## STAMPEDE trial

**Reference:** PR Schauer *et al*. Bariatric Surgery versus Intensive Medical Therapy for Diabetes — 5-Year Outcomes. *NEJM 2017;* 376:641-651
https://www.nejm.org/doi/10.1056/NEJMoa1600869?url_ver=Z39.88-2003&rfr_id=ori:rid:crossref.org&rfr_dat=cr_pub%3dwww.ncbi.nlm.nih.gov

STAMPEDE recruited 150 patients from a single centre in the US. Patients were randomised to 1 of 3 groups.

**P:** Patients aged 20-60 years with type 2 diabetes and BMI 27-43

**I:** Intensive medical therapy plus sleeve gastrectomy

**I:** Intensive medical therapy plus Roux-en-Y gastric bypass

**C:** Intensive medical therapy alone

**O:** HbA1c ≤ 6% with or without the use of diabetes medications (primary outcome). Secondary outcomes included levels of fasting plasma glucose, fasting insulin, lipids, and high-sensitivity C-reactive protein (CRP); the homeostasis model assessment of insulin resistance index; weight loss; blood pressure; adverse events; coexisting illnesses; and changes in medications.

**Intensive medical therapy** was defined as lifestyle counselling, weight management, frequent home glucose monitoring, and the use of newer drug therapies (e.g., incretin analogues) approved by the FDA. Every 3 months for the first 12 months, patients returned for study visits with a diabetes specialist and were counselled by a diabetes educator, evaluated for bariatric surgery by a psychologist and encouraged to participate in the Weight Watchers program. The goal of medical management was modification of diabetes medications until the patient reached the therapeutic goal of a HbA1c level of 6.0% or less or became intolerant to the medical treatment. All patients were treated with lipid-lowering and antihypertensive medications with the following targets: systolic blood pressure, 130 mm Hg or less; diastolic blood pressure, 80 mm Hg or less; and low-density lipoprotein cholesterol, 2.6 mmol/L or less.

**Bariatric procedures** were performed laparoscopically with the use of instruments provided by Ethicon Endo-Surgery. Gastric bypass consisted of the creation of a 15-to-20-ml gastric pouch, a 150-cm Roux limb, and a 50-cm biliopancreatic limb. Sleeve gastrectomy involved a gastric-volume reduction of 75 to 80% by resecting the stomach alongside a 30-French endoscope beginning 3 cm from the pylorus and ending at the angle of His. Vitamin and nutrient supplementation after gastric bypass included a multivitamin, iron, vitamin $B_{12}$, and calcium citrate with vitamin D; after sleeve gastrectomy, such supplementation included a multivitamin and vitamin $B_{12}$.

**Results:** Among the 134 patients who completed 5 years of follow-up, the primary outcome was achieved in 2 of 38 patients (5%) in the medical-therapy group, as compared with 14 of 49 patients (29%) in the gastric-bypass group (P=0.01) and 11 of 47 patients (23%) in the sleeve-gastrectomy group (P=0.03). At 5 years, patients in the surgical groups required significantly fewer medications than did patients in the medical-therapy group. At 5 years, reductions in body weight, BMI, waist circumference, and waist-to-hip ratio were greater after gastric bypass and sleeve gastrectomy than after intensive medical therapy. The reduction in body weight was greater after gastric bypass than after sleeve gastrectomy (P=0.01).

**Critical appraisal:** Very limited generalisability. Unclear risk of bias.

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| **Internal validity (bias)** | Selection bias | Unclear: no information |
| | Detection bias | Probably low: no blinding of outcome assessment but the primary outcome is 'objective' |
| | Performance bias | Unclear: no blinding of caregivers which may have influenced treatment decisions |
| | Attrition bias | Probably high: more patients withdrew from medical therapy (n=8) than bariatric surgery groups (n=1). Only patients still participating in the trial at 5 years were included in the analysis |
| | Selective outcome reporting | Unclear: protocol was not able to be accessed (required institutional login) |
| **External validity (generalisability)** | P | Unclear why only included patients aged 20-60 and BMI 27-43 |
| | I | Relatively tightly defined interventions and comparator. |
| | C | |
| | O | Primary outcome is a blood test measurement. |
| | O | Single centre, single surgeon study performed in the US |

**How has this influenced practice?** NICE guidelines now recommend that.

**Other criticisms:**

- Adherence to the intensive medical therapy intervention was not measured (meaning that bias may have played a part)
- Limited generalisability
- No information on the effect of bariatric surgery on macrovascular outcomes, long term survival or health-related quality of life
- Not powered to detect differences between the two bariatric surgeries