Mr Jon Morrow

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Department of Bariatric Surgery
Middlemore Hospital

Friday, June 9, 2017

16:55 - 17:10 Why Bariatric Surgery?

Why Bariatric Surgery?

Jon Morrow

Bariatric Surgery Misconceptions

“Surgery is a ‘cop out’. Individuals just need to go on a diet and exercise programme”

- Obese individuals become resistant to long term weight loss by diet and exercise

- Surgery offsets conditions caused by dieting that are responsible for weight regain

Bariatric Surgery Misconceptions

“Most people who have bariatric surgery regain their weight”

- Up to 50% may regain some weight
- Success is also measured by:
  - Comorbidity
    - Prevention, remission, resolution
  - Quality of life
    - Self esteem, physical activity, socialisation, employment, sexual activity
  - Longevity of life

Bariatric Surgery Misconceptions

“The chance of dying from bariatric surgery is more than the chance of dying from obesity”

Surgery Decreases Long-term Mortality, Morbidity, and Health Care Use in Morbidly Obese Patients

Nicolas V. Christou, MD, PhD, John S. Sampalis, PhD, Moishe Liberman, MD, Didier Look, MD, Stephane Auger, BSc, Alexander P.H. McLean, MD, and Lloyd D. MacLean MD, PhD

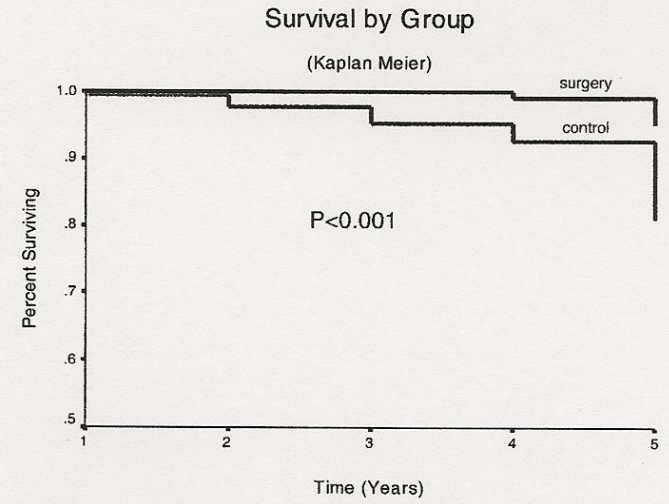
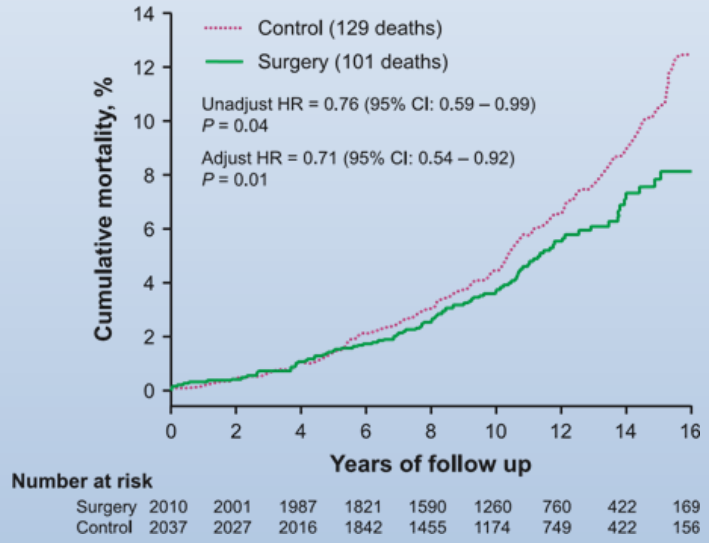


FIGURE 2. Survival by group (Kaplan Meier survival analysis).

Ann Surg 2004; 240(3): 416-23

Review of the key results from the Swedish Obese Subjects (SOS) trial – a prospective controlled intervention study of bariatric surgery

