

Notes

Impact of Workplace Wellness-Program Participation on Medication Adherence, p. 2

A T A G L A N C E

Impact of Workplace Wellness-Program Participation on Medication Adherence, *by Paul Fronstin, Ph.D., Employee Benefit Research Institute, and M. Christopher Roebuck, Ph.D., RxEconomics, LLC*

- This study analyzes data from a large employer that enhanced financial incentives to encourage enrollment in its workplace wellness programs. It estimates the effect of wellness-program participation on medication adherence in six chronic conditions: hypertension, dyslipidemia, diabetes, congestive heart failure, asthma/chronic obstructive pulmonary diseases, and depression.
- Biometric screenings led to an average increase in medication adherence for dyslipidemia and depression. Biometric screenings had no impact on medication adherence among individuals with hypertension, congestive heart failure, or asthma/chronic obstructive pulmonary diseases. Participation in health risk assessments (HRAs) had no statistically significant effects on medication adherence for any of the chronic conditions examined.
- Improvements in medication adherence may signal forthcoming medical-cost offsets and productivity enhancements from biometric screenings. Whether or not these benefits exceed program costs is a research question worthy of future study using data on a greater number of wellness programs, over longer time periods.

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Introduction

This study represents the third in a series that analyzes data from a large employer, which enhanced financial incentives to encourage participation in its workplace wellness programs. In prior work (Fronstin and Roebuck 2015a), it was concluded that voluntary wellness programs disproportionately attracted relatively healthy individuals. A subsequent paper (Fronstin and Roebuck 2015b) examined the impact of participation in health risk assessments (HRAs) and biometric screenings on health services utilization and costs. That study made use of the quasi-experimental design generated by the rollout of the financial incentives to different groups, at different times. This allowed for control of individual selection bias to derive unbiased results. The main finding was that biometric screenings served to increase the use of, and spending on, prescription drugs; however the study cited the need for further research, since wellness programs may take several years to have a meaningful positive impact on health status, as evidenced through reductions in health services use and spending.

This paper explores whether this employer's HRAs and biometric screenings affected medication adherence among those diagnosed with, and on therapy for, six chronic conditions: hypertension, dyslipidemia, diabetes, congestive heart failure (CHF), asthma/chronic obstructive pulmonary disease (COPD), and depression. Although past work showed an increase in prescription drug utilization due to the wellness program, it cannot be concluded that this effect translated into an improvement in medication adherence—a metric arguably more important, since the link between medication adherence and decreased other non-drug medical services use and spending has been clearly established (Roebuck, et al. 2011). Indeed, finding a positive impact of wellness-program participation on medication adherence may be an early indicator of success, suggesting that health care cost savings are forthcoming.

Data and Methods

Study Sample

As in the two prior papers (Fronstin and Roebuck 2015a and Fronstin and Roebuck 2015b), study data came from a large manufacturer based in the Midwest, but with employees located throughout the U.S. Health insurance eligibility information, medical and prescription-drug claims, as well as wellness-program-participation data were obtained for the time period 2011–2013. The employer had offered HRAs since at least 2004 and implemented biometric screenings in 2007. Individuals' responses to HRAs and results of biometric screenings were also obtained.

The study sample included full-time active employees, 18–64 years old (as of Dec. 31, 2013), and continuously enrolled in the employer's health plan from 2011 through 2013. Employees in health plans that paid claims on a prepaid or capitated basis such as health maintenance organizations were excluded, as were spouses, partners, and other dependents. The final analytical dataset consisted of 71,982 employees.

Study Design

As described in greater detail in earlier work, the estimation strategy makes use of a natural experiment wherein the study employer altered the financial incentives it offered to members for their participation in HRAs and biometric screenings. Incentive changes were implemented differentially across certain groups and years. Briefly, starting with the 2012 plan year, non-union employees were offered a \$20 per month (i.e., \$240 per year) reduction in health insurance premiums if they completed HRAs. Prior to this, all employees received a \$50 gift card for participating. The following year (2013), a subset of union employees collectively bargained for this new financial incentive for completing HRAs, but all other union workers continued to receive the gift card.

