

# Healthcare resource utilization and costs in individuals who discontinue liraglutide and who switch from liraglutide to once-weekly injectable semaglutide

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## Aim

- To compare healthcare resource utilization (HCRU) and medical costs between people with type 2 diabetes (T2D) who discontinue the once-daily injectable glucagon-like peptide-1 receptor agonist (GLP-1 RA) liraglutide or switch from liraglutide to the once-weekly injectable GLP-1 RA semaglutide.

## Introduction

- The increasing prevalence of T2D is further elevating the burden on the US healthcare system due to rising costs associated with disease progression and management.<sup>1-3</sup>
- Effective therapies, such as GLP-1 RAs, can help control blood glucose and reduce the risk of diabetes-related complications,<sup>4,5</sup> ultimately helping to manage associated healthcare costs.
- Analyses in T2D cohorts have demonstrated worse glycemic control and increased HCRU and costs among those who discontinued liraglutide vs those who did not.<sup>6,7</sup>
- Discontinuing a GLP-1 RA without making appropriate treatment adjustments may lead to suboptimal care and increased HCRU, representing a high-risk, high-cost group.<sup>6-8</sup>
- Switching to an effective medication such as once-weekly semaglutide<sup>9</sup> may improve clinical and economic outcomes.<sup>10</sup>

## Methods

- This was an observational cohort study of real-world claims data (Merative<sup>TM</sup> MarketScan<sup>®</sup> Commercial and Medicare Database).
- Patients were indexed from January 1, 2018 to March 31, 2020.
- Patients were included if they were aged ≥18 years at pre-index, had ≥2 medical claims for T2D on different days during the pre-index period and no claims for other GLP-1 RAs during the study, or pregnancy or bariatric surgery/hospice prior to index date.
- Outcomes were compared between discontinuers and switchers over the 360-day post-index period using stabilized inverse probability of treatment weighting.
  - Discontinuers were individuals who stopped liraglutide with no addition of insulin or other second-line antidiabetic drugs.
  - Switchers were individuals who switched to semaglutide within ±90 days of liraglutide discontinuation, used semaglutide for ≥180 days and had no addition of other second-line antidiabetic drugs or insulin.

## Results

- Of the 111,815 patients who discontinued liraglutide for T2D in the database, 5,304 met the criteria and were included in the study.
- After inverse probability of treatment weighting, characteristics of the two cohorts were well balanced (**Table 1**).

**Table 1:** Baseline demographics, clinical characteristics, HCRU and costs after weighting for the discontinuer and switcher cohorts

