Spaarne Gasthuis Baria Nederland

Bariatrische chirurgie

en de relatie met de tandheelkunde

Yair I.Z. Acherman
chirurg
Spaarne Gasthuis

Ontmoet Sonja

Vrouw, 38jr
voormalig TMF-vj, actrice
miss Nederland 1997

In 2015 was de maat vol:

- van alles geprobeerd: “you name it….”
- het lukt me steeds niet om duurzaam af te vallen
- klachten: pijn in gewrichten, snel moe
- Slaap apnoe (OSAS)
- 162cm 110 kg → BMI 42

“ Help me doc……”

* met toestemming

Obesitas

BODY MASS INDEX

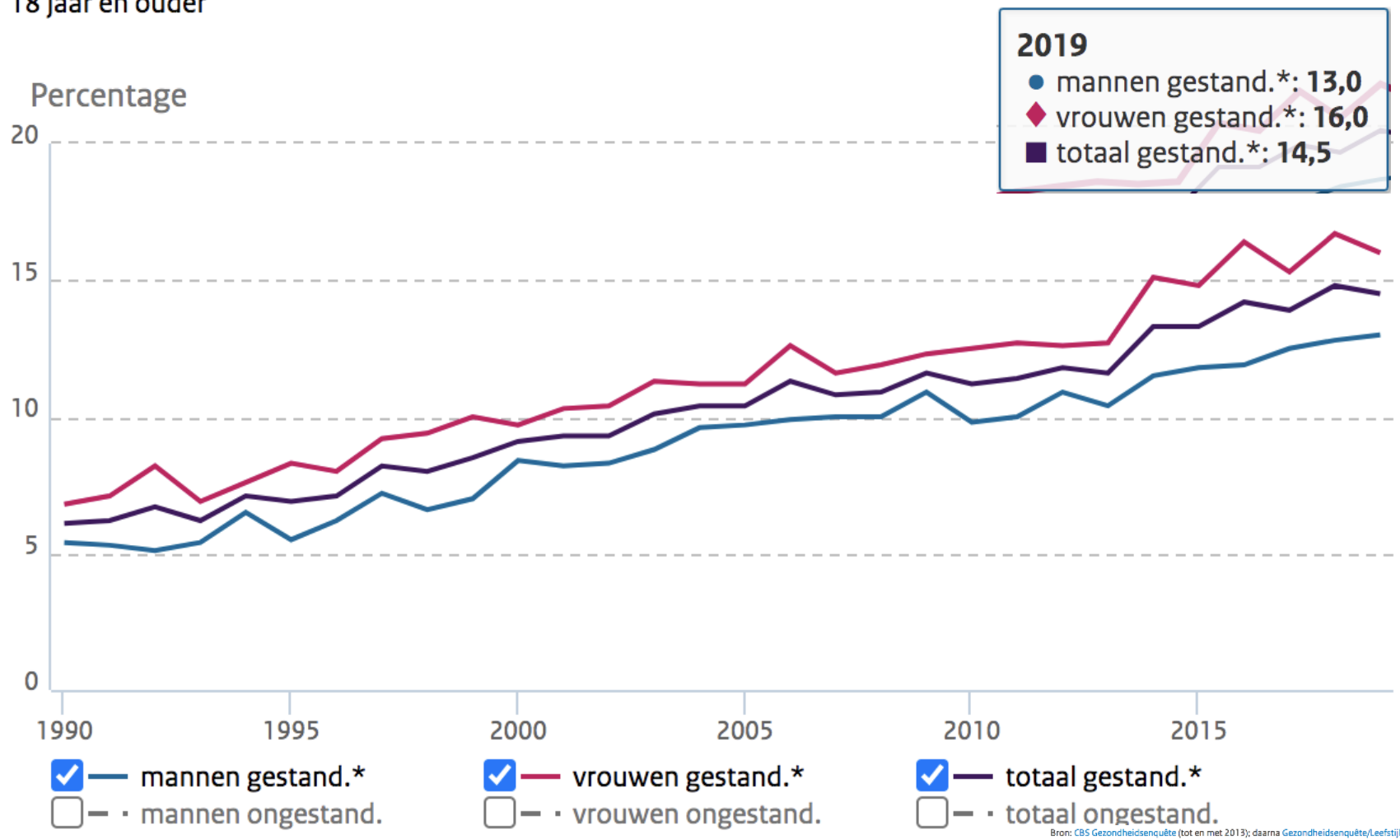
$$BMI = \frac{\text{GEWICHT}}{\text{LENGTE} \times \text{LENGTE}}$$

< 18,5	18,5 - 25	> 25	> 30	> 35
ondergewicht	normaal gewicht	overgewicht	obesitas	ernstig obesitas

Wist je dat?

