Administrative Burden and Treatment Continuation: Evidence from Continuous Glucose Monitoring in Medicaid

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Abstract

This paper examines the use of continuous glucose monitoring devices (CGMs) among Type 1 Diabetes beneficiaries in West Virginia Medicaid. Although CGMs are considered the gold standard of care and are effective in preventing costly hospitalizations, their use is subject to prior authorization and recurring reauthorization requirements that have become increasingly stringent over time. After initial approval in 2019 with annual reauthorization, the required renewal period was shortened to six months in 2021 and to three months in 2022, increasing administrative burdens on patients and physicians. Using administrative Medicaid claims data, we track adult beneficiaries with type 1 diabetes who received a CGM and examine how CGM usage evolves under different reauthorization regimes within the first year following initial receipt. We find that shortening the renewal interval is associated with substantial reductions in sustained CGM use. Continued usage declines more sharply under the six month policy beginning in the second and third quarters after receipt, and the reductions are substantially larger under the three month regime. The timing of these declines closely matches renewal thresholds, suggesting that increased administrative frequency contributes to reduced continuation. These findings highlight how cost containment policies such as prior authorization and reauthorization requirements, can generate unintended consequences by restricting access to established standards of care. In this setting, administrative requirements may reduce sustained CGM use and increase the risk of preventable, diabetes related hospitalizations driven by poor glycemic control, undermining the very cost saving objectives the policies aim to achieve.

Keywords: Prior Authorization, Continuous Glucose Monitoring, Medicaid Policy, Administrative burden.

JEL Classification: I13, H51.

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1 Introduction

Administrative requirements are a central component of health insurance design. While coverage expansions determine who is eligible for care and what services and procedures are covered, authorization and reauthorization rules determine whether access is sustained over time. For high value medical technologies such as continuous glucose monitoring (CGM) for individuals with type 1 diabetes (T1D), these administrative processes may shape not only initial uptake but continued use. Understanding how renewal requirements affect sustained access is therefore critical for evaluating the effectiveness of health insurance policy.

T1D requires continuous monitoring to prevent acute complications and reduce long term health risks. CGM devices provide real time glucose data and have been shown to improve glycemic control, reduce hypoglycemia, and improve quality of life (Ni et al. (2023); Prahalad et al. (2020)). As Medicaid programs expanded coverage for CGM, access to this technology increased. However, coverage alone does not eliminate administrative complexity. Many Medicaid programs require either prior authorization and/or periodic reauthorization, creating repeated documentation requirements for beneficiaries and providers.

While coverage expansions increase access to CGM, the design of administrative rules may determine whether that access is sustained over time. In particular, shortening the interval between required reauthorizations increases the frequency of documentation and provider certification, potentially raising compliance costs for beneficiaries and providers. Therefore, this paper examines whether increasing the frequency of Medicaid reauthorization requirements reduces sustained CGM use among adults with T1D.

West Virginia Medicaid shortened its CGM reauthorization interval from one year to six months in the fourth quarter of 2021 and then to three months in the second quarter of 2022. These sequential policy changes generate quasi experimental variation in administrative rules. Using administrative claims data from 2017 through 2022, we construct a panel of adult Medicaid beneficiaries with T1D who received a CGM and estimate a dynamic event time model comparing continuation trajectories across reauthorization regimes within the first year following the first CGM receipt.

The results indicate that shortening the reauthorization interval reduces sustained CGM use. Under the six month policy, continuation declines more sharply beginning in the second and third quarters after receipt. The reductions are substantially larger under the three month regime. The timing of these declines closely matches the renewal thresholds, suggesting that increased administrative reauthorization frequency contributes to reduced

use over time. These findings are robust to alternative T1D classification algorithms, heterogeneity by baseline clinical severity, and a placebo test assigning a fictitious reform prior to the policy change.

This study builds on two strands of literature. First, a growing body of work documents that Medicaid policy design shapes CGM uptake and disparities in access. When cost and coverage barriers are reduced, adoption increases and glycemic outcomes improve (Miyazaki et al., 2024; Ni et al., 2023). However, access remains uneven across insurance types and geographic areas (Bailey et al., 2023; Kruger and Anderson, 2021). Evidence from West Virginia Medicaid shows that patients treated by endocrinologists are more likely to obtain CGM following coverage expansion, suggesting that administrative complexity interacts with provider capacity (Gaulke et al., 2023). Second, the administrative burden literature demonstrates that compliance costs can reduce participation in public programs even when eligibility remains unchanged (Arbogast et al., 2024; Camillo, 2021; Herd and Moynihan, 2025). Administrative frictions also affect provider behavior, with evidence that complex billing and authorization processes reduce physician participation in Medicaid (Dunn et al., 2024). While these studies highlight the importance of administrative design, little evidence directly estimates how changes in renewal frequency affect sustained use of an already adopted medical technology.