For biometric screenings, all employees were given a nominal reward for participating before 2013—mostly in the form of free books or a chance to win movie tickets. In 2013, non-union workers were required to participate in biometric screenings, in addition to completing HRAs, in order to continue to receive the \$20 per month (i.e., \$240 per year) reduction in health insurance premiums. Union workers were not offered financial incentives to participate in biometric screenings in 2013, but they did receive prize giveaways in years prior.

Given that the alterations in incentives for participating in HRAs and biometric screenings happened for different cohorts in different years, this study constructed three groups for analysis:

- Test Group 1 was comprised of the 15,312 union members who were exposed to the new financial incentive for completing HRAs starting in 2013.
- Test Group 2 included the 40,547 non-union employees who were offered the new financial incentive for participating in HRAs in 2012, and for both HRAs and biometric screenings in 2013.
- Lastly, the 16,123 union employees who never received the \$20/month reduction in health insurance premiums during the three-year study period made up the Control Group.

Wellness-program-participation impacts on adherence to medications were investigated for six chronic conditions: hypertension, dyslipidemia, diabetes, CHF, asthma/COPD, and depression. Patients were classified as having one or more of these diseases if they had at least one inpatient or two outpatient (on different dates) medical claims with a relevant diagnosis code during a given year. Condition-specific adherence was calculated using the proportion of days covered (PDC)—a metric ranging from 0 to 1 that represents the fraction of days in the period that the patient had at least one drug for the condition on hand.

Multivariate regression models of each adherence (dependent) variable were estimated as a function of participation indicators for HRAs and biometric screenings, as well as the following covariates: geographic region, household size, health insurance plan type, annual wage amount, number of years of tenure with the employer, and the Charlson Comorbidity Index score. For a more detailed discussion of the modeling methodology, please see the Appendices from previous studies (Fronstin and Roebuck 2015a and Fronstin and Roebuck 2015b).

An important concern for the analysis was patient-level selection bias. Since wellness-program participation was voluntary, members may have made their enrollment decisions for unobserved reasons that may have also been correlated with medication adherence. Not accounting for this possibility may lead to biased estimates of the impact of the wellness programs. In response to this challenge, two analyses were pursued: First, linear, fixed-effects models were estimated, which control for all time-invariant personal characteristics that may be confounders. Since this approach does not eliminate potential endogeneity due to unmeasured variables that vary over time, an instrumental-variables (IV) approach was also used that made explicit use of the quasi-experimental design of the financial incentives rollout. Interestingly, the IV coefficients were similar in both magnitude and significance to their fixed-effects counterparts. Therefore, results from the latter are presented for brevity.

Results

Descriptive Statistics

Figure 1 presents the baseline (2011) sample means (by group) for the prevalence of each of the six chronic diseases. All other variable means have been reported elsewhere (see Fronstin and Roebuck 2015a; Fronstin and Roebuck 2015b). Dyslipidemia (i.e., high cholesterol) was the most common condition—present in 25–28 percent of the study population. The second-most prevalent disease was hypertension (19–21 percent), followed by diabetes (7–9 percent), depression (6–7 percent), and asthma/COPD (4 percent). CHF affected less than 1 percent of individuals included in the analysis.

Average PDC values at baseline for each condition are reported in Figure 2. Patients were most adherent to medications used to treat CHF (80–91 percent). Among employees diagnosed with, and on therapy for, hypertension, dyslipidemia, and diabetes, average PDCs ranged from 68 percent to 79 percent. Lower adherence was measured for individuals with depression (53–61 percent), and asthma/COPD (30–38 percent).

Wellness Program Effects on Medication Adherence

Figure 3 presents the impacts of HRAs and biometric screenings on medication adherence from the linear, fixed-effects models. Of the 12 estimates, only 2 reached statistical significance. First, biometric screenings were shown to have had a positive 0.007 effect on medication adherence for dyslipidemia ($p < 0.05$). Second, biometric screenings were also associated with a 0.026 increase in medication adherence for depression ($p < 0.01$). No other parameter estimates for biometric screenings or HRAs were statistically different from zero.

