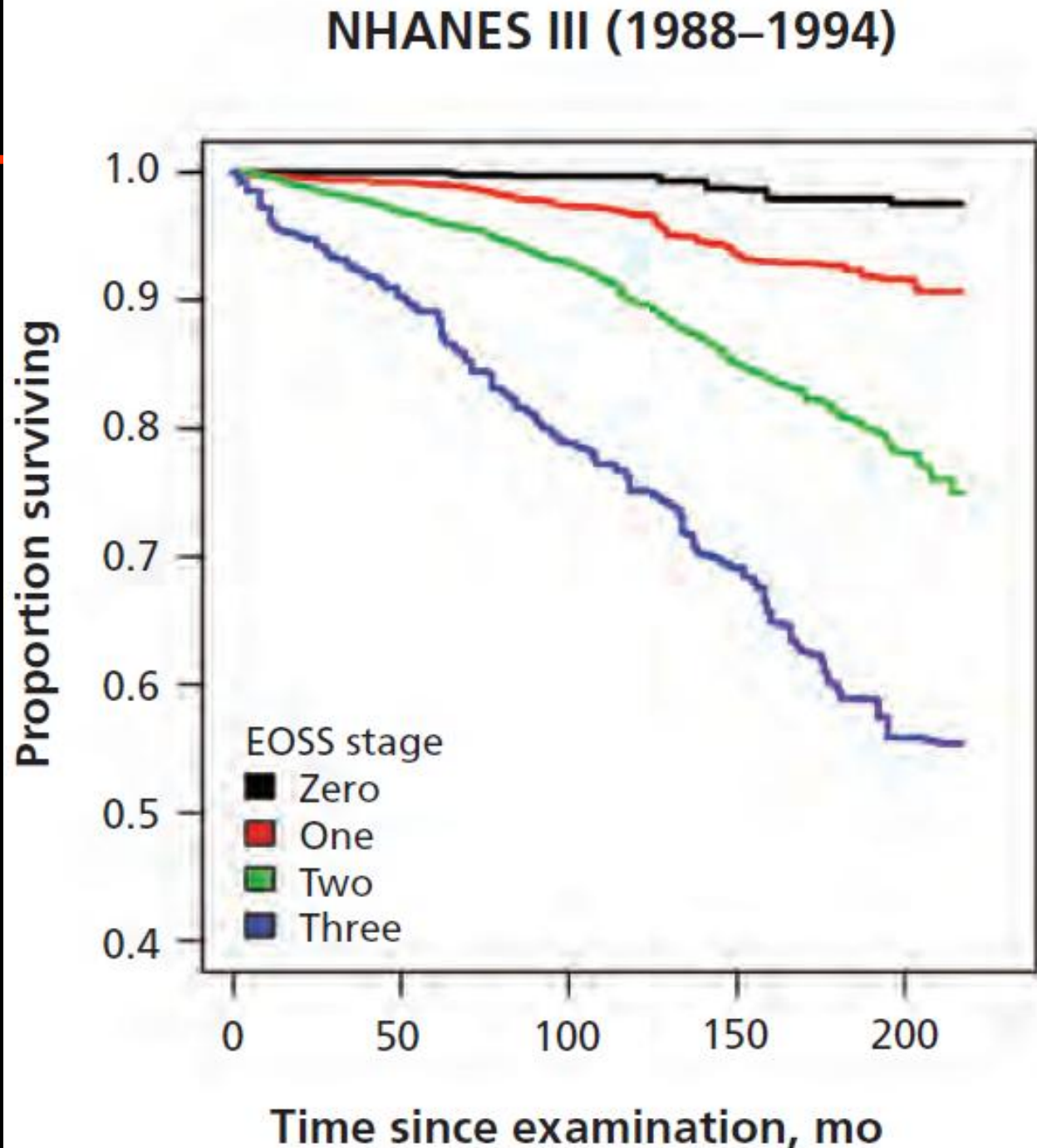


# Imperial Weight Centre



# Morbid obesity vs Obese morbidity

Sharma et al  
CMAJ 2011



# Do you want to Medicalise this man?

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Physically active

Employed

Happy

120/78 mmHg

Normal glucose  
and lipids