This paper makes three main contributions. First, it documents how changes in administrative reauthorization frequency are associated with sustained use of a high value medical technology within Medicaid. Rather than focusing on initial adoption, the analysis examines continuation following the first quarter of CGM receipt, highlighting how administrative design shapes treatment persistence over time. Second, it exploits two sequential policy changes within a single institutional setting, allowing comparison across different levels of administrative intensity. This provides evidence on how incremental increases in renewal frequency affect continuation behavior. Third, it contributes to the literature on administrative burden in health care by examining how renewal requirements operate in a chronic disease context where treatment adherence is clinically important.

2 Literature Review

Continuous glucose monitors (CGMs) are widely recognized as a high-value technology for diabetes management, with substantial evidence documenting improvements in glycemic control and reductions in hypoglycemia for individuals with diabetes. Despite these clinical benefits, CGM adoption remains uneven, particularly among publicly insured populations, pointing to the role of insurance design and administrative processes

in shaping access to effective care.

A growing body of work shows that Medicaid policy design plays a central role in determining CGM uptake. When cost and coverage barriers are removed, CGM adoption increases markedly and translates into improved health outcomes. Evidence from Medicaid expansions that fully subsidize CGM access demonstrates high uptake and adherence across racial and ethnic groups, with corresponding improvements in glycemic control, suggesting that disparities in technology use largely reflect institutional barriers rather than differences in patient demand or treatment effectiveness (**?**). Similarly, policy-driven reductions in administrative and insurance barriers have been shown to substantially increase CGM use among publicly insured children and young adults with type 1 diabetes, narrowingthough not eliminatinggaps relative to privately insured patients (Miyazaki et al., 2024). Together, these studies highlight the capacity of Medicaid policy reforms to expand access to high-value medical technology, while also emphasizing that coverage expansions alone may be insufficient to achieve equity.

Beyond formal coverage, administrative burden has emerged as a key mechanism through which Medicaid policies shape access to care. Administrative burden, conceptualized as learning, compliance, and psychological costs imposed on beneficiaries, has been shown to reduce participation in social safety net programs, including Medicaid, even among eligible populations (Herd and Moynihan, 2025). Policy-induced variation in enrollment and renewal rules, such as documentation requirements and limits on automatic renewal, can screen out those most in need of public resources, increasing inequalities in access to care and reducing program effectiveness independent of eligibility or benefit generosity (Arbogast et al., 2024). Importantly, these burdens are not merely artifacts of statutory design but arise through implementation politics, organizational constraints, and street-level practices, and can be shifted or mitigated when states intervene deliberately across multiple layers of program administration (Camillo, 2021).

In the context of CGM access under Medicaid, administrative burden often materializes through prior authorization and reauthorization requirements. Evidence from West Virginia Medicaid illustrates how these processes interact with provider capacity and expertise to shape technology uptake. Following the introduction of CGM coverage with prior authorization, beneficiaries with type 1 diabetes receiving care from board-certified endocrinologists were significantly more likely to have administrative claims for CGM supplies than those treated by other providers (Gaulke et al., 2023). This pattern suggests that administrative complexity does not affect all beneficiaries uniformly; instead, it amplifies disparities based on provider access, training, and ability to navigate authorization requirements. Complementary evidence from clinician surveys indicates that time con-

straints, limited institutional support, and negative attitudes toward diabetes technology among some providers further constrains CGM adoption, reinforcing the role of provider-mediated administrative frictions (Tanenbaum et al., 2018).

In addition to affecting beneficiaries directly, administrative burden imposes substantial costs on providers and may indirectly restrict patient access. Using detailed claims data on physician-insurer interactions, (Dunn et al., 2024) document the complexity of billing and authorization processes in U.S. healthcare and estimate that physicians lose approximately 18 percent of Medicaid revenue to billing problems, compared with far smaller losses in Medicare and commercial insurance. These frictions are not merely accounting losses: physicians respond behaviorally by reducing their willingness to accept Medicaid patients in states with more severe administrative hurdles. The magnitude of administrative burden is comparable to payment rates in explaining cross-state variation in Medicaid participation. This evidence suggests that authorization and reauthorization requirements may reduce access not only by imposing compliance costs on beneficiaries, but also by discouraging provider engagement with publicly insured populations.

