

Effects of Health Savings Account–Eligible Plans on Utilization and Expenditures

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Since the Medicare Prescription Drug, Improvement, and Modernization Act was passed in December 2003, health savings accounts (HSAs) have gained increasing popularity among employers.^{1,2} However, little is known about the effects of HSA-eligible plans on expenditures and utilization, including use of preventive services. Health savings accounts are tax-exempt accounts that must occur in conjunction with qualifying high-deductible health plans (HDHPs) according to Internal Revenue Service guidelines. One of the overarching goals of HSAs is to align consumer habits with a more realistic understanding of healthcare costs. People with HSAs or similar coverage were 50% more likely than people with traditional plans to ask providers about costs, 33% more likely to seek out treatment alternatives, and 3 times more likely to choose a less expensive alternative.³

Because HSAs are relatively new, information from multiyear evaluations of these plans has just recently become available.⁴⁻¹⁰ Most studies have combined HSAs and health reimbursement accounts (HRAs) under the umbrella of consumer-directed health plans (CDHPs), making it difficult to interpret the impact of each distinct design. Perhaps most importantly, most extant studies of CDHPs have been subject to selection bias—those who anticipate low utilization and costs (ie, healthier people) will generally find HSA plans more attractive.

An important component that distinguishes HSAs from HRAs is the requirement that the HSA be opened in conjunction with a federally qualified HDHP (aka an HSA-eligible plan). To determine whether HSA-eligible plans have affected utilization and expenditure, we compared the healthcare claims experience of 2 groups. One group consisted of individuals insured through a large Midwestern employer that fully replaced a traditional plan (HMO or preferred provider organization [PPO]) with an HSA-eligible plan so that all employees with health coverage could open a corresponding HSA. The comparison group consisted of individuals insured through large Midwestern employers within the same industry that offered traditional plans throughout the study period. This study design has the unique feature of reducing selection bias, which has been a major limitation of previous HSA studies.

Furthermore, no other studies have evaluated a full-replacement HSA-eligible HDHP plan in which all preventive services were subject to the deductible.

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Objective: To assess the impact of a health savings account (HSA)-eligible plan on utilization and expenditures in an employer-sponsored Midwestern health plan which offered a traditional plan from 2003 through 2004 that was fully replaced by an HSA-eligible plan in 2005 and 2006.

Study Design: Retrospective pre–post design with a control group.

Methods: Medical and pharmacy claims of plan members younger than 65 years who were continuously enrolled throughout the 4-year study period were used to evaluate the impact of switching to the HSA-eligible plan. Expenditure and utilization measures were compared with those for a control group covered by employers in the same industry and geographic location, while controlling for patient characteristics.

Results: The HSA-eligible plan was associated with significantly lower total expenditures (–17.4%), fewer and less costly office visits (–13.6% and –20.3%, respectively), fewer emergency department (ED) visits (–20.1%), lower pharmacy expenditures (–29.2%), lower expenses per drug (–27.9%), a reduced likelihood of mammograms (odds ratio [OR] = 0.55, $P < .05$) and Papanicolaou tests (OR = 0.66, $P < .05$), and a borderline significant reduction in routine physical exams (OR = 0.76, $P < .10$). The HSA-eligible plan also was associated with increased outpatient facility expenditures (5.1%, $P < .05$).

Conclusion: Employer-sponsored HSA-eligible plans appear to be associated with lower healthcare expenditures and/or utilization, particularly for office visits, ED visits, and pharmacy. However, they also may discourage preventive care, leading to increased long-term medical costs. Employers offering HSA-eligible plans should ensure that there are no financial barriers for preventive services.

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Take-Away Points

This study evaluates the impact of a full-replacement health savings account (HSA)-eligible plan on cost and utilization.

