Early Treatment Modification for Type 2 Diabetes in a US Real-World Population: Impact on Glycemic Control, Diabetic Complications, and Healthcare Utilization

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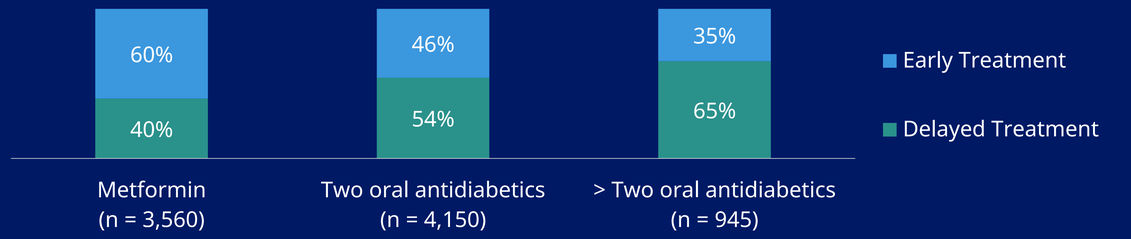
https://sciencehub.novonordisk.com/ispor2022/Uzoigwe.html?cid=gr-0680353448

Patients taking more than one antidiabetic medication at index were more likely to experience **delayed treatment** modification



Background and Aims

- The American Diabetes Association recommends that nonpregnant adults with diabetes maintain blood HbA1c levels of <7.0% as studies have shown that a period of intense glycemic control can confer decades of health benefits.[1]
  - Metformin and lifestyle changes are considered the standard of care for new-onset diabetes control, but combination therapy should be considered in patients with HbA1c levels of 8.5%-9% to achieve a 1%-2% reduction in HbA1c levels.[2]
- This study sought to estimate the prevalence and impact of delayed treatment modification on glycemic control, diabetic complications, and healthcare utilization in patients with type 2 diabetes (T2D) and HbA1c ≥9%.

Methods

- A retrospective cohort of 28,529 adults with T2D were indexed at their first HbA1c measure ≥9% between January 1 and December 31, 2016, using the Optum® Clinformatics® Data Mart Database.
- Patients were included if they had ≥2 ICD-9-CM or ICD-10-CM medical claims for T2D or ≥2 prescription claims for oral antidiabetic medications or glucagon-like peptide-1 receptor agonists, HbA1c ≥9.0%, continuous enrollment for 12-months prior to and 36-months following index and were aged between 18-90 years.
- Patients with type 1 diabetes, gestational diabetes, or pregnancy were excluded.
- Patients were segmented into two groups based on how quickly their T2DM treatment regimen was modified (defined as the addition or switching of T2D medication) after registering an HbA1c level ≥9%:
  1) early treatment modification (within 90 days of index HbA1c ≥9%).
  2) delayed (>90 days post-index) or no treatment modification.
- Post-index ΔHbA1c was assessed at 6-12 months; diabetic complications and healthcare utilization were assessed at 12, 24, and 36 months.

Key Results

- Characteristics of the study sample are shown in **Table 1**.
- Most (59%, n=16,904) patients received early treatment modification, while 41% of patients (n=11,625) received delayed or no treatment modification.
- The largest proportion of patients at baseline were using metformin (36%), followed by sulfonylurea (26%), and basal insulin (16%).
- Follow-up HbA1c values were available for 68% of patients in both the early (n=11,534) and delayed (n=7,897) treatment groups. Baseline mean HbA1c levels were significantly higher in the early treatment group than in the delayed treatment group and decreased by a significantly greater amount at follow-up (**Figure 2**).
- Diabetes Complication Severity Index (DCSI) scores were significantly lower for the early treatment group at baseline and at 36 months (**Figure 3**). Lower DCSI scores indicate less severe diabetes complications.
- Inpatient and ER visits did not differ significantly between the two groups. The early treatment modification group had significantly fewer outpatient visits at 36 months (**Figure 4**).