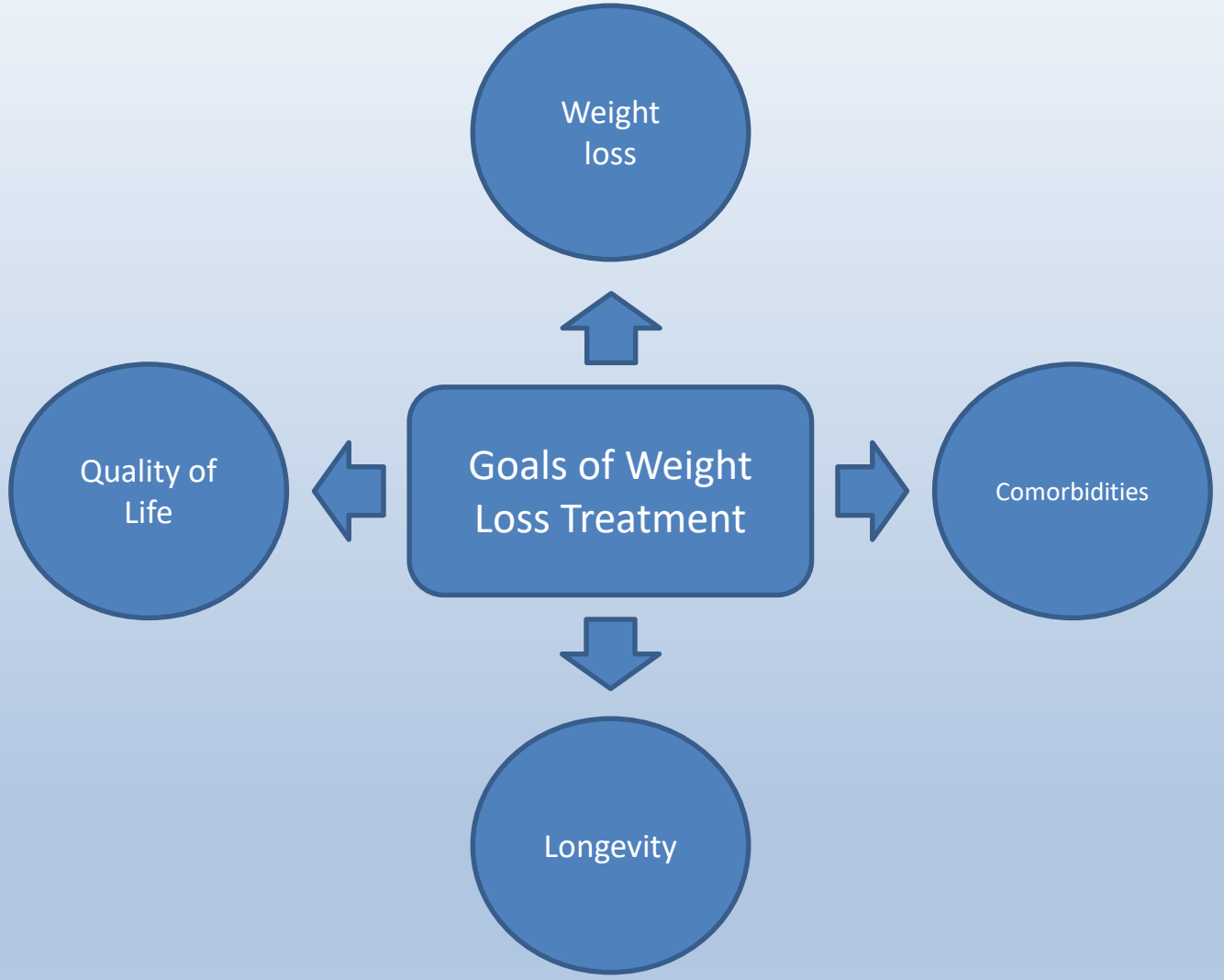


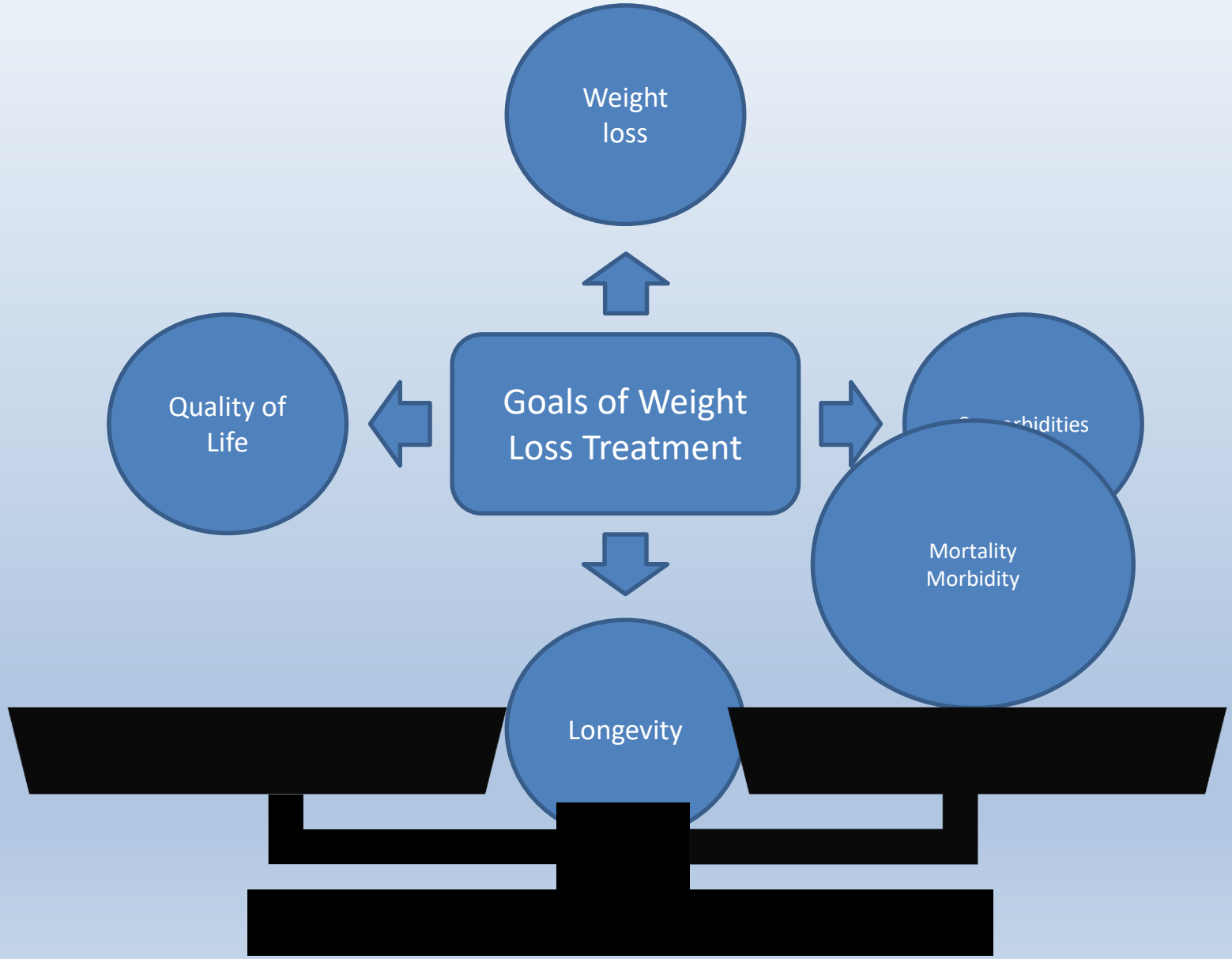
J Intern Med 2013;273:219-234

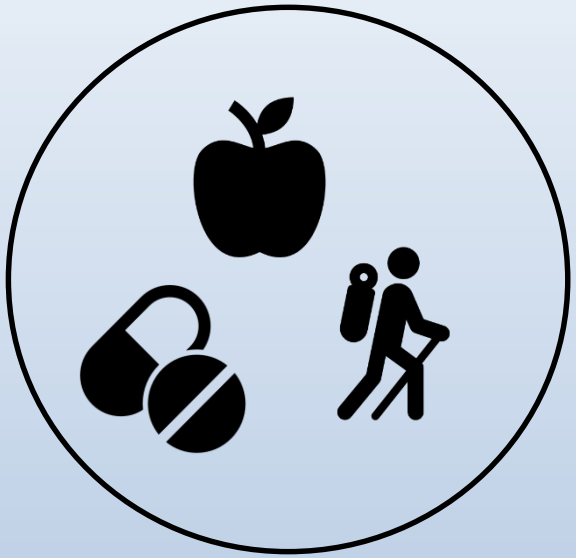
Mortality Rates from Common Operations

- Bariatric surgery 1/1000

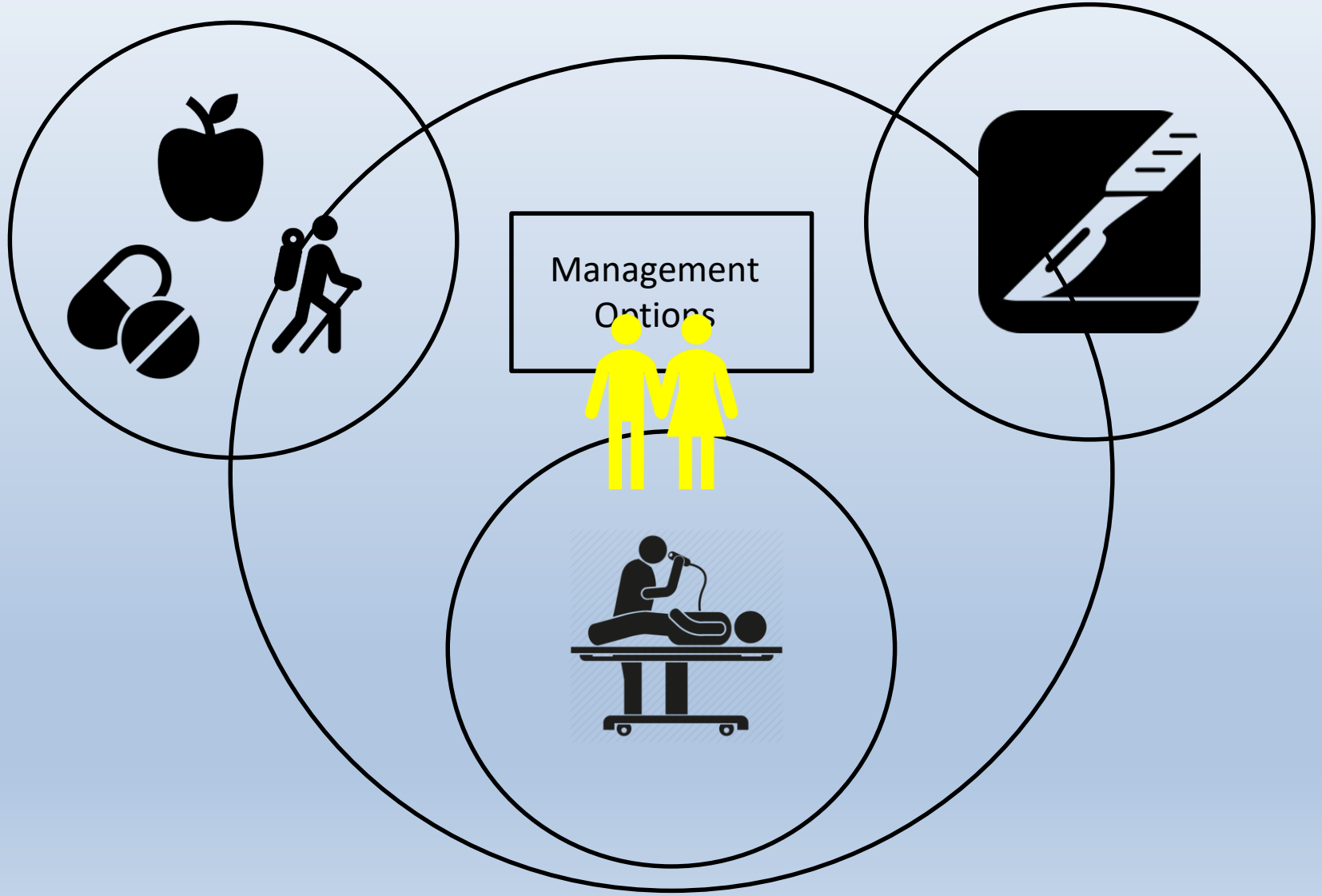
- Cholecystectomy 1.5/1000
- Hip replacement 3/1000
- Hernia Repair 2/1000 to 20/1000


