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TRENDS

Does Insurance Coverage For Drug Therapy Affect Smoking Cessation?

A study in Minnesota found that drug coverage alone is not enough.

by Raymond G. Boyle, Leif I. Solberg, Sanne Magnan, Gestur Davidson, and Nina L. Aleksi

ABSTRACT: Whether insurance coverage for smoking-cessation medicines increases quitting rates is uncertain. In this paper we evaluate the overall effect of a new health plan pharmacy benefit on the use of pharmacotherapy, attempts to quit, and quitting rates. The presence of a smoking-cessation pharmacy benefit as implemented by these health plans produced no change in the use of bupropion, nicotine patches, or nicotine gum, nor did it result in higher rates of quitting smoking. Further studies are needed to test whether greater efforts to make smokers aware of insurance benefits or adding other types of cessation support might lead to any beneficial effects.

SEVERAL DRUG THERAPIES for smoking cessation have been found to be efficacious in randomized clinical trials. Nicotine patches have been demonstrated to produce twice the abstinence rates of placebo patches.¹ Sustained-release bupropion (Zyban) also appears to greatly increase smoking-cessation rates.² On the basis of this evidence, national practice guidelines call for clinicians to offer these drug therapies to all smokers interested in quitting.³

Some consider health insurance coverage of these smoking-cessation medications to be the next step in achieving progress in tobacco-use control.⁴ However, recent data suggest that few health plans fully cover pharmacotherapy for smoking.⁵ Such a step has been strongly recommended in the updated smoking-

cessation guideline from the U.S. Public Health Service.⁶ The evidence for this recommendation, however, is based on four studies, each with limitations that make it difficult to know whether such insurance coverage in real life would have any beneficial effects.⁷ A study by Sue Curry and colleagues, for example, evaluated only smokers who were willing to sign up for a cessation-support program under various degrees of coverage for either the program or nicotine replacement therapy (NRT).⁸ In a study published since the release of the national guideline, Helen Schauffler and colleagues compared smokers who were given free NRT products with a control group.⁹ They found that the odds ratio of quitting at one year was 1.6 for those given the NRT.

However, none of these studies tested

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whether simply changing insurance coverage makes a difference in smokers' use of tobacco or quitting, and none studied the effect of coverage for bupropion. Thus, there remains a need for adequate population-based data on the relationship between coverage of medications for smoking cessation and rates of quitting smoking.

In 1998 each of the three major health plans covering most of the population of Minnesota reported their intention to begin including a pharmacy benefit covering all effective pharmacological aids for smoking cessation. This presented a unique opportunity to test the hypothesis that expanding health insurance coverage for such cessation aids will facilitate smoking cessation. Two of the health plans formed a collaboration to answer the following research question: Will this new insurance coverage change smokers' use of these products, cessation attempts, and successful quitting?

Study Methods

Our collaboration involved Blue Cross Blue Shield of Minnesota (Blue Cross) and HealthPartners. Blue Cross is Minnesota's oldest and largest health insurer, with more than 1.7 million members and a network-based delivery system. HealthPartners covers 650,000 members through its integrated staff-model care system and contracted medical groups. About 36 percent of HealthPartners members belong to its staff-model health maintenance organization (HMO).

Beginning with the renewal of employer insurance contracts in January 1999, both health plans began including pharmacological aids for smoking cessation as a health insurance benefit. Most insured employer groups received this benefit as part of their contract ($n = 9,900$); however, self-insured groups could opt out. Using administrative databases, each health plan identified employer groups with and without the new smoking-cessation benefit. Of 133 self-insured groups, we identified 63 that were not offering the pharmacy benefit to employees. Self-insured and fully insured groups were categorized by size and benefit option, and samples of smoking members were

identified and surveyed before and after the pharmacy benefit's introduction.¹⁰

■ **Identification of smokers.** Since neither health plan had information about the smoking status of individual members, smokers willing to participate in the study were identified during October 1998. A double-reply postcard was mailed directly to 163,596 health plan members covered by the identified groups. The postcard text stated an interest in knowing smokers' opinions about covering benefits such as the nicotine patch. Members were asked to detach and return the second part of the postcard if they smoked and were willing to participate in two postal surveys.