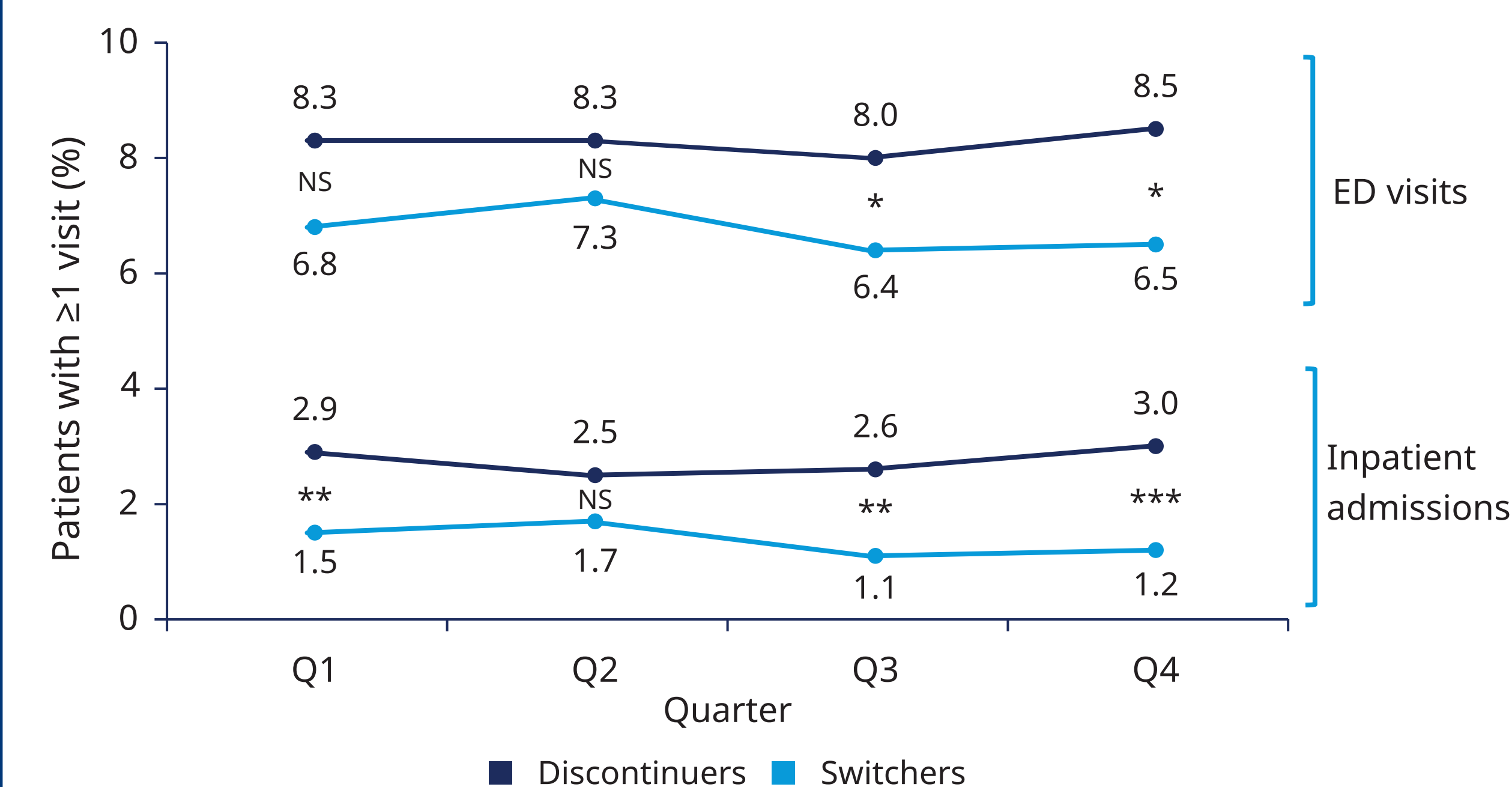
Characteristic	Discontinuers <i>n</i> = 3,935	Switchers <i>n</i> = 1,369	SMD
Demographics			
Age, mean (SD), years	53.1 (8.6)	53.3 (8.4)	0.02
Female sex, <i>n</i> (%)	2,095 (53.2)	740 (54.1)	0.02
Payer, <i>n</i> (%)			
Commercial	3,678 (93.5)	1,277 (93.3)	0.01
Medicare	257 (6.5)	92 (6.7)	0.01
Clinical characteristics			
DCCI, mean (SD)	2.4 (1.9)	2.4 (1.9)	0.01
DCSI, mean (SD)	1.0 (1.4)	1.0 (1.3)	0.00
Pre-index glucose-lowering medications, <i>n</i> (%)			
Biguanides	2,932 (74.5)	1,017 (74.3)	0.01
DPP-4i	438 (11.1)	154 (11.2)	0.00
SGLT-2i	1,397 (35.5)	485 (35.4)	0.00
Sulfonylureas	1,015 (25.8)	346 (25.3)	0.01
TZD/AGIs	334 (8.5)	115 (8.4)	0.00
Insulin	1,945 (49.4)	649 (47.4)	0.04
HCRU			
Hospitalizations			
Patients with an admission, <i>n</i> (%)	402 (10.2)	127 (9.3)	0.03
No. of admissions, mean (SD)	0.1 (0.5)	0.1 (0.5)	0.01
Outpatient visits			
ED			
Patients with a visit, <i>n</i> (%)	1,023 (26.0)	331 (24.2)	0.04
No. of visits, mean (SD)	0.5 (1.5)	0.4 (0.9)	0.05
Outpatient office			
Patients with a visit, <i>n</i> (%)	3,928 (99.8)	1,365 (99.7)	0.02
No. of visits, mean (SD)	9.3 (6.7)	9.3 (6.0)	0.01
All-cause healthcare costs, mean (SD), USD			
Inpatient	\$4,690 (26,662)	\$3,703 (17,258)	0.04
ED visits	\$509 (2,073)	\$400 (1,331)	0.06
Outpatient office visits	\$1,140 (963)	\$1,167 (880)	0.03
Other outpatient services	\$6,685 (26,334)	\$5,059 (14,186)	0.08
Total all medical	\$13,024 (40,409)	\$10,330 (28,069)	0.08

