Changes in Health Care Financing & Organization (HCFO)

findings brief

key findings

- Value-based insurance design (VBID) improves medication adherence by 1 to 3 percent in the first year after implementation

- Improvements in adherence were sustained and amplified in the second year post-implementation, ranging from 2 to 5 percent

- Adherence improvements varied according to VBID participants' baseline adherence, with greatest improvements evident in those with poorer baseline adherence

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Value-Based Insurance Design Yields Near- and Long-Term Improvements in Medication Adherence

Overview

Medication adherence is critical to the management of chronic conditions. Yet, many patients forgo medication when confronted with unmanageable or rising medication costs, a phenomenon termed cost-related nonadherence. Value-based insurance design (VBID) is a benefit design strategy that aims to align patient cost sharing with the value of a particular clinical service, often by eliminating or reducing copayments for effective treatments. Accordingly, the application of VBID principles should reduce the financial barrier faced by patients when refilling needed medications, thereby improving their medication adherence. In an effort to improve the health of enrollees while controlling costs, health plans have begun to implement VBID as a way to promote better medication adherence, improve disease management, and lower health care spending.

In a HCFO-funded study, Matthew Maciejewski, Ph.D., Duke University School of Medicine and Durham VA Medical Center, and colleagues explored the business case for value-based insurance design, including VBID's impact on adherence for a range of medications used to manage chronic disease. They evaluated the near-term and long-term effects on medication adherence of a VBID program implemented by Blue Cross Blue Shield of North Carolina (BCBSNC) in 2008. BCBSNC eliminated generic medication copayments and reduced copayments for brand-name medications for eight drug classes used to treat diabetes, hypertension, hyperlipidemia, or congestive heart failure. In a 2010 article in *Health Affairs*, Maciejewski and colleagues reported their initial findings for enrollee adherence after one year, noting that adherence improvements ranged from a gain of 3.8 to 1.5 percentage points, depending on the drug category examined.[1] In the current study, the researchers extended the one-year analysis to identify longer-term adherence at two years and to identify which patients would most benefit from VBID programs.[2]

Methods

The researchers used administrative claims data from BCBSNC to conduct a retrospective pre-post quasi-experimental study design with a nonequivalent control group. The observations were taken during the 12 months before program implementation (January through December 2007), one year post-implementation (2008), and two years post implementation (2009). Participants were included in the study if they were continuously enrolled in BCBSNC from January 2007 through December 2009, experienced no change in their VBID enrollment status from 2008 to 2009, were age 18 years or older in 2008, and were taking at least one of eight classes of drugs (metformin, HMG-CoA reductase inhibitors [statins], thiazide diuretics, angiotensinconverting enzyme inhibitors [ACEI], beta-blockers, calcium channel blockers [CCB], angiotensin receptor blockers [ARB], and cholesterol absorption inhibitors [CAI]). The researchers drew the comparison group from BCBSNC members enrolled in Administrative Services Only benefits. The comparison group did not benefit from the elimination of copayments for generic medications, but it did benefit from reduced copayments for brand-name drugs.

The study assessed medication adherence by calculating a medication possession ratio (MPR), which describes the number of days of supply dispensed per year over the number of days observed in the year, with perfect adherence equal to one. The researchers examined the impact of VBID on adherence through a differences-in-differences model that compared a VBID participant's expected adherence with his or her expected adherence had he or she not participated in the VBID plan. The researchers conducted propensity score matching to control for differences between the treatment (VBID plan) and the control groups in terms of variables that may predict selecting into the VBID plan. All participants were categorized as fully adherent (≥80 percent MPR), somewhat adherent (between 50 and 80 percent MPR), or nonadherent (≤50 percent MPR).