# Indication for Obesity intervention

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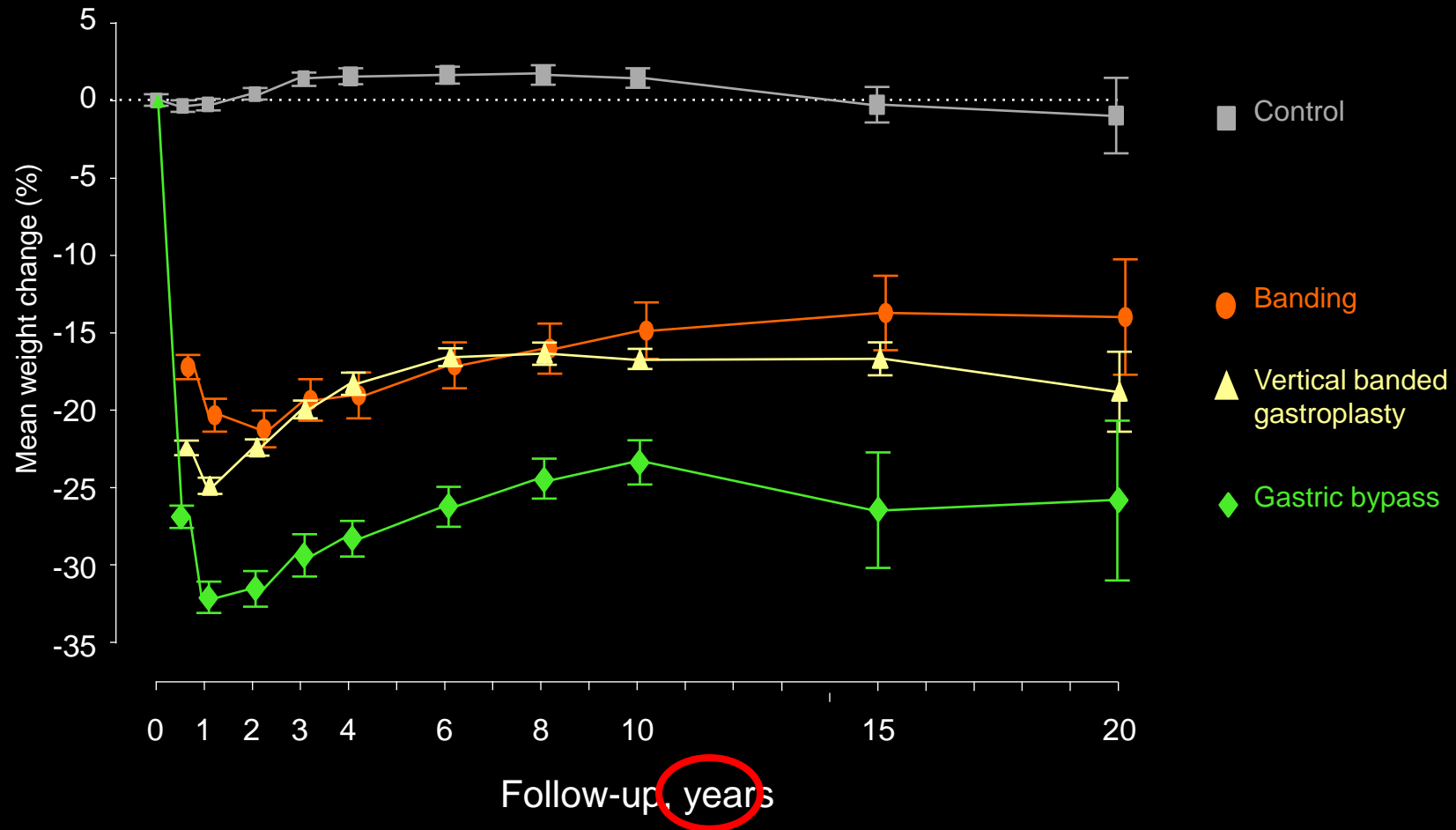


- 55 years
- Pipe smoker
- 3<sup>rd</sup> party assistance for ADL
- No exercise
- 148/88mmHg
- Fasting glucose 7.5mmol/L
- Low HDL, high Tg
- +/- Sleep apnoea

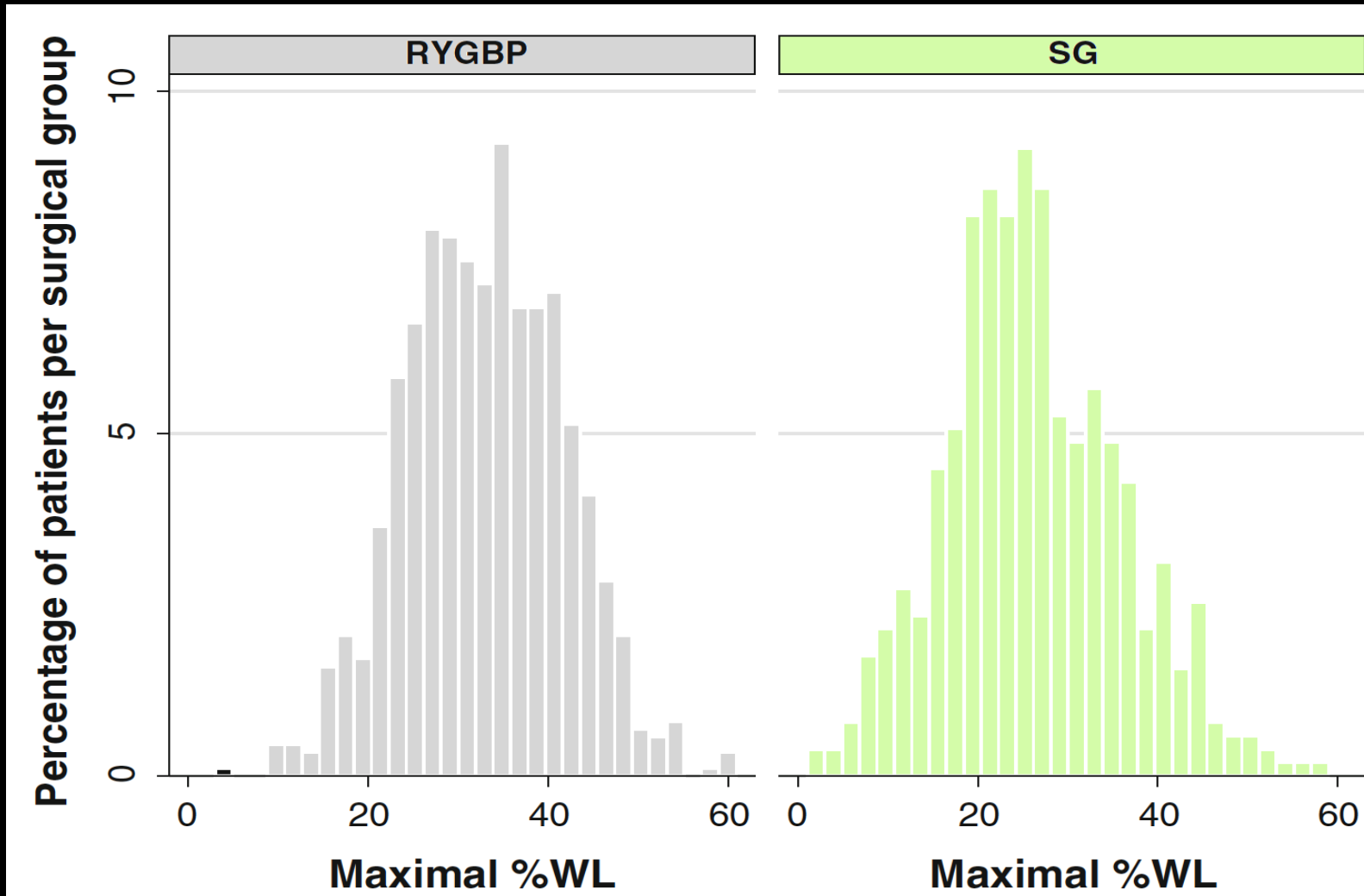
Good candidate for intervention ?



