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The Impact of Expanding Pre-Deductible Coverage in HSA-Eligible Health Plans on Medication Adherence

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AT A GLANCE

IRS Notice 2019-45 allows health savings account (HSA)-eligible health plans the flexibility to cover 14 drug classes and other health services used to prevent the exacerbation of chronic conditions prior to meeting the plan deductible. In this *Issue Brief*, we used claims data to quantify the effect of expanding pre-deductible coverage on medication adherence among enrollees with certain chronic conditions. We found some evidence that expanding pre-deductible coverage in HSA-eligible health plans increased medication adherence in 2022, but not earlier.

Key Findings:

- By 2022, there was evidence of a rebound in medication adherence. We found that the percentage of enrollees with diabetes using insulin increased 4 percentage points, and the percentage of enrollees with heart disease or diabetes using statins increased by 1 percentage point. While the magnitude of the effect may seem small, it is important to remember that when medication adherence fell as a result of the introduction of an HSA-eligible health plan, the magnitude of the declines was relatively small as well. Furthermore, the implied out-of-pocket elasticities of demand are closely aligned with previously published estimates.

- The lack of a large increase in medication adherence may also be due to the fact that adherence rates were already relatively high, averaging 77 percent to 89 percent, with the exception of inhaled corticosteroids, which are often used as a rescue medication and not necessarily filled in a way that would suggest that an enrollee was adherent.

Our findings may be influenced by the ways in which employers implemented changes in response to the IRS notice. First, while the overall employer response to the notice seemed overwhelming, with three-quarters reporting that they expanded pre-deductible coverage for at least one of the 14 services, we would expect the largest impact on medication adherence for diabetes medications and beta blockers, as 66 percent and 54 percent added pre-deductible coverage for those services, respectively. Less than one-half added pre-deductible coverage for inhaled corticosteroids (43 percent), angiotensin-converting enzyme (ACE) inhibitors (39 percent), statins (38 percent), selective serotonin reuptake inhibitors (SSRIs) (35 percent), and anti-resorptive therapy (29 percent).

Similarly, it is not a surprise that the magnitude of the effects is small, as the majority of employers substituted copayments and/or coinsurance for deductibles when they expanded pre-deductible coverage. Whether employers moved from deductibles to no cost sharing whatsoever varied by the different medications. Statins were most likely to be covered in full, with 40 percent of employers reporting that they did not require any cost sharing as a result of the IRS notice, which may explain why statins were one of the two medications that experienced a rebound in adherence. In contrast, only one-quarter of employers exempted ACE inhibitors, SSRIs, or inhaled corticosteroids from any cost sharing.

The fact that we did not see a change in adherence for most of the medications examined is not surprising. Since 2021 was the first year that many employers expanded pre-deductible coverage, it may take time for enrollees to learn that their health plan has changed coverage for certain preventive services. They may not be aware of the change in plan design, despite employers' best efforts to inform enrollees of a plan design change that is considered an improvement in benefits.

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The Impact of Expanding Pre-Deductible Coverage in HSA-Eligible Health Plans on Medication Adherence

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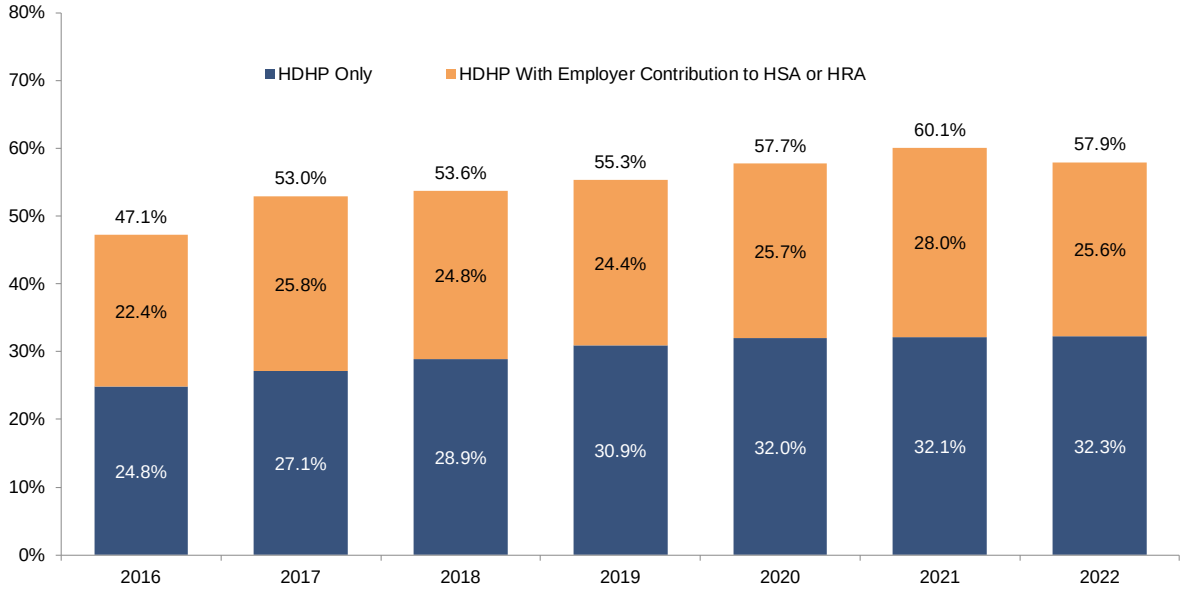
Introduction

The Medicare Prescription Drug, Improvement, and Modernization Act of 2003 (MMA) included a provision that created what are commonly known as high-deductible health plans (HDHPs). At the time, these plans had to have a deductible of at least $1,000 for individual coverage and $2,000 for family coverage (see Appendix Figure 1). As will be discussed in more detail below, HDHPs may provide coverage of certain preventive services prior to the satisfaction of the health plan deductible. Enrollees in plans that meet these and other requirements are allowed to open and contribute to a health savings account (HSA) on a tax-preferred basis. Thus, these plans are also commonly known as HSA-eligible health plans. In 2024, these plans must have a deductible of at least $1,600 for individual coverage and $3,200 for family coverage. Enrollment in high-deductible plans accounts for over one-half of those with private health coverage (Figure 1).[1]

Figure 1
Percentage of Persons Enrolled in a High-Deductible Health Plan (HDHP), by Employer Contribution to HSA or HRA,* Among Those With Private-Sector Health Coverage and Employee-Only Coverage, 2016–2022



* HSA = health savings account, HRA = health reimbursement arrangement.
Source: Medical Expenditure Panel Survey - Insurance Component (MEPS-IC).

