

WELCOME

TO

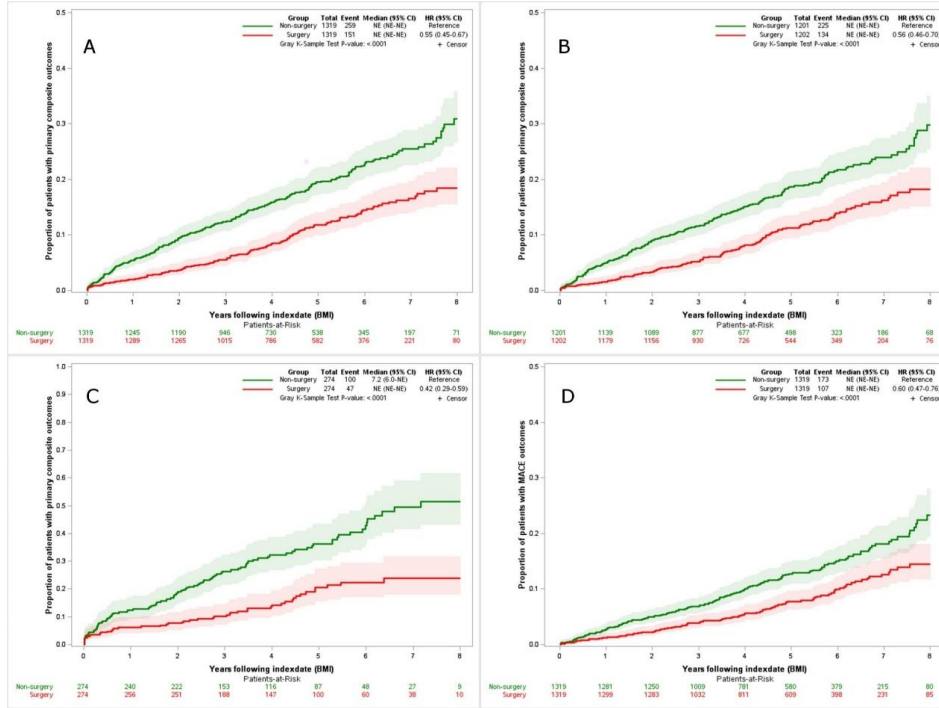
BRAVE 

Bariatric surgery for the Reduction of cArديوVascular Events
randomized controlled trial

Why do we need a trial?

- Outcomes in cardiovascular disease (CVD) remain poor
- Obesity is common + strong association between obesity and CVD
- Patients with obesity and CVD have worse outcomes
- Plausible mechanism that weight reduction will improve CVD
- Observational data suggests potential benefit
- Currently bariatric surgery is not commonly offered to CVD patients

Effect of Bariatric Surgery on CV Outcomes: ICES observational study



Primary outcome: Death, MI, Revascularization, Stroke and HF hospitalization

HR 0.55
(95% CI 0.45– 0.67)

Risk of 30-day mortality ~0.1%



Overall Research Question

In people with obesity (BMI ≥ 30 kg/m²) and heart disease, is bariatric surgery a safe and effective way to reduce the risks of death and major cardiovascular events compared to medical weight management?