Weight loss
Quality of Life
Goals of Weight Loss Treatment
Comorbidities
Longevity


Weight loss
Quality of Life
Goals of Weight Loss Treatment
Mortality
Morbidity
Longevity



Management Options


Management
Options

The new england
journal *of* medicine

established in 1812 august 23, 2007 vol. 357 no. 8

Effects of Bariatric Surgery on Mortality in Swedish Obese Subjects

Lars Sjöström, M.D., Ph.D., Kristina Narbro, Ph.D., C. David Sjöström, M.D., Ph.D., Kristjan Karason, M.D., Ph.D.,
Bo Larsson, M.D., Ph.D., Hans Wedel, Ph.D., Ted Lystig, Ph.D., Marianne Sullivan, Ph.D., Claude Bouchard, Ph.D.,
Björn Carlsson, M.D., Ph.D., Calle Bengtsson, M.D., Ph.D., Sven Dahlgren, M.D., Ph.D., Anders Gummesson, M.D., Peter Jacobson, M.D., Ph.D., Jan Karlsson, Ph.D., Anna-Karin Lindroos, Ph.D., Hans Lönroth, M.D., Ph.D.,
Ingmar Näslund, M.D., Ph.D., Torsten Olbers, M.D., Ph.D., Kaj Stenlöf, M.D., Ph.D., Jarl Torgerson, M.D., Ph.D.,
Göran Ågren, M.D., and Lena M.S. Carlsson, M.D., Ph.D., for the Swedish Obese Subjects Study

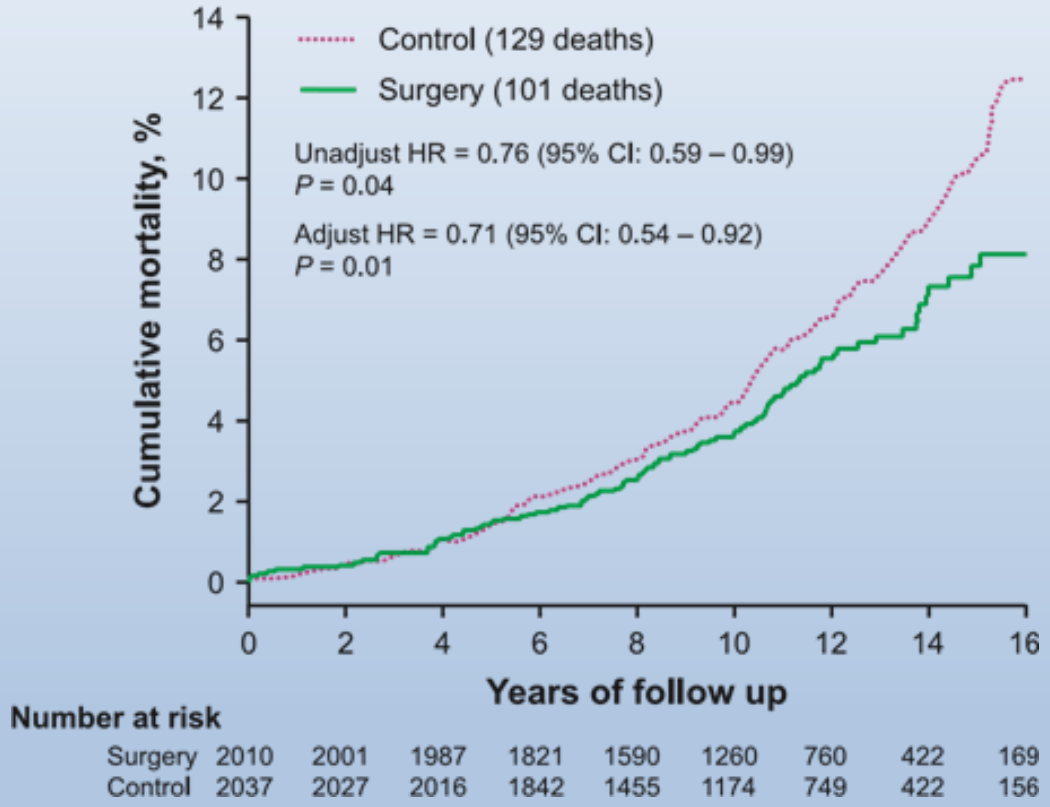
SOS Trial

- Prospective matched surgical intervention trial
- 4047 obese subjects
  - 25 surgical departments
  - 480 primary health care centres
  - Recruited from 1987 – 2001
- Surgical group n=2010
- Non-surgical group n=2037