Under the initial IRS guidance, until the deductible is met, coverage does not include "any service or benefit intended to treat an existing illness, injury, or condition, including drugs or medications" (Internal Revenue Service, 2004). This narrow definition of the "safe harbor" has likely caused some plan members to go without needed care, as it is well established that increases in cost sharing for health care have been associated with deleterious consequences. Thus, the U.S. Department of the Treasury issued guidance 15 years later in 2019 via IRS Notice 2019-45 to further increase

the flexibility of HSA-eligible health plans to cover specific low-cost preventive services on a pre-deductible basis to prevent the exacerbation of chronic conditions (Figure 2).[2]

Figure 2
Chronic Disease Management Services in the Expanded Safe Harbor

Preventive Care Service	For Individuals Diagnosed With
Angiotensin-converting enzyme (ACE) inhibitors	Congestive heart failure, diabetes, and/or coronary artery disease
Antiresorptive therapy	Osteoporosis and/or osteopenia
Beta blockers	Congestive heart failure and/or coronary artery disease
Blood pressure monitor	Hypertension
Inhaled corticosteroids	Asthma
Insulin and other glucose-lowering agents	Diabetes
Retinopathy screening	Diabetes
Peak flow meter	Asthma
Glucometer	Diabetes
Hemoglobin A1c testing	Diabetes
International normalized ratio (INR) testing	Liver disease and/or bleeding disorders
Low-density lipoprotein (LDL) testing	Heart disease
Selective serotonin reuptake inhibitors (SSRIs)	Depression
Statins	Heart disease and/or diabetes

Source: https://vbidcenter.org/initiatives/hsa-high-deductible-health-plans-2/

Much work has been done to examine the impact of the IRS notice on the response of employers and health plans, as well as the impact on premiums. A 2021 EBRI survey found that 76 percent of employers with 200 or more employees increased the number of drugs and services covered pre-deductible in HSA-eligible health plans as a result of IRS Notice 2019-45 (Fronstin and Fendrick, 2021). Pre-deductible coverage was often added for health care services related to heart disease and diabetes care. Two-thirds added pre-deductible coverage for blood pressure monitors and insulin/glucose-lowering agents, 61 percent added coverage for glucometers, and 54 percent added coverage for beta blockers. Health care services least likely to have pre-deductible coverage were peak flow meters related to the treatment of asthma and international normalized ratio (INR) testing for the treatment of liver disease and bleeding disorders (25 percent each). Most employers did not eliminate cost sharing for the pre-deductible services that were added. The percentage eliminating cost sharing ranged from 25 percent to 40 percent, depending on the service. The 2021 EBRI survey also found that most employers would add pre-deductible coverage for additional health care services if allowed by law (Fronstin and Fendrick, 2021). A 2021 AHIP survey of health plans also found that three-quarters of health plans expanded pre-deductible coverage as a result of the IRS notice.[3]

When it comes to the impact of expanding pre-deductible coverage on premiums, three studies have been conducted. The 2021 AHIP survey of insurers mentioned above noted that most reported either no premium increase or premium increases of less than 1 percent. Although estimates are reported, a great deal of uncertainty regarding the effect of Notice 2019-45 on premiums remains. In the AHIP survey, 15 percent of fully insured plans and 29 percent of self-insured plans noted that it was too early to know what impact the notice had on premiums. Another 7 percent of fully insured plans and 17 percent of self-insured plans reported "other" when asked about the impact of the notice on premiums. No context was given for the "other" responses, but we can conclude that 22 percent of fully insured plans and 46 percent of self-insured plans still did not know what impact the notice had on premiums.

EBRI research using claims data and assumptions about behavioral responses confirmed the findings from the AHIP survey (Fronstin, Roebuck, and Fendrick, 2022). In general, the impact on premiums of expanding pre-deductible coverage as allowed in IRS Notice 2019-45 was small. Estimated premium increases ranged from virtually zero to 1.5 percent. There was no premium increase in the conservative scenario where deductibles were replaced by coinsurance, use of health care services was assumed not to increase due to lower cost sharing, and enrollees' related diagnoses were required. We found a 0.87 percent increase in premiums when use of health care services was assumed to

increase because of the lower cost sharing and employers did not impose any cost sharing. If all 14 services were excluded from pre-deductible coverage with no cost sharing, use of health care services increased, and the services were covered whether or not an enrollee had a related diagnosed condition, premiums increased by 1.5 percent.

Other research has been conducted to examine the expansion of pre-deductible coverage to medications to manage chronic conditions as well. One such study was conducted before IRS Notice 2019-45 was released and examined 57 drug classes used to treat 11 chronic conditions (VBID Health, n.d.). It found that covering all these drug classes pre-deductible with a combination of copayments and coinsurance would increase premiums by 1.7 percent. More recently, an EBRI study used claims data to estimate the effect of expanding pre-deductible coverage beyond IRS Notice 2019-45 to 116 classes of medications. The impact on premiums of expanding pre-deductible coverage to 116 drug classes related to chronic disease management medications in HSA-eligible health plans would be relatively small, ranging from 1.3 to 4.7 percent.

We recently started to examine the impact of the IRS notice on plan enrollees. Fronstin and Volkov (2023a) examined the impact of the notice on enrollment in HSA-eligible health plans and found that we are not seeing more enrollees in HSA-eligible health plans with conditions such as heart disease, hypertension, depression, diabetes, and asthma than in the past. We also examined the impact of the notice on enrollee cost sharing, with the key question being whether we are seeing fewer enrollees in HSA-eligible health plans with deductibles for services such as insulin and inhaled corticosteroids, and found that cost sharing shifted from deductibles to copayments and coinsurance among enrollees in HSA-eligible health plans for a number of services impacted by IRS Notice 2019-45. The same shift was not observed for enrollees in other types of health plans. Yet, the IRS notice appears to have had a negligible impact on overall cost sharing as a percentage of total spending on a number of services impacted by the notice. This may be because employers were more likely to shift cost sharing from deductibles to copayments and coinsurance instead of eliminating it.

More recently, Fronstin and Volkov (2023b) examined the impact of the notice on use of health care services. Overall, the study found that between 2018 and 2021, the IRS notice led to more of an increase in the use of three of the seven medical services in HSA-eligible plans compared with non-HSA-eligible plans. Use of low-density lipoprotein (LDL) testing, hemoglobin A1C (HbA1C) testing, and retinopathy screening increased by a larger percentage among enrollees in HSA-eligible plans compared with those in health plans not targeted by this policy change, suggesting that the IRS contributed to increased use of these services. In addition, use of selective serotonin reuptake inhibitors (SSRIs), statins, and angiotensin-converting enzyme (ACE) inhibitors increased by a larger percentage among enrollees in HSA-eligible plans compared with those in health plans not targeted by this policy change, suggesting that the IRS also contributed to increased use of these prescription drugs. Use of health services may not have changed for all targeted services and prescription drugs because many employers substituted copayments and/or coinsurance for deductibles.

In this *Issue Brief*, we examine the impact of IRS Notice 2019-45 on medication adherence among enrollees in HSA-eligible health plans. More specifically, we examine whether the notice affected use of insulin and other glucose-lowering agents, SSRIs, statins, beta blockers, antiresorptive therapy, inhaled corticosteroids, and ACE inhibitors.

Background

Until IRS Notice 2019-45 was released on July 17, 2019, when it came to providing pre-deductible coverage of health care services in HSA-eligible health plans, employers were guided by the Internal Revenue Service (IRS) safe harbor section 223(c)(2)(C) of the Internal Revenue Code (IRC). Employers could only provide coverage of the following services prior to the satisfaction of the plan deductible:

- Preventive services recommended by the U.S. Preventive Services Task Force (USPSTF), the Advisory Committee on Immunization Practices (ACIP), the Health Resources and Services Administration's (HRSA's) Bright Future Project, and HRSA and the Institute of Medicine (IOM) Committee on Women's Clinical Preventive Services (required by Section 2713 of the Patient Protection and Affordable Care Act of 2010 (ACA) and IRS Notice 2013-57) (Kaiser Family Foundation, 2015; Internal Revenue Service, 2013).