BRAVE RCT Study Design



Obesity (BMI ≥ 30 kg/m²) and heart disease

RANDOMIZE
1:1

1000 participants
from 50-60 sites
globally

Intervention Arm:
Bariatric Surgery

Control Arm:
Medical weight
management

Follow-up: 2-, 6- and q 6-months
Average follow-up: 4.5 years

Inclusion Criteria

- Body mass index ≥ 35 kg/m²; OR
- BMI ≥ 30 kg/m² and age >55 or type 2 diabetes; AND
- **Cardiovascular disease**, defined as follows:
 - High-risk CAD (history of MI, percutaneous coronary intervention, coronary artery bypass grafting, or stenoses $\geq 50\%$ in 2 or more major coronary arteries)
 - History of Left ventricular ejection fraction (LVEF) $< 40\%$ (patient with recovered EF eligible)
 - Heart failure with preserved ejection fraction (LVEF $> 40\%$) and either HF hospitalization in the last 2-years or NT-proBNP > 300 pg/ml or BNP > 100 pg/ml in the past 12 months
 - Documented atrial fibrillation (AF) with CHA2DS2-VASc ≥ 2 stroke risk score
 - History of any stroke
 - PAD (peripheral revascularization of the iliac, infra-inguinal or carotid arteries; limb or foot amputation for arterial vascular disease; or $\geq 50\%$ carotid or peripheral artery stenosis)

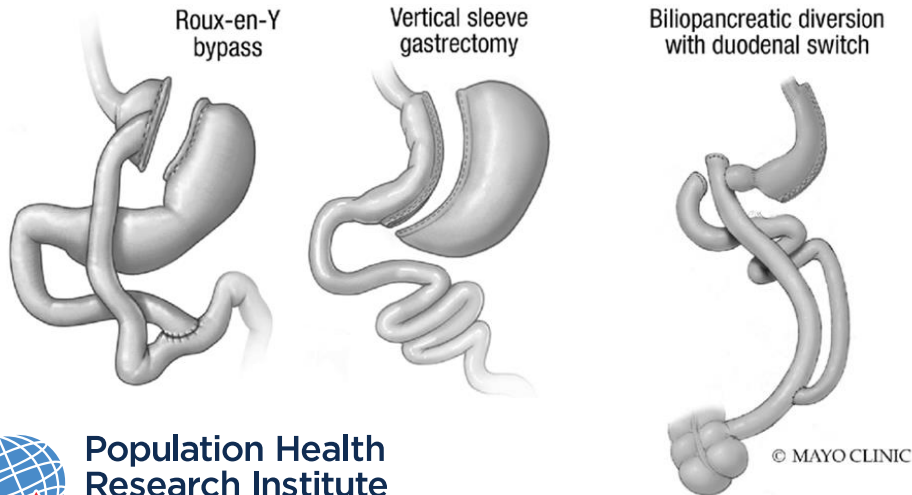
Exclusion Criteria

1. Hospital admission for HF, myocardial infarction, stroke or coronary revascularization within 30 days of randomization.
2. Percutaneous coronary intervention with a drug eluting stent within 90 days of randomization.
3. Pregnancy
4. Contraindication to bariatric surgery in accordance with local clinical practice
5. Prior bariatric surgery, other than gastric banding
6. Life expectancy <2 years from non-cardiovascular causes
7. Inability to provide informed consent

Intervention Arms

Bariatric Surgery

The bariatric surgery procedures performed in BRAVE include either gastric bypass, sleeve gastrectomy or duodenal switch performed at the surgeon's discretion



Medical Weight Management

- Reflects the standard medical obesity treatment available locally
- May include:
 - Counseling on dietary, lifestyle and/or behavioral modification
 - Low-calorie meal replacement
 - Obesity medications (e.g., semaglutide, liraglutide, bupropion / naltrexone or other locally approved medications)

Primary Outcome

Composite of all-cause death, MI, stroke, and HF hospitalization

Secondary & Other Outcomes

- Cardiovascular mortality
- New / remission of diabetes
- Atrial fibrillation
- Obesity-related cancers
- Integrated cardiovascular risk factor score
- Mental health, cognition, QOL
- Weight
- Cost effectiveness

Safety

- Perioperative complications
- Long-term procedure morbidity

MIND Sub-Study



- **Rationale:** mental health and cognitive problems are common in people with obesity and CVD, they worsen health outcomes, and are difficult to treat
- **Question:** how does bariatric surgery effect mental health and cognition, compared to medical management?
- **Main outcomes:** depression, general cognition



Conclusions

BRAVE will definitively demonstrate whether bariatric surgery or medical weight management is better at reducing death and complications from cardiovascular disease in people with obesity and cardiovascular disease