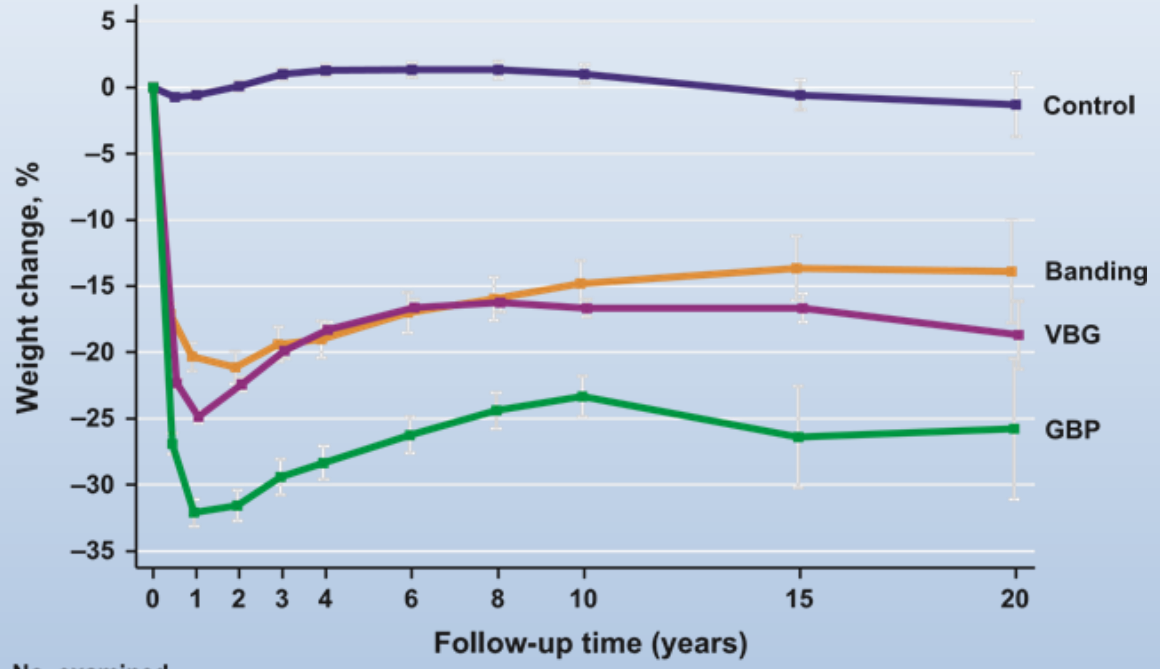
Endpoint

- Primary
  - Mortality
- Secondary
  - Diabetes
  - Effect on CVS disease
  - Cancer rates

Mortality


Control (129 deaths)
Surgery (101 deaths)
Unadjust HR = 0.76 (95% CI: 0.59 – 0.99)
P = 0.04
Adjust HR = 0.71 (95% CI: 0.54 – 0.92)
P = 0.01
Cumulative mortality, %
0
2
4
6
8
10
12
14
0
2
4
6
8
10
12
14
16
Years of follow up
Number at risk
Surgery 2010 2001 1987 1821 1590 1260 760 422 169
Control 2037 2027 2016 1842 1455 1174 749 422 156

Weight Loss

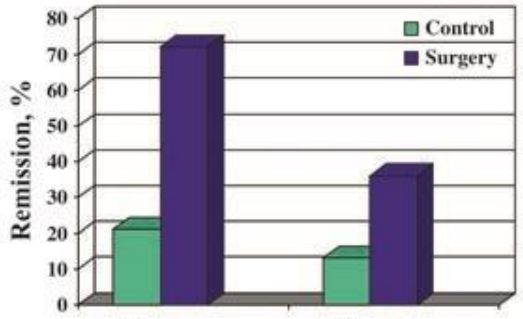


No. examined

Control	2037	1490	1242	1267	556	176
Banding	376	333	284	284	150	50
VBG	1369	1086	987	1007	489	82
GBP	265	209	184	180	37	13

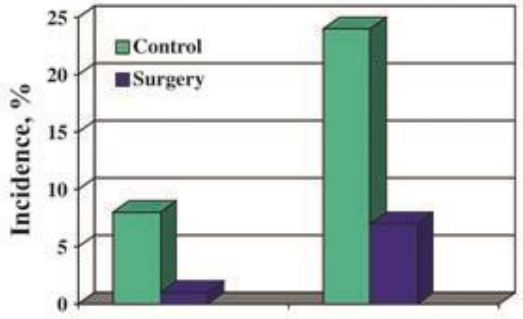
Diabetes

(a) SOS. Remission from diabetes over 2 and 10 years



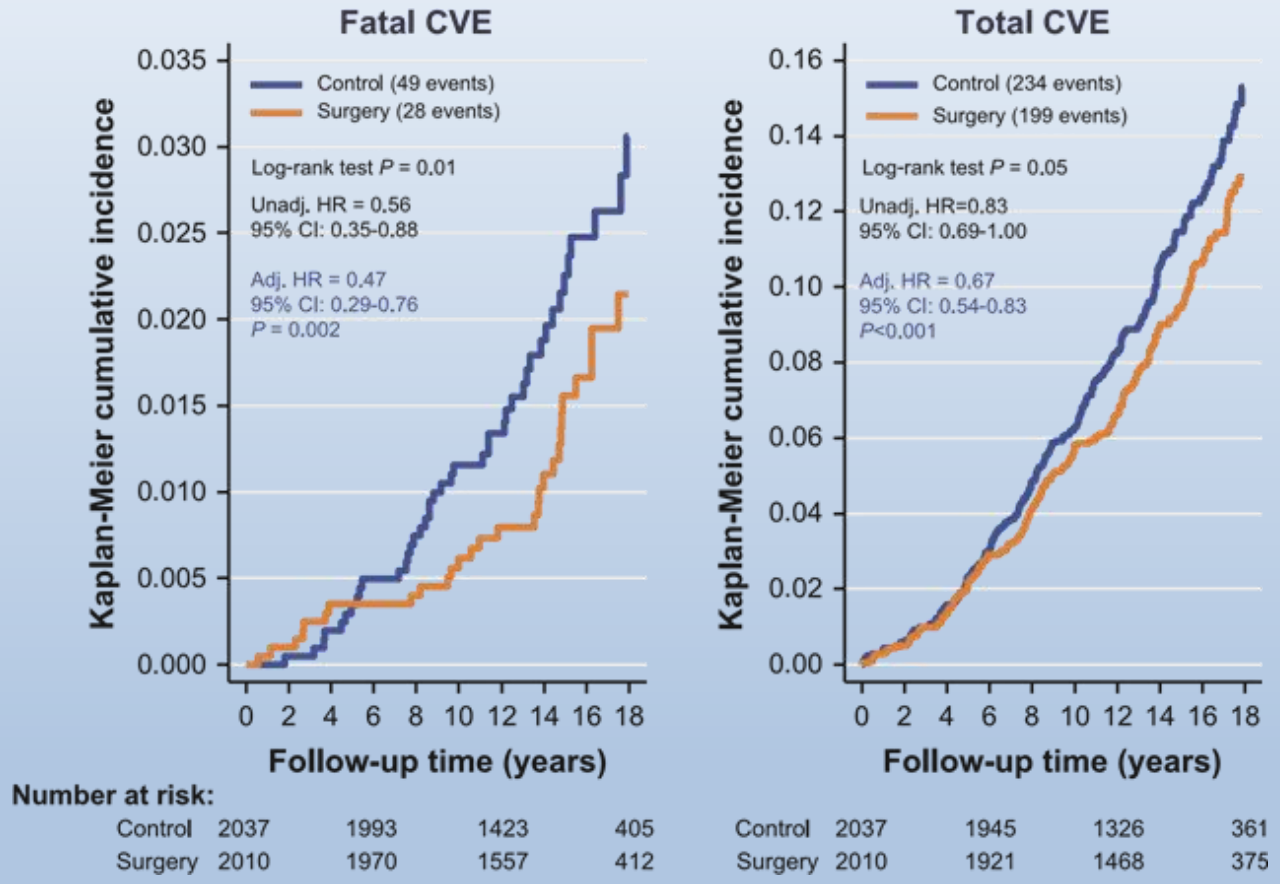
Number of subjects:	2 year	10 year
Control	248	84
Surgery	342	118
Adjusted Odds ratio	8.42	3.45
95% CI	5.68 - 12.5	1.64 - 7.28
P value	<0.001	<0.001

