# GLP-1 agonists disrupting diabetes adherence quality measures

August 2023

Glucagon-like peptide 1 (GLP-1) receptor agonists are a class of drugs indicated for the treatment of type 2 diabetes and obesity.[1] Certain chemicals in the GLP-1 receptor agonists class are co-indicated for the treatment of both diabetes and weight management, albeit under different brand names.[2] As GLP-1 receptor agonist brands are increasingly being used for weight loss purposes, Walgreens noted disruptions to Medicare Part-D payers' diabetes adherence metrics in 2022; this effect may be attributed to the fact that use of any drug for differing indications can lead to dosing and course of therapy schema irregularities.[3,4,5] Medication adherence for diabetes has been a CMS Stars quality metric since 2012.[6] Patients may experience poor health when they are taking diabetes medications inappropriately, potentially resulting in poor health outcomes and raising the overall cost of care. Over the past decade, CMS has viewed medication adherence as a critical component in a health insurers' performance; insurers in turn use performance-based financial incentives to leverage pharmacies to assist in cultivating adherence amongst payer member diabetic patients. Therefore, any significant trend in off-indication usage of GLP-1 receptor agonists can affect performance incentives to pharmacies for diabetic adherence quality metrics.

Walgreens, in partnership with AllazoHealth, a health outcomes predictions company, investigated the disruptions to Medicare Part-D payers' diabetes adherence metrics in 2022.

## OBJECTIVES

- Identify if there were significant changes to the proportion of diabetes quality metric patients who had claims for a GLP-1 receptor agonists in 2022
- Identify if there were significant differences in the end-of-year adherence rates of diabetes quality metric patients on GLP-1 receptor agonists versus those who are not
- Quantify the impact of the above two factors on end-of-year diabetes adherence quality metrics in 2022

## METHODS

We selected plans from three separate Medicare Part-D insurers for this study. Patients included in the study had to have at least two paid claims at a Walgreens pharmacy location for non-insulin anti-diabetic medications processed by any of the selected payers within any study year (2020 to 2022). Patients who filled at least two claims of GLP-1 receptor agonists within any study year and no other anti-diabetic drug were categorized as GLP-1 Monotherapy for that given year. For the purposes of this study, the GLP-1 Monotherapy subset of patients can be used as a proxy for potential off-indication usage of the drug class

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because GLP-1 receptor agonists often serve as add-on therapy to metformin, the standard first-line treatment2.

We compared the population-level adherence performance of the *GLP-1 Monotherapy* subpopulation to those patients who did not have any paid claims for GLP-1 receptor agonists in the same year (the yearly *No GLP-1* subpopulation).

A third study group analyzed were patients that had two claims of GLP-1 receptor agonists along with at least one claim of non-GLP-1 anti-diabetic medications within any study year (the yearly *GLP-1 Polytherapy* group); because GLP-1 receptor agonists are indicated as add-on therapy, this subpopulation could be representative of on-indication usage of the diabetes-indicated brands.

All three groups were mutually exclusive and, when summed within years, were representative of the total denominator of each payers' diabetes quality metric. The proportion of patients using GLP-1 receptor agonists was calculated by the ratio of each of the *GLP-1 Monotherapy* and the *GLP-1 Polytherapy* groups to the three payers' total yearly diabetes quality metric denominators. Year-over-year differences in that ratio were analyzed to assess significance.

Study patients were considered adherent if they achieved at least 80-percent of days covered ("PDC80") for all of their anti-diabetic medications within a year per CMS Stars Medication Adherence guidelines.[7] Yearly adherence rates were calculated for each of the three study groups and payers. Within each payer, the rates for each group were compared to one another and across years to determine if there were any statistically significant differences.

Since the hypothesis was that the *GLP-1 Monotherapy* patients underperformed the other groups due to off-indication usage within that subpopulation, impacts to each payer's year-end diabetes quality metric were calculated by removing the *GLP-1 Monotherapy* patients from each payers' yearly diabetes metric numerator and denominator and then recalculating the end-of-year performance. All calculations of statistical significance were performed by calculating Z-scores for population proportions.

This research was approved by Advarra IRB (Protocol Number Pro00035033).