# Body weight change in Swedish Obese Subjects study



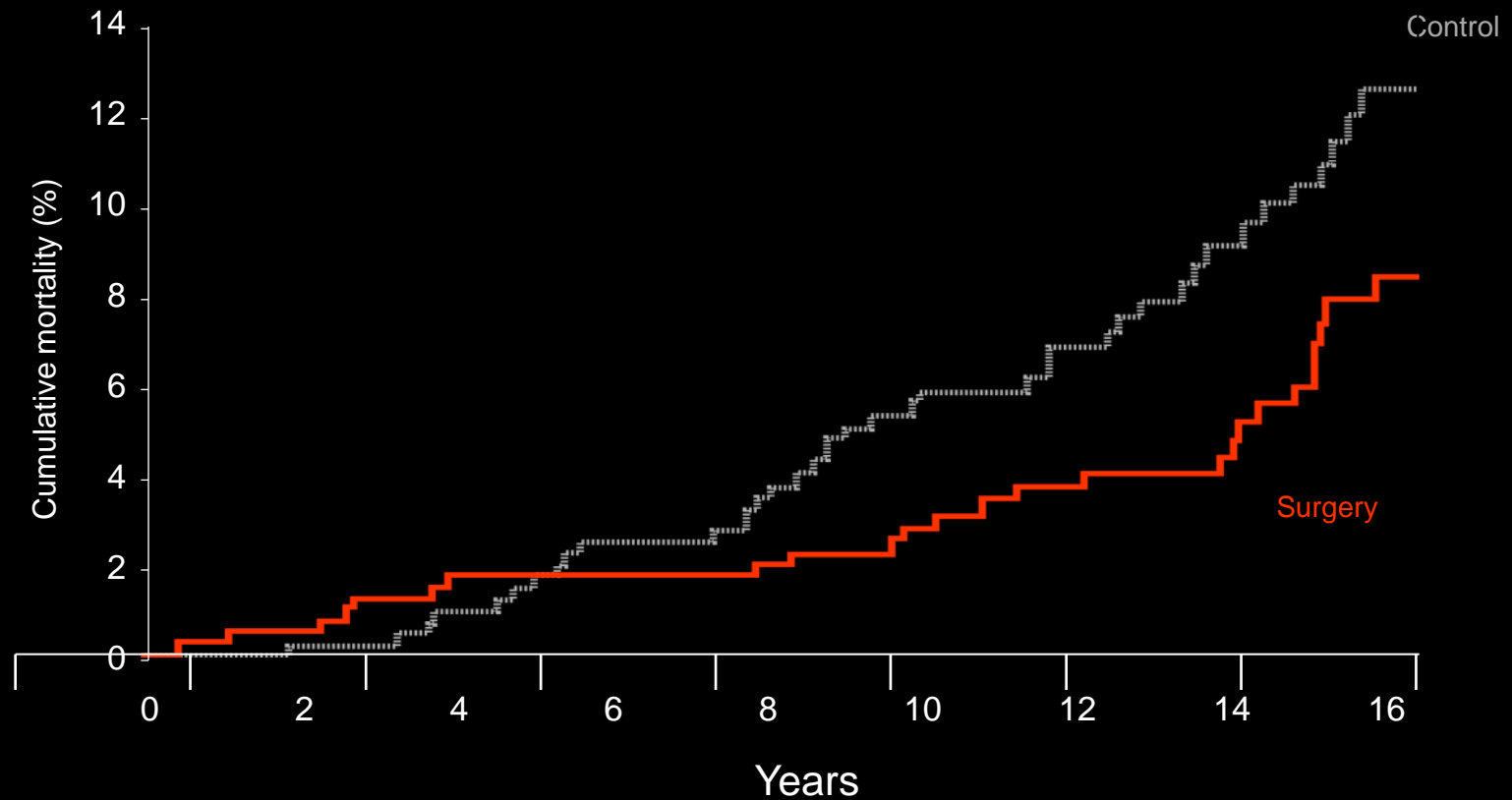
# Maximal %weight loss for patients after gastric bypass and Sleeve gastrectomy



RYGBP: Roux-en-Y gastric Bypass n=877  
SG: Sleeve Gastrectomy n= 513

# Cardiovascular disease

Diet/drug-induced weight loss: NO mortality benefit (yet)