(b) SOS. Incidence of diabetes over 2 and 10 years

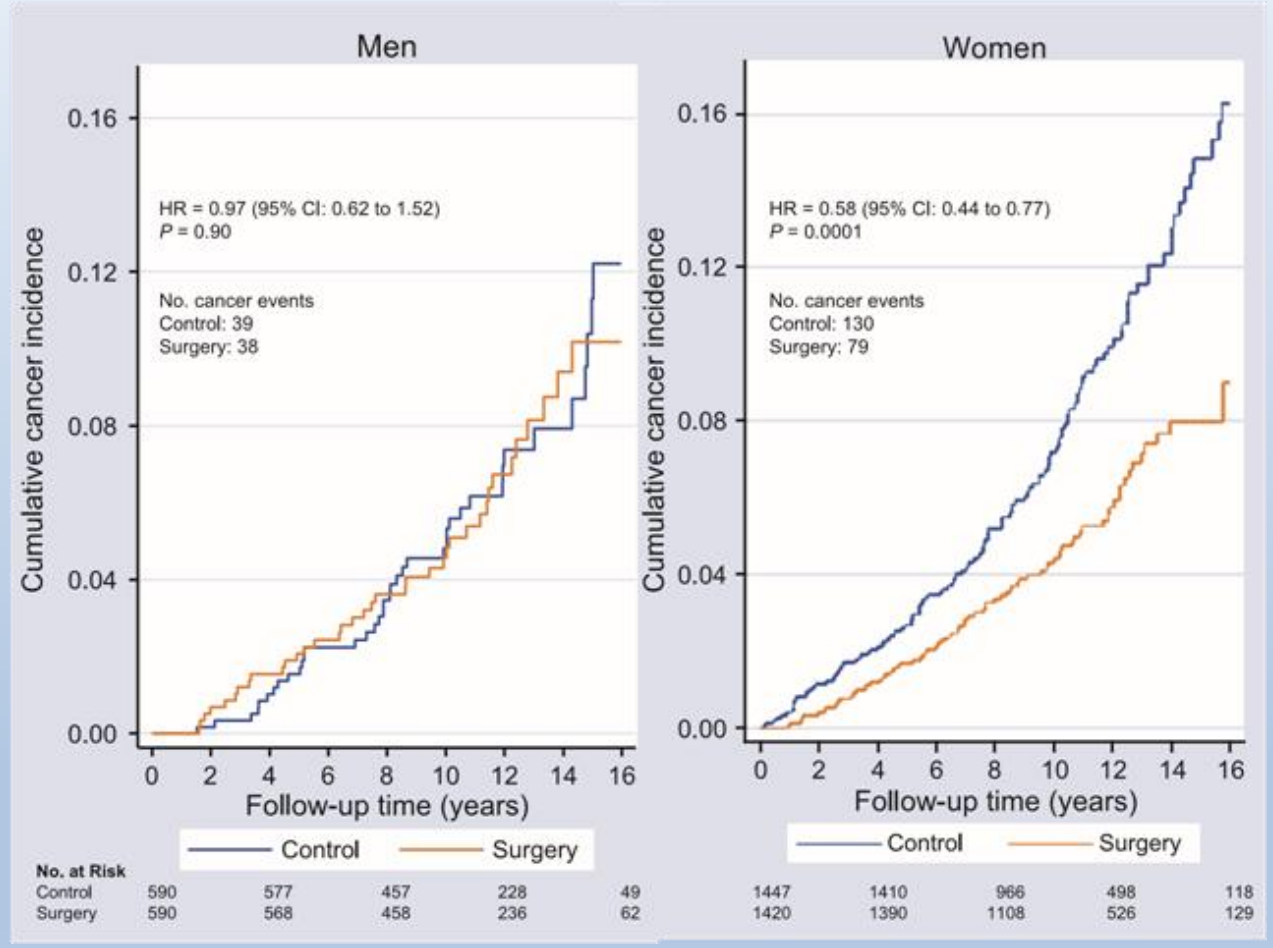


Number of subjects:	2 year	10 year
Control	1402	539
Surgery	1489	517
Adjusted Odds ratio	0.14	0.25
95% CI	0.08 - 0.24	0.17 - 0.38
P value	<0.001	<0.001

CVS events


Fatal CVE
Kaplan-Meier cumulative incidence
0.035
0.030
0.025
0.020
0.015
0.010
0.005
0.000
Control (49 events)
Surgery (28 events)
Log-rank test P = 0.01
Unadj. HR = 0.56
95% CI: 0.35-0.88
Adj. HR = 0.47
95% CI: 0.29-0.76
P = 0.002
0 2 4 6 8 10 12 14 16 18
Follow-up time (years)
Number at risk:
Control 2037 1993 1423 405
Surgery 2010 1970 1557 412
Total CVE
Kaplan-Meier cumulative incidence
0.16
0.14
0.12
0.10
0.08
0.06
0.04
0.02
0.00
Control (234 events)
Surgery (199 events)
Log-rank test P = 0.05
Unadj. HR=0.83
95% CI: 0.69-1.00
Adj. HR = 0.67
95% CI: 0.54-0.83
P<0.001
0 2 4 6 8 10 12 14 16 18
Follow-up time (years)
Control 2037 1945 1326 361
Surgery 2010 1921 1468 375

Cancer Rates



SOS in brief

Reduction in mortality

Decreased incidence of developing diabetes
Increased remission rates of diabetes

Reduction in MI

Reduction in stroke

Reduction in cancer incidence (women)

Reduction in weight/BMI

The new england
journal *of* medicine

established in 1812 april 26, 2012 vol. 366 no. 17

Bariatric Surgery versus Intensive Medical Therapy in Obese Patients with Diabetes

Philip R. Schauer, M.D., Sangeeta R. Kashyap, M.D., Kathy Wolski, M.P.H., Stacy A. Brethauer, M.D., John P. Kirwan, Ph.D., Claire E. Pothier, M.P.H., Susan Thomas, R.N., Beth Abood, R.N., Steven E. Nissen, M.D., and Deepak L. Bhatt, M.D., M.P.H.

