

Is a Diabetes Value Based Insurance Design Associated with Lower Costs?



K. Bowen¹, K. Mishler², A. House¹, P. P. Gleason^{1,3} ¹Prime Therapeutics LLC, Eagan, MN, United States; ²Blue Cross and Blue Shield of Kansas, Topeka, KS, United States; ³University of Minnesota, College of Pharmacy, Minneapolis, MN, United States

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Background

- According to the Centers for Disease Control and Prevention (CDC), 29 million Americans have diabetes with Type 2 diabetes accounting for 90% to 95% of all diagnosed individuals.¹ Diabetes was the seventh leading cause of death in the US and is the leading cause of kidney failure (nephropathy), lower-limb amputations and adult-onset blindness (retinopathy).
- More than 20% of health care spending is for people with diagnosed diabetes.¹
- Glucose lowering medications have been shown to lower the incidence and progression of diabetes microvascular complications such as nephropathy and retinopathy.²
- Increased adherence to glucose lowering diabetes medication has been associated with decreased hospitalization risk and lower total medical costs.³
- A negative association between increasing an individual's out-of-pocket cost for their diabetes medication (i.e., cost share) and diabetes medication adherence has been shown.⁴
- In 2008, Blue Cross and Blue Shield of North Carolina initiated a diabetes mellitus (DM) value based insurance design (VBID) by lowering generic diabetes drug cost shares to zero, for their fully insured membership. They found a 3.8 percentage diabetes medication adherence improvement.⁵
- Little is known about the impact of reducing diabetes drug cost shares to zero dollars for generic and brand formulary diabetes medications within a large self-insured population.

Objective

- Assess the 2015 DM medication adherence and total cost of care total cost of care with a DM VBID. The DM VBID program consisted of insulin at the generic cost share and generic/preferred formulary DM drugs having an extended 100 day supply or 100 units for a single copay. The DM VBID group was compared to a concurrent control group with a standard benefit and also compared to the background cost difference between members without DM in the VBID plan versus members outside the VBID plan.

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1305 Corporate Center Drive, Eagan, MN 55121

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Patrick Gleason, 800.858.0723, ext. 5190
pgleason@primetherapeutics.com

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Methods

- Using a Health Insurance Portability and Accountability Act of 1996 (HIPAA) compliant limited dataset from five Midwest and five Southern Blue Cross Blue Shield clients with comprehensive integrated medical and pharmacy claims data, we identified 5 million members continuously enrolled from 2014 through 2015, younger than 65 years, and resided in the client's primary service area. Study members were derived from this dataset.
- Members with DM were identified using the Healthcare Effectiveness Data and Information Set (HEDIS) criteria.⁶ All other members were categorized as members without DM.
- The DM VBID (intervention) group was the 8,128 DM members who met HEDIS DM diagnosis criteria among 153,330 commercial fully insured members in the Blue Cross and Blue Shield of Kansas (BCBSKS) plan that implemented a DM VBID in 2009 and continued through 2015.
- The DM VBID benefit consisted of insulin at the generic cost share and generic/preferred formulary DM drugs having an extended 100-day supply or 100 units for a single copay. The generic copay was \$15 and the preferred formulary copay was \$30.
- The DM non-VBID standard benefits comparison group was identified from the 5 million continuously enrolled population without VBID benefits and 12:1 matched on having DM, age in years, and gender resulting in a stratified random sample (SRS) of 97,536 matched DM non-VBID members.
- To assess the background cost differences, we evaluated the 153,330 fully insured commercial members in BCBSKS to identify non-DM members who were the same age and gender as the 8,128 members with DM in the plan. We then matched 4:1 the non-DM BCBSKS members to DM VBID members to create a cohort of SRS 32,512 non-DM VBID members. From these 32,512 non-DM BCBSKS members we matched 12:1 to the 5 million members outside Kansas to create a SRS 390,144 standard benefits members without DM (non-DM non-KS).
- Per patient per year (PPPY) total cost of care (medical plus pharmacy) percent change from 2014 to 2015 was calculated by summing all calendar year paid (allowed) amounts, member plus plan paid, medical and pharmacy benefits, without adjustment for rebates or coupons.
- The PPPY costs for intervention DM VBID were compared to the control DM non-VBID. For background cost, the non-DM VBID were compared to the non-DM non-VBID, respectively.
- Diabetes medication adherence was measured using the Centers for Medicare and Medicaid Services (CMS) proportion of days covered (PDC) methodology.⁷
- Descriptive statistics were used for all cost comparisons. The Chi-square test was used for dichotomous comparisons.