The broader literature on healthcare administration emphasizes the scale of these frictions. Survey evidence indicates that physicians and their staff devote substantial time to interacting with insurers, generating national administrative costs estimated between $23 and $31 billion annually (Casalino et al., 2009). International comparisons further highlight that the United States stands out for high administrative intensity relative to other wealthy countries, contributing meaningfully to overall spending differences (Cutler and Ly, 2011). More generally, analyzes of U.S. healthcare inefficiency emphasize fragmentation, heterogeneity in treatment patterns, and weak alignment between spending and value (Chandra and Staiger, 2020; Garber and Skinner, 2008). In the pharmaceutical context, diffusion patterns suggest that lower-quality drugs often spread more rapidly in the U.S. than higher-quality alternatives, consistent with allocative inefficiency in treatment adoption (Kyle and Williams, 2017). Together, this body of work suggests that administrative and organizational complexity is not incidental but central to understanding both cost containment in the U.S. health system.

At the same time, administrative restrictions may serve cost-containment objectives. In Medicare Part D, prior authorization policies reduce drug utilization by nearly 27 percent, generating measurable fiscal savings with relatively modest paperwork costs (Brot-Goldberg et al., 2023). Revealed-preference calculations suggest that these savings may exceed beneficiaries willingness to pay for the restricted drugs, highlighting a potential efficiency rationale for authorization requirements. Similarly, evidence from Chile shows that standardizing disease-specific coverage and guaranteeing timely access to defined treat-

ments reduced mortality by 4.4 percent and narrowed dispersion in treatment intensity across hospitals (Menares and Muñoz, 2025). These findings illustrate that institutional design can either exacerbate or mitigate inefficiency, depending on how administrative rules shape utilization patterns.

These studies suggest that while Medicaid coverage expansions and cost reductions are necessary for increasing CGM uptake, the design and implementation of administrative processes critically determine whether these policies translate into equitable access. Prior authorization and reauthorization requirements may serve cost-containment objectives, but they also introduce learning and compliance costs that can impede sustained CGM use and potentially undermine treatment adherence and negatively affect health outcomes. Existing evidence highlights the need to evaluate these tradeoffs explicitly, particularly in settings such as West Virginia Medicaid, where administrative burden, provider capacity, and population health needs intersect in ways that may shape both access to technology and downstream outcomes.

3 Methods

3.1 Data

This study uses administrative claims data from West Virginia Medicaid (WVM) to examine access to continuous glucose monitoring (CGM) among adult beneficiaries with type 1 diabetes (T1D). The dataset includes all adjudicated medical and pharmacy claims and allows longitudinal tracking of individuals over time. The study period spans January 2017 (2017-Q1) through December 2022 (2022-Q4).

The sample is restricted to beneficiaries aged 20 to 64 years. This age range reflects differences in CGM coverage rules for pediatric beneficiaries and ensures a consistent policy environment across the adult population.

Identification of type 1 diabetes (T1D) is based on claims derived algorithms. In the baseline specification, beneficiaries are classified as having T1D if they have at least one diagnosis of T1D, defined using ICD 10 codes E10.xx. We further restrict the sample to individuals who receive a CGM during the observation period. CGM use is identified through claims for any CGM related components, including transmitters, sensors, receivers, or readers. This definition constitutes the full sample used in the baseline analysis.

We identify 927 beneficiaries who successfully received a CGM during the study period. Rather than modeling CGM adoption, the empirical analysis focuses on continuation of use following the first quarter in which a beneficiary receives a CGM. For each individual,

event time is defined relative to the first observed CGM claim. Quarter 0 corresponds to the quarter of initial receipt, and beneficiaries are followed for up to three additional quarters, yielding a four-quarter (one-year) post-receipt observation window. By definition, all individuals in our sample used a CGM in Quarter 0. This design allows us to examine how reauthorization requirements at the time of first use affect sustained CGM use within the first year after treatment begins.

The primary outcome is CGM continuation, measured using pharmacy and durable medical equipment claims for CGM components, including transmitters, sensors, receivers, and readers associated with approved CGM systems (DEXCOM G6 and Freestyle Libre). Outcomes are based on observed claims rather than prescriptions written, thereby capturing successful authorization and dispensing rather than prescribing intent.

Table 1 presents summary statistics for the sample of beneficiaries with T1D who received a CGM during the study period. The average age is 39 years, with a range from 20 to 64, and approximately 64 percent of the sample is female. The racial composition reflects the demographic distribution of the West Virginia Medicaid population: 85.4 percent identify as White, 3 percent as Black, 8.6 percent as another race category, and 2.7 percent as Hispanic.

At the time of first CGM receipt, 23.8 percent of beneficiaries were exposed to the six-month reauthorization regime and 27.4 percent to the three-month regime, with the remainder initiating under the original one-year policy. Alternative classification algorithms for T1D yield broadly similar sample proportions.