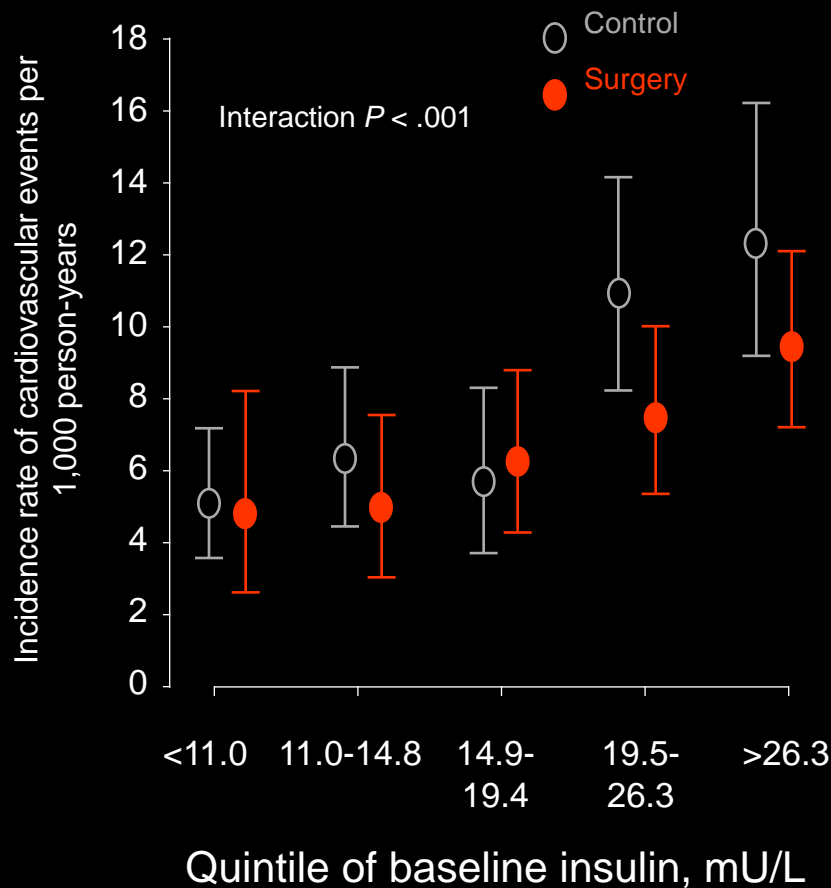
No. at risk

Surgery	2010	2001	1987	1821	1590	1260	760	422	169
Control	2037	2027	2016	1842	1455	1174	749	422	156

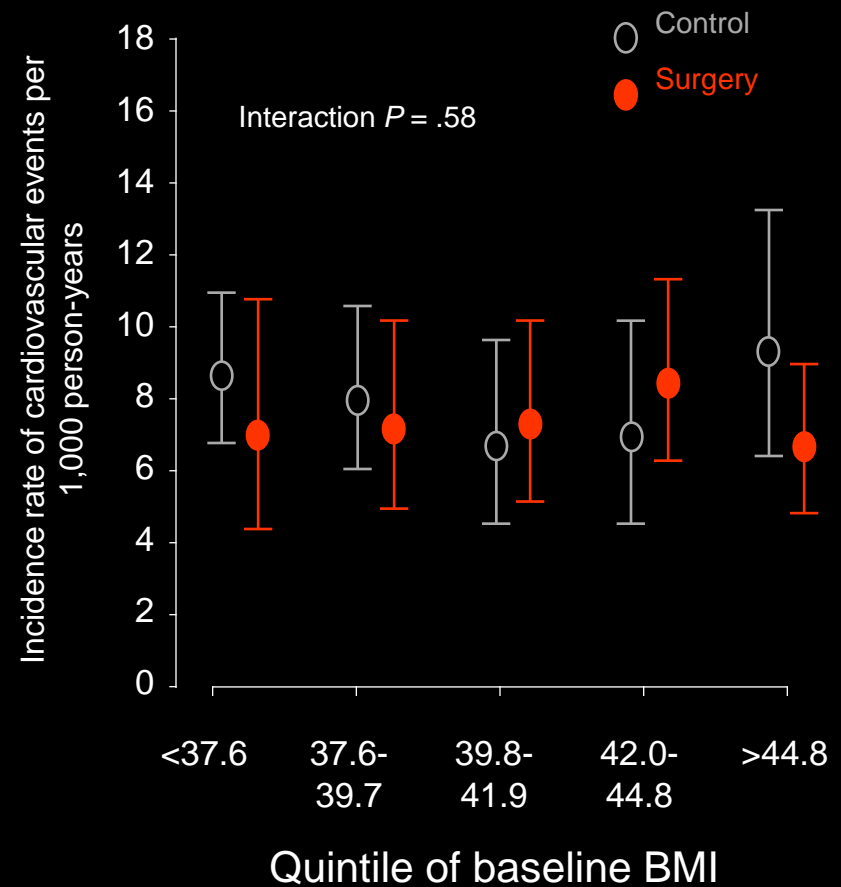
Sjöström L, et al. N Engl J Med 2007; 357:741–52.