■ **Survey data collection.** The 3,703 members who returned the postcard were mailed a baseline questionnaire and, twelve months later, a follow-up questionnaire. During the administration of the baseline survey, we identified 109 members who were ineligible because they had quit smoking or were unable to complete the survey because of illness. A similar procedure was followed with each survey: an initial mailing, a reminder postcard after seven days, a second survey at twenty-one days, and up to six telephone calls to nonresponders beginning at thirty-one days. A follow-up survey was sent a year later.

The eight-page survey requested information about demographic characteristics, satisfaction with the health plan, smoking behavior, quitting attempts, interest in quitting, use of various aids to quit smoking, and whether various cessation aids were covered by the plan. Smoking cessation was assessed using two questions. The first was, "Do you now smoke cigarettes every day, some days, or not at all?" Subjects responding "not at all" were then asked how long it was since they quit smoking (six months or less, more than six months). We used "more than six months" as our definition of long-term quitters. The survey was pretested, but biochemical validation of self-reported abstinence was not performed.

■ **Pharmacy benefit.** Both plans independently implemented similar smoking-cessation benefits for their commercial insurance. Both covered the same pharmaco-

therapies: nicotine patches, nicotine gum, and sustained-release bupropion (Zyban). Both organizations required a provider's prescription for coverage, even for over-the-counter medications. Blue Cross did not limit utilization, while HealthPartners limited members to a sixty-day supply per calendar year. Neither organization required prior authorization or proof of enrollment in a counseling program, or provided coverage for cessation counseling at the time.

■ **Statistical analysis.**

Analysis of the effect of the pharmacy benefit on smoking cessation was based on point prevalence at the twelve-month follow-up and proportion of smokers who reported that they had quit for six months, comparing those who did and those who did not have the coverage. To control for any covariate imbalance in the overall treatment arms of this study and in our analysis of those respondents who reported knowing of the benefit and those who did not, we controlled for baseline characteristics—addiction level, readiness to quit, years a smoker, whether an every-day smoker, and quantity smoked per day—of the smokers in our sample within logistic regressions models. We also controlled for age, sex, marital status, education level, and race. To take account of any difference at baseline in our dependent variables, we estimated bivariate logistic regression models using MLwiN.¹¹ This allowed us to take account of any effects of the clustering of the respondents within the employer groups we selected for our study. We estimated the difference in our dependent variables at follow-up between those with the benefit and those without, compared with their corresponding difference at the first (baseline) survey. Because of the nonlinear nature of the logistic function, we calculated these differences based on the covariate-adjusted average probabilities, using all observations at baseline and at follow-up in a recycled prediction method. Finally, we tested the significance of these differences using a large sample Wald statistic

“Almost half of the sample was interested in quitting smoking in the next thirty days.”

based on the logistic coefficients and covariance structure.

Study Results

Of the 3,703 postcards returned, the unadjusted response rates to the baseline survey were identical between the two arms of the study: 86.5 percent (2,020/2,339) of members with the benefit and 86.4 percent (1,180/1,364) of members without the benefit. Of the 3,200 completed baseline surveys, 302 were not

mailed a follow-up survey for the following reasons: seventeen reported smoking fewer than 100 cigarettes in their lifetime, and we could not verify the insurance status of 285.

From the remaining 2,898 smokers surveyed at twelve months, usable data were collected from 80 percent, yielding a final sample across both time points of 2,327.

■ **Characteristics of participants.** Exhibit 1 categorizes the final sample by exposure to the smoking-cessation pharmacy benefit and shows respondents' demographic and smoking characteristics. We found no differences between the two groups on any of the demographic variables. The two groups also are statistically identical across smoking variables except for time of smoking their first cigarette of the day. It is important to note that almost half of the sample was interested in quitting smoking in the next thirty days.

■ **Knowledge and use of smoking-cessation benefit.** At the one-year follow-up, only 30 percent of the smokers with the benefit reported knowing that their health insurance plan covered medicines for smoking cessation, but 6 percent of those without the benefit thought that they had such coverage (Exhibit 2). Also, smokers with the benefit were no more likely than the control group was to report use of bupropion or nicotine products in the previous year.

