Real-world clinical effectiveness of liraglutide 3.0 mg for weight management in Canada

1. **Wharton S**
   Wharton Medical Clinic, Burlington, ON, Canada
2. **Liu A**
   Novo Nordisk Canada, Mississauga, ON, Canada
3. **Pakseresht A**
   Novo Nordisk Canada, Mississauga, ON, Canada
4. **Nortoft E**
   Novo Nordisk A/S, Copenhagen, Denmark
5. **Haase CL**
   Novo Nordisk A/S, Copenhagen, Denmark
6. **Mancini J**
   IQVIA, Montreal, QC, Canada
7. **Power GS**
   IQVIA, Mississauga, ON, Canada
8. **VanderLelie S**
   Wharton Medical Clinic, Burlington, ON, Canada
9. **Christensen RAG**
   Wharton Medical Clinic, Burlington, ON, Canada

Introduction

- In 2014, roughly 14.2 million (54%) adult Canadians self-reported as having overweight or obesity.[1]
- In 2015, liraglutide 3.0 mg was approved for weight management in Canada, as an adjunct to a reduced calorie diet and increased physical activity.[2]
- The clinical efficacy of liraglutide 3.0 mg has been established in a randomized controlled clinical trial,[3] but the real-world clinical effectiveness has yet to be investigated.

Objectives

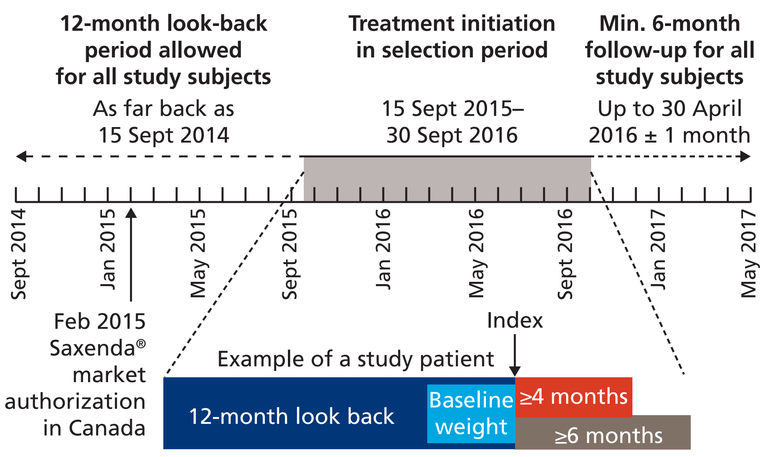
- To be the first study to investigate the real-world clinical effectiveness of liraglutide 3.0 mg, in combination with diet and exercise, at 4 and 6 months post-initiation.
- To examine changes in absolute and percent body weight, as well as in cardiometabolic markers from baseline.

Subjects and methods

Data source and study design

- A database of de-identified electronic medical records (EMR) from the Wharton Medical Clinic (WMC), a network of six publicly funded secondary care weight and diabetes management clinics in Ontario, Canada, was used.
- All treatment initiations between 15 September 2015 and 30 September 2016 were assessed (Figure 1).