- Compared with traditional plans, the HSA-eligible plan was associated with lower total expenditures, fewer and less costly office visits, fewer emergency department visits, and less costly prescription fills.
- The HSA-eligible plan was associated with reduced likelihood of mammograms and possibly Papanicolaou tests and routine physical exams.
- The HSA-eligible design may be effective in decreasing cost and utilization, but employers and health plans may want to ensure that there are no financial barriers to preventive services to avoid unintended long-term consequences.

period and categorized by place of service (office, outpatient facility, inpatient facility, and pharmacy). Expenses included out-of-pocket payments by the individual and the amount paid by the health plan, and were typically defined by the health plan's fee schedule for office/outpatient services and by diagnosis-related groups (DRGs) for inpatient hospital services. Fee schedules and DRGs are based on the complexity and resource intensity associated with each service or admission. Annual expenses were adjusted for inflation using the Consumer Price Index and expressed in 2006 dollars.

METHODS

Study Population

The study population included individuals covered through large Midwestern transport companies headquartered in the same state, with claims administered by the same Midwestern health plan. Study population members were continuously enrolled in a health plan all 4 years of the study period (January 1, 2003, through December 31, 2006) and were younger than 65 years on January 31, 2006. The study population included 2 groups: (1) employees of a single employer covered by PPOs or HMOs in 2003 and 2004 and by an HSA-eligible plan in 2005 and 2006 (HSA group), and (2) employees of different employers in the same industry covered by PPOs or HMOs from 2003 through 2006 (traditional group). The traditional group was distribution matched (4:1) to the HSA group on the basis of prospective risk score (illness burden) category as of December 31, 2003, defined in increments of 0.1 for risk scores of 0 to 3, 0.5 for scores of 3 to 10, and 1.0 for scores of 10 to 14. The prospective risk score is described in further detail in the following section.

Data Elements

Age and sex were captured from the health plan's membership data. Illness burden was measured using Symmetry Episode Risk Groups (ERGs), which use episode-of-care methodology to create measures of health risk for individuals and groups using medical and pharmacy claims information. The ERG prospective risk score is a relative risk measure that predicts an individual's need for healthcare services and associated costs for the next 12 months.¹¹ Episode Risk Groups are considered a leading health risk assessment tool for commercial populations, and outperformed 6 other predictive models.¹²

Utilization and expenditure measures were derived from medical and pharmacy claims data for each calendar year of the study period. Utilization counts were calculated for office visits, outpatient facility visits, emergency department (ED) visits, inpatient admissions, and prescription fills. Total expenditures were summed for each calendar year of the study

Plan characteristics such as deductibles, out-of-pocket maximum (OPM), coinsurance, and copayment amounts were collected from the benefit database maintained by the health plan. The HSA-eligible group and the traditional group had similar benefits in 2003, each having in-network single/family deductibles of approximately \$500/\$1000. As of January 1, 2005, the HSA group's single/family deductibles and OPM amounts substantially increased to \$2000/\$6000 and \$4000/\$10,000, respectively, and an HSA option was added to the plan. In contrast, the traditional group experienced only modest increases to deductibles and OPM amounts during this same period. Both groups had 20% coinsurance levels throughout the study period (coinsurance was required once the deductible was met in the HSA plan), and most members of the traditional group had office copayment amounts of \$15 or \$20. The HSA-eligible plan did not waive the deductible for any preventive services, meaning that members paid out-of-pocket until the deductible was met.

Statistical Analysis

SAS/STAT software version 9.2 (SAS Institute Inc, Cary, NC) was used to perform all analyses.¹³ Age and prospective risk score were compared between the traditional and HSA groups using *t* tests and χ^2 tests. Multivariate models were used to investigate the effect of the independent variables (age and prospective risk as of the beginning of that calendar year, sex, and plan design, which was coded as HSA = No in years 2003 and 2004 and HSA = Yes in years 2005 and 2006 for those with an HSA-eligible plan; all others were coded No across all 4 years) on the dependent variables (utilization and expenditure measures) over time.