Trend volwassenen met obesitas 1990-2019

18 jaar en ouder



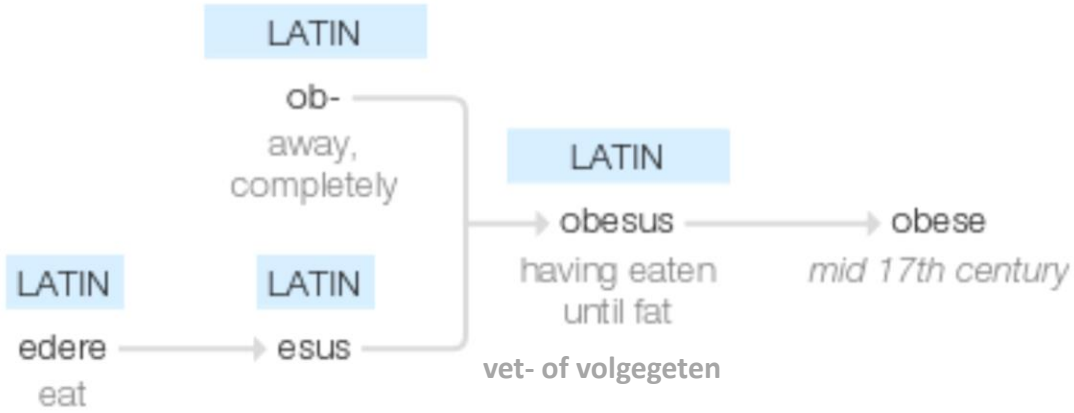
Bron: CBS Gezondheidsenquête (tot en met 2013); daarna Gezondheidsenquête/Leefstijlmonitor CBS i.s.m. RIVM