# Fasting insulin, but not BMI, predict benefit

Cardiovascular events by baseline insulin



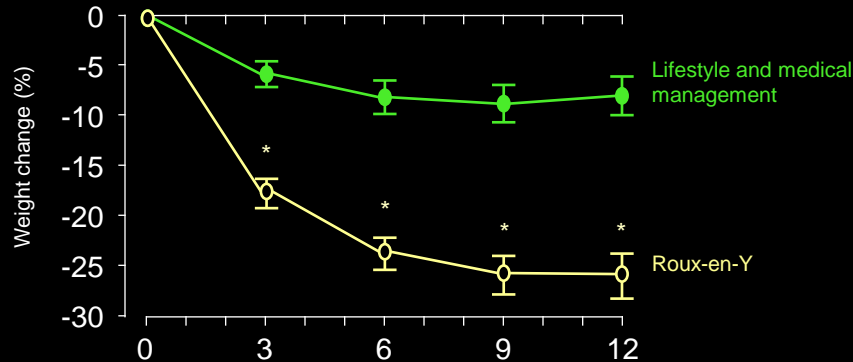
Cardiovascular events by baseline BMI



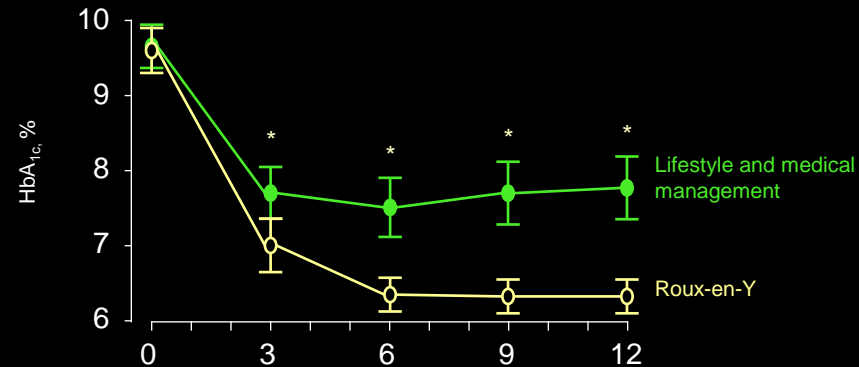


# Metabolic changes

A. Percent weight change from baseline



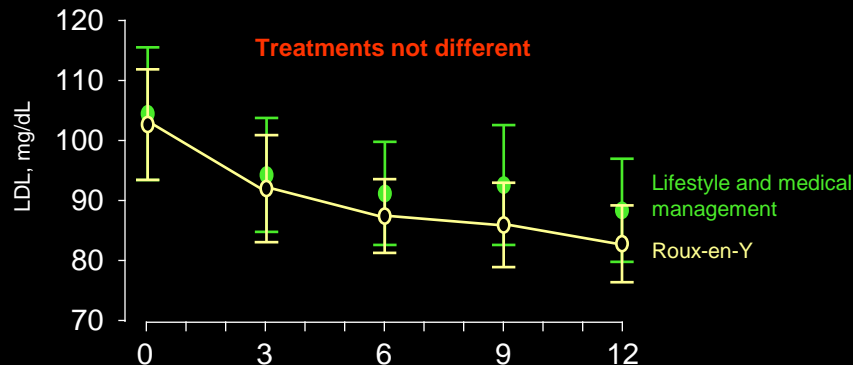
B. Haemoglobin A<sub>1c</sub>



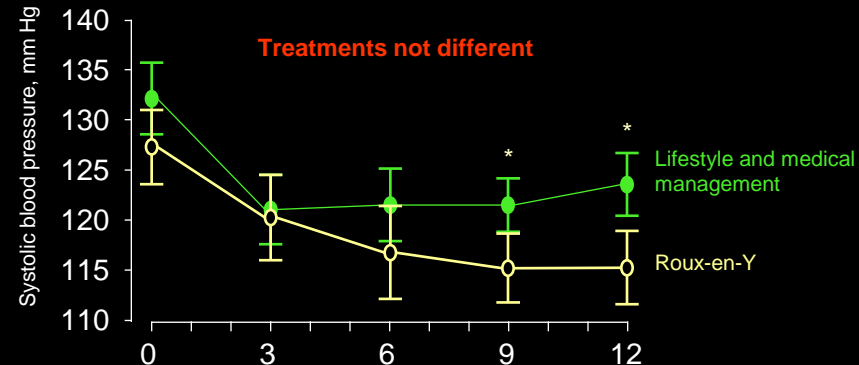
No. of participants	60	56	53	53	57
Lifestyle & medical mgmt	60	54	57	55	57
Roux-en-Y					

No. of participants	60	56	53	53	56
Lifestyle & medical mgmt	60	54	57	55	57
Roux-en-Y					

C. LDL cholesterol



D. Systolic blood pressure



No. of participants	60	56	53	53	54
Lifestyle & medical mgmt	60	54	57	55	57
Roux-en-Y					

No. of participants	60	56	53	53	56
Lifestyle & medical mgmt	60	54	57	55	57
Roux-en-Y					

\*P-value for difference is <0.01

# Remission vs Control on Diabetes

Mingrone et al Lancet 2015 and le Roux et al Lancet 2015

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	Medical treatment group (n=15)	Roux-en-Y gastric bypass group (n=19)	Biliopancreatic diversion group (n=19)	p value*
ADA partial remission at 2 years	0	15 (75%)	19 (95%)	<0.0001
ADA partial remission at 5 years	0	7 (37%)	12 (63%)	0.0007
ADA complete remission at 5 years	0	0	0	..

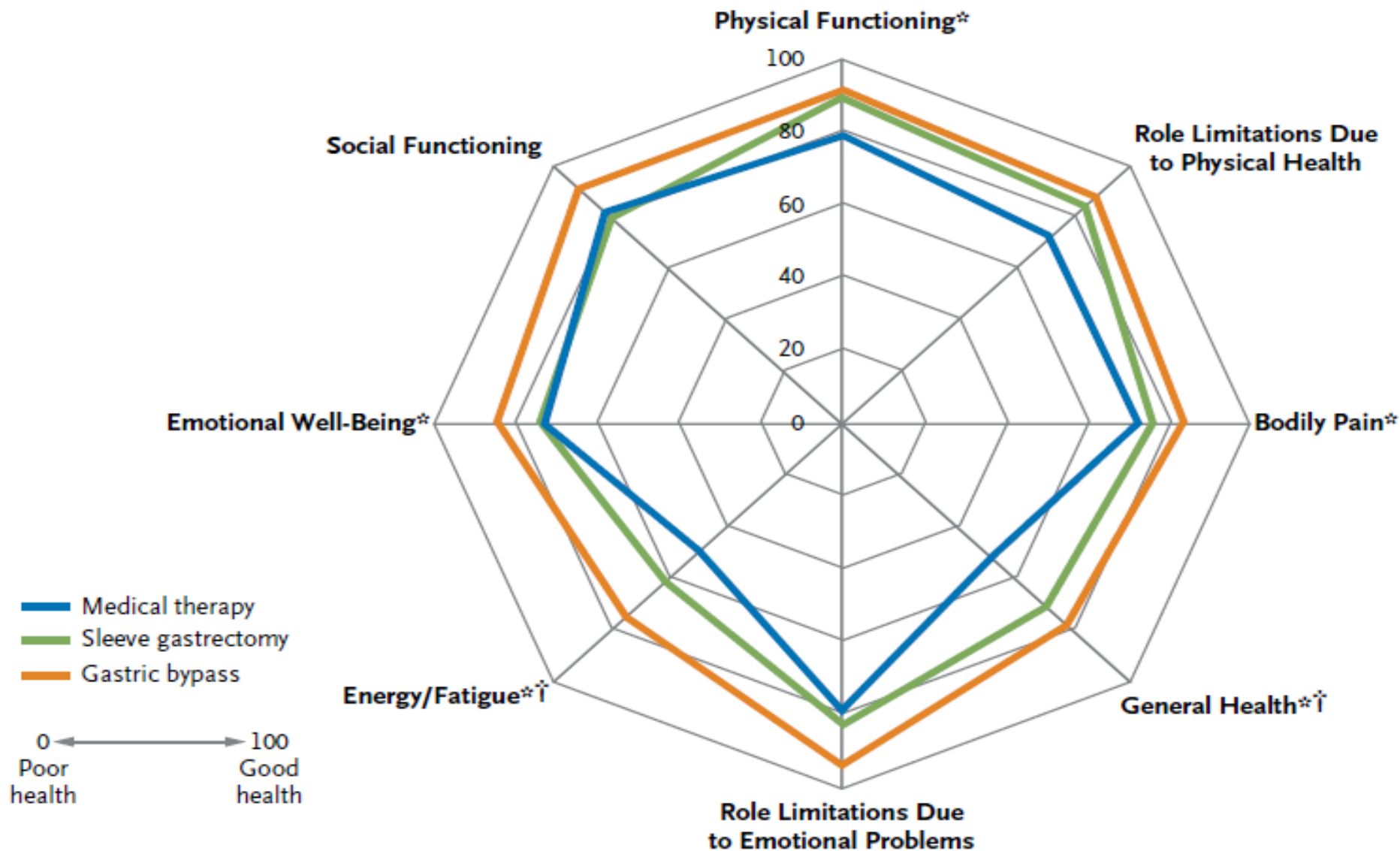
Mingrone and colleagues' study lays the foundation to start the hard work of maintaining diabetes remission once surgery has levelled the playing field.