For the expenditure data, separate models were estimated for the zero values (due to the excessively large number of zeros across the 4-year study period) and the positive values. The skewed distributions of the positive expenditures were addressed through application of the log normal models with

random effects (for which zero is not a legitimate value, in contrast to normal theory models). Logistic regression with random effects modeled the presence of positive expenditures versus the zeros.

Fixed-effects negative binomial models with random coefficients were used to analyze the utilization variables.¹⁴ In observational studies with longitudinal data, fixed-effects models are appropriate because they focus on the within-subject differences, which allow the unobserved variables to have any correlation structure with the observed variables, thus providing an element of control of external variation typically available in designed experiments with random effects. Fixed-effects models work only with balanced data (no missing data); therefore, they could not be used for expenditure data due to the large number of zeros that were dealt with by applying separate models, leaving the positive expenditure data unbalanced. Zeros are legitimate values with count data, but zero values in all 4 years were problematic because fixed-effects models for counts require positive counts at least 1 point in *time within person*. Consequently, people with zero values in all 4 years of the study were excluded from the utilization models.

For both expenditure and utilization models, analyses were conducted with and without outliers. Two-way scatter plots of utilization by prospective risk were used to develop outlier exclusion thresholds for utilization models, and outliers were excluded on the basis of a prospective risk score greater than 9, as visual data plots illustrated these to be extreme values. Two-way scatter plots of expenditures by prospective risk score were used to identify outlier thresholds by expenditure category. A prospective risk score greater than 10.5 and/or the following dollar thresholds were used to exclude subjects: \$100,000 for total expenditures, \$40,000 for office, \$100,000 for inpatient, \$75,000 for outpatient, \$15,000 for pharmacy, and \$700 per drug, as visual data plots illustrated these to be extreme values.

McNemar's tests compared the use of preventive services of eligible individuals within each group before and after January 1, 2005. Individuals were considered eligible for a preventive service if they met specific age and sex criteria. Changes in use of preventive services between groups of eligible members were compared using stratified logistic regression with a dichotomous outcome (used service/did not use service), controlling for age and prospective risk. Individuals were considered to have used the preventive service if they had 1 or more claims for the service during the time period.

RESULTS

A total of 696 individuals in the HSA-eligible group were

distribution matched to 2778 individuals in the traditional group at a ratio of 1:4. The HSA-eligible group was significantly younger at baseline (29.9 vs 33.2 years; $P < .05$) but had equivalent average prospective risk scores of 0.853 due to distribution matching procedures. The proportion of males and females did not differ between HSA-eligible groups (55.5% male) and traditional groups (58.1% male). There also was no difference in the percentage of single versus family contracts between the HSA-eligible groups (52% single) and traditional groups (54% single).

Expenditure and Utilization Measures

Summary statistics for per member per year (PMPY) expenditures are displayed in **Table 1**. In general, the traditional group experienced yearly median increases in most expenditure categories from 2003 to 2006, whereas the HSA-eligible group generally experienced decreasing expenditures following implementation of the HSA-eligible design in 2005. In all categories except for inpatient and outpatient expenditures (in which the median remained at zero throughout the study period for both groups), the median expenditures of the traditional group in 2006 exceeded those in 2003. Conversely, the 2006 median expenditures of the HSA-eligible group were lower than the 2003 expenditures.

Average utilization totals by time period are expressed PMPY or as the rate per 1000 members (Table 1). Although median values varied minimally, mean utilization generally increased over time for the traditional group, with the exception of ED visits. In contrast, mean utilization in the HSA-eligible group generally decreased or remained unchanged following implementation of the HSA-eligible design in 2005, with the exception of outpatient visits and prescription fills.