/éty·
mö·lo
·giə/

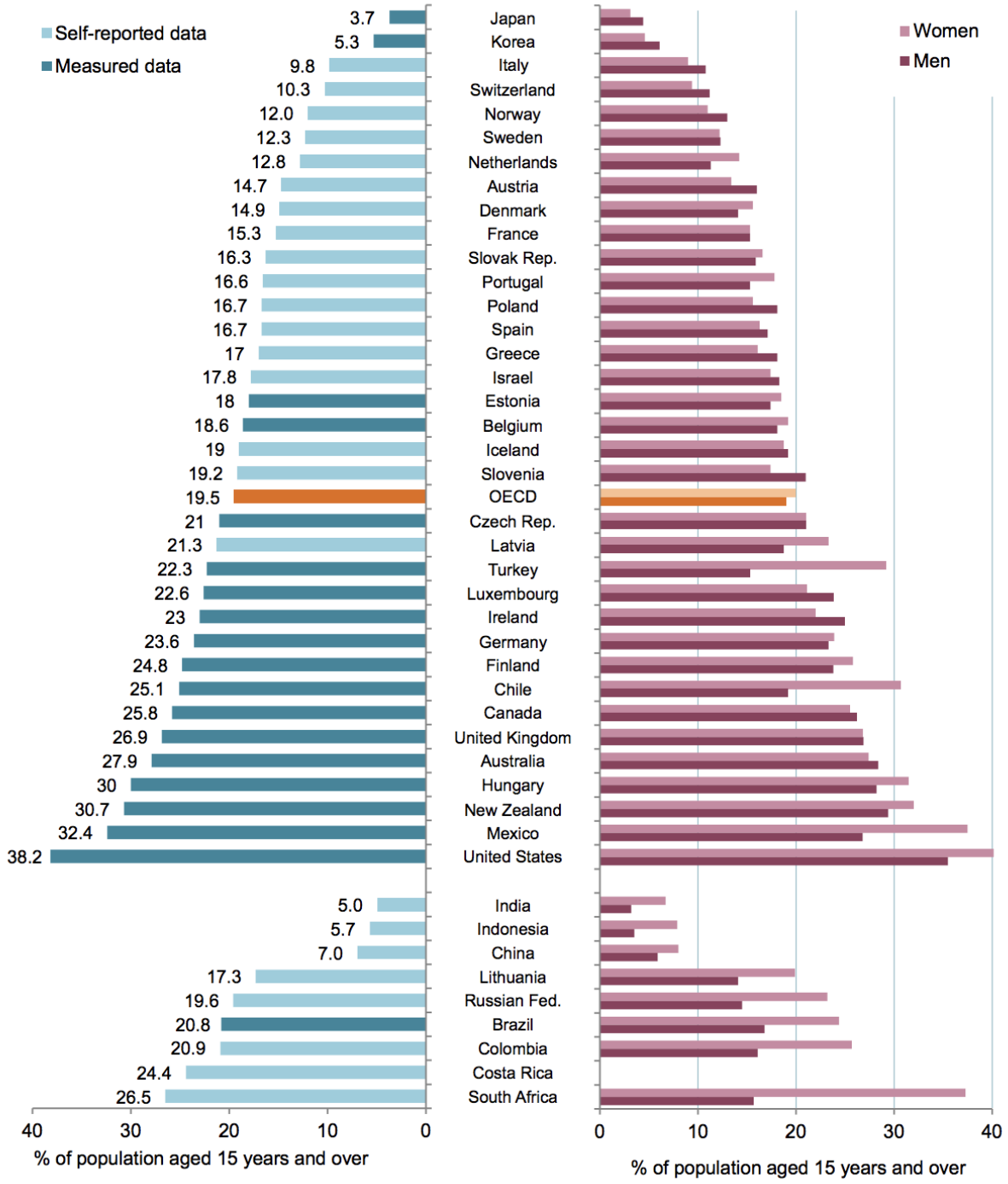
obese

/ə(ʊ)ˈbiːs/

Origin



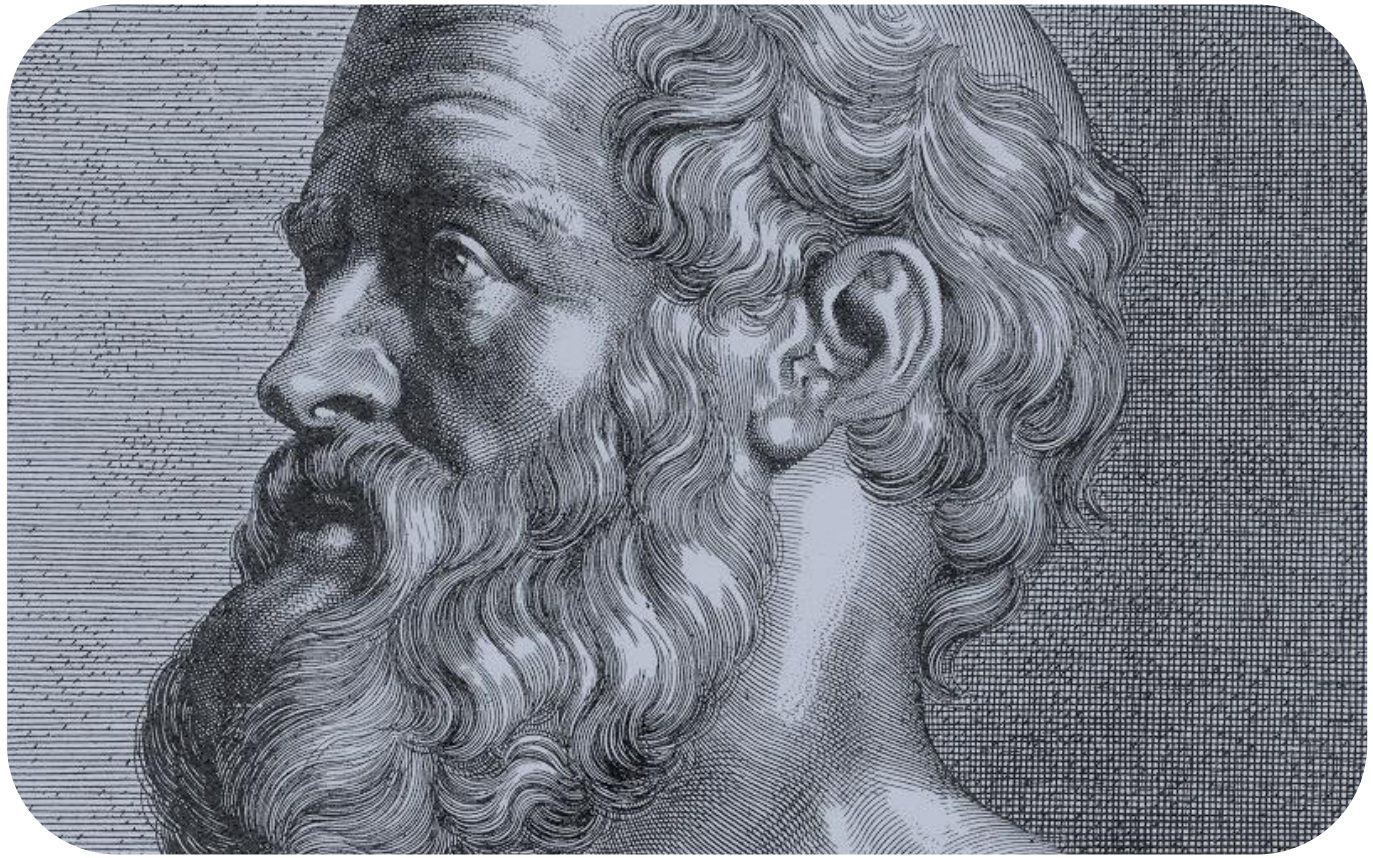
mid 17th century: from Latin *obesus* 'having eaten until fat', from *ob-* 'away, completely' + *esus* (past participle of *edere* 'eat').