Table 1: Summary Statistics

	N	Mean	SD	Min	Max
Demographic Characteristics					
Age	927	39.01	11.83	20	64
Female	927	0.636	0.481	0	1
White	927	0.854	0.353	0	1
Black	927	0.030	0.171	0	1
Other Race	927	0.086	0.281	0	1
Hispanic	927	0.027	0.162	0	1
Event-Time Indicators					
Quarter 0	927	1.000	0.000	1	1
Quarter 1	918	0.892	0.310	0	1
Quarter 2	751	0.802	0.399	0	1
Quarter 3	658	0.793	0.405	0	1
Policy Indicators at First CGM Receipt					
Twelve-Month Regime	927	0.488	0.500	0	1
Six-Month Regime	927	0.238	0.426	0	1
Three-Month Regime	927	0.274	0.446	0	1
Diabetes Classification Indicators					
Klompas	927	0.585	0.493	0	1
Teltsch	927	0.625	0.484	0	1
Baseline Clinical Severity					
Baseline Severity	927	3.266	2.839	0	13

Notes: Summary statistics are calculated at the individual level. Policy indicators correspond to the reauthorization regime in effect at the time of first CGM receipt. Baseline severity is constructed using claims observed in the first quarter of CGM use and reflects the count of diabetes-related complications and acute health care utilization indicators, ranging from 0 to 13.

The event-time indicators describe CGM continuation patterns relative to the first quarter of CGM receipt. By construction, all beneficiaries are observed in quarter 0, and the share remaining in subsequent quarters declines over time, reflecting discontinuation and attrition in sustained use. Baseline clinical severity, measured using claims observed in the first quarter of CGM use, has a mean of 3.26 and ranges from 0 to 13. This measure captures the number of diabetes-related complications at treatment onset, including hospitalizations, emergency department visits, and diagnosis codes indicative of uncontrolled diabetes.[1] The substantial variation in baseline severity indicates meaningful heterogeneity

[1]Severity is calculated based on diagnoses of retinopathy-, neuropathy-, nephrology-, cerebrovascular-,

in underlying disease burden at the time of first CGM receipt, motivating the subsequent analysis of heterogeneous policy effects.

To assess robustness to alternative identification rules, we implement two widely used classification algorithms from the literature, proposed by Klompas et al. (2013) and Teltsch et al. (2019). These algorithms rely on different combinations of diagnosis codes, medication use patterns, and utilization histories to distinguish T1D from type 2 diabetes in administrative data.[2]

3.2 Empirical Strategy

During the study period, West Virginia Medicaid modified its CGM reauthorization requirements for adult beneficiaries with T1D. Beginning in 2021Q4, the reauthorization period was shortened to six months. In 2022Q2, the policy was further revised to require reauthorization every three months. These changes increased the frequency with which beneficiaries were required to obtain physician documentation to maintain CGM access.

To evaluate the impact of these policy changes on continued CGM use, we exploit variation in the calendar quarter in which beneficiaries initiated CGM. Let k_i^0 denote the calendar quarter of CGM initiation for individual i. Event time is defined relative to initiation, where $k = 0$ corresponds to the initiation quarter and $k = 1, 2, 3$ denote subsequent quarters within the first year of follow up.

We construct indicators for whether CGM initiation occurred under the six month or three month reauthorization regimes based on the calendar quarter k_i^0. These indicators are fixed at the individual level and capture exposure to different administrative requirements at the time of initiation.

We estimate the following event time specification:

cardiovascular-, peripheral vascular-, and metabolic-related conditions. The index is associated with higher risk of diabetes-related hospitalization (Young et al., 2008).

[2]The Klompas algorithm classifies T1D based on a combination of diagnosis codes and insulin use, placing emphasis on the absence of oral hypoglycemic agents. The Teltsch algorithm incorporates diagnosis frequency and treatment patterns, requiring consistent insulin use and limited evidence of type 2 diabetes management.

$$
\begin{aligned}
Y_{it} = \alpha_z + \omega_r + \sum_{k=1}^{3} \beta_k \mathbf{1}(EventTime_{it} = k) \\
+ \lambda_6 SixMonth_i + \lambda_3 ThreeMonth_i \\
+ \sum_{k=1}^{3} \delta_k \mathbf{1}(EventTime_{it} = k) \times SixMonth_i \\
+ \sum_{k=1}^{3} \gamma_k \mathbf{1}(EventTime_{it} = k) \times ThreeMonth_i \\
+ X_{it}'\theta + \varepsilon_{it}.
\end{aligned} \tag{1}
$$

where Y_{it} denotes the outcome for individual i in event quarter t relative to CGM initiation. The specification includes zipcode fixed effects α_z and region fixed effects ω_r, which proxy for time invariant geographic differences in access, provider supply, and health care infrastructure. The vector X_{it} includes age, gender, and race as covariates. Standard errors are clustered at the individual level.