Table 2 shows the impact of the HSA-eligible design on expenditures. After controlling for age and prospective risk, the positive versus zero expenditure models yielded negative estimates, indicating that the HSA-eligible design implementation was associated with a lower likelihood of positive expenditures in the following categories: total, office, outpatient, pharmacy, and amount per drug. The Expenditure Models on Positive Values Only columns contain coefficients for the effect of HSA on positive expenditure measures, where individuals with zero expenditure were excluded. The estimates are the log percent differences between study groups. In these models based only on positive values, the implementation of the HSA-eligible design was associated with significantly lower total expenditures (-17.4%), office expenditures (-20.3%), pharmacy expenditures (-29.2%), and amount per drug (-27.9%), and significantly higher outpatient expenditures (5.1%) than the traditional group. Inpatient expenditure was not significantly different between groups. A total of 24 distinct people

■ **Table 1.** Descriptive Statistics for Expenditure and Utilization Variables

Variable	Traditional Plan (n = 2778)				HSA-Eligible Plan (n = 696)			
	Zero Count, %	Median, \$	Mean, \$	90th Percentile, \$	Zero Count, %	Median, \$	Mean, \$	90th Percentile, \$
Expenditures								
Total								
2003	19	405	1700	3786	14	411	1822	3900
2004	19	500	1988	4791	17	451	2246	5205
2005	17	551	2370	5357	19	314	2143	3868
2006	18	594	2519	5443	18	309	2069	4741
Office								
2003	24	193	466	1034	18	226	451	1066
2004	25	216	549	1190	21	217	547	1139
2005	23	237	614	1354	24	174	481	933
2006	23	243	692	1467	23	181	649	1150
Inpatient								
2003	96	0	344	0	95	0	501	0
2004	96	0	345	0	96	0	500	0
2005	95	0	481	0	95	0	488	0
2006	96	0	490	0	95	0	402	0
Outpatient								
2003	71	0	480	961	68	0	548	1330
2004	67	0	632	1763	67	0	834	2191
2005	66	0	724	1854	71	0	904	1203
2006	67	0	716	1854	70	0	679	1902
Pharmacy								
2003	37	33	342	952	34	40	291	773
2004	36	35	381	1133	36	35	344	850
2005	33	52	460	1305	39	21	245	694
2006	34	45	509	1488	39	18	267	673
Amount per drug								
2003	37	13.77	27.73	73.18	34	14.25	25.33	67.22
2004	36	13.51	30.22	81.71	36	13.82	27.13	70.02
2005	33	16.58	33.49	87.43	39	9.82	21.46	58.19
2006	34	16.35	33.00	87.17	39	7.83	19.88	56.37
Utilization								
Office visits (PMPY)								
2003	29	1	2.34	6	26	2	2.77	6
2004	30	2	2.44	6	29	2	2.45	6
2005	27	2	2.55	7	31	1	2.15	6
2006	28	1	2.60	5	30	1	2.15	5
Outpatient visits (per 1000)								
2003	97	0	0.04	0	97	0	0.04	0
2004	96	0	0.06	0	97	0	0.04	0
2005	96	0	0.06	0	97	0	0.04	0
2006	97	0	0.05	0	97	0	0.04	0
ED visits (per 1000)								
2003	90	0	0.13	1	89	0	0.13	1
2004	90	0	0.13	1	90	0	0.13	1
2005	89	0	0.14	1	91	0	0.10	0
2006	89	0	0.13	0	92	0	0.09	0
Hospital admissions (per 1000)								
2003	97	0	0.03	0	96	0	0.05	0
2004	97	0	0.03	0	96	0	0.04	0
2005	97	0	0.04	0	96	0	0.04	0
2006	97	0	0.04	0	97	0	0.03	0
Prescription fills (PMPY)								
2003	37	2	6.10	17	34	2	5.91	19
2004	36	2	6.55	21	36	2	6.47	24
2005	33	2	7.45	16	39	1	5.72	18
2006	34	1	8.11	16	39	1	6.44	19

ED indicates emergency department; HSA, health savings account; PMPY, per member per year.