Self-reported data
Measured data
Women
Men
3.7 Japan
5.3 Korea
9.8 Italy
10.3 Switzerland
12.0 Norway
12.3 Sweden
12.8 Netherlands
14.7 Austria
14.9 Denmark
15.3 France
16.3 Slovak Rep.
16.6 Portugal
16.7 Poland
16.7 Spain
17 Greece
17.8 Israel
18 Estonia
18.6 Belgium
19 Iceland
19.2 Slovenia
19.5 OECD
21 Czech Rep.
21.3 Latvia
22.3 Turkey
22.6 Luxembourg
23 Ireland
23.6 Germany
24.8 Finland
25.1 Chile
25.8 Canada
26.9 United Kingdom
27.9 Australia
30 Hungary
30.7 New Zealand
32.4 Mexico
38.2 United States
5.0 India
5.7 Indonesia
7.0 China
17.3 Lithuania
19.6 Russian Fed.
20.8 Brazil
20.9 Colombia
24.4 Costa Rica
26.5 South Africa
40 30 20 10 0
% of population aged 15 years and over
0 10 20 30 40
% of population aged 15 years and over

Hippocrates:

“ Sudden death is more common in those who naturally fat than in the lean.”

+/- 400BC

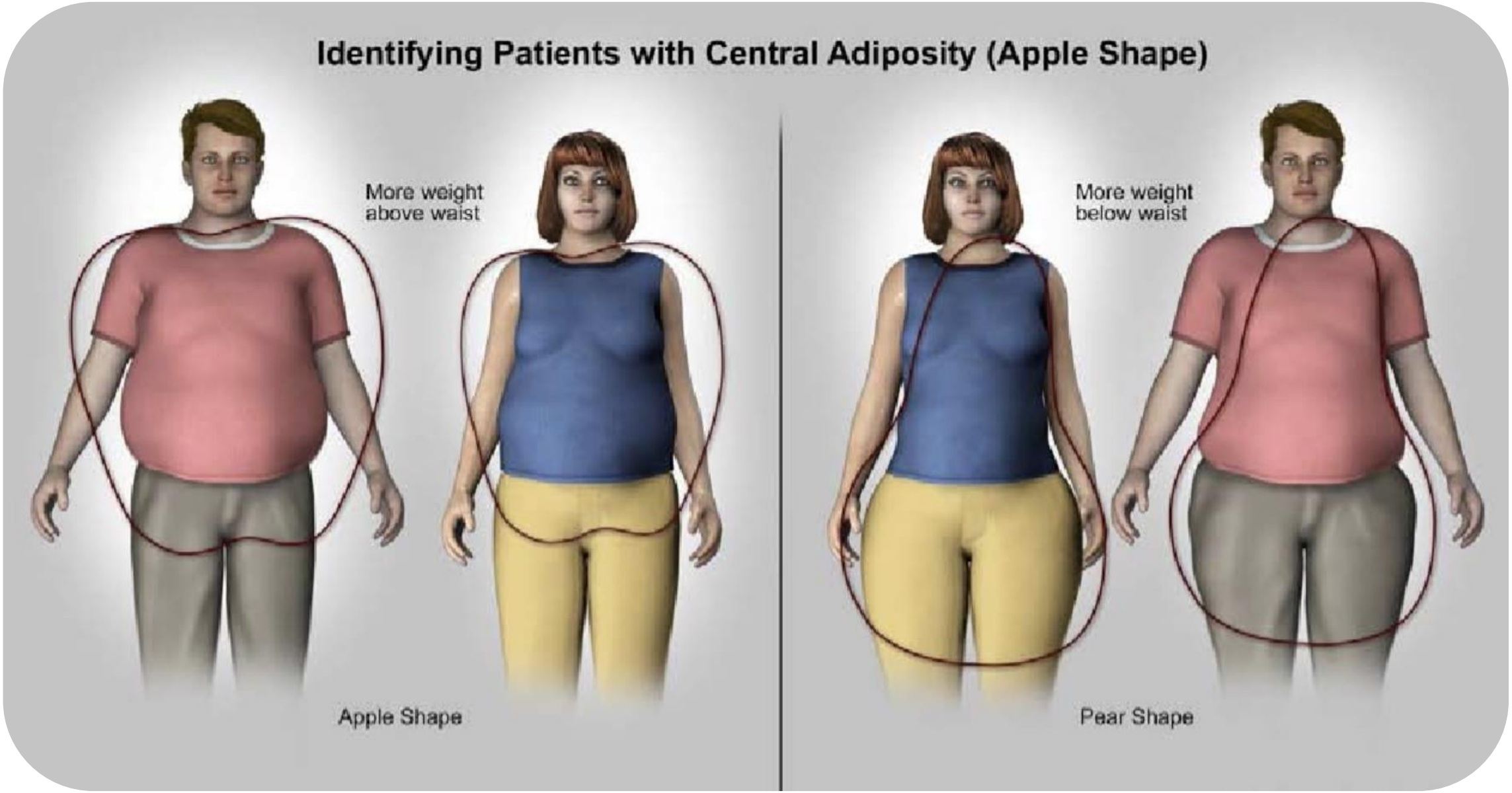


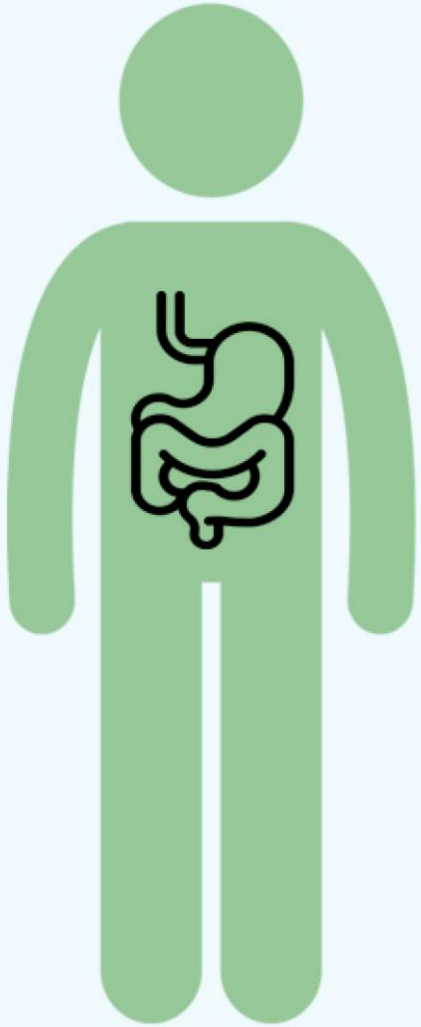
Oorzaken?

Volwassen patiënt met obesitas

Oorzaak	Voorbeelden