Results

- BCBSKS implemented a DM VBID in 2009 and has continued the program as of this poster presentation.
- Analyzable continuously enrolled members during 2014 and 2015 identified for this study (Figure 1):
 - Members with DM**
 - 8,128 BCBSKS DM VBID members (i.e., DM VBID BCBSKS)
 - Average age 52 years
 - 47% female
 - 52% continuously enrolled with BCBSKS from 2009 through 2015
 - 97,536 DM non-VBID members (i.e., DM non-VBID matched), matched 12:1 on age and gender to the 8,128 BCBSKS DM VBID members
 - Members without DM**
 - 32,512 BCBSKS members without DM (i.e., non-DM BCBSKS), matched 4:1 on age and gender to the 8,128 BCBSKS DM VBID members
 - 390,144 members without DM not in Kansas (i.e., non-DM matched), matched 12:1 on age and gender to the 32,512 BCBSKS members without DM
- Comparison of 2015 Total Cost of Care, Diabetes Drug Adherence, Insulin Utilization and Any Diabetes Drug Utilization (Tables 1 and 2)**
 - 20% lower member cost share (i.e., out of pocket expense) PPPY for diabetes drugs at \$328 among BCBSKS DM VBID members compared to \$409 among DM non-VBID matched members.
 - Pharmacy cost differences were:
 - DM Members**
 - 27% higher diabetes drugs PPPY cost at \$328 among BCBSKS DM VBID members compared to \$2,772 among DM non-VBID matched members
 - 3% higher all other drugs (non-diabetes drugs) PPPY cost at \$2,610 among BCBSKS DM VBID members compared to \$2,542 among DM non-VBID matched members

Non-DM Members

- 3% lower all drugs PPPY cost at \$1,498 among BCBSKS non-DM members compared to \$1,541 among non-DM matched members

Medical cost differences were:

DM Members

- 18% lower medical benefit PPPY cost at \$9,962 among BCBSKS VBID DM members compared to \$12,151 among DM non-VBID matched members

Non-DM Members

- 13% lower medical benefit PPPY cost at \$4,748 among BCBSKS non-DM members compared to \$5,439 among non-DM matched members

Total cost of care (pharmacy cost plus medical cost):

DM Members

- 8% lower diabetes drugs PPPY cost at \$16,086 among BCBSKS DM VBID members compared to \$17,465 among DM non-VBID matched members

Non-DM Members

- 10% lower all drugs PPPY cost at \$6,256 among BCBSKS non-DM members compared to \$6,980 among non-DM matched members

Figure 1. Study Population Identification

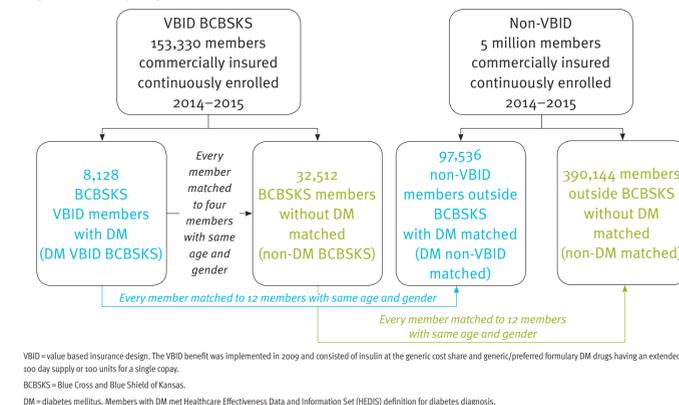


Table 1. 2015 Annual Diabetes Mellitus (DM) Per Patient Per Year (PPPY) Allowed Cost Comparison Among VBID and Non-VBID Populations

Population*	Pharmacy costs		Medical costs	Total cost of care
	Diabetes drugs	All other drugs		
DM VBID BCBSKS (n = 8,128)	\$3,514	\$2,610	\$9,962	\$16,086 (8% lower than matched comparison)
DM non-VBID matched (n = 97,536) [†]	\$2,772	\$2,542	\$12,151	\$17,465
non-DM BCBSKS (n = 32,512) [†]	\$0	\$1,498	\$4,748	\$6,256 (10% lower than matched comparison)
non-DM matched (n = 390,144) [†]	\$0	\$1,541	\$5,439	\$6,980