- Periodic health evaluations such as annual physicals and select preventive screenings not listed above (optional, per Internal Revenue Service (2004)).
- Obesity weight-loss programs and tobacco cessation programs (optional, per Internal Revenue Service (2004)).
- Drugs taken by asymptomatic individuals to prevent the manifestation of disease (optional, per Internal Revenue Service (2004)).

Increases in consumer out-of-pocket costs for health care have been associated with deleterious consequences. These include financial stress, worse disease control, increases in hospitalizations, and exacerbation of health disparities, particularly for those with chronic medical conditions and lower household incomes.[4] Peer-reviewed literature has demonstrated that selectively lowering cost sharing for high-value chronic disease management medications can meaningfully improve adherence, reduce the risk of adverse health outcomes, and, in some cases, reduce expenditures (Lee et al., 2013).

With IRS Notice 2019-45 in place, HSA-eligible health plans are now able to adopt a more flexible benefit design, offering more protection for certain medical services through a value-based insurance design (V-BID) plan structure. As the market for HSA-eligible health plans grows, it is important that these plans use this flexibility to allow for effective health management for all beneficiaries. A targeted strategy exploring coverage for certain high-value, clinically indicated health services prior to meeting the deductible will produce more effective, clinically nuanced designs without fundamentally altering the original intent and spirit of these plans. Adoption of voluntary, clinically nuanced expanded HSA-eligible health plan benefit designs has the potential to mitigate cost-related non-adherence, enhance patient-centered outcomes, allow for lower premiums than most preferred provider organizations (PPOs) and health maintenance organizations (HMOs), and substantially reduce aggregate health care expenditures.

According to Notice 2019-45, the list of preventive services that can be covered pre-deductible will be reviewed on a periodic basis. In fact, the guidance specifically states that the periodic review is expected to occur approximately every five to 10 years. For patients and employers alike, 10 years may be a long time to wait for such coverage decisions, given the pace of research on plan design and medical innovation. There are already examples of services that may meet the criteria for pre-deductible coverage that were omitted from Notice 2019-45. For example, the notice identifies ACE inhibitors to prevent exacerbations for individuals diagnosed with congestive heart failure (CHF), diabetes, and/or coronary artery disease. Patients who either do not respond to or who have an adverse reaction to ACE inhibitors are usually switched to angiotensin receptor blockers (ARBs) to prevent the same exacerbations. However, ARBs are not included in the list of 14 services in Notice 2019-45, and thus they cannot be covered pre-deductible in HSA-eligible health plans. Similarly, serotonin-norepinephrine reuptake inhibitors (SNRIs) may be an effective treatment for patients with depression who do not respond to SSRIs.

Furthermore, there is already an appetite for adding more services, as evidenced by The Chronic Disease Management Act, which was reintroduced in the U.S. Congress as recently as March 2023. This bipartisan, bicameral legislation would give HSA-eligible health plans additional flexibility to provide pre-deductible coverage for services that prevent the exacerbation of chronic conditions.

Data and Methods

For the present analysis, we used enrollment information as well as medical and pharmacy claims data from the MarketScan® Commercial databases. We included full-time workers and their dependents who were ages 18–64 and enrolled in either a PPO or an HSA-eligible HDHP. We only included enrollees who were continuously enrolled from January 1, 2019, through December 31, 2022. We also required the presence of a valid individual or family annual deductible amount for each member (and year), which was obtained from the MarketScan® Benefit Plan Design Database.

Next, we extracted all pharmacy claims during the four-year study period for 11 therapeutic classes using the American Hospital Formulary Service (AHFS) Pharmacologic-Therapeutic Classification System numbers (see Appendix Figure 2), the first eight of which were explicitly included in IRS Notice 2019-45 as allowed for pre-deductible coverage and the

last three (calcium channel blockers (CCBs), ARBs, and SNRIs) were not. Seven unique chronic condition indicators were created using International Classification of Diseases, 10th Revision (ICD-10) codes. These diseases were listed in the IRS notice. Individuals were assumed to have one or more of these conditions if they had one inpatient claim or two outpatient claims (on different dates) during a given year.

Adherence was measured using the proportion of days covered (PDC), which commenced on the first fill date (on or after January 1, 2019) for a prescription within a therapeutic class and ended on December 31, 2022. Only individuals identified as having a corresponding chronic condition for the therapeutic class in 2019 (the baseline year) were retained for the ensuing analysis. Finally, in addition to continuous PDC, we also created a dichotomous measure of adherence where PDC ≥ 0.80 as well as a count variable of 30-day adjusted therapeutic class-specific prescription drug fills.

For each therapeutic class, our task was to analyze prescription drug utilization and adherence for the two distinct cohorts of individuals included in the study: those enrolled in PPOs and those enrolled in HDHPs, which allowed pre-deductible coverage beginning in 2020. We first performed a 1:1 exact match between PPO and HDHP members within each therapeutic class on baseline (2019) values of the following variables: male, age group (18–24, 24–34, 35–44, 45–54, 55–64), geographic region (Northeast, Midwest, South, West), Charlson Comorbidity Index (0, 1, 2, 3+),[5] PDC category (0.00–0.19, 0.20–0.39, 0.40–0.59, 0.60–0.79, 0.80–1.00), and a flag for new user equal to 1 if the patient's first baseline fill was beyond Q1 of 2019. Match rates ranged from 83 percent for antiresorptive therapy to 99 percent for statins. Final sample sizes ranged from 371 individuals in each of the PPO and HDHP groups for antiresorptive therapy to 15,330 in each statin cohort.

Statistical Analysis

Mean values across groups within therapeutic class for all variables used in the analysis are reported in Figure 3. In addition to the measures employed in the matching process, mean age (continuous), policyholder (indicator), deductible level (continuous), and PDC (continuous) are also reported.

To estimate the impact of pre-deductible coverage on prescription drug utilization and adherence, a difference-in-differences (DiD) modeling approach was employed. Specifically, for each dependent variable, a multivariate regression was estimated with indicators for male, policyholder, four age groups, three geographic regions, three years, HDHP, three HDHP times year interaction terms, deductible, and Charlson Comorbidity Index. A negative binomial model was used for the number of prescriptions; ordinary least squares was used for the proportion of days covered; and probit was used for adherence. The DiD estimators of the effect of pre-deductible coverage are given by the three HDHP by-year interactions and presented in Figure 4 as marginal effects calculated at the mean values of all other regressors. Statistical significance based upon standard errors clustered by person are denoted as follows: *** $p<0.01$; ** $p<0.05$; and * $p<0.10$. If pre-deductible coverage was implemented by the HDHP plans under study and assuming non-zero elasticity of demand, then we would expect to see positive and statistically significant results for one or more of the eight therapeutic classes included in the IRS notice during the three years post-baseline. Of course, depending on the timing of related plan design changes, delayed effects might also be possible. No effects should be expected in the three therapeutic classes not specifically afforded pre-deductible coverage in HDHPs.