## RESULTS

On a year-over-year basis, there were significant increases in the proportion of the GLP-1 Monotherapy and GLP-1 Polytherapy groups as a ratio of each of the three study payers' diabetes metric year-end populations (see Figures A and B and Table 1). Notably, there were year-over-year increases in the proportion of patients who are GLP-1 Monotherapy when comparing 2020-2021 differences to 2021-2022 differences for each payer. The GLP-1 Polytherapy group's rate of growth declined slightly.

When compared to the No GLP-1 and GLP-1 Polytherapy groups, end-of-year adherence performance lagged substantially behind for the GLP-1 Monotherapy subpopulations for each payer (see Figure C and Table 2). For example, for Payer A in 2022, only 41.2% of GLP-1 Monotherapy patients finished the year adherent compared to 72.3% of the No GLP-1 group and 71.7% of the GLP-1 Polytherapy group. All differences in end-of-year adherence rates between No GLP-1/GLP-1 Polytherapy and GLP-1 Monotherapy were statistically significant with $p<.001$.

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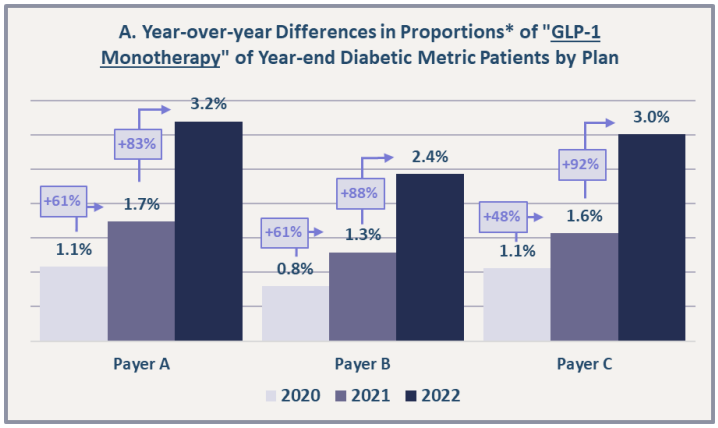
Figure A and B



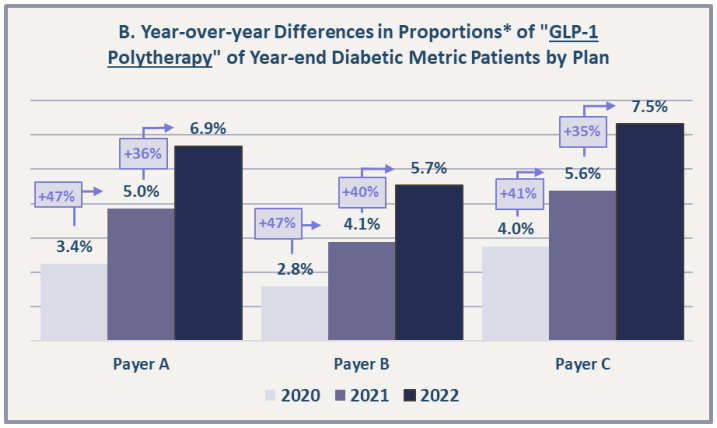




Table 1

| Year-over-year Differences in Proportions* of GLP-1 Monotherapy/Polytherapy of Year-end Diabetic Metric Patients by Plan | | | | | | | |
|---|---|---|---|---|---|---|---|
| | | Percent of end-of-year Diabetes Population | | | Percent increase | | |
| Study Group | Payer | 2020 | 2021 | 2022 | 2020 to 2021 | 2021 to 2022 | 2020 to 2022 |
| GLP-1 Monotherapy | Payer A | 1.1% | 1.7% | 3.2% | 61% | 83% | 194% |
| GLP-1 Monotherapy | Payer B | 0.8% | 1.3% | 2.4% | 61% | 88% | 203% |
| GLP-1 Monotherapy | Payer C | 1.1% | 1.6% | 3.0% | 48% | 92% | 185% |
| GLP-1 Polytherapy | Payer A | 3.4% | 5.0% | 6.9% | 47% | 36% | 100% |
| GLP-1 Polytherapy | Payer B | 2.8% | 4.1% | 5.7% | 47% | 40% | 105% |
| GLP-1 Polytherapy | Payer C | 4.0% | 5.6% | 7.5% | 41% | 35% | 90% |