VBID = value based insurance design. The VBID benefit was implemented in 2009 and consisted of insulin at the generic cost share and generic/preferred formulary DM drugs having an extended 100 day supply or 100 units for a single copay.
BCBSKS = Blue Cross and Blue Shield of Kansas.
DM = diabetes mellitus. Members with DM met Healthcare Effectiveness Data and Information Set (HEDIS) definition for diabetes diagnosis.
Allowed costs are actual costs paid to providers after network discounts and including plan and member share without adjustment for drug manufacturer rebates or coupons.
[†]All members were continuously enrolled in 2014 and 2015.
[‡]Matched comparison group consisted of members outside of BCBSKS from a 5 million commercially insured population. Matching was done at 12:1 on gender and age in years.
[§]BCBSKS non-DM members were identified who matched the DM VBID members on age and gender using a 4:1 match of members without DM within BCBSKS.

Table 2. Diabetes Mellitus (DM) Drug Adherence and Utilization Comparison Among VBID and Non-VBID Populations

Population*	Average total 2015 member cost share paid for diabetes drugs	2015 diabetes drug adherence [†]	2015 insulin utilization	2015 any diabetes drug utilization
DM VBID BCBSKS (n = 8,128)	\$328 (20% lower than matched comparison)	72.4% (p < 0.01)	29.0% (p < 0.01)	87.8% (p < 0.01)
DM non-VBID matched [†] (n = 97,536)	\$409	70.9%	25.9%	86.6%

VBID = value based insurance design. The VBID benefit was implemented in 2009 and consisted of insulin at the generic cost share and generic/preferred formulary DM drugs having an extended 100 day supply or 100 units for a single copay.
BCBSKS = Blue Cross and Blue Shield of Kansas.
DM = diabetes mellitus. Members with DM met Healthcare Effectiveness Data and Information Set (HEDIS) definition for diabetes diagnosis.
[†]All members were continuously enrolled in 2014 and 2015.
[‡]Matched comparison group consisted of members outside of BCBSKS from a 5 million commercially insured population. Matching was done at 12:1 on gender and age in years.
[§]Adherence was defined using the proportion of days covered (PDC) method endorsed by the Pharmacy Quality Alliance (PQA) and used by CMS. An individual is defined as adherent if their PDC is ≥ 80% during the analysis year.

Conclusions

- Within a large fully insured commercial population providing a DM VBID for many years, there was no difference in total cost of care compared to a matched population with standard benefits when the background cost differences were assessed.
- The DM VBID was associated with a 20% lower member out of pocket cost share for diabetes drugs during 2015 and this lower cost share potentially resulted in the significant 1.5 percentage point higher diabetes drug adherence.
- Insulin cost share was most impacted by the DM VBID, as the member paid a generic drug copay for all insulins and the member could receive up to 10 insulin vials (100 dispensing units = 100ml or a limit of 100 days supply, whichever is less) for a single copay. The lower insulin member cost potentially explained the significant 12% higher insulin use (i.e., 3.1 percentage points higher) among the DM VBID members compared to DM non-VBID members.
- The lack of total cost of care savings is partially explained by the 27% higher, \$742 PPPY additional diabetes drug expenditures among the VBID members. The high cost for diabetes drugs offset the medical cost avoidance potential these drugs could provide.
- Medical event and subsequent cost avoidance from improved diabetes control and adherence takes many years, with clinical trials indicating between five to 10 years, or more. This evaluation in the seventh-year post VBID implementation found indications of potential lower medical costs that were offset by higher pharmacy costs resulting in no difference in total cost of care when compared to background cost differences.
- Blue Cross and Blue Shield of Kansas continues to provide DM VBID for their fully insured members.

Limitations

- These findings assessing the potential DM VBID impact are limited to the specific DM VBID implemented by BCBSKS in 2009 and is not generalizable to other DM VBID programs.
- Data are limited to a single large BCBSKS commercially insured population that implemented a DM VBID in 2009; therefore, findings may not be generalizable to other insured populations.
- Members were not continuously enrolled from 2009 to present, therefore members with DM were exposed to the VBID for varying lengths of time which may have mitigated the potential VBID impact this study could assess.
- Administrative pharmacy and medical claims have the potential for miscoding and include assumptions of member actual drug use and diagnosis.
- Although higher DM drug adherence has been associated with lower hospitalization rates and lower medical costs, this study did not assess a direct causal impact of increased DM drug adherence with medical events or costs.
- The comparison group was closely matched by gender and age. However, they may have had other important differences from the intervention group that could have influenced the study findings.
- It is anticipated that it may take longer than the observation period in this study for changes in medical event avoidance and cost reduction to be fully realized.

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