The interaction terms allow the post initiation trajectory of CGM continuation to differ flexibly across reauthorization regimes. Rather than imposing a common shift, the model estimates separate interaction effects for each post initiation quarter. The coefficients δ_k and γ_k therefore capture how continuation in quarter k differs for beneficiaries initiating under the six month and three month reauthorization regimes, respectively, relative to the baseline annual reauthorization period.

Because the sample ends in 2022Q4, beneficiaries initiating under the three month reauthorization regime have a shorter observable follow up window. Estimates for this regime are therefore interpreted cautiously due to limited post initiation exposure.

Identification relies on the assumption that, conditional on geographic fixed effects and observed covariates, cohorts defined by the first quarter of CGM receipt would have followed similar continuation trajectories in the absence of changes in reauthorization requirements. In particular, no other contemporaneous policy changes or cohort-specific shocks should differentially affect sustained CGM use across receipt periods. Under this assumption, differences in post-receipt continuation patterns can be attributed to changes in administrative reauthorization frequency.

Because administrative claims data require a definition of T1D, we assess whether the estimated policy effects are sensitive to alternative classification rules. In addition to our primary claims-based definition, we implement commonly used algorithms from the liter-

ature, including those proposed by Klompas et al. (2013), and Teltsch et al. (2019). These approaches differ in their reliance on diagnosis codes, medication claims, and utilization patterns to distinguish type 1 from type 2 diabetes. For each definition, the sample is restricted accordingly and the dynamic event-time specification is re-estimated. Consistency across classification rules would indicate that the results are not driven by misclassification or sample composition.

We next isolate the transition to the six-month reauthorization regime. To do so, the sample is restricted to beneficiaries whose first CGM receipt occurs between 2021Q1 and 2021Q4, thereby excluding exposure to the subsequent three-month reform introduced in 2022Q2 and removing CGM users whose first use was before the pandemic. This narrower policy window allows a cleaner comparison between the original one-year rule and the six-month reauthorization requirement. The specification focuses exclusively on the interaction between event time and the six-month policy indicator, sharpening identification of the first reduction in reauthorization duration.

To further distinguish policy effects from general time trends, we compare beneficiaries who first received a CGM under the six-month regime to those who were already using CGM prior to the policy change. Established users are observed over the same calendar quarters as newly exposed beneficiaries, allowing for a contemporaneous comparison within a common time frame. Differences in post-receipt trajectories between these groups provide additional evidence on whether shortened reauthorization intervals alter sustained CGM use.

We also examine heterogeneity by baseline clinical severity. A severity measure is constructed using claims observed in the first quarter of CGM receipt, capturing diabetes-related complications and health care utilization at CGM treatment onset. The main specification is estimated across subsamples defined by alternative severity thresholds. Because the severity measure is continuous rather than binary, this approach permits a flexible examination of whether administrative burden differentially affects patients with varying levels of underlying disease burden.

Finally, we conduct a placebo test to assess the validity of the identification strategy. A fictitious reform indicator is assigned to cohorts receiving CGM between 2021Q2 and 2021Q3, when the one-year reauthorization rule remained in effect. The sample is restricted to pre-2021Q4 observations, and the true policy indicator is replaced with this placebo measure. In the absence of an actual policy change, the interaction terms should be statistically indistinguishable from zero. Failure to detect a placebo effect supports the interpretation that the main results are not driven by pre-existing differential trends across

receipt cohorts.

4 Results

Table 2 reports the baseline dynamic event-time estimates of CGM continuation within the first year following the first quarter in which a WV Medicaid beneficiary receives a CGM. Across all specifications, continuation declines over the span of a year. Relative to the first quarter of CGM receipt, the probability of continued CGM use falls steadily in quarters one, two, and three. This pattern reflects natural attrition over time, independent of policy changes.

Table 2: Effect of Reauthorization Frequency on CGM Continuation

	(1) Full Sample	(2) Klompas	(3) Teltsch
Event Time (*Baseline = Quarter 0*)			
1 Quarter	-0.060***	-0.056***	-0.057***
	(0.012)	(0.015)	(0.014)
2 Quarters	-0.101***	-0.092***	-0.090***
	(0.015)	(0.018)	(0.018)
3 Quarters	-0.147***	-0.128***	-0.131***
	(0.018)	(0.021)	(0.021)
Event Time × Six Month			
1 Quarter	-0.023	-0.047	-0.047
	(0.023)	(0.033)	(0.032)
2 Quarters	-0.121***	-0.116***	-0.118***
	(0.033)	(0.043)	(0.041)
3 Quarters	-0.174***	-0.173***	-0.179***
	(0.038)	(0.049)	(0.048)
Event Time × Three Month			
1 Quarter	-0.155***	-0.137***	-0.135***
	(0.030)	(0.041)	(0.039)
2 Quarters	-0.537***	-0.626***	-0.607***
	(0.059)	(0.078)	(0.076)
Observations	3,244	1,928	2,056
R-squared	0.288	0.326	0.320

Notes: Column (1) reports estimates for the full analytic sample. Columns (2) and (3) apply alternative T1D classification algorithms from the literature. All specifications include zipcode and region fixed effects as well as demographic controls (age, gender, and race). Robust standard errors are clustered at the individual level. The interaction term for three quarters under the three month reauthorization regime is omitted due to lack of observations. *** p<0.01, ** p<0.05, * p<0.1.

