Zero Dollar Drug Copay Program Increases Generic Drug Use Among Patients with Diabetes in Louisiana: Six-Month Analysis

Tiangle Tang, MPH; Debra Winberg, MS, MA; Abelian Li, PhD; Charles Stoecker, M.A., Ph.D.; Hui Shao, M.D., Ph.D.; Mingyan Cong, Ph.D.; Brice Mohundro, Pharm.D.; Mia Liu, M.S.; Jason Ouyang, MPH, M.D.; Somesh C. Nigam, Ph.D.; mollie carby, pharma; Elizabeth Naunau, MPH, Ph.D.; Liubing Shi, MS,Pharm, M.A., Ph.D.
School of Public Health and Tropical Medicine, Tulane University; •Hubert Department of Global Health, Rollins School of Public Health, Emory University; •Blue Cross and Blue Shield of Louisiana; •Louisiana Public Health Institute.

INTRODUCTION
As of 2022, about 28.7 million people in the U.S. were living with diabetes. Louisiana has one of the highest diabetes prevalence rates in the U.S. In 2022:
• About 500,800 Louisianans had been diagnosed with diabetes.
• 7.7% of the Louisiana population was estimated to have prediabetes.
• Diabetes in Louisiana had an estimated cost of around $5.7 billion.

Patients with Type 2 Diabetes (T2D) have higher risks for complications.
• T2D is associated with increased risk of coronary heart disease (Hazard Ratio [HR] 2.00, 95% CI 1.81 – 2.19) and ischemic stroke (HR 2.27, 1.85 – 2.65).
• The prevalence of hypertension is two times higher among patients with T2D compared to the general population (60% vs. 29.1%).
• Individuals with T2D exhibit greater prevalence of complications such as nephropathy (27.5%), retinopathy (25%), and neuropathy (50%).
• 90.45% of all diabetes cases are T2D.

Non-adherence to diabetes treatment can pose a great threat to diabetes management.
• There is a statistically significant correlation between reduction in hemoglobin A1c (HbA1c) and decreased risk of various diabetes complications.
• However, more than 45% of patients with diabetes have poor glycemic control, with medication non-adherence being a factor. Medication non-adherence is well documented to be associated with increased morbidity and mortality, increased healthcare utilization, and poor management of complications.
• Factors for medication non-adherence include, but are not limited to, young age, lower educational attainment, limited access to healthcare, treatment complexity, and financial hardships.

Previous studies have shown that eliminating or reducing copays for medications can improve adherence. However, there is limited evidence regarding the association between changes in copayments and patterns of medication use.

AIM
This study aimed to examine the association between medication use patterns and the ZDC program.

METHOD (Cont.)
• Ages 18 to 95
• No prior participation in the ZDC program

Main Exclusion Criteria
• Members with high deductable health plans (HDHPs), members without pharmacy benefits through BCBSLA, those with an Administrative Services Only (ASO or self-funded) employer plan, and members who have Medicare supplemental plans.
• Members who reside outside the state of Louisiana.
• Members who were pregnant

Study Cohort
Main Eligibility Criteria
• Members with T2D identified through ICD-10 code E11 or antidiabetic medication use who were continuously enrolled with BCBSLA for at least two years.

RESULTS (Cont.)
Control Group
• AsO members
• Members who had continuous copay pharmacy benefit through BCBSLA in 2019 and 2020
• Members with claims for ZDC-eligible drug before and after the index date. Participants in the control group used ZDC-eligible drugs without ZDC benefit due to non-participation in the ZDC program.

Treatment Group
• Fully insured (FI) members
• Members who had continuous copay pharmacy benefit through BCBSLA in 2019 and 2020
• Members with claims for ZDC-eligible drug before and after the index date. Participants in the treatment group used ZDC-eligible drugs with ZDC benefit as they participated in the ZDC program.

Outcomes
• Brand drug allowed amount
• Generic drug allowed amount

Statistical Analysis
• A difference-in-difference (DID) regression model with inverse probability of treatment weights was used to estimate the effect of the ZDC program on medication use patterns.
• Data were aggregated to a bimonthly level.
• Means and standard deviations (SD) were used to report all continuous variables.
• Frequencies and proportion in percentages were used to report all categorical variables.
• Propensity score matching (PSM) was used to balance the group characteristics and inverse probability of treatment weights were generated for the control group.
• Time fixed effects, individual fixed effects, age, and group product time-specific trends were included in the DID model.
• The parallel trends assumption of the DID model was tested with an event study.

RESULTS
Data Source
• BCBSLA’s claims data encompass a broad range of information, such as demographic details, enrollment information, medical claims, pharmacy claims, dental claims, diagnosis and procedure codes, dates of service, information about healthcare providers and facilities, laboratory test results, referrals to other specialists, as well as financial and other billing codes.

Study Period
• Jan. 1, 2019-Dec. 31, 2020 (18 months pre-intervention, 6 months in intervention).
• July 1, 2020, is when the ZDC program became available to eligible BCBSLA members (index date).

Study Cohort
Main Eligibility Criteria
• Members with T2D identified through ICD-10 code E11 or antidiabetic medication use who were continuously enrolled with BCBSLA for at least two years.

DISCUSSIONS
• The increase in generic drug allowed amount suggests the ZDC program may be associated with an increase in generic drug use.
• The ZDC program did not significantly affect brand drug allowed amount.

Copy Modifications and Generic Drug Use
• This study’s findings are consistent with previous research on generic drug use, which showed that utilization of generics tends to rise as copays for generics decline or copays for brand drugs increase.
• According to Sen et al., Children’s Health Insurance Program enrollees were not found to switch to using generic drugs even though copays for brand drugs are higher.
• Rodin et al. concluded that adjusting copays by lowering the cost of generic drugs and reducing the cost of brand drugs did not result in a complete transition to generic drugs among patients with specific medical conditions.
• Findings from Sen et al. and Rodin et al. may partially explain why there was no statistically significant change in brand drug allowed amount during the six-month post-period.

Limitations
• ZDC usage was not randomly assigned. We used individual fixed effects to avoid identification bias based on unobserved differences between the treatment and control groups that are time-invariant. We used average probability of treatment weighting to further make the two groups alike on observable pre-period characteristics.
• A post-treatment period of only six months is insufficient to evaluate the long-term impact of the ZDC program. An extended post-treatment period is necessary to determine whether the current effect of the program would persist or change over time.
• We aggregated the data into two-month periods as the data were too noisy for the parallel pre-trends test to hold in the single month data. A larger sample size may allow for more stability in estimates in a model with a single month time step.
• AsO (control group) and FI (treatment group) plans differ in their designs significantly, which may be problematic if those differences changed coincident with the index date for ZDC implementation.

CONCLUSION
The ZDC program benefit led to increased generic drug allowed amount in enrollees. This increase aligns with program expectations.

ACKNOWLEDGEMENT
This study is funded by the Centers for Disease Control and Prevention and NIDDK. (1U01DP006253-01)

REFERENCE