Figure 3

Baseline Sample Characteristics (in 2019)

	Antiresorptive Therapy		Angiotensin-Converting Enzyme (ACE) Inhibitors		Beta Blockers		Inhaled Corticosteroids		Glucose-Lowering Agents		Insulins		Selective Serotonin Reuptake Inhibitors (SSRIs)		Statins	
	HDHP (n=371)	PPO	HDHP (n=5,314)	PPO	HDHP (n=1,177)	PPO	HDHP (n=1,741)	PPO	HDHP (n=11,523)	PPO	HDHP (n=3,019)	PPO	HDHP (n=6,440)	PPO	HDHP (n=15,330)	PPO
Age (years)	55.8	55.8	51.7	51.7	53.7	53.8	43.3	43.3	50.2	50.2	47.9	47.8	38.5	38.6	52.4	52.4
18–24^	0%	0%	0%	0%	0%	0%	12%	12%	2%	2%	6%	6%	23%	23%	0%	0%
25–34^	0%	0%	2%	2%	0%	0%	10%	10%	3%	3%	6%	6%	14%	14%	1%	1%
35–44^	1%	1%	13%	13%	6%	6%	24%	24%	16%	16%	17%	17%	26%	26%	11%	11%
45–54^	31%	31%	43%	43%	40%	40%	34%	34%	42%	42%	38%	38%	25%	25%	42%	42%
55–64^	68%	68%	42%	42%	54%	54%	20%	20%	37%	37%	33%	33%	12%	12%	46%	46%
Gender																
Male^	3%	3%	70%	70%	80%	80%	34%	34%	62%	62%	60%	60%	29%	29%	68%	68%
Female^	97%	97%	30%	30%	20%	20%	66%	66%	38%	38%	40%	40%	71%	71%	32%	32%
Policyholder	39%	54%	71%	73%	73%	68%	50%	61%	67%	71%	62%	66%	41%	51%	70%	72%
Deductible	$3,907	$1,414	$3,641	$1,367	$3,698	$1,440	$3,771	$1,293	$3,682	$1,370	$3,609	$1,289	$3,828	$1,386	$3,732	$1,374
Charlson Comorbidity Index^	0.47	0.48	1.73	1.74	1.77	1.80	1.27	1.27	1.78	1.78	2.17	2.19	0.30	0.31	1.25	1.26
New User^	49%	49%	20%	20%	26%	26%	46%	46%	20%	20%	23%	23%	30%	30%	25%	25%
Proportion of Days Covered (PDC)	81%	81%	87%	86%	89%	89%	56%	56%	87%	87%	81%	81%	77%	77%	86%	86%
0% to 19%^	5%	5%	1%	1%	1%	1%	17%	17%	1%	1%	2%	2%	5%	5%	2%	2%
20% to 39%^	10%	10%	4%	4%	3%	3%	20%	20%	3%	3%	6%	6%	8%	8%	5%	5%
40% to 59%^	6%	6%	6%	6%	5%	5%	17%	17%	6%	6%	9%	9%	10%	10%	6%	6%
60% to 79%^	8%	8%	11%	11%	9%	9%	16%	16%	12%	12%	18%	18%	15%	15%	12%	12%
80% to 100%^	71%	71%	77%	77%	82%	82%	30%	30%	77%	77%	65%	65%	62%	62%	76%	76%

Notes:

Values are proportions unless denoted otherwise.

Variables used in coarsened exact matching process are denoted by ^. Match rates ranged from 83% (for Antiresorptive Therapy) to 99% (for Statins).

HDHP = high-deductible health plan; PPO = preferred provider organization.

Figure 4

Estimates of Impact of Pre-Deductible Coverage in HSA-Eligible Health Plan on Prescription Drug Use and Adherence, by Year and Medication Class

(All Findings Relative to 2019)

Condition Dependent Variable	**Effect After 1 Year (2020)**	**Effect After 2 Years (2021)**	**Effect After 3 Years (2022)**
Antiresorptive Therapy			
Number of prescriptions	0.02	0.06	-0.10
Proportion of days covered (PDC)	0.00	-0.01	0.00
Adherent (PDC ≥ 80%)	-0.01	-0.02	-0.01
Angiotensin-Converting Enzyme (ACE) Inhibitors			
Number of prescriptions	-0.09	0.01	-0.04
Proportion of days covered (PDC)	0.00	0.00	0.00
Adherent (PDC ≥ 80%)	0.00	0.01	0.01
Beta Blockers			
Number of prescriptions	-0.18	-0.06	0.08
Proportion of days covered (PDC)	0.00	0.00	0.01
Adherent (PDC ≥ 80%)	0.02	0.01	0.03
Inhaled Corticosteroids			
Number of prescriptions	-0.39 ***	-0.18	0.00
Proportion of days covered (PDC)	-0.02 *	-0.01	0.00
Adherent (PDC ≥ 80%)	-0.01	-0.02	0.00
Glucose-Lowering Agents			
Number of prescriptions	-0.03	-0.03	0.08
Proportion of days covered (PDC)	0.00	0.00	0.01
Adherent (PDC ≥ 80%)	0.00	0.00	0.01
Insulins			
Number of prescriptions	-0.21	0.04	0.25
Proportion of days covered (PDC)	-0.01	0.00	0.01
Adherent (PDC ≥ 80%)	0.00	0.02	0.04 ***
Selective Serotonin Reuptake Inhibitors (SSRIs)			
Number of prescriptions	0.06	0.03	0.08
Proportion of days covered (PDC)	0.00	0.01	0.01
Adherent (PDC ≥ 80%)	0.01	0.01	0.00
Statins			
Number of prescriptions	-0.12 ***	-0.07	0.10 *
Proportion of days covered (PDC)	0.00	0.00	0.01 **
Adherent (PDC ≥ 80%)	0.01 **	0.01	0.01 *

Notes:

All prescription drug measures are condition-specific.

Number of prescriptions calculated using 30-days' supply equivalents.

Presented are marginal effects of the difference-in-differences estimators, calculated at the mean values of all other regressors, which included:

indicators for male, policyholder, 5 age groups, 4 geographic regions, 2 years, HDHP, 3 HDHP times year interaction terms (presented), deductible, and Charlson Comorbidity Index.

A negative binomial model was used for number of prescriptions, proportion of days covered used ordinary least squares, and adherent was specified as a probit.

Statistical significance based upon standard errors denoted as follows: *** p<0.01; ** p<0.05; * p<0.10

Results

In this section, we present the findings on the impact of expanding pre-deductible coverage in HSA-eligible health plans on use of pharmacy services. Specifically, we look at the impact on use of the following pharmacy services:

- Antiresorptive therapy.
- ACE inhibitors.
- Beta blockers.
- Inhaled corticosteroids.
- Insulin and other glucose-lowering agents.
- SSRIs.
- Statins.

Three annual measures of medication utilization and adherence were used as dependent variables: (1) the number of 30-day adjusted prescriptions filled for the condition; (2) the PDC for the condition, which represents the fraction of days in the period that the patient had at least one drug for the condition on hand; and (3) a flag indicating a PDC of 80 percent or higher, a commonly used threshold for adherence (Roebuck, Liberman, et al., 2011). Proportion of days covered is now used, for example, by the Centers for Medicare & Medicaid Services as a quality measure component of the Star Ratings calculation for stand-alone prescription drug plans as well as Medicare Advantage Plans.