AGI, alpha glucosidase inhibitors; DCCI, Deyo-Charlson Comorbidity Index; DCSI, Diabetes Complications Severity Index; DPP-4i, dipeptidyl peptidase-4 inhibitor; ED, emergency department; HCRU, healthcare resource utilization; SD, standard deviation; SGLT-2i, sodium-glucose cotransporter-2 inhibitor; SMD, standardized mean difference; TZD, thiazolidinedione; USD, United States dollar

- Over the full post-index period, discontinuers had significantly higher utilization of inpatient and emergency services compared with switchers, with 9.1% vs 5.2% ( $p<0.001$ ) having ≥1 hospitalization and 25.4% vs 20.7% having ≥1 emergency department (ED) visit ( $p=0.001$ ).

- Quarterly analysis of HCRU mirrored that of the full post-index period, with a greater proportion of discontinuers with ≥1 hospitalization or ED visit compared with switchers (**Figure 1**).
- Mean total post-index medical costs were significantly lower for switchers (\$8,513) than for discontinuers (\$13,585,  $p<0.001$ ), driven by a 2.6-fold lower inpatient and 1.6-fold lower ED costs (**Figure 2**).

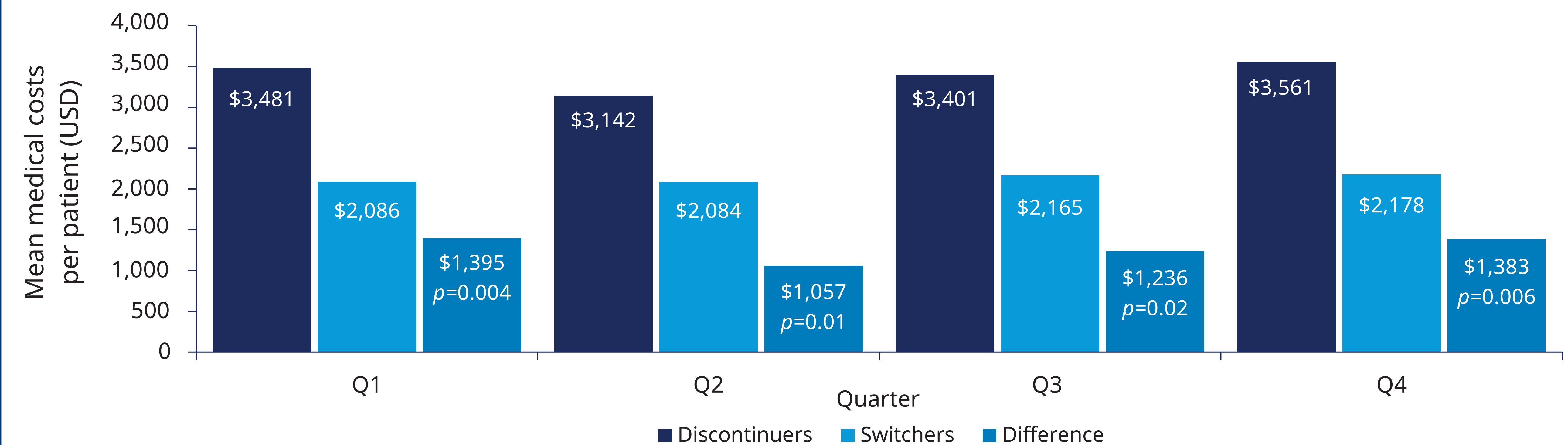
**Figure 1:** Weighted post-index quarterly hospitalizations and ED visits for the discontinuer and switcher cohorts



\* $p<0.05$ ; \*\* $p<0.01$ ; \*\*\* $p<0.001$ . ED, emergency department; NS, non-significant; Q, quarter

- Mean total medical costs remained significantly higher for discontinuers compared with switchers in all four quarters of the post-index period ( $p<0.05$  for all quarters) (**Figure 3**).

**Figure 3:** Weighted post-index quarterly medical costs for the discontinuer and switcher cohorts



Q, quarter; USD, United States dollar

## Conclusions

- People with T2D who switched from liraglutide to semaglutide had significantly lower HCRU in inpatient and ED services and lower medical costs compared with people who discontinued liraglutide treatment.
- Continued treatment by switching to semaglutide could result in improved clinical and economic outcomes for people with T2D for whom liraglutide is no longer optimal.

## References

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