The key coefficients of interest are the interactions between event time and the reauthorization regimes. These estimates capture whether shortening the administrative renewal window alters the post-treatment trajectory of CGM use. Under the six-month reauthorization policy, continuation declines more sharply beginning in the second quarter after the first CGM claim. In the full sample, the interaction term for two quarters is negative and statistically significant, and the effect becomes larger in the third quarter. The timing of these effects closely matches the six-month renewal threshold, suggesting that more frequent documentation requirements reduce sustained device use.

The effects are substantially larger under the three-month reauthorization regime. The interaction terms for one and two quarters are strongly negative and precisely estimated across specifications. The magnitude of the second-quarter effect is particularly pronounced, indicating a sharp drop in continuation shortly after the first required renewal. Because the sample ends in fourth quarter of 2022, few beneficiaries remain exposed long enough to estimate the third-quarter interaction under the three-month regime, and that term is therefore omitted.

These results are consistent across alternative claims-based definitions of type 1 diabetes. The similarity in magnitudes across definitions suggests that the findings are not driven by misclassification of diabetes type.

Our findings indicate that increasing the frequency of reauthorization requirements reduces sustained CGM use within the first year of treatment. The alignment between the timing of renewal thresholds and the observed declines supports the interpretation that administrative burden acts as a barrier to continued access.

Table 3 focuses exclusively on the six-month reform to provide a cleaner estimate of its effect, independent of the later three-month policy change. The estimates are highly consistent with the baseline results. Column (1) restricts the sample to cohorts surrounding the implementation of the six-month reform and excludes any exposure to the three-month regime. As in the main specification, continuation declines over event time relative to the first quarter of CGM receipt. The interaction terms indicate that the six-month reform leads to a statistically significant reduction in CGM continuation beginning in the second quarter after receipt, with the effect growing larger by the third quarter. The timing of these effects closely aligns with the six-month renewal requirement, reinforcing the interpretation that increased administrative frequency reduces sustained device use.

Columns (2) and (3) implement a new versus established comparison. These specifications contrast beneficiaries who first received a CGM under the six-month regime with those already using CGM prior to the reform but observed over the same calendar window. The negative interaction coefficients remain statistically significant, particularly in the second and third quarters. The results are similar when the sample is further restricted to cohorts beginning in the first quarter of 2021 and later, ensuring comparable pre-reform exposure.

The results are consistent across these different specifications, suggesting that the observed patterns are not driven by compositional differences or general time trends, but instead reflect the impact of the increased administrative burden imposed by the six-month reauthorization policy. Therefore, the six-month reform independently reduced sustained

CGM use within the first year following the first CGM receipt, even prior to the implementation of the more restrictive three-month policy.

Table 3: Isolating the Six-Month Reauthorization Reform

	(1) Six-Month Reform Window	(2) New vs. Established	(3) New vs. Established (Restricted Cohorts)
Event Time (*Baseline = Quarter 0*)			
1 Quarter	-0.091***	-0.090***	-0.078***
	(0.030)	(0.016)	(0.029)
2 Quarters	-0.109***	-0.130***	-0.097***
	(0.032)	(0.019)	(0.032)
3 Quarters	-0.174***	-0.202***	-0.215***
	(0.039)	(0.023)	(0.044)
Event Time × Six Month			
1 Quarter	0.008	0.008	-0.005
	(0.036)	(0.026)	(0.035)
2 Quarters	-0.112**	-0.091**	-0.124***
	(0.045)	(0.035)	(0.044)
3 Quarters	-0.149***	-0.118***	-0.108*
	(0.052)	(0.041)	(0.056)
Observations	1,306	2,315	1,278
R-squared	0.363	0.273	0.361

Notes: Column (1) restricts the sample to initiation cohorts surrounding the implementation of the six-month reauthorization policy and excludes observations exposed to the subsequent three-month reform; the analysis window spans 2021Q1 through 2022Q2. Column (2) compares beneficiaries initiating CGM under the six-month regime to beneficiaries already using CGM prior to the reform, observed over the same calendar window. Column (3) further restricts this comparison to initiation cohorts beginning in 2021Q1 and later to ensure comparable pre-reform exposure. All specifications include zipcode and region fixed effects and demographic controls (age, gender, and race). Robust standard errors are clustered at the individual level. *** p<0.01, ** p<0.05, * p<0.1.