Figure 4 presents estimates of the impact of the IRS notice on prescription drug use and adherence in 2020, 2021, and 2022. After adjusting for the characteristics in Figure 3 using the difference-in-differences multivariate models described above, we found some evidence that expanding pre-deductible coverage in HSA-eligible health plans increased medication adherence in 2022, but not earlier.

Specifically, in 2020, the only statistically significant effects were found for inhaled corticosteroids and statins. Otherwise, there was no evidence of changes in medication use or adherence for the other medications examined. With respect to inhaled corticosteroids and statins, we found decreases in the numbers of prescriptions filled, a decrease in the PDC for inhaled corticosteroids, and an increase in adherence for statins. We are not surprised by these findings. 2020 was the first full year that employers could have expanded pre-deductible coverage, and a 2020 survey from the Kaiser Family Foundation found that only 29 percent of employers with 200 or more employees increased the number of drugs and services covered pre-deductible in HSA-eligible health plans because of the IRS notice.[6] 2020 was also the first year of the pandemic, and use of health care services fell during that year.

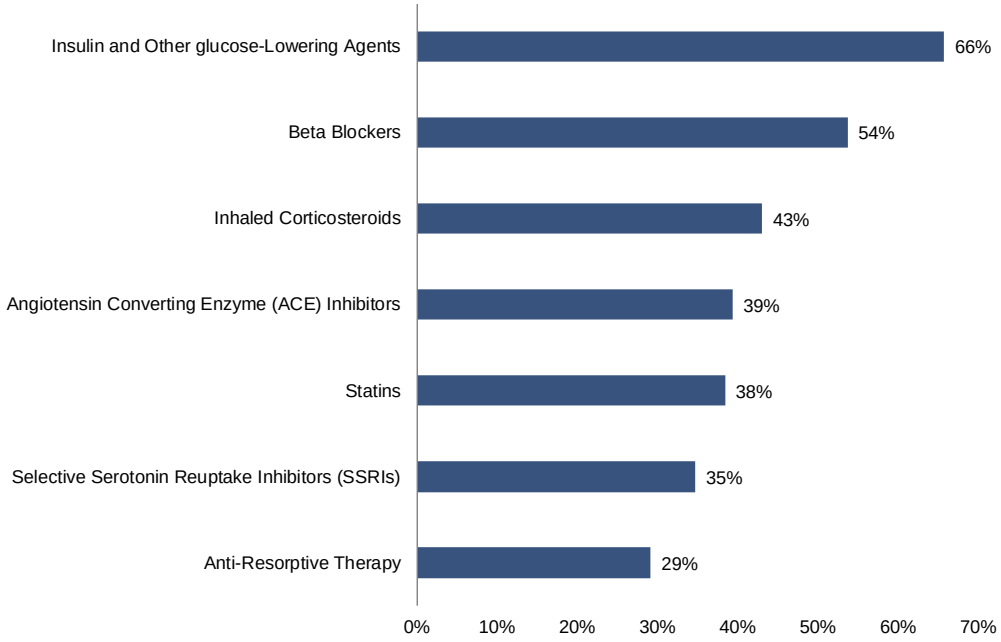
We also found no evidence of changes in medication use or adherence for any of the medications examined in 2021, and we are not surprised by the lack of behavior change in 2021 either. While in prior work we found that three-quarters of employers said they added pre-deductible coverage as a result of the IRS notice in 2021 (Fronstin and Fendrick, 2021), it is possible that plan enrollees were unaware of the change to their plan design. In this prior work, we also found that not all employers who expanded coverage did so for all services. While 66 percent did so for insulin and other glucose-lowering agents, only 29 percent did so for anti-resorptive therapy (Figure 5). Furthermore, when an employer offers pre-deductible coverage for any of the pharmacy services allowed in IRS Notice 2019-45, it does not necessarily mean that those services are not subject to any other cost sharing. We found that the percentage of employers that did not subject the pharmacy service to any cost sharing ranged from a low of 25 percent to a high of 40 percent (Figure 6). Between nearly one-half (48 percent) and two-thirds (63 percent) required a copayment from employees, depending on the service. The percentage of employers requiring coinsurance ranged from 6 percent to 16 percent.

Our findings indicate that, by 2022, there was evidence of a rebound in medication adherence. We found that the percentage of enrollees with diabetes using insulin increased 4 percentage points, and the percentage of enrollees with heart disease or diabetes using statins increased by 1 percentage point. The observed out-of-pocket elasticities of demand implied by these results are in line with published research. Specifically, we found that relative to PPOs, the average member cost share for insulin among HSA-eligible insulin users declined by 9.5 percent from 2019 to 2022. The increase in insulin use measured over the same time period translates to an estimated elasticity of -0.15 (on the

intensive margin). This numerical result very closely resembles the comparable estimate of -0.12 reported by Roebuck (2012) in a comprehensive study of therapeutical class-specific elasticity of demand. Moreover, the calculation for statins results in an estimated elasticity of -0.06, which is also surprisingly similar to the -0.05 reported in Roebuck (2012). While the magnitude of these effects may seem small, it is important to remember that, in past research, when medication adherence fell as a result of the introduction of an HSA-eligible health plan, the magnitude of the declines was relatively small as well. Fronstin, Sepúlveda, and Roebuck (2013) found a 4 percentage point decline in adherence to hypertension medications, a 13 percentage point decline in adherence to dyslipidemia medications, a 10 percentage point drop in adherence to diabetes medications, and no drop in adherence to asthma/COPD or depression medications when health plan enrollees were switched to an HSA-eligible health plan in 2007. The lack of a large increase in medication adherence may be due to the fact that adherence rates were already relatively high, averaging 77 percent to 89 percent, with the exception of inhaled corticosteroids, which are often used as a rescue medication and not necessarily filled in a way that would suggest that an enrollee was adherent.

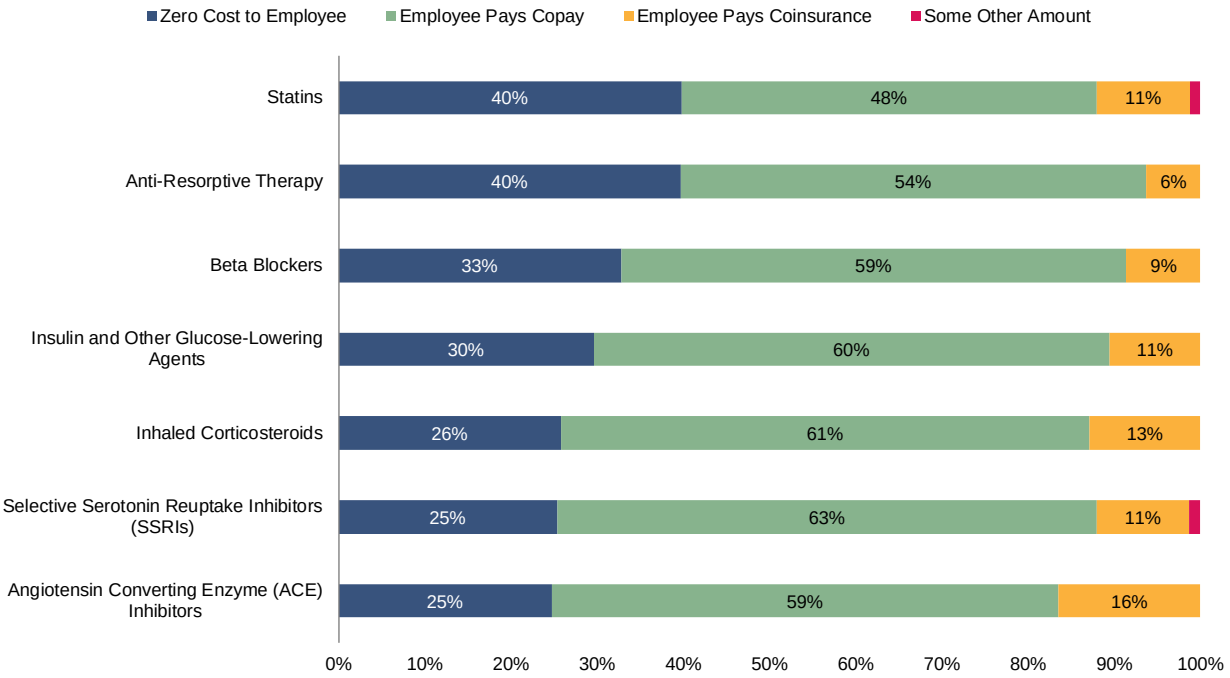
As mentioned above, we also examined three therapeutic classes not specifically afforded pre-deductible coverage in HDHPs — calcium channel blockers (CCBs), angiotensin receptor blockers (ARBs), and serotonin and norepinephrine reuptake inhibitors (SNRIs). We included these classes to test our model, as we should not see an impact on medication adherence for these medications as a result of the IRS notice. As expected, the IRS notice had no impact on the use of these medications. These findings are not shown in the figures.