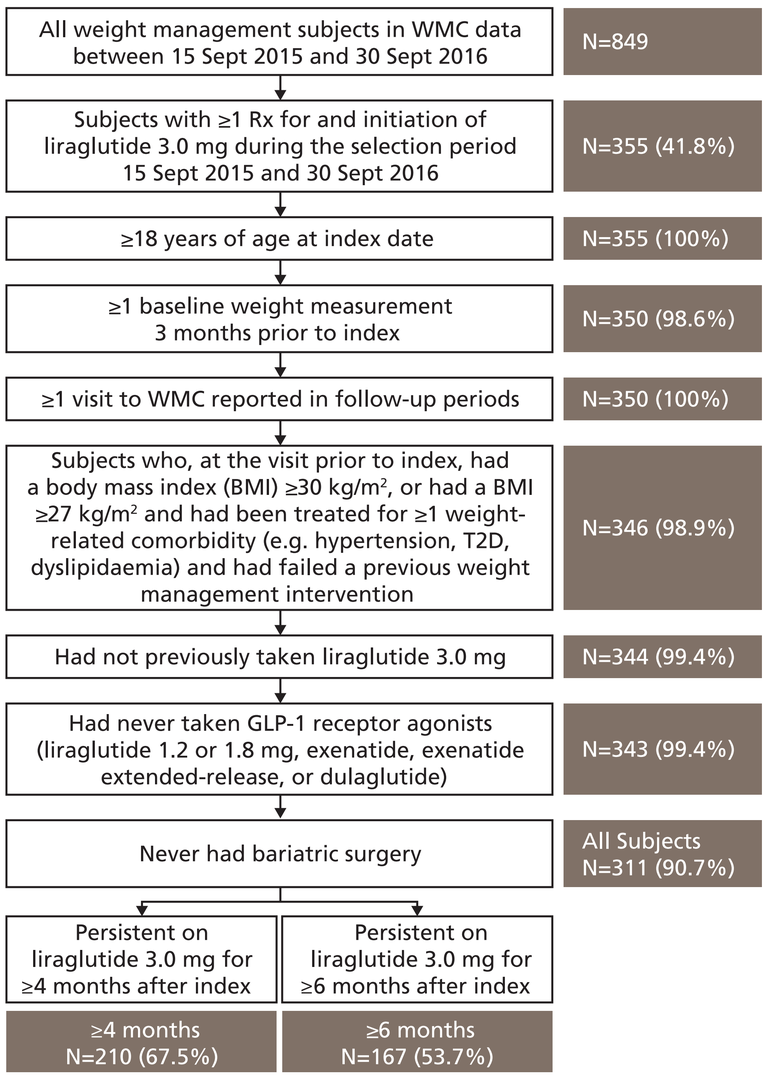
Figure 1 Treatment initiation and study period.



Subjects

- All-subjects cohort: all subjects meeting the study inclusion/exclusion criteria (Figure 2).
- ≥4 months cohort: those persistent on liraglutide 3.0 mg for at least 4 months;
- ≥6 months cohort: those persistent on liraglutide 3.0 mg for at least 6 months.

Figure 2 Number of subjects following selection criteria.



Statistical analysis

- Body weight, HbA_{1c}, SBP, and DBP 6 months post-index were compared to their respective baseline values using paired *t*-tests for subjects in the ≥6 months and all-subjects cohorts. A weight analysis at 4 months was also done for subjects in the ≥4 months cohort.
- Mean (SD) percentage weight loss and n (%) of subjects with ≥5% loss in body weight and >10% loss in body weight, was reported for subjects in all three cohorts.

Results

- Average age was 49.7 years and subjects were predominantly white (77.5%) and female (83.0%) (Table 1).
- Average BMI was 40.7 kg/m², and weight was 114.8 kg.
- At baseline, 74.9% of subjects had normoglycaemia, 19.9% had prediabetes, and 5.1% had diabetes (Table 1).
- Average baseline values for HbA_{1c} and blood pressure were 5.8% and 127/77 mmHg, respectively.
- In all subjects, regardless of persistence, there was a significant change in body weight (–7.5 kg, $p<0.001$) 6 months after initiation of treatment (Table 2).

Table 1 Baseline characteristics for all subjects.

	N=311
Age, n Mean (SD) (years) Median (IQR) (years)	311 49.7 (11.6) 50 (42, 58)
Sex, n Female, n (%)	311 258 (83%)
Ethnicity, n White, n (%) Other, n (%) Missing, n (%)	311 241 (77.5%) 48 (15.4%) 22 (7.1%)
Body mass index categories, n Overweight, n (%) Obese class I, n (%) Obese class II, n (%) Obese class III, n (%)	311 3 (1%) 70 (22.5%) 83 (26.7%) 155 (49.8%)
Weight, n Mean (SD) (kg) Median (IQR) (kg)	311 114.8 (26.3) 111.2 (95.4, 129.6)
Glycated haemoglobin (HbA_{1c}), n Mean (SD) Median (IQR)	168 5.8 (0.9) 5.7 (5.4, 6.1)
Systolic blood pressure (SBP), n Mean (SD) (mmHg) Median (IQR), (mmHg)	311 127.2 (11.2) 126 (120, 135)
Diastolic blood pressure (DBP), n Mean (SD) (mmHg) Median (IQR) (mmHg)	311 77.2 (7.2) 78 (72, 82)
Diabetes, n None, n (%) Pre-diabetes, n (%) Type 2 diabetes, n (%)	311 233 (74.9%) 62 (19.9%) 16 (5.1%)
Hypertension, n Yes, n (%)	311 103 (33.1%)
Dyslipidaemia, n Yes, n (%)	311 190 (61.1%)

Table 2 Differences in absolute weight.

