# A Description of GLP-1 Receptor Agonists Medication Use Within a Managed Care Health Plan: A Retrospective Cohort Analysis

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## Background

- The prevalence of diabetes in the United States has significantly increased from 23.4 million in 2015 to over 37.3 million in 2022, imparting $327 billion in total health care costs[3,4].
- Glucagon-like peptide-1 receptor agonists (GLP-1 RAs) are a novel therapeutic class for the treatment of type-2 diabetes mellitus (T2DM), which have been available in the United States for over a decade. The use of GLP-1s have been associated with significant improvements in glycated hemoglobin, weight loss, microvascular complications, and cardiovascular (CV) outcomes and mortality[5,6,8]. Despite the therapeutic advantages of GLP-1s, the class is relatively underutilized in the United States, accounting for only 7% of second-line prescriptions (after metformin) in 2016, behind sulfonylureas (46%), dipeptidyl peptidase-4 inhibitors (DPP-4i; 20%), and insulin (17%)[6].
- In 2021, the American Diabetes Association (ADA) recommended metformin as the preferred initial agent for the treatment of T2DM and recommends a GLP-1 or sodium-glucose cotransporter 2 inhibitor (SGLT-2is) with demonstrated CV benefits for patients with established atherosclerotic cardiovascular disease (ASCVD) or indicators of high risk, established kidney disease, or heart failure[1].
- Recent updates to the 2022 ADA guidelines suggest that first-line therapy depends on comorbidities, patient-centered factors, and management needs and generally includes metformin and lifestyle modifications. GLP-1s and SGLT-2s (with or without metformin) are appropriate initial agents for the treatment of T2DM with or at risk for ASCVD, heart failure, and/or chronic kidney disease[2].
- The combination of GLP-1 and DPP-4 agents does not provide synergistic effects and is not cost effective; therefore, concurrent therapy is not recommended[7].
- Currently, literature describing the utilization trends of GLP-1 RAs without metformin or concurrent to DPP-4is in a real-world setting, particularly managed care, remains limited.

## Objective

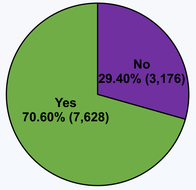
- To compare real-world utilization trends of GLP-1 RAs prescribed without a prior metformin prescription or with a concurrent DPP-4i prescription in a managed care population.

## Methods

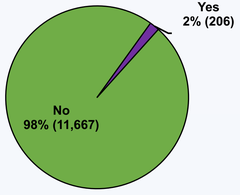
- Retrospective cohort study to analyze utilization trends of GLP-1 RAs without prior metformin or concurrent to DPP-4is.
- Deidentified claims data between January 1, 2019, and June 30, 2022, from HealthPartners, managed care health plan.
- Received IRB approval through HealthPartners Institute.
- Generic code numbers (GCN) for GLP-1s, DPP-4is, metformin, and other diabetic medications were used to gather claims data (member ID, age, drug, fill date, health plan, and provider specialty).
- Data was stored and analyzed using Microsoft Excel – pivot tables and excel functions (”match” and “index”) were used to perform data analysis.

## Results

### Figure 1: Prior Metformin

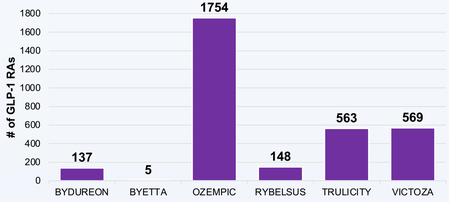



### Figure 2: Concurrent GLP-1/DPP-4

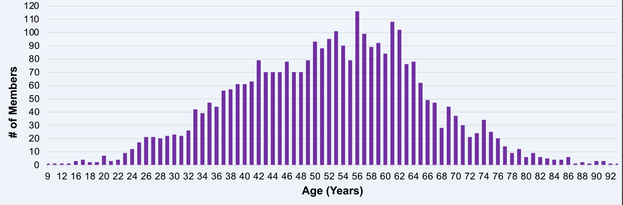



- The total number of members receiving GLP-1s prior to metformin from January 1, 2022, to June 30, 2022, (n = 10,804), Commercial (n = 7,646), Medicaid (n = 1,842), Medicare (n = 1,290), and MSHO Medicare/Medicaid (n = 233) (**Figure 1)**
- The total number of members receiving concurrent GLP-1/DPP-4 from January 1, 2019, to June 30, 2022, (n = 11,873), Commercial (n = 8,224), Medicaid (n = 2,097), Medicare (n = 1,362), and MSHO Medicare/Medicaid (n = 253) (**Figure 2)**