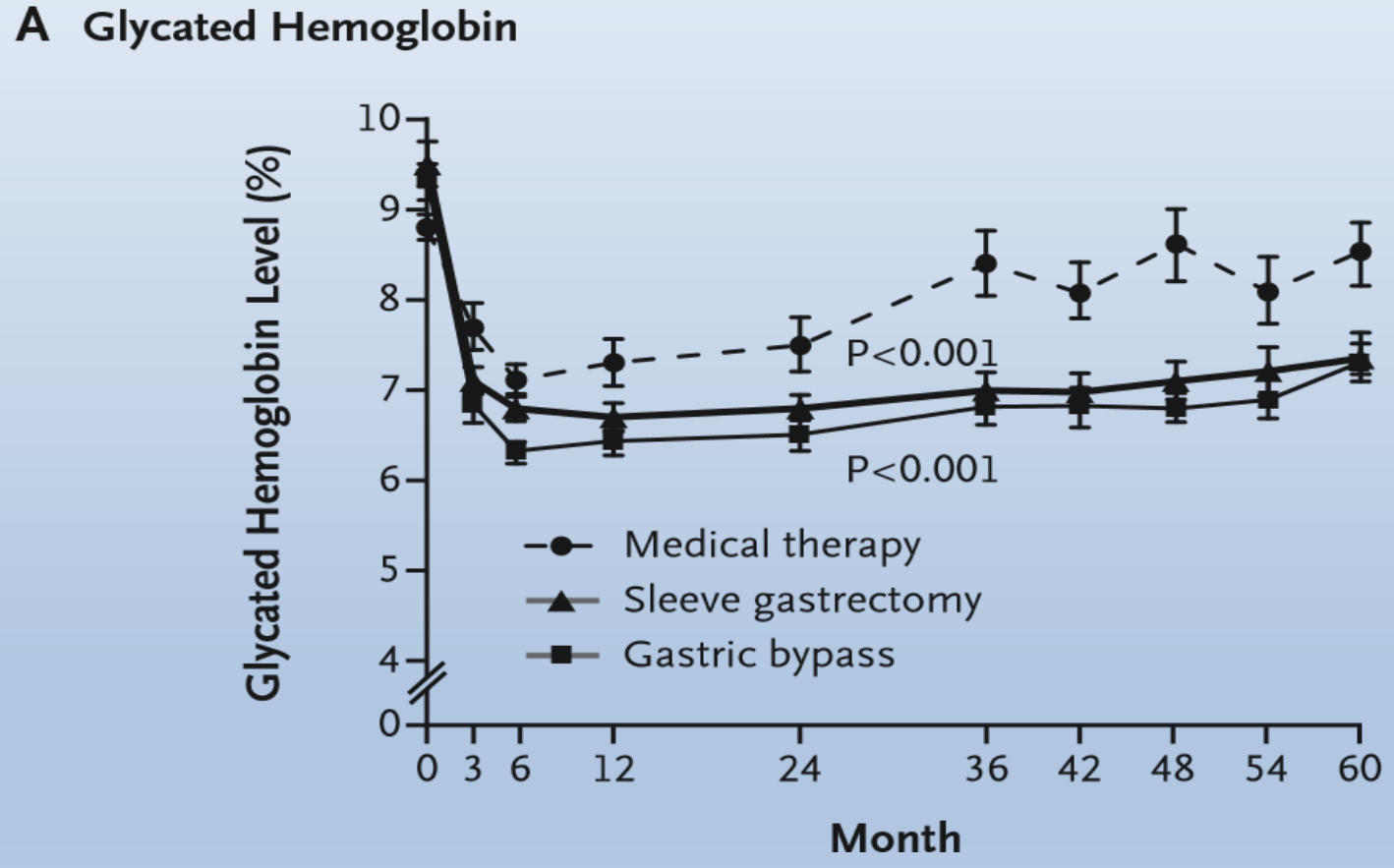
STAMPEDE Trial

- Surgical Treatment And Medications Potentially Eradicate Diabetes Efficiently
- Randomised, non blinded, single centre trial
- 150 patients with uncontrolled diabetes
- 3 arms:
  - Intensive medical therapy
  - Intensive medical therapy + RnYGB
  - Intensive medical therapy + gastric sleeve

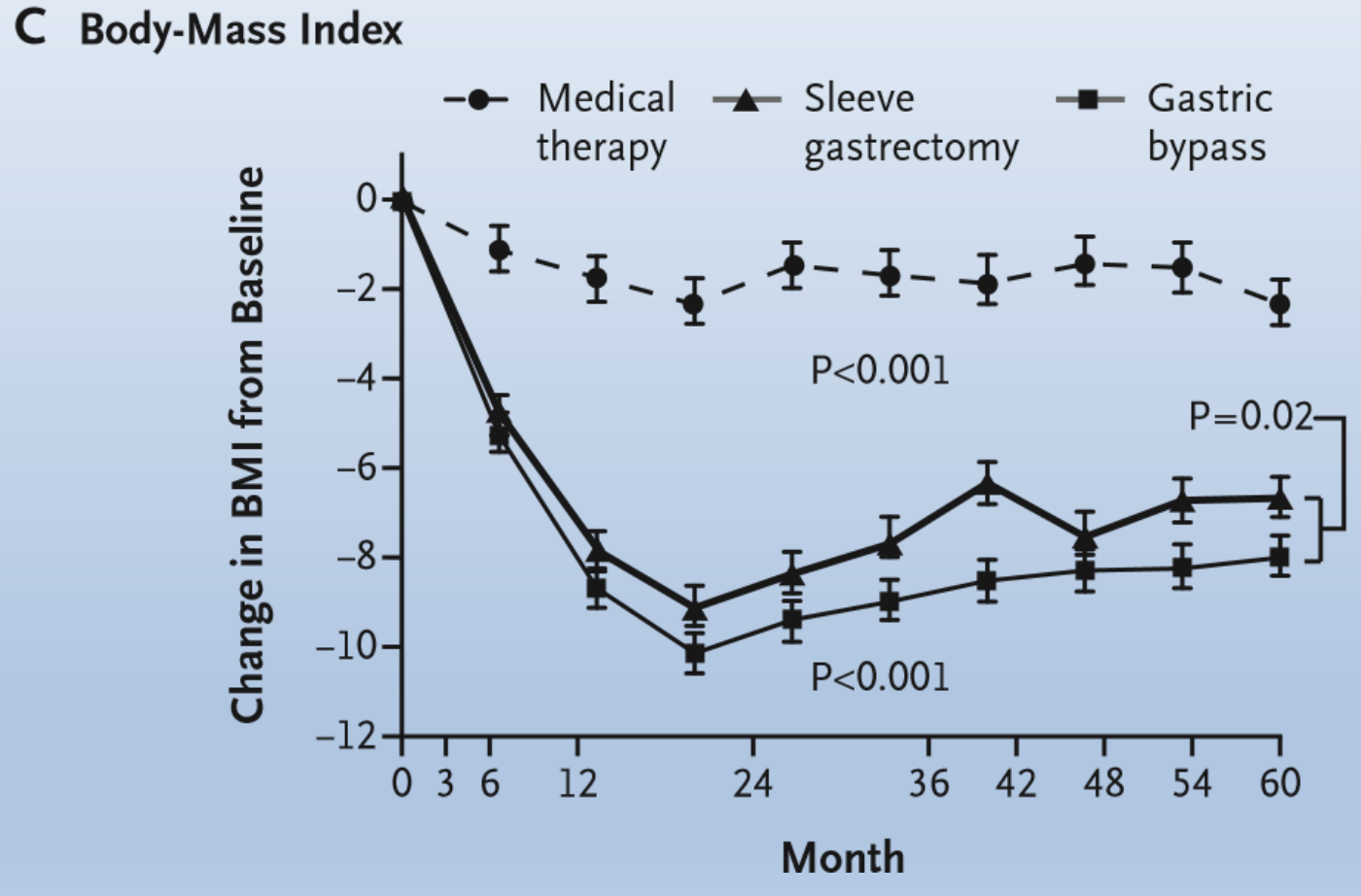
Endpoint

- Primary
  - HbA1c 6.0% or less at 12 months

STAMPEDE 5yr results



STAMPEDE 5yr results



STAMPEDE in brief

Reduction in average HbA1c (2.1% vs 0.3%)

Reduction in number of diabetes medications

Reduction in weight/BMI

Bariatric Surgery in the United Kingdom: A Cohort Study of Weight Loss and Clinical Outcomes in Routine Clinical Care

PLOS Medicine, December 22, 2015

- Observational retrospective cohort study

- 2 arms:
  - 3882 surgical patients (from 4036)
    - Gastric band/sleeve/bypass
    - BMI 44.7
  - 3882 matched non-surgical patients (from 18333)
    - BMI 42.1

Results

- Protective hazard ratios
  - Incidence
    - T2DM 0.68
    - Hypertension 0.35
    - Angina 0.59
    - MI 0.28
    - OSA 0.55