Table 1: Patient Baseline Characteristics, unadjusted

	Early	Delayed
n (%)	16,904 (59.3)	11,625 (40.8)
Age, mean years (SD)	63.3 (11.9)	65.6 (11.1)
Gender, n (%)		
Female	7,990 (47.3)	5,301 (45.6)
Male	8,912 (52.7)	6,323 (54.4)
Unknown	2 (0.0)	1 (0.0)
Region, n (%)		
Midwest	1,930 (11.4)	1,378 (11.9)
Northeast	1,349 (8.0)	1,062 (9.1)
South	8,744 (51.7)	5,787 (49.8)
West	4,863 (28.8)	3,376 (29.0)
Unknown	18 (0.1)	22 (0.2)

Percentages may not sum to 100% due to rounding.
Abbreviations: SD, standard deviation.

Figure 2: Unadjusted HbA1c levels at index and at 6-12 months follow-up

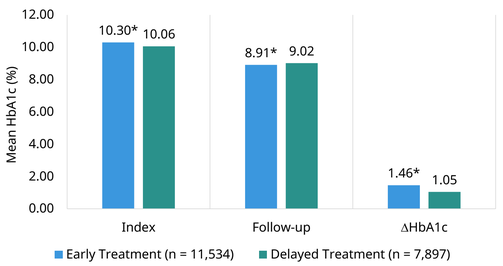
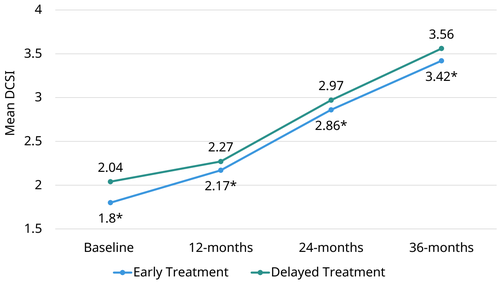
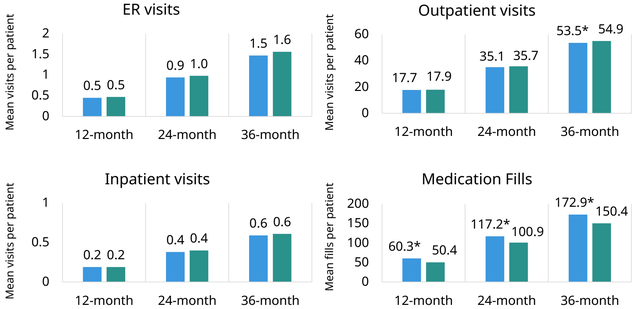


Figure 3: Unadjusted total DCSI scores



*indicates means are significantly different (p < 0.05) from the delayed treatment group.
Abbreviations: DCSI, Diabetes Complication Severity Index; HbA1c, hemoglobin A1c.

Figure 4: Cumulative mean healthcare resource utilization



*indicates means are significantly different (p < 0.05) from the delayed treatment group. Abbreviations: ER, emergency room.

Summary and Conclusions

- Early treatment modification was significantly associated with improved glycemic control and decreased outpatient visits in this cohort of patients with elevated HbA1c levels.
- Patients taking more diabetes medications experienced delayed treatment modification more frequently.
- Further research is needed to understand the impact of treatment modification on diabetes complications, as well as the impact of differences in population characteristics on these results. This study did not adjust for patient differences at baseline, which could explain some of the differences seen at follow-up

References:
[1]American Diabetes Association. 6. Glycemic Targets: Standards of Medical Care in Diabetes-2019. Diabetes Care. 2019;42(Suppl 1):S61-S70. doi:10.2337/dc19-S006
[2]Doyle-Delgado K, Chamberlain JJ, Shubrook JH, Skolnik N, Trujillo J. Pharmacologic Approaches to Glycemic Treatment of Type 2 Diabetes: Synopsis of the 2020 American Diabetes Association's Standards of Medical Care in Diabetes Clinical Guideline. Ann Intern Med. 2020;173(10):813-821. doi:10.7326/M20-2470

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This study was sponsored by Novo Nordisk, Inc. The authors acknowledge the medical writing assistance of John Newman and Rebecca Hahn of KJT Group, Inc. (Rochester, NY, USA).

Disclosures: All authors were employees and shareholders of Novo Nordisk, Inc. at the time this research was conducted.

Presented at ISPOR 2022, May 15-18, 2022, National Harbor, MD.