Changes in Metabolic Markers in Obesity Patients Completing Serial Blood Testing

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BACKGROUND & OBJECTIVE

- Trial evidence (e.g. SELECT) shows GLP-1 based treatment improves cardiometabolic health, but real-world evidence remains limited.
- This analysis examines shifts in six key cardiometabolic biomarkers among patients on a GLP-1 based obesity treatment programme who completed serial blood testing — contributing real-world evidence outside of controlled trial conditions.

METHODS

In a retrospective analysis of real-world data from a UK digital medical weight management provider, patients were eligible if they: (1) were prescribed GLP-1 based therapy; (2) had ≥2 blood tests (BTs); (3) completed their first BT within one month prior to, or at any point during, their obesity treatment; and (4) had a gap of >1 month and <18 months between their first and latest BT. Biomarkers analysed were HbA1c, total cholesterol, HDL, LDL, TC:HDL ratio, and triglycerides, using UK reference ranges. Patients were prescribed tirzepatide or injectable semaglutide. Mean biomarker change from first to latest test was assessed using paired t-tests.

Results

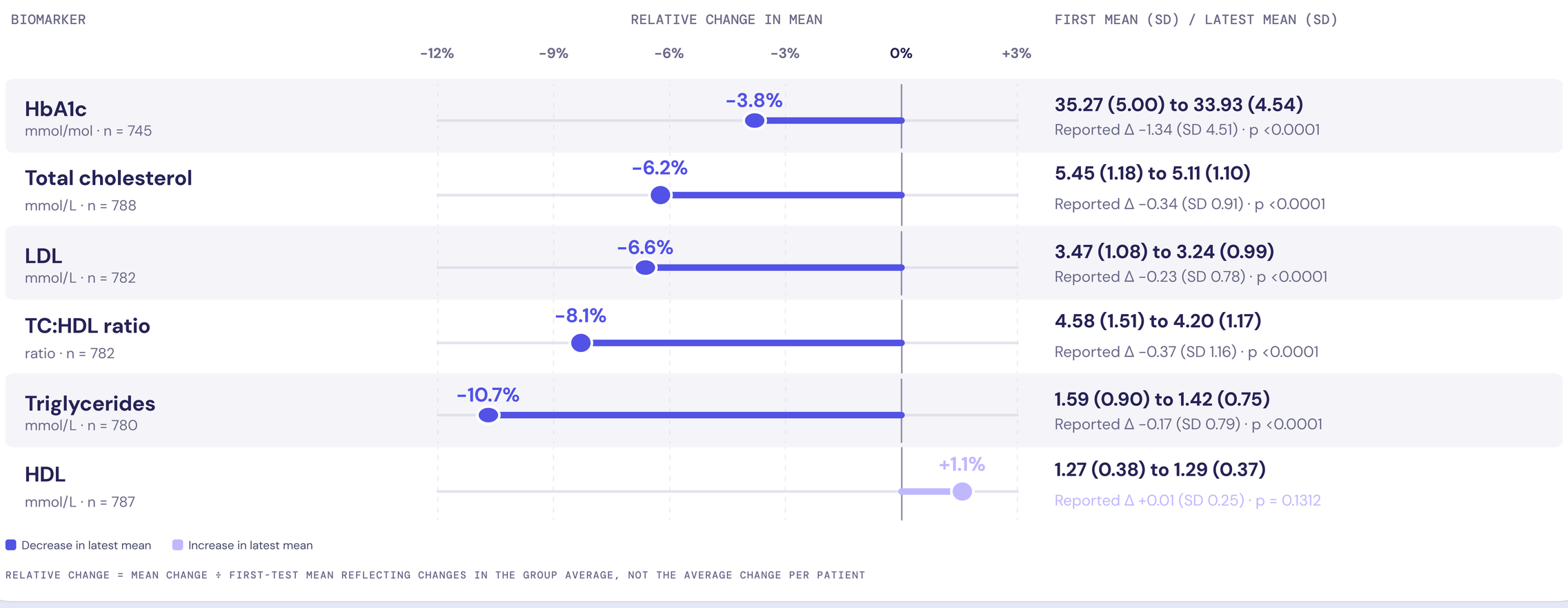
895 participants met eligibility criteria
mean age 45.9 years, SD 10.8;
64.0% male;
mean starting BMI 33.7 kg/m², SD 5.2.
85.3% were GLP-1 medication-naive at programme entry.

Mean gap between first and latest blood test was 171.8 days (SD 111.3); modal follow-up was 3 months (22.0%), with 59.4% of participants followed for 1–5 months.

All six biomarkers improved;
Five reached statistical significance ($p < 0.0001$):
HbA1c -1.34 mmol/mol,
total cholesterol -0.34 mmol/L,
LDL -0.23 mmol/L,
TC:HDL ratio -0.37, triglycerides -0.17 mmol/L.
HDL rose by 0.01 mmol/L ($p = 0.13$, not significant).

84.7% of patients who entered the programme with pre-diabetes reverted to normoglycaemia by their latest test.

MEAN BIOMARKER CHANGE FROM FIRST TO LATEST BLOOD TEST.



RELATIVE CHANGE = MEAN CHANGE ÷ FIRST-TEST MEAN REFLECTING CHANGES IN THE GROUP AVERAGE, NOT THE AVERAGE CHANGE PER PATIENT

IMPLICATIONS

- **Benefits extend well beyond the scale.** Participants engaging in a digital GLP-1 based programme showed broad, statistically significant improvement across five of six cardiometabolic biomarkers — a reduction in cardiovascular and type 2 diabetes risk that weight change alone wouldn't capture.
- **Real diabetes-risk reversal, not just improvement.** 84.7% of patients who entered the programme with pre-diabetes reverted to normoglycaemia by their latest test — a remission-level outcome.
- **Real-world evidence corroborating trial data.** These findings align with phase III RCT evidence (including SELECT), extending it into a naturalistic digital care setting where adherence and follow-up are far less controlled than in a trial.
- **A case for serial, structured monitoring as standard care.** Repeated blood testing surfaced meaningful biomarker change that weight tracking alone would have missed — supporting comprehensive monitoring as part of digital obesity treatment, not an optional add-on.

Beyond weight: five of six cardiometabolic markers improved significantly, and 85% of patients with pre-diabetes reverted to normoglycaemia.