*Dimitri J Pournaras, \*Carel W le Roux*

# Quality of life after 3 years

Schauer et al | NEJM 2014

B At 3 Years

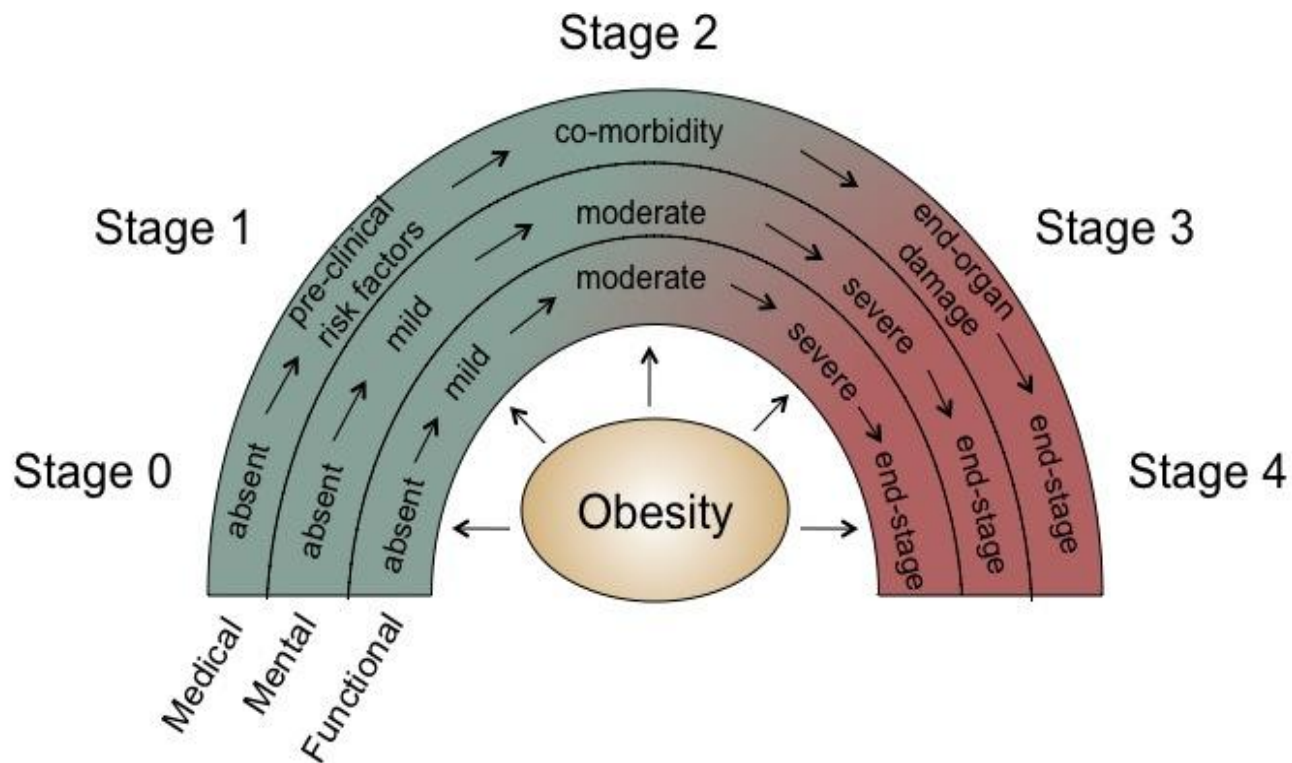


# Aim

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- We treat obese morbidity not morbid obesity

# Edmonton Obesity Staging System (EOSS)



# Obesity Staging Score: Aylwin et al Front Horm Res 2008

	Stage 0	Stage 1	Stage 2	Stage 3
<b>Airway</b>	Normal	Apnoea	CPAP	Cor pulmonale
<b>BMI</b>	<35	35-50	50-60	>60
<b>CVD</b>	<10%	>20%	IHD	CCF
<b>Diabetes</b>	Normal	IFG/IGT	Controlled	Uncontrolled
<b>Economic</b>	No	impact	disadvantage	unemployed
<b>Function</b>	Normal	limited	3 <sup>rd</sup> party	House-bound
<b>Gonadal</b>	Normal	PCOS	Subfertile	Breakdown
<b>Health status</b>	Normal	Low mood	Depression	Disorder
<b>Image</b>	Normal	impaired	dysphoria	Disorder



# Who should have bariatric surgery?

## Clinical use and benefit of bariatric surgery

There is a general perception that the main clinical indication for bariatric surgery is BMI. The higher the BMI, the more appropriate it is to refer for surgery.

This is not the case. BMI can be a poor indicator of clinical need or functionality. A person with a BMI of 30 with co-morbidities could benefit more from surgery than a patient with a BMI of 50.

Furthermore, operating only on individuals with a very high BMI will result in a disproportionately high post-operative complication rate.

We therefore need to focus bariatric surgery on patients who will benefit most and whose health improvement will help reduce future health expenditure.