■ **Quitting attempts and success.** We also compared participants' reports of attempting to quit for one day or longer and of not smoking at the time of responding and

EXHIBIT 1**Demographic And Smoking Characteristics Of Subjects With And Without A Smoking-Cessation Pharmacy Benefit, 1999**

	No-benefit group (N = 767)	Benefit group (N = 1,560)	p value
Demographics			
Female	57.2%	55.3%	.37
Age (years, mean)	46.1 (12.3) ^a	46.1 (11.5) ^a	.99
Education beyond high school	63.4%	60.2%	.12
White	95.0%	96.0%	.31
Married	63.4%	66.9%	.10
Smoking behavior			
Years smoked	27.1 (12.2) ^a	27.4 (11.4) ^a	.58
Daily smoker	90.2%	91.7%	.25
Smoke within 5 minutes of waking	24.6%	29.9%	.008
Interest in quitting within 30 days	44.5%	47.0%	.25

SOURCE: Data collected by HealthPartners Research Foundation Survey Center, January 1999.

^aStandard deviation is in parentheses.

found no difference between control and benefit conditions (Exhibit 2). There are also no significant differences between the control and benefit conditions for long-term quitting (at least six months).

We considered baseline interest in quitting as a factor in predicting whether someone quit smoking with or without the pharmaceutical benefit. Smokers with the benefit were no

more likely to quit than were smokers without the benefit, regardless of their interest in quitting in the next month (16.4 percent vs. 16.1 percent, $p = 0.9$) or in the next six months (9.4 percent vs. 9.9 percent, $p = 0.8$).

In an additional analysis, we examined use of the benefit and quitting as a function of knowledge of the benefit. Among those with the pharmacy benefit, 30.3 percent ($n = 472$)

EXHIBIT 2**Comparison Of Subjects' Knowledge Of Benefit, Use Of Cessation Pharmacotherapy, And Quitting At One-Year Follow-Up, Based On The Presence Of A Smoking-Cessation Pharmacy Benefit, 1999**

	No-benefit group	Benefit group	p value
Knowledge of benefit	6.0%	30.3%	< .0001
Use of therapy in past 12 months			
Any Zyban use	18.9	23.5	.17
Any NRT use	28.3	26.4	.46
Quitting attempts			
One day or longer	37.8	40.3	.30
More than 30 days	9.3	9.8	.60
No longer smoking			
Point prevalence	13.5	14.3	.81
6 months or more	4.1	4.1	.97

SOURCE: Data collected by HealthPartners Research Foundation Survey Center, January 1999.

NOTES: Adjusted for covariates and baseline values of dependent variables. See text for full description. For sample sizes, see Exhibit 1. NRT is nicotine replacement therapy.

responded positively when asked if they knew that medicines for quitting smoking were now covered by their health plan. Within this subgroup, smokers were more likely to report use of Zyban but not NRT. They were also more likely to make attempts to quit but not to quit smoking (Exhibit 3).

Summary And Discussion

This study took advantage of the introduction of a covered benefit for smoking cessation in two health plans to test the recommendation from many tobacco-control advocates and the U.S. Public Health Service tobacco guideline that health insurers should include smoking-cessation treatment as a covered service.¹² Covered treatment in this study was not tied to a behavioral program; therefore, we were able to test the use of smoking-cessation pharmacotherapy in a large sample of smokers with and without new benefit coverage for the therapy alone.

After twelve months the presence of the benefit was not associated with any change in use of bupropion, nicotine patches, or nicotine gum. In addition, the smoking-cessation benefit had no significant effect on attempts to quit smoking or actual quitting.

Use of the treatment medications across all subjects averaged about 20 percent for

bupropion and 27 percent for NRT. This closely matched the nicotine product use observed in a study by Schauffler and colleagues, in which they ensured that all subjects knew about the availability of free NRT and provided it in response to a phone call, with no need for a physician visit or prescription.¹³

Behavioral therapy and prescription requirement. The use of behavioral therapy to aid smoking cessation is a common practice in clinical trials involving smoking-cessation pharmacotherapies. This study differed from these clinical trials, both because of no requirement for behavioral therapy and because a provider prescription was required to obtain the medication. There is no way to know if the prescription requirement acted as a barrier to widespread use of the benefit, but this does not appear to be the case, again based on results in the Schauffler study.¹⁴ In that study the authors found 25 percent use of nicotine replacement (gum or patches) at one-year follow-up in a group with a covered benefit and no required prescription. We found a very similar proportion (26 percent) reporting use of nicotine gum or patches at one year. A comparison with bupropion was not possible, as it was not covered during the Schauffler study.