Value	Cohort	N	n	Mean (SD)	Mean difference	*p*-value
Baseline weight	All subjects	311	203	115.5 (28.3)	-	-
Weight 6 months post-index	All subjects	-	203	108.1 (28.2)	–7.5 (–8.4, 6.5)	<0.001
Baseline weight	≥4 months	210	187	115.7 (28.7)	-	-
Weight 4 months post-index	≥4 months	-	187	108.9 (28.5)	–6.9 (–7.6, 6.2)	<0.001
Baseline weight	≥6 months	167	145	117.4 (31.0)	-	-
Weight 6 months post-index	≥6 months	-	145	109.4 (31.0)	–8.1 (–9.2, 6.9)	<0.001

- Weight loss was also significant for subjects persistent on treatment for ≥4 months (–6.9 kg, $p<0.001$) and for those persistent for ≥6 months (–8.1 kg, $p<0.001$).
- All subjects acheived a mean weight loss of 6.6% (Figure 3a), with 119 (58.6%) and 62 (30.5%) of subjects losing ≥5% and >10% body weight, respectively (Figure 3b).
- Percentage change in body weight in the ≥4 months group was –6.2%, where 117 (62.6%) and 34 (18.2%) subjects lost ≥5% and >10% body weight, respectively (Figure 3a & b).
- Percentage change in body weight from baseline for the ≥6 months group was –7.1%, with 63.4% and 35.2% of subjects having lost ≥5% and >10% body weight, respectively (Figure 3a & b).

Figure 3a. Mean percentage weight change.

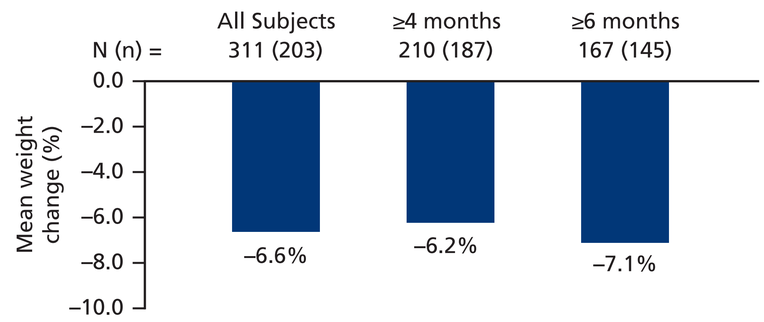
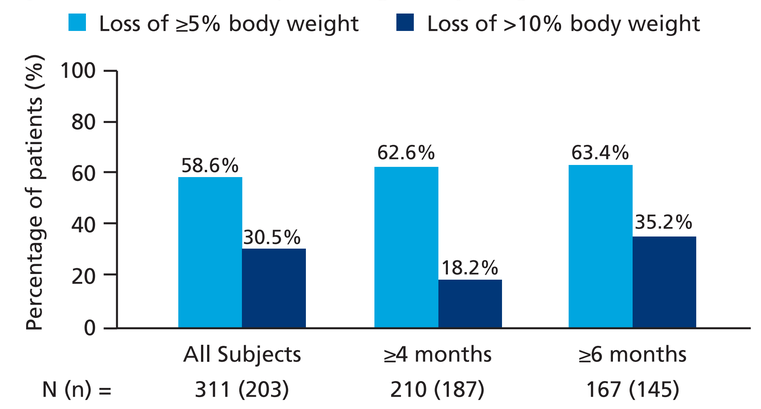


Figure 3b. Differences in percentage body weight.