## Rationing

There is a limited supply of bariatric surgery. There does not appear to have been any work done to compare supply with a population-based estimate of need.

However, it is accepted that bariatric surgery is a cost-effective option for the management of adult obesity and associated complications. These guidelines are therefore *not* designed to reduce the existing volume of bariatric surgery activity, but rather to optimise clinical benefit and minimise long-term high cost medical expenditure that would arise should some patients not be operated upon.

At the same time, the development of these referral guidelines should reduce the inappropriate variance in referral rates across PCTs.

	Stage 0	Stage 1	Stage 2	Stage 3
Airways	Normal	Snoring	Sleep apnoea	Cor pulmonale
Body mass index	<30	30-35	35-49	>50
Cardiovascular	Normal	Controlled hypertension	Established ischemic heart disease or difficult to control hypertension	Unstable angina / Heart failure
Diabetes	Normoglycaemia	Impaired fasting glycaemia	Type 2 diabetes	Uncontrolled type 2 diabetes
Gonadal (sexual and reproductive function)	Normal	Irregular periods Low libido	Polycystic Ovarian Syndrome Male impotence	Obesity-related subfertility

# Multidisciplinary team

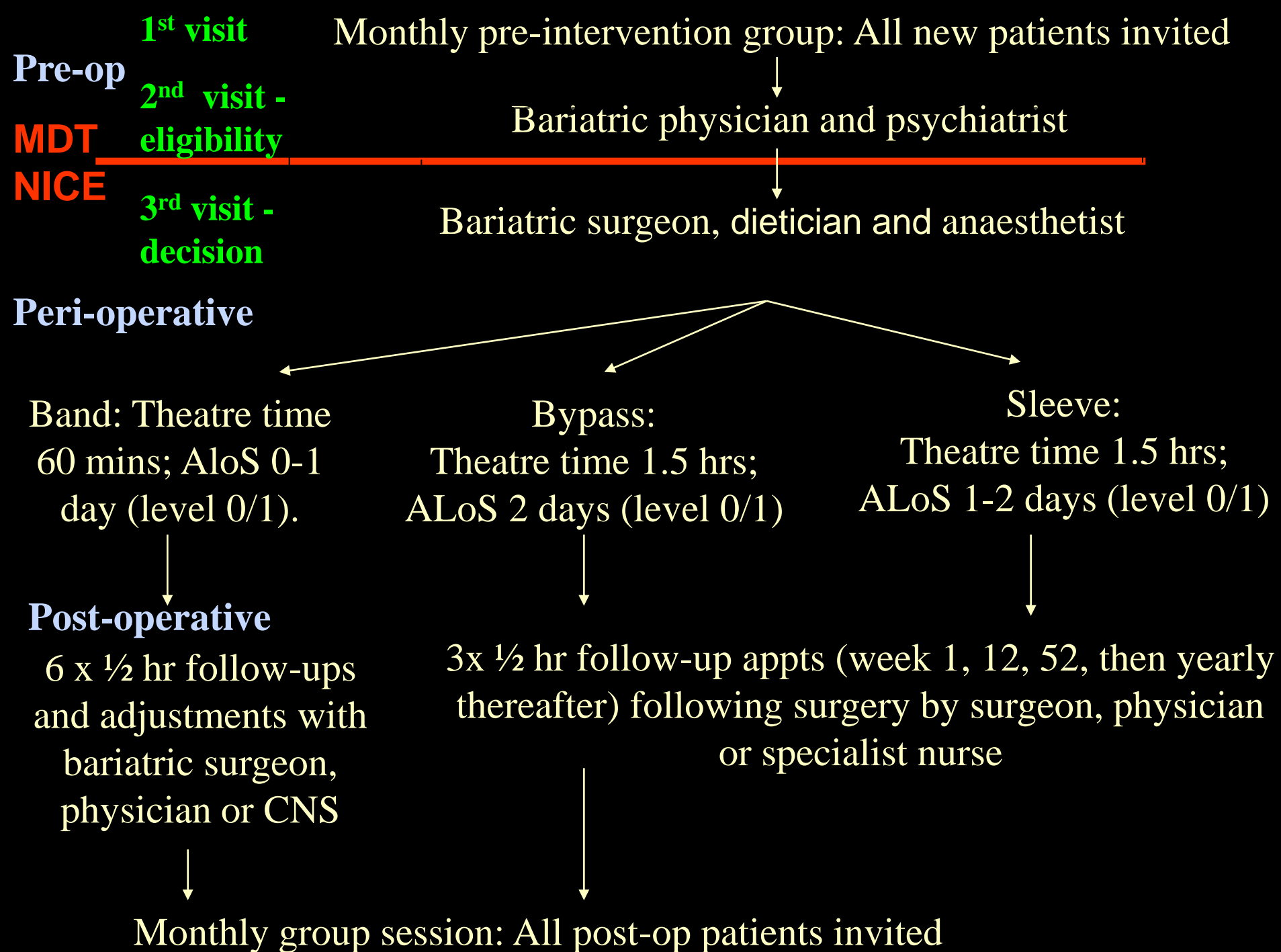
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- Surgeons
- Physicians
- Anaesthetists
- Dieticians
- Psychiatrists
- Clinical nurse specialists
- Dedicated bariatric ward nurses
- Dedicated bariatric theatre staff

# Service

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- Referrals
  - 50 per week from GPs
- Lifestyle arm
  - 6 visits over 6 months followed by group sessions
- Pharmacotherapy arm
  - 3 visits of 1 year to maximum 5 visits over 18 months
- Bariatric surgery arm



# Pre-Bariatric surgery

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- 1<sup>st</sup> visit: Group session
- 2<sup>nd</sup> visit: Physician, dietician, psychiatrist
- 3<sup>rd</sup> visit: Surgeon
- Multidisciplinary team meeting
- 4<sup>th</sup> visit Pre-assessment with Anaesthetists
- Surgery (20 – 24 cases per month)