Figure 5
Preventive Care Measures Covered on a Pre-Deductible Basis in 2021 as a Result of IRS Notice 2019-45



Source: Fronstin and Fendrick (2021).

Figure 6
Cost Sharing Arrangements in 2021 as a Result of IRS Rule 2019-45



Source: Fronstin and Fendrick (2021).

Discussion

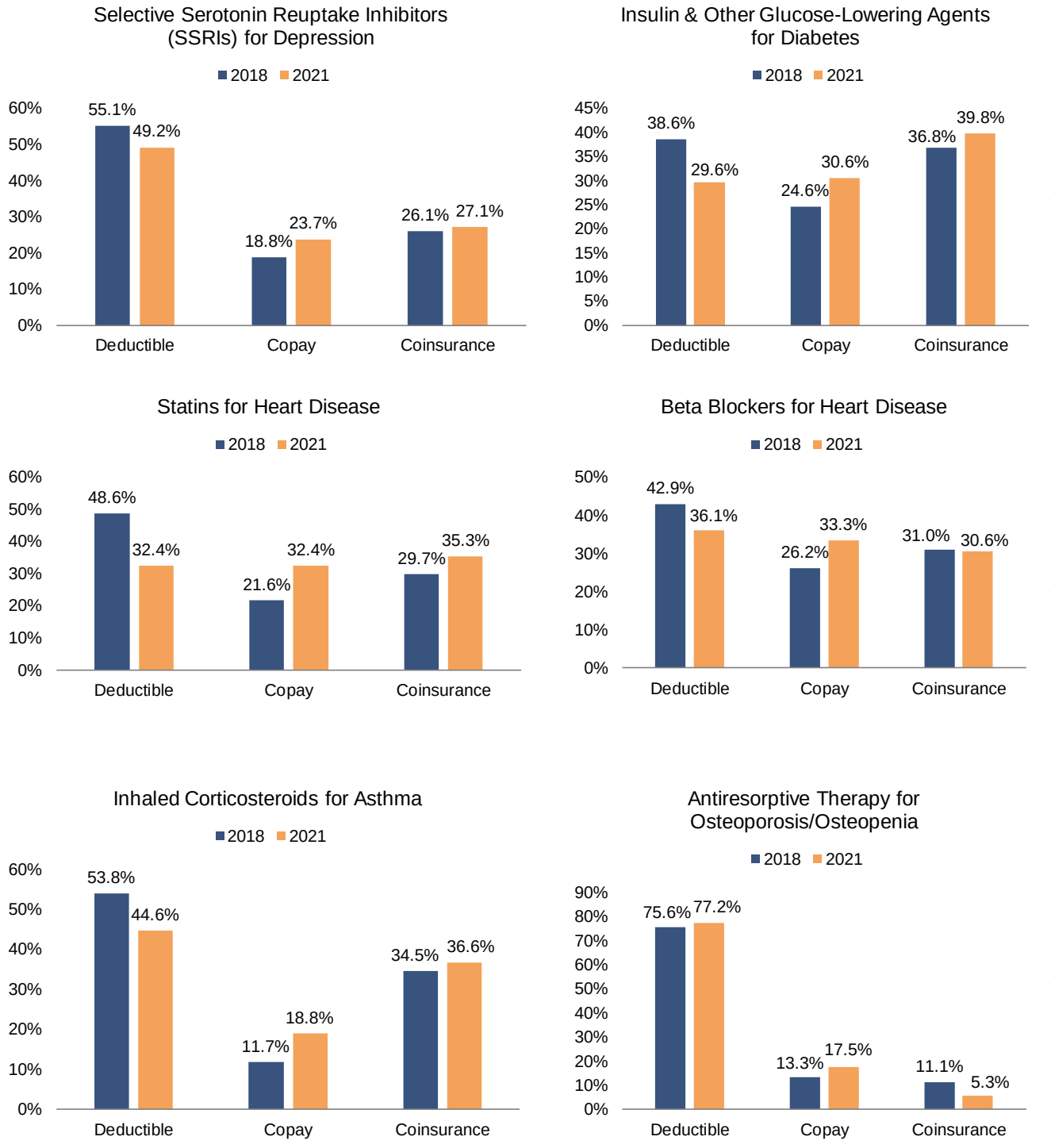
As mentioned above, our findings may be influenced by the ways in which employers implemented changes in response to the IRS notice. First, while the overall employer response to the notice seemed overwhelming, with three-quarters reporting that they expanded pre-deductible coverage for at least one of the 14 services, we would expect the largest impact on medication adherence for diabetes medications and beta blockers, as 66 percent and 54 percent added pre-deductible coverage for those services, respectively. Less than one-half added pre-deductible coverage for inhaled corticosteroids (43 percent), ACE inhibitors (39 percent), statins (38 percent), SSRIs (35 percent), and anti-resorptive therapy (29 percent).

Similarly, it is not a surprise that the magnitude of the effects is small, as the majority of employers substituted copayments and/or coinsurance for deductibles when they expanded pre-deductible coverage. Whether employers moved from deductibles to no cost sharing whatsoever varied by the different medications. Statins were most likely to be covered in full, with 40 percent of employers reporting that they did not require any cost sharing as a result of the IRS notice (Figure 6), which may explain why statins were one of the two medications that experienced a rebound in adherence. In contrast, only one-quarter of employers exempted ACE inhibitors, SSRIs, or inhaled corticosteroids from any cost sharing.

Our analysis of claims data confirms our findings from the survey of employers. When examining the composition of cost sharing, we found that it shifted from deductibles to copayments and coinsurance for enrollees in HSA-eligible health plans. Among HSA-eligible health plan enrollees, the percentage of cost sharing paid through deductibles fell for SSRIs, insulin and other glucose-lowering agents, statins, beta blockers, and inhaled corticosteroids (Figure 7). Cost sharing was unchanged for antiresorptive therapy.