### Figure 3: GLP-1 RA Utilization for No Metformin Group

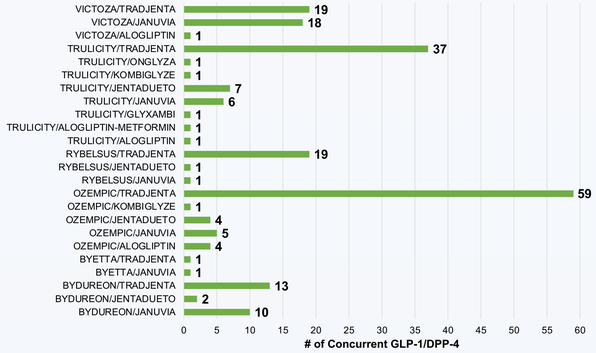



### Figure 4: Age Distribution of Members for No Metformin




Concurrent GLP-1/DPP-4 displayed similar “bell-curve “ graph with majority of patients falling in the 50-70 range (66 was the most common age with 12 member's total).

### Figure 5: Concurrent GLP-1/DPP-4 Medication Use




### Table 1: Provider Specialty & Other Diabetic Medications Utilized

| GLP-1 RA Prior to Metformin | | | | Concurrent GLP-1 RA/DPP-4i | | | |
|---|---|---|---|---|---|---|---|
| **Provider Specialty** | **Total #** | **Other Diabetic Medications** | **Total #** | **Provider Specialty** | **Total #** | **Other Diabetic Medications** | **Total #** |
| Endocrinology | 457 | Sulfonylureas | 18,874 | Endocrinology | 20 | Sulfonylureas | 205 |
| Family Medicine | 1,664 | Meglitinides | 196 | Family Medicine | 128 | Meglitinides | 2 |
| Internal Medicine | 447 | Thiazolidines | 2,598 | Internal Medicine | 33 | Thiazolidines | 32 |
| Surgery | 109 | Glycosidase Inhibitor | 123 | Surgery | 1 | Glycosidase Inhibitor | 4 |
| Nurse Practitioners | 36 | SGLT-2i | 15,279 | Nurse Practitioners | 2 | SGLT-2i | 156 |
| Pediatrics | 18 | Insulin Regular | 1,391 | Pediatrics | 1 | Insulin Regular | 10 |
| Urgent Care | 39 | Rapid-Acting Insulin | 10,205 | Urgent Care | 3 | Rapid-Acting Insulin | 24 |
| Weight Management | 14 | Long- Acting Insulin | 24,428 | | | Long-Acting Insulin | 186 |

## Discussion

- Although the results showed a significant amount of GLP-1 RA utilization prior to metformin, we were unable to conclude true off-label use due to insufficient data and criteria.
- The limitations of our study include a narrow study population that lacked significant variability, impacting the overall generalizability.
- Unable to establish causation for observable trends without further claims data, specifically focusing on patient demographics, economic factors, and diagnostic codes.
- Limiting the duration of data collection to one-year or less for certain variables make it difficult to establish data trends.

## Conclusion

- Our findings indicate that GLP-1 RA use prior to metformin is a relatively common event, occurring in roughly 30% of patients receiving prescriptions for GLP-RAs. However, these results are not indicative of off-label GLP-1 RA use but can be suggestive of off-label GLP-1 RA use. This study helps demonstrate the importance of close monitoring and documenting of all claims to ensure patents are receiving safe, effective, and guideline-directed therapy.

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