Table A1 examines whether the estimated policy effects vary by baseline clinical severity at the time of the first CGM receipt. Across severity subsamples, the overall pattern of declining continuation remains consistent with the main results, with negative and generally statistically significant interaction terms under both the six-month and three-month reauthorization regimes, particularly in the second and third quarters following receipt. While the direction and timing of the effects are stable, the magnitude of the six-month

policy effect increases as severity thresholds rise, whereas it is smaller and statistically insignificant among beneficiaries with no baseline severity indicators. In contrast, declines under the three-month regime persist even among beneficiaries with no baseline severity, although magnitudes vary across groups.[3] These findings indicate that the main results are not driven by differences in severity composition at treatment onset, while also revealing meaningful heterogeneity in how administrative burden affects patients depending on their underlying clinical complexity.

Table A2 reports the results of a placebo test in which a fictitious reform is assigned to cohorts prior to the implementation of the six-month reauthorization policy. As expected, continuation declines over event time relative to the first quarter of CGM receipt. However, the interaction terms associated with the placebo reform coefficients are statistically insignificant across all post-event quarters. There is no evidence of differential continuation patterns around the artificial policy threshold.

These findings support the identification strategy. If the main results were driven by underlying time trends or unobserved cohort differences, we would expect to observe similar effects when assigning a false reform date. The absence of such effects strengthens the interpretation that the observed declines in continuation are attributable to the actual changes in reauthorization frequency rather than spurious temporal dynamics.

5 Discussion

Our study shows that shortening Medicaid reauthorization intervals reduces sustained CGM use among adults with type 1 diabetes. Under the original one-year rule, continuation declines gradually over the first year following the first CGM receipt. When the renewal requirement is shortened to six months, continuation falls more sharply beginning in the second and third quarters. The decline is even larger under the three-month reauthorization regime. The timing of these effects closely matches the renewal thresholds, suggesting that more frequent documentation requirements reduce continued device use.

These findings are consistent with the administrative burden literature. Prior work shows that learning and compliance costs can reduce participation in public programs even when eligibility remains unchanged (Arbogast et al., 2024; Herd and Moynihan, 2025). In this setting, beneficiaries must obtain repeated physician documentation to maintain CGM access. Increasing the frequency of reauthorization raises the number of administrative steps required within a year, which may disrupt continuation even among patients who

[3] This zero severity cohort should be interpreted with care due to small sample sizes (approx. 20% of the total sample).

have already successfully adopted the technology. Because authorization processes are mediated through providers, the results are also consistent with evidence that administrative complexity can affect access through provider capacity and engagement (Dunn et al., 2024; Gaulke et al., 2023).

Several limitations should be noted. The analysis relies on claims data and cannot directly observe patient preferences or clinical decisions that may independently influence discontinuation. The study is also based on a single state Medicaid program, and institutional features specific to West Virginia may limit generalizability. Finally, the shorter follow-up window for the three-month regime requires cautious interpretation of longer-term effects. Despite these caveats, the placebo test and multiple robustness checks support the interpretation that changes in reauthorization frequency contribute to the observed declines in continuation.

Our results indicate that increasing administrative frequency reduces sustained CGM use within Medicaid. While reauthorization policies may serve cost-containment objectives, they also appear to introduce measurable barriers to continued access to a clinically beneficial technology.

6 Conclusion

This paper examines how changes in Medicaid reauthorization requirements affect continued use of continuous glucose monitoring among adults with type 1 diabetes in West Virginia. Using administrative claims data from 2017 through 2022, we exploit variation in reauthorization rules in the calendar quarter of first CGM receipt to estimate dynamic event-time effects under three reauthorization regimes: annual, six-month, and three-month renewal. By focusing on continuation within the first year after initial receipt, the analysis isolates how administrative renewal frequency shapes sustained access to a high-value medical technology. Multiple robustness checks, including alternative diabetes classifications, restricted policy windows, comparisons of new versus established users, heterogeneity by baseline severity, and placebo tests, support the identification strategy.

The results show that shortening the reauthorization interval reduces sustained CGM use. Under the original one-year policy, continuation declines gradually over time. When the renewal requirement is reduced to six months, continuation falls more sharply beginning in the second and third quarters following the first CGM receipt. The decline is substantially larger under the three-month reauthorization regime, with pronounced reductions shortly after renewal thresholds are reached. These effects are consistent across alternative sample definitions and are not driven by baseline clinical severity or underlying

time trends. The timing of the declines closely aligns with renewal requirements, suggesting that increased administrative frequency contributes to reduced continuation.