# Post bariatric surgery

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- Bypass / Sleeves / Duodenal switches
  - 1 week: Surgeon
  - 3 months: Physician
  - 6 months: Physician
  - 12 months: Surgeon
- Banding
  - 1 week: Surgeon
  - 6 weeks: adjustment (every 2 weeks until optimal)
- Group sessions and shared care with GPs ensures continuous care

# Capacity

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- Bariatric theatre lists
  - Monday pm: 2 sleeves / 1 redo
  - Wednesday: 4 bypasses / sleeves
  - Fridays: 4 bands
- Bariatric beds
  - 4 dedicated and ring fenced beds (Mon-Fri)
- Length of stay
  - Bands 50% day cases 50% 1 night
  - Bypass / Sleeve 2 nights
- High dependency unit
  - 1 in 20 cases to MRSA negative unit

# Definition of International Diabetes Federation

Miras, le Roux et al Diabetes Obesity and Metabolism 2014

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Optimization of the metabolic state may be defined as:

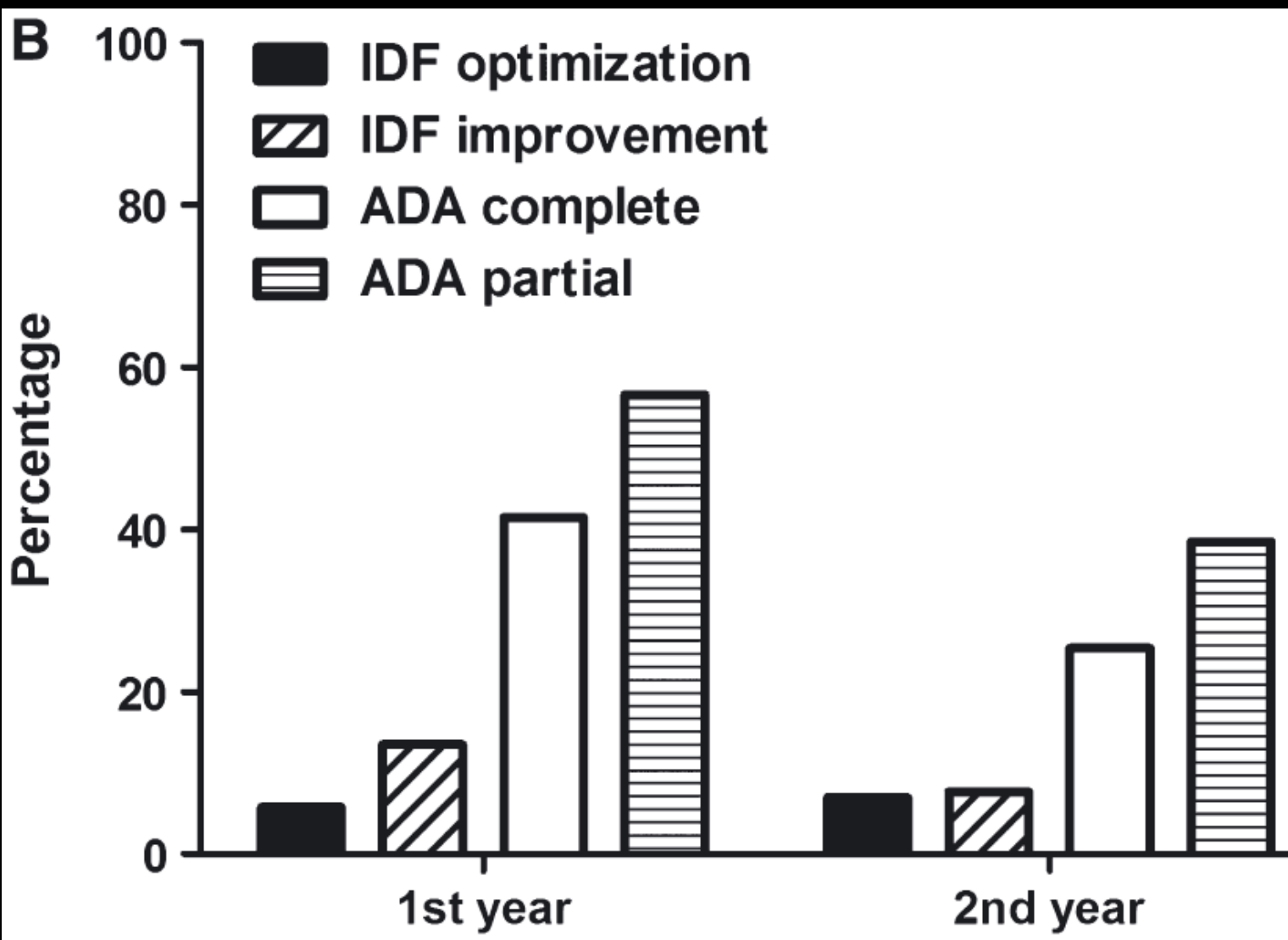
- $\text{HbA}_{1c} \leq 42 \text{ mmol/mol}$  (6%)
- no hypoglycaemia
- total cholesterol  $< 4 \text{ mmol/l}$ ; LDL cholesterol  $< 2 \text{ mmol/l}$
- triglycerides  $< 2.2 \text{ mmol/l}$
- blood pressure  $< 135/85 \text{ mmHg}$
- $> 15\%$  weight loss
- with reduced medication from the pre-operated state or without other medications (where medications are continued, reduced doses from pre-surgery with minimal side effects would be expected)

A substantial improvement in the metabolic state may be defined as:

- lowering of  $\text{HbA}_{1c}$  by  $> 20\%$
- LDL  $< 2.3 \text{ mmol/l}$
- blood pressure  $< 135/85 \text{ mmHg}$   
with reduced medication from the pre-operated state

# How do we measure up?

Miras le Roux et al. Diabetes Obesity and Metabolism 2014



# Conclusions

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- Chronic disease management model
- Focus on health gain not weight loss
- Patients that would benefit most
  - Type 2 diabetes HbA1c > 9%
  - Type 2 diabetes microvascular disease
- Don't operate on patients with BMI < 30 kg/m<sup>2</sup>

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