**All year-over-year difference in proportions for each payer are statistically significant with p<.001*

Table 2

| 2. End-of-Year Adherence Rates and Denominators for Diabetic Patients by Payer, Year, and GLP-1 Status | | | | | | |
|---|---|---|---|---|---|---|
| | Adherence Rates | | | Denominators | | |
| Payer/Year | No GLP-1 | GLP-1 Polytherapy | GLP-1 Monotherapy | No GLP-1 | GLP-1 Polytherapy | GLP-1 Monotherapy |
| **Payer A** | | | | | | |
| 2020 | 72.8% | 74.1% | 42.4% | 151,441 | 5,463 | 1,721 |
| 2021 | 71.6% | 72.7% | 44.4% | 160,666 | 8,701 | 3,002 |
| 2022 | 72.3% | 71.7% | 41.2% | 154,960 | 11,839 | 5,499 |
| **Payer B** | | | | | | |
| 2020 | 79.7% | 81.6% | 48.5% | 360,032 | 10,416 | 2,994 |
| 2021 | 78.5% | 80.9% | 49.1% | 374,499 | 16,181 | 5,115 |
| 2022 | 78.8% | 79.9% | 46.1% | 383,932 | 23,944 | 10,155 |
| **Payer C** | | | | | | |
| 2020 | 74.7% | 80.0% | 51.2% | 150,641 | 6,266 | 1,676 |
| 2021 | 73.4% | 78.3% | 51.5% | 142,556 | 8,552 | 2,408 |
| 2022 | 74.3% | 77.4% | 49.1% | 137,328 | 11,531 | 4,617 |

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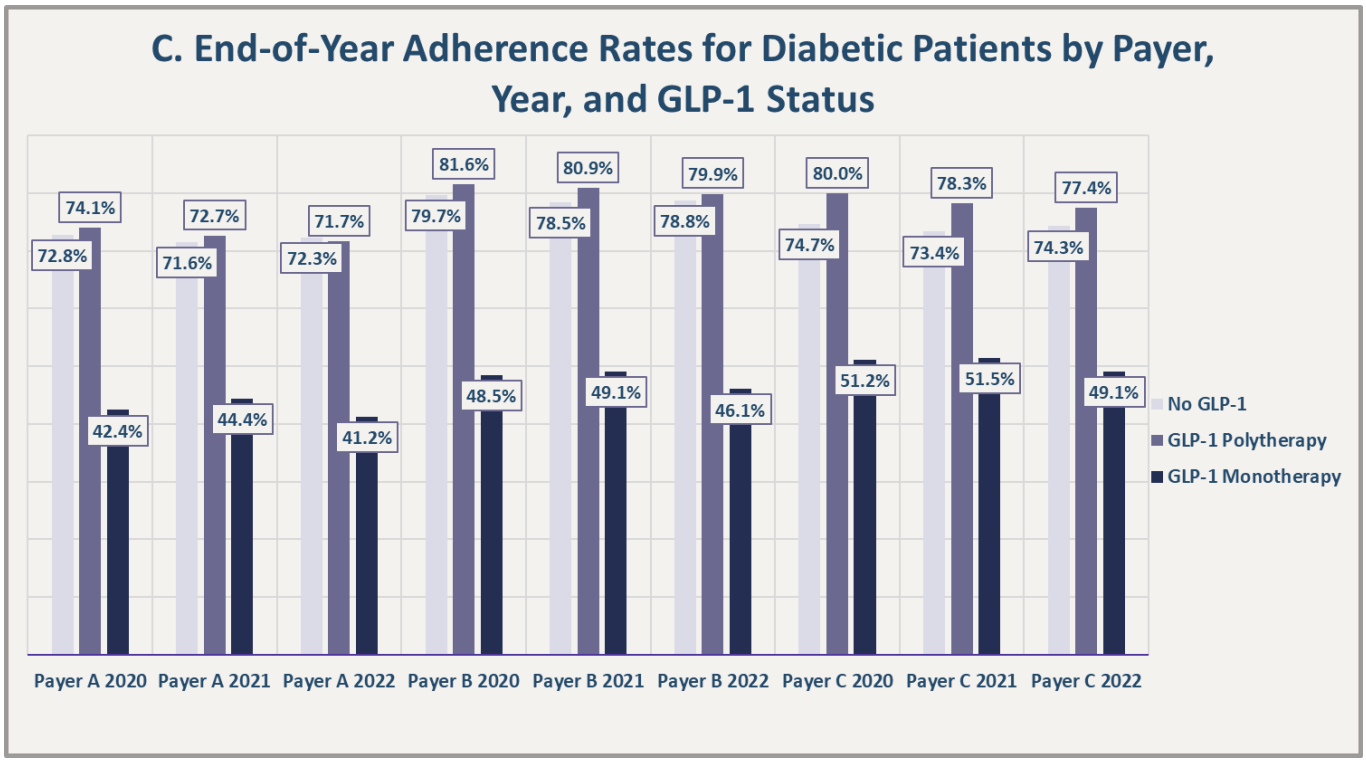
Figure C