Figure 7

Cost Sharing by Type of Health Care Service, Among HSA-Eligible Health Plan Enrollees



Source: Employee Benefit Research Institute estimates based on administrative enrollment and claims data.

The fact that we did not see a change in adherence for most of the medications examined is not surprising. Since 2021 was the first year that many employers expanded pre-deductible coverage, it may take time for enrollees to learn that their health plan has changed coverage for certain preventive services. They may not be aware that these medications are either free or subject to copayments or coinsurance instead of deductibles (Figure 6), despite employers' best efforts to inform enrollees of a plan design change that is considered an improvement in benefits. In fact, EBRI research indicates that 63 percent of enrollees with an HSA-eligible health plan spend less than 30 minutes choosing a health plan.[7] Furthermore, the employers themselves may or may not have done a good job educating their employees about the change.

It is also worth noting that the demand for prescription drugs has generally been found to be relatively inelastic. The RAND Health Insurance Experiment estimated the elasticity to be -0.17 (Manning et al., 1987; Newhouse et al., 1993). In an analysis of 29 therapeutic classes, Roebuck (2012) derived the elasticities of insulin and statins to be -0.12 and -0.05 on the intensive margin (respectively). These estimates align quite well with those calculated for those drugs in our present work (-0.15 and -0.06).

The fact that employers moved toward covering services on a pre-deductible basis once they were allowed to do so comes at a critical period of time. When the ACA passed in 2010, it included provisions requiring that employers and health plans cover certain preventive services in full. These include services such as screenings for cancer and other health conditions, vaccinations, and birth control. Plan sponsors have been prohibited from imposing any form of cost sharing (i.e., deductible, copayments, or coinsurance) on participants receiving these services.

On September 7, 2022, Judge Reed O'Connor of the U.S. District Court for the Northern District of Texas found a key part of the preventive service provision unconstitutional. Specifically, the decision in *Braidwood Management Inc. v. Becerra* refers to the part of the ACA that requires coverage without cost sharing of those preventive services to which the U.S. Preventive Services Task Force (USPSTF) — a group the Agency for Healthcare Research and Quality has been authorized by the U.S. Congress to convene since 1998 — assigns a rating of "A" or "B".

If this court decision is upheld, employers and health plans could impose some form of cost sharing for these preventive services. Yet, employers may continue to provide these services at no or low cost to members for at least a few reasons, including:

1. Employers may not want to cut benefits during a time when unemployment is low and recruitment and retention of workers is of concern.
2. Employers may believe that incentivizing the use of these services reduces aggregate health spending in the long term.
3. There is precedent for covering these services without cost sharing in the absence of the ACA mandate. When health reimbursement arrangements (HRAs) were introduced in the early 2000s, some employers provided first-dollar coverage for preventive services (Fronstin, 2002). Comparable generous coverage was implemented when health savings account (HSA)-eligible health plans were introduced (Fronstin, Sepúlveda, and Roebuck, 2013a). And of course, the 2021 EBRI survey mentioned above found that when the IRS allowed employers and health plans to cover certain preventive services outside HSA-eligible health plan deductibles, about three-quarters of them chose to do so, often without cost sharing (Fronstin and Fendrick, 2021).[8]

Two recent surveys found support among employers for the continuation of providing preventive services without cost sharing. A 2022 EBRI survey found that 80 percent of HR decision makers said they would continue to cover preventive services in full.[9] Similarly, a 2023 survey found that 72 percent of employers expect to continue providing coverage for all preventive services without cost sharing.[10]

Twenty years after passage of the MMA, only one-quarter of smaller employers and one-half of larger employers offer an HSA-eligible health plan.[11] Employers may be holding back from adopting HSA-eligible health plans because of evidence that they may be associated with a reduction in appropriate preventive care and medication adherence (Agrawal, Mazurenko, and Menachemi, 2017). The savings or medical cost offsets from providing incentives to get

preventive care are often difficult to quantify. Yet employers often invest in such care in the absence of evidence. Because of constraints around preventive care and HSA-eligible health plans, employers appear to have moved toward higher deductibles in PPOs, while some have adopted HRA plans instead, possibly with flexible spending accounts (FSAs). The IRS notice may not only cause employers offering HSA-eligible health plans to adopt pre-deductible coverage, but might also result in more employers offering such plans, especially as they see any evidence of a rebound in medication adherence.

Yet, while employers could incentivize the use of preventive services in non-HSA plans, not all employers have done so. The IRS notice may move such employers toward changing their plan design to incentivize the use of preventive services for several reasons. First, they may do so because the IRS notice has legitimized it. Second, as health plans make it easier to offer preventive services on a pre-deductible basis in HSA plans, it is just as easy for employers to adopt the strategy in other types of health plans.

Congressional Efforts to Further Expand Pre-Deductible Coverage

Building on the momentum of Executive Order 13877 and IRS Notice 2019-45, Sens. John Thune (R-SD) and Tom Carper (D-DE) introduced the Chronic Disease Management Act of 2019 in the Senate (S. 1948), followed by the introduction of the companion bill in the House of Representatives (H.R. 3709) by Reps. Earl Blumenauer (D-OR) and Tom Reed (R-NY). This bipartisan, bicameral legislation would give HSA-eligible health plans additional flexibility to provide coverage for services that manage chronic conditions prior to meeting the plan deductible. The bill was reintroduced in the Senate in January 2020 (S. 3200), April 2021 (S. 1424), and March 2023 (S. 655), and it was reintroduced in the House of Representatives in May 2021 (HR. 3563), building on the IRS guidance and previous versions to further increase pre-deductible coverage for chronic disease management.

Conclusion

In response to IRS Notice 2019-45, three-quarters of large employers and health plans offering HSA-eligible health plans expanded pre-deductible coverage for medications and services that prevent the exacerbation of chronic conditions (Fronstin and Fendrick, 2021). The impact on premiums of expanding pre-deductible coverage for 14 services in HSA-eligible health plans as allowed in IRS Notice 2019-45 is small (Fronstin, Roebuck, and Fendrick, 2022). Further expanding pre-deductible coverage to 116 drug classes that are used mostly for chronic disease medication management would also have a small impact on premiums (Fronstin, Roebuck, and Fendrick, 2022). Enrollment into HSA-eligible health plans has been unaffected, but enrollees are paying a smaller share of the total cost of services as cost sharing has shifted from deductibles to copayments and/or coinsurance (Fronstin and Volkov, 2023a).

Our analysis confirms that medication adherence improved among enrollees using statins and insulin. This may be because the majority of employers substituted copayments and/or coinsurance for deductibles instead of eliminating cost sharing completely. It may also be due to lack of enrollee knowledge about plan design changes that were introduced to incentivize use of preventive services. Employers would exclude additional preventive services if allowed by the IRS, according to EBRI's survey results. However, if their goal is to increase use of those services, they should consider their approach to cost sharing.

Employers and policymakers have an appetite for more flexible plan designs or "smarter" deductibles, because rising health care spending has created serious fiscal challenges. Smarter deductibles accommodating services preventing the exacerbation of chronic conditions might be a natural evolution of health plans. Value-based reimbursement promotes the delivery of evidence-based, high-quality care that encourages use of — rather than creating barriers to — high-value services. Interventions that improve patient-centered outcomes while maintaining affordability may be found in the form of a clinically nuanced HSA-eligible health plan that better meets workers' clinical and financial needs.