■ **Table 2.** Impact of the HSA-Eligible Design on Expenditures

Expenditure	Positive Versus Zero Expenditure Models ^a			Expenditure Models on Positive Values Only ^b			Outliers ^c (No. of Subjects)
	Estimate	F ^d	P	Estimate	F ^d	P	
Total	-0.269	5.83	.016	-0.174	20.03	<.001	15
Office ^e	-0.234	5.15	.023	-0.203	25.01	<.001	18
Inpatient	0.090	0.35	.556	0.010	0.01	.940	11
Outpatient	-0.177	4.65	.031	0.051	10.35	.001	13
Pharmacy	-0.254	7.60	.006	-0.292	40.70	<.001	11
Amount per drug	-0.254	7.62	.006	-0.279	88.09	<.001	10

HSA indicates health savings account.

^aLogistic regression with random effects used to model zero versus non-zero expenditures.

^bLog normal distribution with random intercept used to model positive expenditure values.

^cOutliers were excluded on the basis of a prospective risk score greater than 10.5 or a dollar amount of \$100,000 for total expenditures, \$40,000 for office, \$100,000 for inpatient, \$75,000 for outpatient, \$15,000 for pharmacy, and \$700 per drug, as visual data plots illustrated these to be extreme values.

^dType 3 F value adjusted for age, sex, and prospective risk. Interaction terms were tested.

^eThe interaction term for prospective risk and HSA was significant for office expenditures. As prospective risk increases, HSA goes from being less expensive to more expensive than traditional plans.

(0.7% of total sample) were excluded from at least 1 expenditure model.

The utilization model coefficients are displayed in **Table 3**. These estimates are interpreted as the log percent difference between the traditional group and the HSA-eligible group. The implementation of the HSA-eligible design was associated with significantly fewer office visits (-13.6%) and ED visits (-20.1%). No other significant differences were detected, but measures such as inpatient and outpatient facility visits were used at substantially lower frequencies than measures such as office visits and prescription. A total of 16 people (0.5% of total sample) were excluded from at least 1 expenditure model.

Use of Preventive Services

Table 4 shows the number of individuals meeting age and sex eligibility criteria for each preventive service. This table also illustrates the percentage of eligible individuals who used each service at least once from January 1, 2003, through December 31, 2004, and from January 1, 2005, through December 31,

2006, as well as the change in percentage of eligible individuals receiving preventive services before 2005 and after 2005. McNemar's tests showed that the proportion of HSA-eligible group members receiving mammograms significantly decreased (-14%, $P < .05$) after 2005. In contrast, the traditional group had a significant increase in prostate screening exams after 2005 (8.9%, $P < .05$).

Stratified logistic regression models demonstrated that the HSA-eligible plan was associated with significantly lower odds of receiving mammograms, and nearly significantly lower odds of receiving Papanicolaou tests and routine health maintenance exams compared with the traditional plans after controlling for age and prospective risk (Table 4). There was no difference between the 2 groups in changes in use for prostate cancer screening.

DISCUSSION

In our analysis, the HSA-eligible plan was associated with

■ **Table 3.** Impact of the HSA-Eligible Design on Utilization

Utilization Measure	Zero Count (All 4 Years) ^a	Positive Utilization Count Models ^b			
		No. ^c	Estimate	t ^d	P
Office visits (PMPY)	272	3186	-0.136	-5.23	<.001
Outpatient visits (per 1000)	3105	353	-0.156	-1.01	.310
ED visits (per 1000)	2383	1075	-0.201	-2.17	.030
Hospital admissions (per 1000)	3072	386	-0.093	-0.63	.528
Prescription fills	424	3034	-0.044	-1.44	.151

ED indicates emergency department; HSA, health savings account; PMPY, per member per year.

^aZero values in all 4 years were problematic because the fixed-effects model requires variation of the within-person response. Consequently, people with zero values in all 4 years of the study were excluded from the utilization models.