Results

- Bariatric surgery and resolution of T2DM
  - HR 9.29
- Bariatric surgery and resolution of hypertension
  - HR 5.64

Cochrane Review

- Surgery for weight loss in adults (Review) 2014

- Meta-analysis
  - 22 trials
  - 1798 participants
  - Sample sizes 15 to 250
  - Quality of evidence: moderate

Key results

- Surgery achieved greater weight loss than non-surgical interventions
- Improvement in QoL
- Improvement in diabetes

Metabolic Surgery in the Treatment Algorithm for Type 2 Diabetes: A Joint Statement by International Diabetes Organizations

Diabetes Care 2016; 39:861-877

Executive Summary

- A substantial body of evidence has accumulated, including numerous, albeit mostly short/midterm RCTs, demonstrating that metabolic surgery – defined here as the use of GI surgery with the intent to treat T2D and obesity – can achieve excellent control of hyperglycaemia and reduce cardiovascular risk factors

Executive Summary

- Metabolic surgery should be a recommended option to treat T2D in appropriate surgical candidates with class III obesity regardless of the level of glycaemic control or complexity of glucose lowering regimes, as well as in patients with class II obesity with inadequately controlled hyperglycaemia despite lifestyle and optimal medical therapy

Executive Summary

- Metabolic surgery should also be considered an option to treat T2D in patients with class I obesity and inadequately controlled hyperglycaemia despite optimal medical treatment by either oral or injectable medications (including insulin)

Executive Summary

- Metabolic surgery is a potentially cost-effective treatment option in obese patients with T2D

Bariatric Registries

- Up to date/in real time
- Measure outcomes
- Study longitudinal safety and efficacy of bariatric surgery
- Assess care and implement quality improvements

Bariatric Registries

- BOLD (America)
  - Bariatric Outcomes Longitudinal Database
- UKNBSR (UK)
  - UK Bariatric National Bariatric Surgery Registry
- OSSANZ BSR (Australasia)
  - Obesity Surgical Society of Australia and New Zealand Bariatric Registry

Bariatric Surgery Registry, BSR

- N=15,643
  - Female 79%, male 21%
  - Average age 44.2 years
  - Mean BMI 43
  - 14.8% Diabetics
- 113 surgeons
- 84 sites

Primary procedures

• Sleeve gastrectomy	7270
• Gastric Band	3600
• Gastric bypass	691
• SAGB	309
• Gastric imbrication	9
• Gastroplasty	3
• BPD/DS	11
• Other	17

Results

Post op	%EWL
1 year	50%
2 years	54%
3 years	52%

Diabetes Treatment (n=436)	Baseline	12 months
Diet/exercise	78(18%)	28(6%)
Non-insulin(mono) therapy	156 (36%)	62(14%)
Non-insulin(poly)therapy	51(12%)	14(3%)
Insulin	99(23%)	42(10%)

Results

- Mortality 0.06%
- Morbidity
  - Primary 2.1%
  - Revisional 5.3%

MMH 2007-2014

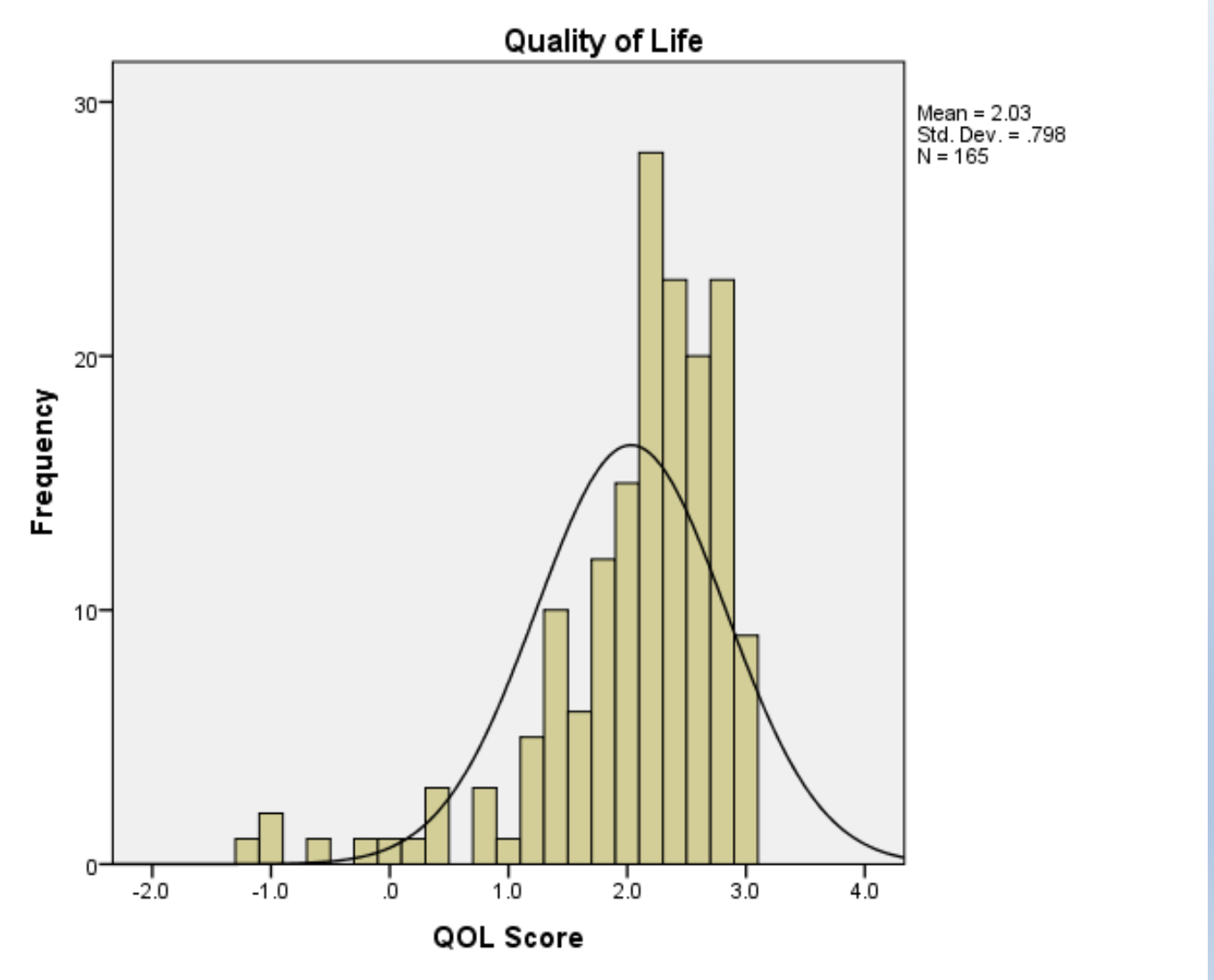
- 1047 Procedures
  - 1005 Primary sleeves
- Age: 43yrs
- Gender:
  - Female 75%
  - Male 25%
- Ethnicity:
  - NZ European 47%
  - Maori 22%
  - Samoan 8%

Results

Post Op	%EWL
1 year	48%
2 years	63%
3 years	63%
4 years	61%

Co-morbidity	Improved/resolved
Diabetes	58%
Hypertension	28%
OSA	30%
Hyperlipidaemia	20%

Quality of Life



Moorehead-Ardelt QOL Questionaire

Greatly Improved	2 to 3
Improved	0.5 to 2
Minimal to no change	-0.5 to 0.5
Diminished	-2 to -0.5
Greatly diminished	-3 to -2