The growing proportion and poor adherence of the *GLP-1 Monotherapy* patients had significant and sizable impacts on year-end performance metrics for each payer in 2022. By removing this subpopulation from the numerators and denominators of the payers' diabetes population, we can estimate improvements of 1%, 0.8%, and 0.8% for payers A, B, and C respectively (see Table 3).

Table 3

| Payer | GLP-1 Monotherapy Adherent | GLP-1 Monotherapy Patients | Total Diabetes Metric Patients Adherent | Total Diabetes Metric Patients Patients | GLP-1 Monotherapy Adherence Rate | Total Diabetes Metric Adherence Rate | Diabetes Metric Numerator without "GLP-1 Monotherapy" Patients | Diabetes Metric Denominator without "GLP-1 Monotherapy" Patients | Diabetes Metric Adherence Rate without "GLP-1 Monotherapy" Patients | Esimated Impact of "GLP-1 Monotherapy" Group on Diabetes Metric |
|---|---|---|---|---|---|---|---|---|---|---|
| Payer A | 2,267 | 5,499 | 122,801 | 172,298 | 41.2% | 71.3% | 120,534 | 166,799 | 72.3% | **1.0%** |
| Payer B | 4,679 | 10,155 | 326,176 | 418,031 | 46.1% | 78.0% | 321,497 | 407,876 | 78.8% | **0.8%** |
| Payer C | 2,268 | 4,617 | 113,271 | 153,476 | 49.1% | 73.8% | 111,003 | 148,859 | 74.6% | **0.8%** |

## CONCLUSIONS

When considering *GLP-1 Monotherapy* as a proxy for off-indication usage of GLP-1 class drugs, this study shows strong impacts to the diabetes adherence quality measures for three major Medicare Part D payers in 2022; this was due to the growing patient proportions and poor adherence for the *GLP-1 Monotherapy* subpopulation of patients.

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These impacts will likely continue or be exacerbated due to the interplay of the following phenomena: (a) growing social media coverage surrounding the effectiveness of GLP-1s for weight loss, (b) promotion of off-indication usage to bypass formulary requirements and/or prior authorization, (c) growing utilization of telehealth services to obtain prescriptions for GLP-1s, and (d) supply shortages due to increased demand (which will in turn generate missed days of coverage for PDC80 calculations).[8,9,10,11,12]

Impacts of 0.8%-or-greater to diabetes adherence will carry financial implications for incentivized quality improvement initiatives such as CMS Stars and payer-to-pharmacy quality measure programs.

## LIMITATIONS

Due to the inaccessibility of patient diagnosis data, the study used *GLP-1 Monotherapy* as a proxy for off-indication use. Similar research should be conducted by organizations that have access to both diagnosis data and/or laboratory results (A1C levels) as well as medication adherence data.

Non-pharmacy health plan data and claims affiliated with hospice care, insulin therapy, end-stage renal disease, or death were not available for use in this study. Due to this, patients were included in the study that would have been excluded from diabetes metric denominators if health plan data was accessible.


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