^bFixed-effects negative binomial models with random coefficients for the prospective risk score.

^cSixteen outliers were excluded on the basis of a prospective risk score greater than 9, as visual data plots illustrated these to be extreme values.

^dt Values were adjusted for age, sex, and prospective risk. Interaction terms were tested.

■ **Table 4.** Use of Preventive Services by Time Period, and Impact of the HSA-Eligible Design on Use of Preventive Services^a Based on Stratified Logistic Regression

Preventive Service	No. of Eligible Members		Percent Utilization Before 2005		Percent Utilization After 2005		Difference in Percent Utilization ^b		Odds Ratio (95% CI)	P
	Trad	HSA	Trad	HSA	Trad	HSA	Trad	HSA	HSA Variable	
Papanicolaou test (females 18-64 y)	722	180	56.0	62.2	54.4	56.7	-1.6	-5.5	0.66 (0.44, 1.00)	.05
Mammogram (females 40-64 y)	440	93	56.4	65.6	54.5	51.6	-1.9	-14.0 ^c	0.55 (0.31, 0.99)	.04
Prostate screening (males 50-64 y)	368	57	37.0	49.1	45.9	56.1	8.9 ^b	7.0	0.98 (0.46, 2.18)	.99
Routine exam (18-64 y)	1926	463	81.6	83.6	82.9	79.5	1.3	-4.1	0.76 (0.55, 1.05)	.10

CI indicates confidence interval; HSA, health savings account; trad, traditional.

^aModels adjusted for age and prospective risk.

^bDifference = before 2005 – after 2005.

^cMcNemar's χ^2 test comparing the proportion of eligible members within each group using preventive services before 2005 versus after 2005 was significant at $P < .05$.

significantly lower total expenditures, fewer and less costly office visits, fewer ED visits, less costly prescription fills and amount per drug, and a reduction in the likelihood of mammograms, Papanicolaou tests, and possibly routine physical exams. There was no difference in inpatient facility cost or utilization, but there was a significant increase in outpatient facility expenditures for those in the HSA group. These findings suggest that members of the HSA-eligible group restricted utilization of nonemergent face-to-face services, including some preventive services, due to increased out-of-pocket office expenses. Pharmacy expenditures decreased significantly without a significant decrease in prescription fills, indicating that individuals with the HSA-eligible plan did not discontinue their prescriptions, but rather sought out lower-cost options such as generic medications to reduce out-of-pocket pharmacy expenses. The significant increase in outpatient facility expenditures, given no change in outpatient utilization and decreased ED utilization, indicated that once individuals with the HSA-eligible plan did seek services in an outpatient facility, the expenses related to those services were substantial. However, this phenomenon was not observed for inpatient services. Of note, outpatient and inpatient facility analyses were based on small utilization numbers and widely varying expenditures.

Our results are consistent with the RAND Health Insurance Experiment, which indicated that members consumed fewer services when faced with higher cost sharing.¹⁵ However, the RAND experiment found significant decreases in cost and utilization in all places and types of services, whereas our results showed that office, preventive, and pharmacy services may have been more heavily impacted than hospital-related services. This difference may be related in part to the

differences in the benefit designs studied. The RAND designs involved straight coinsurance, but the plans in our study involved a combination of coinsurance, copayments, deductibles, and OPM amounts.

Our results also are somewhat consistent with those of Parente et al, who compared the cost and utilization patterns of employees with employer-sponsored health coverage who were given a choice between traditional managed care plans and a CDHP (the latter involving a spending account rather than an HSA).⁴ Compared with traditional plans, the CDHP had lower costs associated with physician visits and pharmaceutical use, but higher hospital admission rates and costs.⁴ Selection bias could potentially explain the differences in findings, because individuals in the Parente et al study chose a CDHP over a traditional plan and therefore may have been more apt to delay seeking medical care, possibly leading to more serious medical conditions and high-cost hospitalizations.