Obesity Surgery, 14, 939-947

The Impact of Weight Reduction Surgery on Health-Care Costs in Morbidly Obese Patients

John S. Sampalis, PhD[1,2,3]; Moishe Liberman, MD[1,3]; Stephane Auger, BSc[1,3]; Nicolas V. Christou, MD, PhD[1]

[1]Section of Bariatric Surgery, Division of General Surgery, McGill University Health Centre, [2]Division of Clinical Epidemiology, McGill University Health Centre, [3]JSS Medical Research Inc., Montreal, Quebec, Canada

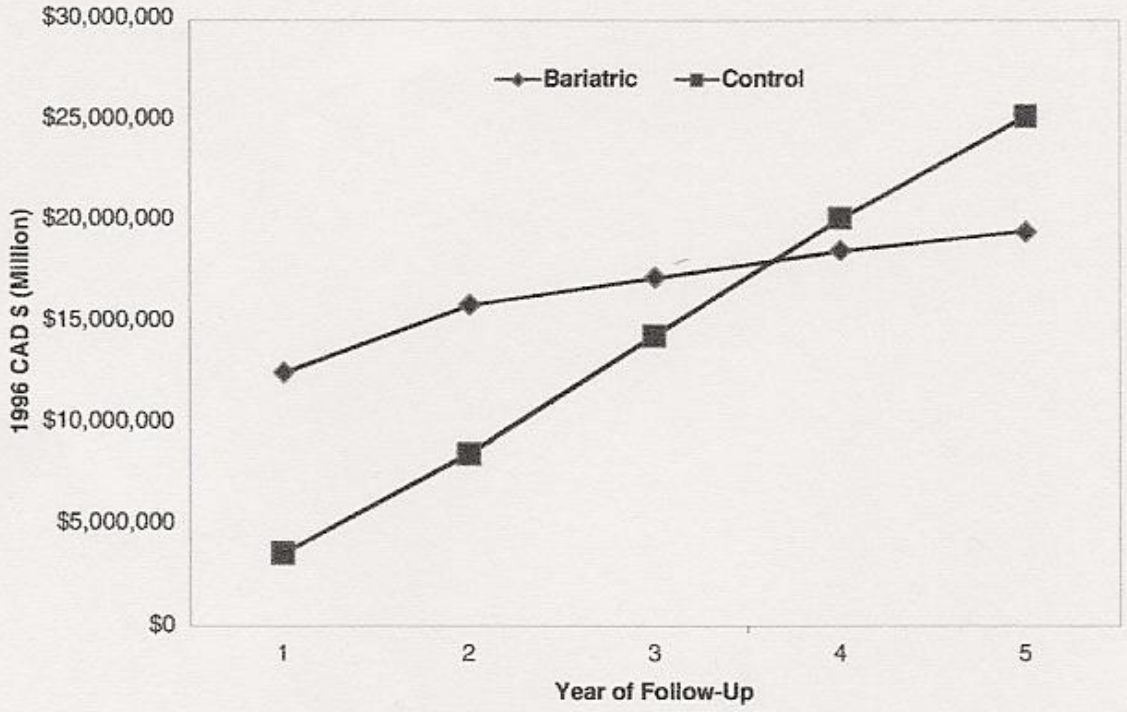


Figure 1. Average cumulative costs per 1,000 patients for hospitalization by group and year of follow-up.

Obesity Surgery, 16, 1488-1503

Cost-Effectiveness and Budget Impact of Obesity Surgery in Patients With Type-2 Diabetes in Three European Countries

Roger Ackroyd, MB, ChB, MD, FRCS[1]; Jean Mouiel, MD, FACS[2]; Jean-Marc Chevallier, MD, PhD[3]; Frederic Daoud, MD, MSc[4]

[1]Royal Hallamshire Hospital, General Surgery, Sheffield, South Yorkshire, United Kingdom; [2]University of Nice, Obesity Center, Nice, France; [3]Hôpital Européen Georges-Pompidou, General Digestive Surgery, Paris, France; [4]Medalliance, Paris, France

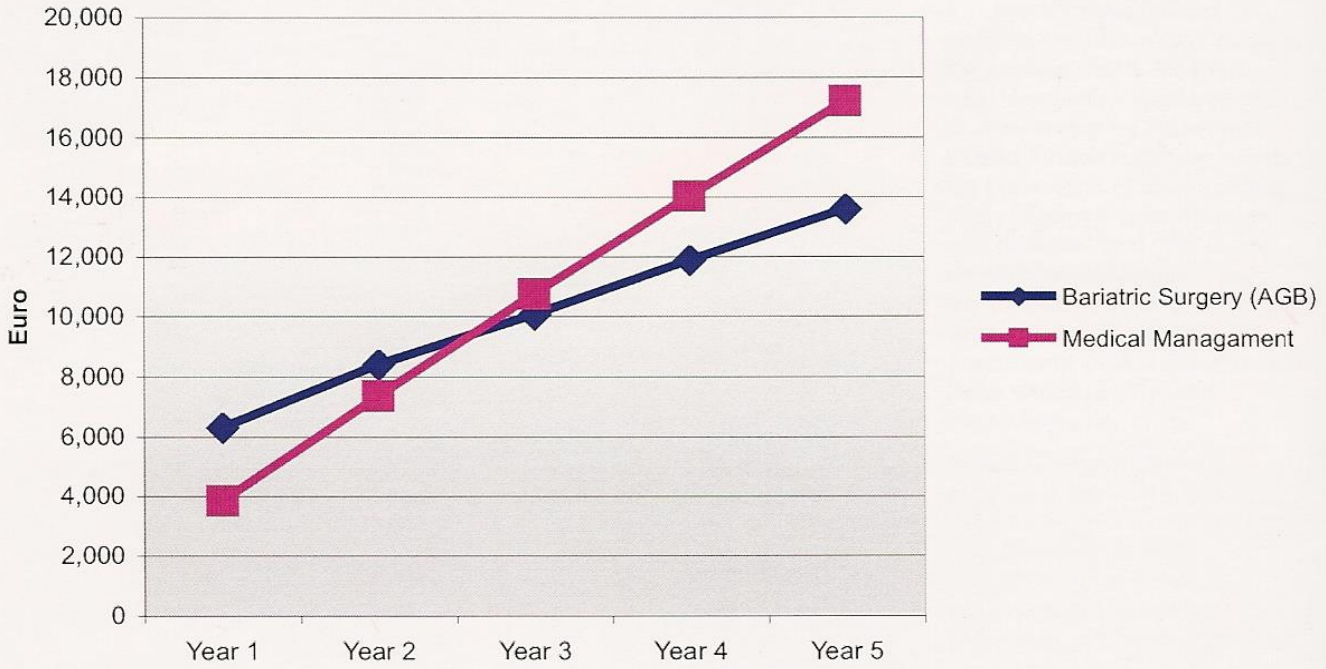


Figure 12 Cumulative Healthcare Costs (€) Accrued in Conventional and Surgery Treated Patients in Germany (Ackroyd et al., 2006)

AGB, adjustable gastric band

Summary

- Metabolic surgery
  - Is safe
    - Mortality less than other procedures
  - Is effective
    - Sustained weight loss
    - Improvement in comorbidities
    - Improvement in quality of life
- Registries
  - monitoring outcomes
  - Ensuring best practice for your patients

Why Bariatric Surgery?

Why not Bariatric Surgery?