Results

Before propensity score matching, the treatment and control groups demonstrated significant differences; for example, VBID participants taking ACEIs were slightly younger, were more likely to be male, demonstrated a higher comorbidity burden, used more disease management, and had lower overall health expenditures at baseline than non–VBID participants taking ACEIs. Propensity score matching eliminated systematic differences between the groups to allow for valid comparisons. Before implementation of the VIBD program, the groups had similar adherence rates (ranging from 75 to 83 percent adherence depending on drug class). In the adjusted analyses, VBID participants' adherence improved significantly, ranging from a 0.9 to 3.2 percent improvement in adherence in year one and a 2.2 to 5.0 percent improvement in year 2, depending on drug class.

In terms of the analyses by adherence level, the study noted the greatest improvements in adherence for patients with poorer baseline adherence. VBID participants who were nonadherent to treatment before VBID exhibited adherence improvements ranging from 3.0 to 9.7 percentage points, depending on drug class, compared to patients who were fully adherent to treatment. VBID participants who were somewhat adherent before VBID implementation improved from 3.4 to 8.8 percent, compared with patients who were fully adherent at baseline. The study's results indicate that 4.1 to 11.5 percent of VBID participants who were nonadherent (MPR ≤ 50 percent) at baseline became fully adherent (MPR ≥ 80 percent) by the end of the study period, representing a clinically meaningful adherence improvement of at least 30 percentage points in the subgroup.

Limitations

The researchers noted several limitations in the interpretation of the study results. First, adherence estimates resulting from claims data assume that patients consume medication once they fill a prescription; this may not always be the case. It is also possible that unobservable confounders partially explain the relationship between VBID and adherence improvement, potentially biasing the results of the study. Finally, the study examined adherence in an insured population and for eight drug classes for several chronic diseases. As such, caution should be used when extrapolating the study's results to other populations that were not part of the study.

Discussion and Policy Implications

The explicit inclusion of VBID in the Affordable Care Act signals recognition that benefit design is an important tool in need of testing and evaluation. The present study demonstrates that the implementation of VBID can improve adherence by 1 to 3 percent in the first year and by 2 to 5 percent in the second year post-adoption. Critics of VBID counter that an improvement in adherence ranging from only 1 to 5 percent may not be clinically significant. The current analysis expanded on earlier research to demonstrate the differential effect of VBID in terms of a patient's baseline adherence. Earlier studies focused on the average patient, perhaps obscuring larger improvements in adherence in patients who were nonadherent at baseline for reasons that include cost-related nonadherence. The present study's findings demonstrate that, for patients participating in VBID who were nonadherent at baseline, adherence improved by as much as 9.7 percentage points. As such, VBID may render a clinically meaningful improvement in adherence for specific subpopulations, particularly for patients who failed to take prescribed medications because of cost. In terms of clinical significance, patients who were previously nonadherent to metformin before VBID implementation experienced an average adherence improvement of 8.8 percentage points, which translates to an additional 32-day supply of medication per year. For those patients, VBID motivated more than an additional month of adherence.

The analysis of subgroups highlights VBID's potential for making meaningful improvements in adherence, particularly by eliminating or reducing copayments for effective chronic disease medications. Nonetheless, the researchers note that eco-

nomic evaluations of VBID to date have concluded that it is cost-neutral as opposed to cost-saving. Further examination of optimal benefit design is needed to understand VBID's full potential for saving money while improving health outcomes.

Conclusion

Value-based insurance design was associated with near- and long-term improvements in medication adherence, with the most notable improvements evident in patients who were previously nonadherent. The findings suggest that VBID may help improve the clinical management of chronic diseases, though further research is needed to determine the potential for cost-savings and to help guide the application of this tool under the Affordable Care Act.

For More Information

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Endnotes

1   Maciejewski, M.L et al. "Copayment Reductions Generate Greater Medication Adherence in Targeted Patients," *Health Affairs* (Millwood), Vol. 29, No. 11, 2010, pp. 2002-8.

2   Farley, J.F. et al. "Medication Adherence Changes Following Value-Based Insurance Design," *American Journal of Managed Care*, Vol. 18, No. 5, 2012, pp. 265-74.