Conclusions

Health risk assessments and biometric screenings are increasingly used by employers to identify existing or potential health issues among their plan members. The hope is that information derived from these wellness programs will prompt patients to make meaningful lifestyle changes, use preventive care, and commence and comply with recommended treatment. Indeed, these steps would both reduce the burden of their illnesses and decrease the risk of future, adverse-health events.

In earlier work, no significant effects of HRAs were found in the first year post-completion. However, biometric screenings led to an increase in prescription-drug utilization by 0.31 fills per person per year ($p < 0.01$), and associated prescription-drug costs (+\$56 per person per year). Delving deeper into the therapeutic classes comprising this additional drug use, it was found that statins and selective serotonin reuptake inhibitors (SSRIs) and serotonin-norepinephrine reuptake inhibitors (SNRIs) were the top-three classes driving the increase in prescription-drug utilization. Therefore, the current findings on increased adherence are confirmation of the earlier results, since these are the primary medications used to treat dyslipidemia and depression.

Decision-makers faced with the decision of whether to allocate scarce resources to implement wellness programs must consider the economic costs and consequences of such programs. With short time horizons, programs like HRAs and biometric screenings may not provide a net benefit—especially if plan sponsors are offering financial incentives for member participation. Indeed, the earlier work confirms this. However, longer-term medical cost offsets and productivity enhancements may be possible through improved medication adherence made possible via information captured through biometric screenings. Whether these future benefits outweigh the costs is an empirical question requiring analysis of longer panel datasets, on a greater number of wellness programs.

Figure 1
Percent of Sample Diagnosed With Various Chronic Conditions, by Group

Variable	Test Group 1: Select Union Members (N=15,312)	Test Group 2: Non-Union Employees (N=40,547)	Control Group: Other Union Members (N=16,123)
Hypertension	21%	21%	19%
Dyslipidemia	25%	28%	26%
Diabetes	9%	7%	8%
Congestive Heart Failure (CHF)	0.3%	0.2%	0.3%
Asthma/COPD	4%	4%	4%
Depression	7%	7%	6%

Source: Employee Benefit Research Institute analysis based on administrative claims data.

Notes:

- Test Group 1=No incentive for biometric screening, incentive for health risk assessments in 2013.
- Test Group 2=Incentive for biometric screening in 2013, incentive for health risk assessments in 2012 and 2013.
- Control Group=No incentive for biometric screening, no incentive for health risk assessments.
- COPD=Chronic obstructive pulmonary disease

Figure 2
**Proportion of Days Covered (PDC) Among Individuals
Diagnosed With Various Chronic Conditions, by Group**

Variable	Test Group 1: Select Union Members (N=15,312)	Test Group 2: Non-Union Employees (N=40,547)	Control Group: Other Union Members (N=16,123)
Hypertension	77%	78%	78%
Dyslipidemia	68%	71%	72%
Diabetes	77%	77%	79%
Congestive Heart Failure (CHF)	91%	80%	88%
Asthma/COPD	30%	35%	38%
Depression	53%	61%	61%

Source: Employee Benefit Research Institute analysis based on administrative claims data.

Notes:

- Test Group 1=No incentive for biometric screening, incentive for health risk assessments in 2013.
- Test Group 2=Incentive for biometric screening in 2013, incentive for health risk assessments in 2012 and 2013.
- Control Group=No incentive for biometric screening, no incentive for health risk assessments.
- COPD=Chronic obstructive pulmonary disease

Figure 3
**Impact of Biometric Screening and HRAs on Medication
Adherence: Linear, Fixed-Effects Models**

Variable	Biometric Screening	Health Risk Assessments (HRAs)
Hypertension PDC	0.004	-0.005
Dyslipidemia PDC	0.007**	-0.001
Diabetes PDC	0.003	-0.0002
Congestive Heart Failure PDC	0.016	0.007
Asthma/COPD PDC	0.003	-0.006
Depression PDC	0.026***	0.002

Source: Employee Benefit Research Institute analysis based on administrative claims data.

Notes:

- HRAs=Health risk assessments.
- PDC=Proportion of Days Covered.
- COPD=Chronic Obstructive Pulmonary Disease.
- *** Statistically significant at the 0.01 level.
- ** Statistically significant at the 0.05 level.

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