62
Total contact <sup>‡</sup>	1694.63	74.46
Per actual quit at 2 mo <sup>§</sup>	—	1191.42
Per estimated quit <sup>  </sup>	6778.52	397.17
<b>Incremental costs per outcome</b>		
Single-session contact (level 2)*	—	36.26
Program enrollment contact (level 1) <sup>†</sup>	73.25	69.22
Total contact <sup>‡</sup>	73.25	23.80
Per actual quit at 2 mo <sup>§</sup>	—	380.73
Per estimated quit <sup>  </sup>	292.99	126.93

\*n = 42.

†n = 24.

‡n = 66.

§n = 4.

||n = 12.5.

Possible reasons for the greater level-2 enrollment include participants' being interested in some level of assistance but not the complete program, not being ready to quit within 14 days (ie, they preferred to set a quit date at a later time), or simply not wanting to say no to the nurse counselor.

The length of time it takes to contact the participant is an issue for other health plans to consider in implementing similar interventions. A lag in contact was largely a result of how current the data were in the pharmacy database. In most health plans, getting pharmacy data less than a week old is problematic. This may have been a factor in the low enrollment; however, many participants were simply averse to the idea of participating in a program (30.1% did not believe that they needed a program or did not like the idea of a program). Yet, in most cases, members agreed to accept the telephone call and answer questions. Another consideration is the limited reliability of telephone numbers in health plan databases, which adds to the burden of staff who are contacting participants. In this study, half of the participants were not reachable by telephone in up to 4 contact attempts, and this was among members who had a telephone number on file.

Although the total costs per participant were higher in the telephone call group, the enrollment rate was also higher than in the postcard group or the control group, which brought the cost per enrolled participant down and made the telephone call group the most cost effective of the intervention and control groups. Resource

costs of the interventions were minimal, compared with the cost of running the quitline program. In this case, increased use of the quitline can be considered an additional benefit of the study to the extent that it helps fill unused program capacity. If the intervention had led to increased use of the quitline beyond the existing program capacity, then the additional resource costs would need to be considered in this analysis. Staff costs may be further reduced by the use of trained nonclinical personnel, a strategy that has been shown to be effective in quitlines.<sup>21</sup>

Limitations of this study include the selection bias of the study sample, which did not include the health maintenance

organization members of the health plan, subjects not having smoking cessation pharmacotherapy coverage, subjects not needing or seeking pharmacotherapy, and subjects having providers enrolled in a larger ongoing study. The size of the subject pool was small, and self-report data from the telephone call group did not include a specific time frame regarding cessation experience. Quit rates were not validated by carbon monoxide or cotinine tests, although research on cessation data by self-report is reliable.<sup>22,23</sup> Beyond age and sex, additional demographic data were not available, and quit rates and further information on subjects in the control group and the postcard group were not available.

In summary, proactive telephone recruitment of health plan members receiving pharmacotherapy for smoking cessation was effective in enrolling members to participate in quitline counseling. Health plans should consider proactive telephone recruitment to improve the use of quitline services with excess program capacity.

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