The prescription requirement introduces the role of the primary care provider into the

EXHIBIT 3
Use Of Cessation Pharmacotherapy And Quitting At One-Year Follow-Up, By Knowledge Of Smoking-Cessation Pharmacy Benefit, Among Benefit Group, 1999

	No knowledge	Knowledge	p value
Use of therapy in past 12 months			
Any Zyban use	15.5%	41.5%	< .0001
Any NRT use	24.2	31.1	.095
Quitting attempts			
One day or longer	36.3	49.3	.003
More than 30 days	7.7	14.3	.042
No longer smoking			
Point prevalence	13.0	17.1	.53
6 months or more	4.0	4.4	.68

SOURCE: Data collected by HealthPartners Research Foundation Survey Center, January 1999.

NOTES: Adjusted for covariates and baseline values of dependent variables. See text for full description. N = 767. NRT is nicotine replacement therapy.

benefit. We observed no change in physicians' cessation-support behavior after the benefit was in place other than that reported by smokers who were aware of the benefit and who asked for help with quitting (data not shown). Because smokers had to obtain a prescription to use the benefit, the very limited change in physicians' behavior could help to explain why quitting attempts and rates did not change in concert with use of pharmacotherapy.

■ Unique study characteristic. This study represents the third examination of the introduction of a covered benefit for smoking cessation within health systems. However, it is the only one that tested the effects of a change in coverage of medications alone under circumstances likely to be used by health plans to make members aware of the change.

The Schauffler study, for example, demonstrated that smokers who were provided with definitive information about the availability of free NRT by simply calling a phone number would greatly increase their use of NRT and their attempts to quit smoking.¹⁵ This approach, however, may not generalize to health plans as a standard way to communicate benefit changes. The Curry study limited its test to those smokers who were willing to sign up for a behavioral cessation program.¹⁶ This is a very unusual group of smokers, as verified by the Schauffler study's demonstration that even with complete coverage of program costs, only four of 503 subjects (0.8 percent) signed up for a counseling program.¹⁷ Moreover, the Curry study had no information about NRT use or quitting prior to the coverage, and the various study groups in it were from distinctively different populations. Thus, it is hard to know what its results would mean, even if a health plan offered to cover cessation programs.

■ Limitations of study design. The design of our study has some limitations. Since this study was observational, smokers were not randomly assigned to receive the benefit. However, our lack of opportunity to influence

how the health plans enacted the benefit strengthens this natural experiment. A limitation that is not unique to this study is the participation of volunteers who were followed as a cohort to examine their overall use of the benefit. In an effort to determine if the smokers participating in our evaluation of the benefit were different from a general population of smokers, we compared them with data from a separate survey of members of one of the two health plans collaborating in this study. The

“Ours is the only study that tested the effects of a change in coverage of medications alone under circumstances likely to be used by health plans.”

purpose of this other survey was to measure knowledge, attitudes, and behavior of smokers for policy and program planning and as a baseline for assessing change over time. We compared our sample of smokers with the 1,102 smoker respondents who were covered

by Blue Cross commercial insurance. We found the smokers in our study to be older, more likely to be female and married, and to have completed more education. In addition, they were more likely to be daily smokers (91 percent versus 73 percent), to be more interested in quitting smoking in the next thirty days (46 percent versus 31 percent), and to smoke their first cigarette within five minutes of waking (28 percent versus 12 percent). The sample of smokers, then, who completed this evaluation of the benefit represent a pool of candidates who may be especially likely to take advantage of an insurance benefit covering smoking-cessation treatment, especially as a sizable proportion expressed an interest in quitting. Thus, the finding of both limited awareness of the benefit and no effect on use of tobacco, quitting attempts, and quitting is even more interesting than it might be for smokers less interested in quitting.

THIS STUDY PROVIDES an important glimpse into the real-world outcome of adding health insurance coverage for smoking-cessation medications. It provides a sobering caution to the suggestion that

merely providing coverage for smoking-cessation pharmacotherapy will have a substantial effect on rates of smoking cessation. It is possible that if other types of cessation support were covered as well, or if greater efforts were made to make smoker members aware of the coverage, different results might be seen. Further studies are needed to test whether such efforts would encourage more people to quit smoking.

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