Appendix

Appendix Figure 1

Statutory HSA Limits, 2004–2024

	Minimum Deductible		Maximum Contribution		Maximum Out-of-Pocket Limit		Per-Person Catch-up Contribution Limit
	Individual	Family	Individual	Family	Individual	Family	
2004	$1,000	$2,000	$2,600	$5,150	$5,000	$10,000	$500
2005	1,000	2,000	2,600	5,150	5,000	10,000	600
2006	1,050	2,100	2,700	5,450	5,250	10,500	700
2007	1,100	2,200	2,850	5,650	5,500	11,000	800
2008	1,100	2,200	2,900	5,800	5,600	11,200	900
2009	1,150	2,300	3,000	5,950	5,800	11,600	1,000
2010	1,200	2,400	3,050	6,150	5,950	11,900	1,000
2011	1,200	2,400	3,050	6,150	5,950	11,900	1,000
2012	1,200	2,400	3,100	6,250	6,050	12,100	1,000
2013	1,250	2,500	3,250	6,450	6,250	12,500	1,000
2014	1,250	2,500	3,300	6,550	6,350	12,700	1,000
2015	1,300	2,600	3,350	6,650	6,450	12,900	1,000
2016	1,300	2,600	3,350	6,750	6,550	13,100	1,000
2017	1,300	2,600	3,400	6,750	6,550	13,100	1,000
2018	1,350	2,700	3,450	6,900	6,650	13,300	1,000
2019	1,350	2,700	3,500	7,000	6,750	13,500	1,000
2020	1,400	2,800	3,550	7,100	6,900	13,800	1,000
2021	1,400	2,800	3,600	7,200	7,000	14,000	1,000
2022	1,400	2,800	3,650	7,300	7,050	14,100	1,000
2023	1,500	3,000	3,850	7,750	7,500	15,000	1,000
2024	1,600	3,200	4,150	8,300	8,050	16,100	1,000

Appendix Figure 2
Prescription Drug Coding

Therapeutic Class	AHFS Classification Numbers	Chronic Conditions	ICD-10 Codes
Antiresorptive therapy	92:24:00	Osteoporosis/osteopenia	M80.xx-M81.xx; M85.8x-M85.9x
Angiotensin-converting enzyme (ACE) inhibitors	24:08.44.04; 24:32.04	CHF	I50.xx; I11.0; I13.0; I13.2; I09.81
		Diabetes	E08.xx-E13.xx; O24.xx
		CAD	I25.1x; I25.7x; I25.81-I25.84
Beta blockers	24:24; 24:08.08	CHF	I50.xx; I11.0; I13.0; I13.2; I09.81
		CAD	I25.1x; I25.7x; I25.81-I25.84
Inhaled corticosteroids	52:08.08; 48:10.08	Asthma	J45.xx
Glucose-lowering agents	68:20:00	Diabetes	E08.xx-E13.xx; O24.xx
Insulins	08:20.1	Diabetes	E08.xx-E13.xx; O24.xx
Selective serotonin reuptake inhibitors (SSRIs)	28:16.04.20	Depression	F31.3x-F31.6x; F31.75-F31.81; F32.0x-F32.7x; F32.9; F33.xx; F34.1x; F43.21; F43.23
Statins	24:06.1	Heart disease	Ix.xx
		Diabetes	E08.xx-E13.xx; O24.xx
Calcium channel blockers (CCBs)	24:28; 24:08.12	CHF	I50.xx; I11.0; I13.0; I13.2; I09.81
		Diabetes	E08.xx-E13.xx; O24.xx
		CAD	I25.1x; I25.7x; I25.81-I25.84
Angiotensin receptor blockers (ARBs)	24:32.08; 24:08.44.08	CHF	I50.xx; I11.0; I13.0; I13.2; I09.81
		Diabetes	E08.xx-E13.xx; O24.xx
		CAD	I25.1x; I25.7x; I25.81-I25.84
Serotonin and norepinephrine reuptake inhibitors (SNRIs)	28:16.04.16	Depression	F31.3x-F31.6x; F31.75-F31.81; F32.0x-F32.7x; F32.9; F33.xx; F34.1x; F43.21; F43.23

Notes: ICD = International Classification of Diseases.

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Endnotes

[1] In 2022, 57.9 percent of individuals with health coverage through a private-sector establishment were in a plan with a deductible that met the deductible requirements to be HSA eligible. However, we do not know how many of these enrollees were in an HSA-eligible health plan. Some were enrolled in a health plan with a health reimbursement arrangement (HRA). Others were in health plans that met the deductible requirement but may have not met other requirements, such as the restriction on preventive services.

[2] See https://www.irs.gov/pub/irs-drop/n-19-45.pdf.

[3] See https://ahiporg-production.s3.amazonaws.com/documents/202109-AHIP_HDHP-Survey.pdf.

[4] See the literature reviews in Bundorf (2012) and Agrawal, Mazurenko, and Menachemi (2017) as well as research in Brot-Goldberg, Chandra, Handel, and Kolstad (2017); Chandra, Gruber, and McKnight (2010); Chernew et al. (2008); Collins, Rasmussen, Beutel, and Doty (2015); Fronstin and Roebuck (2019); Fronstin and Roebuck (2013); Fronstin and Roebuck (2020); Fronstin and Roebuck (2014); Fronstin and Roebuck (2016); Fronstin, Sepúlveda, and Roebuck (2013a); Fronstin, Sepúlveda, and Roebuck (2013b); Fronstin, Roebuck, Buxbaum, and Fendrick (2020); Goldman, Joyce, and Zheng (2007); Trivedi, Moloo, and Mor (2010); Wharam et al. (2017); and Wharam et al. (2018).

[5] The Charlson Comorbidity Index (CCI) is a measure of health status. More specifically, it is a weighted index that predicts risk of death within one year of hospitalization for patients with specific comorbid conditions. It is widely used in the extant literature as a gauge of general health status. Medical conditions such as diabetes, cancer, and heart disease are included. Overall, the CCI currently consists of 17 health conditions. See Charlson et al. (1987); Deyo, Cherkin, and Ciol (1992); and Quan et al. (2005) for more information.

[6] See Figure 13.14 in https://www.kff.org/report-section/ehbs-2020-section-13-employer-practices-alternative-sites-of-care-and-provider-networks/.

[7] See https://www.ebri.org/publications/research-publications/fast-facts/content/many-have-a-choice-of-health-plans-during-open-enrollment.

[8] Also see https://ahiporg-production.s3.amazonaws.com/documents/202109-AHIP_HDHP-Survey.pdf and https://www.irs.gov/pub/irs-drop/n-19-45.pdf.

[9] See https://www.ebri.org/publications/research-publications/fast-facts/content/will-employers-introduce-cost-sharing-for-preventive-services-findings-from-ebri-s-first-employer-pulse-survey.

[10] See https://www.nationalalliancehealth.org/news/immunization-remains-critical/.

[11] See Figure 8.3 in https://www.kff.org/report-section/ehbs-2023-section-8-high-deductible-health-plans-with-savings-option/.