These findings have direct policy implications. CGMs are widely recognized as an effective tool for improving glycemic control and reducing complications among individuals with type 1 diabetes. While reauthorization policies may aim to contain costs or regulate utilization, increasing administrative frequency appears to create measurable barriers to sustained use. In publicly insured populations, where administrative processes often intersect with provider capacity constraints and documentation requirements, even modest increases in compliance burden can affect access. Policymakers designing coverage rules for high-value technologies must therefore weigh potential fiscal savings against the risk of reducing effective treatment continuity.

Future research should examine whether reductions in CGM continuation translate into downstream changes in clinical outcomes, such as emergency department visits, hospitalizations, or markers of glycemic control. Additional work could explore provider-level responses to reauthorization policies, including changes in prescribing behavior or willingness to manage publicly insured patients. Expanding the analysis to other states would help assess external validity and identify institutional features that moderate the impact of administrative burden. More broadly, evaluating how authorization design shapes both utilization and health outcomes remains central to understanding the tradeoffs between cost containment and access in Medicaid programs.

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Appendix

Table A1: Robustness to Baseline Severity at CGM Initiation

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Event Time (*Baseline = Quarter 0*)							
1 Quarter	-0.049**	-0.064***	-0.045***	-0.042**	-0.049***	-0.079***	-0.087***
	(0.024)	(0.014)	(0.015)	(0.021)	(0.018)	(0.023)	(0.029)
2 Quarters	-0.091***	-0.104***	-0.077***	-0.067***	-0.082***	-0.128***	-0.131***
	(0.032)	(0.017)	(0.020)	(0.026)	(0.022)	(0.029)	(0.035)
3 Quarters	-0.141***	-0.148***	-0.128***	-0.118***	-0.143***	-0.155***	-0.184***
	(0.039)	(0.020)	(0.025)	(0.033)	(0.029)	(0.031)	(0.041)
Event Time $\times$ *Six-Month Reform*							
1 Quarter	-0.026	-0.021	-0.041	-0.052	-0.042	0.002	0.006
	(0.053)	(0.026)	(0.034)	(0.046)	(0.036)	(0.040)	(0.048)
2 Quarters	-0.059	-0.133***	-0.144***	-0.198***	-0.150***	-0.115*	-0.160**
	(0.071)	(0.038)	(0.048)	(0.067)	(0.052)	(0.060)	(0.073)
3 Quarters	-0.062	-0.199***	-0.172***	-0.242***	-0.176***	-0.230***	-0.235***
	(0.082)	(0.043)	(0.055)	(0.075)	(0.059)	(0.068)	(0.081)
Event Time $\times$ *Three-Month Reform*							
1 Quarter	-0.137*	-0.158***	-0.181***	-0.212***	-0.211***	-0.107**	-0.154**
	(0.071)	(0.034)	(0.047)	(0.065)	(0.052)	(0.046)	(0.061)
2 Quarters	-0.526***	-0.536***	-0.632***	-0.726***	-0.612***	-0.493***	-0.323***
	(0.151)	(0.066)	(0.093)	(0.131)	(0.104)	(0.092)	(0.123)
Observations	663	2,581	1,538	875	1,349	1,231	891
R-squared	0.425	0.306	0.349	0.426	0.368	0.370	0.398
Sample Restriction	Severity = 0	Severity ≤ 1	Severity ≤ 2	$1 \leq$ Severity ≤ 2	$1 \leq$ Severity ≤ 3	Severity > 3	Severity > 4

Notes: Each column re-estimates the baseline event-time specification on subsamples defined by baseline severity in the quarter of CGM initiation. Severity is measured using claims-based indicators of acute utilization at treatment onset. All specifications include zipcode and region fixed effects and demographic controls (age, gender, and race). Robust standard errors clustered at the individual level are reported in parentheses. *** p<0.01, ** p<0.05, * p<0.1.

Table A2: Placebo Test Using Pre-Reform Cohorts

	(1) Placebo Reform
Event Time (*Baseline = Quarter 0*)	
1 Quarter	-0.050***
	(0.013)
2 Quarters	-0.098***
	(0.017)
3 Quarters	-0.138***
	(0.020)
Event Time × Fake Reform	
1 Quarter	-0.041
	(0.032)
2 Quarters	-0.011
	(0.036)
3 Quarters	-0.036
	(0.044)
Observations	1,785
R-squared	0.269

Notes: The placebo reform is assigned to initiation cohorts between 2021Q2 and 2021Q3, prior to the implementation of the six-month reauthorization policy. The sample is restricted to pre-reform cohorts only. All specifications include zipcode and region fixed effects and demographic controls (age, gender, and race). Robust standard errors are clustered at the individual level. None of the interaction terms are statistically significant. *** p<0.01, ** p<0.05, * p<0.1.