Differences in cardiometabolic values

- There was a decrease of 0.4% in HbA_{1c} levels ($p<0.001$) after 6 months treatment persistency (Figure 4a).
- SBP significantly decreased by 3.0 mmHg ($p<0.01$) (Figure 4b), while DBP did not change (mean difference 0.10 mmHg, $p=0.90$), after 6 months treatment persistency (data on DBP not shown in figure).
- Similar results were observed in the all-subjects cohort after 6 months, regardless of persistence: a 0.3% decrease in HbA_{1c} levels ($p<0.001$), a 2.2 mmHg decrease in SBP ($p<0.01$), and no change in DBP (mean difference 0.5 mmHg, $p=0.4$) (Figure 4).

Figure 4a. HbA_{1c} at 6 months.

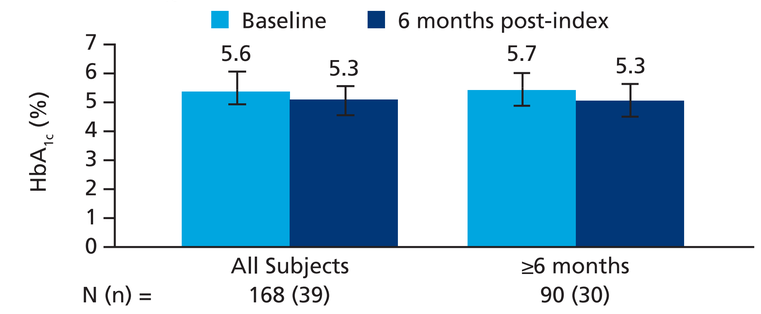
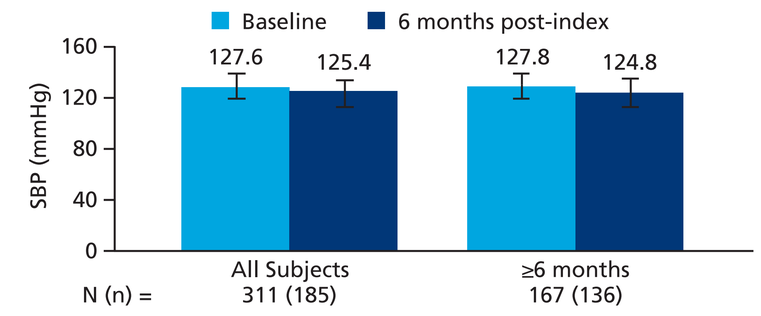


Figure 4b. SBP at 6 months.



N, number providing a value at index date; n, number providing a value at 6 months.

Strengths and limitations

- This study used a high-quality longitudinal database of de-identified EMR data that is representative of the specific target population of pharmacotherapeutic weight management interventions in a government-funded weight management clinic.
- WMC is a referral-based clinic, thus study subjects may be more motivated for weight management intervention than the general eligible population.
- Not all dates of liraglutide 3.0 mg initiation and discontinuation are exact, as they are patient-reported at regular follow-up visits.

References

1. Statistics Canada. Body mass index, overweight or obese, self-reported, adult, by age group and sex - Table 105-0501. Health Canada: Government of Canada; 2016.
2. Novo Nordisk Canada Inc. Availability of Saxenda in Canada [press release]. 27 August 2015.
3. Pi-Sunyer *et al*. A randomized controlled trial of 3.0 mg of liraglutide in weight management. *N Engl J Med* 2015; 373(11):11–22.

Conclusion

- In a real-world setting, liraglutide 3.0 mg, when combined with diet and exercise, was associated with clinically meaningful weight loss and with improvements in cardiometabolic markers.

qrs.ly/pq6vlu3
Scan for more Novo Nordisk scientific materials

Disclosures: SW, SV, and RAG are employees of WMC. AL, AP, EN, and CLH are employees of NN. JM and GSP are employees of IQVIA.
The authors wish to acknowledge Tahir Feroz (Novo Nordisk Canada Inc.; Mississauga, Canada) and Jason Goodfield (QuintilesIMS; Mississauga, Canada) for contributions to study design, Nicole Bhoop (WMC; Burlington, Canada) for assistance with data collection, and Drew Neish (IQVIA; Montreal, Canada) for assistance with analysis.
Presented at the European Congress on Obesity (ECO), 23–25 May 2018, Vienna, Austria.