Finally, our utilization results are similar to those of the aforementioned recent studies on HSAs/HRAs except that use of preventive services did not decrease in those studies.⁵⁻¹⁰ This difference may be explained by important design characteristics of prior studies, including waiving the deductible for preventive services in the CDHP and/or HDHP group and the fact that the study population was usually offered a choice between plans, did not have to be continuously enrolled for the entire study period, and/or was not limited to a particular industry. Other studies that have evaluated cost sharing related to preventive services have found decreased utilization with higher out-of-pocket costs.¹⁶⁻²⁰

The strengths of this study include the reduction of selection bias due to the full replacement of the traditional plan with the HSA-eligible plan, a comparable control

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group, the use of a single industry category and geographic region, and the continuous enrollment of subjects, which allowed us to evaluate within-person variation over a 4-year period.

Our study has several potential limitations. The administrative database does not include variables such as education level, smoking status, or weight. We also did not have information related to job type (such as office-related job vs laborer or field worker) or salary. However, the fixed patient-level effects models used to evaluate the utilization measures significantly reduced the impact of omitted variables by exclusively evaluating within-person variation; time-invariant variables were dropped from the model. Also, by selecting individuals receiving health insurance coverage from employer groups within the same general industry and headquartered in the same geographic area, we likely controlled for potentially confounding variables.

The administrative database also does not contain any information on the HSAs themselves, including contributions made to the HSAs by the employer or the employee. Therefore, while we knew the characteristics of the benefit plan, we did not know how the plans were funded and could not be certain that every employee opened a corresponding HSA. While this information would have been beneficial in interpreting behavioral changes, health plans do not typically administer the HSAs and therefore do not have access to detailed information. In addition, there is a possibility that employers in the traditional group could have added flexible spending accounts (FSAs) to their benefit offerings. FSAs are distinct from health insurance plans and therefore are not part of the administrative database of the health plan. While it is unlikely that the possible existence of FSAs confounded overall findings, it highlights the issue that this study compares bundles of characteristics between HSA-eligible plans and traditional plans. Further research in this area should focus on the effects of plan pieces that are generally different between HSA-eligible plans and traditional plans (eg, high deductibility, use of HSA accounts, different availability of FSAs).

Because we selected employer groups in the same industry and headquartered in the same geographic area, the study results may not be generalizable to populations in different industries and locations. The findings also were limited to those individuals who obtained health insurance coverage through their employer, as this study addressed only employer-sponsored health insurance.

CONCLUSION

The results of this study support the notion that employer-sponsored HSA-eligible plans provide financial in-

centives for consumers to make cost-effective healthcare decisions (eg, choosing generics over brand prescription medications). One caveat is that these plans may discourage preventive care and thus could eventually cause medical costs to increase in the long term. In recent years, most employer-sponsored health plans have waived the deductible on preventive services.^{1,2,21} The current analysis provides a rationale for continued movement in this direction and will hopefully dissuade employers from reverting back to subjecting preventive services to the deductible in hopes of reducing short-term premium costs.

While the Internal Revenue Service allows deductibles to be waived for selected preventive services, it mandates that any service or benefit intended to treat an existing illness, injury, or condition must be subject to the deductible, so first dollar coverage of monitoring services such as glycosylated hemoglobin tests for people with diabetes is not currently allowed. Our study did not have adequate numbers of members with chronic conditions such as diabetes and hypertension to evaluate the impact of the HSA-eligible plan on the healthcare patterns of those populations, but showed that use of some preventive services decreased after the switch to the HSA-eligible plan design. This finding calls into question whether people with chronic conditions would continue to use monitoring services intended to prevent complications and/or worsening of disease after switching to an HSA-eligible plan design. Results of this study support the notion of a “value based insurance design waiver” for HSA-eligible plans to allow for first dollar coverage of highly valued services.²²

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