Leefstijl	• Obstructief slaapapneu syndroom • Overmatig alcoholgebruik • Hoogcalorische of nachtelijke voedselinname • Jojo-effecten (door zeer laag-calorische diëten) • Immobiliteit of verminderde mobiliteit (trauma, ziekte, pijn)
Mentaal	• Depressie • Boulimia nervosa • Binge-eating disorder
Medicijnen	• Corticosteroïden (lokaal, tabletten of injecties) • Bètablokkers (metoprolol, propranolol) • Antidepressiva (mirtazapine, amitriptyline) • Antipsychotica (clozapine) • Anti-epileptica (pregabaline) • Insuline • Protonpomp-remmers • Allergiemiddelen (antihistaminica) • Anticonceptiepil
Hormonaal	• Traagwerkende schildklier • Tekort aan geslachtshormonen • Polycysteus ovarium syndroom • Syndroom van Cushing (teveel stresshormoon cortisol) • Groeihormoon tekort
Regelcentrum in hersenen	• Schade aan hypothalamus (regelcentrum in hersenen dat onder andere eetlust en stofwisseling aanstuurt) • Tumor in de hypothalamus

Oorzaak	Voorbeelden
Genetisch	• Afwijking in het DNA van één gen, bijvoorbeeld MC4 receptor, POMC, leptine • Syndromen, bijvoorbeeld Prader-Willi syndroom, Bardet-Biedl syndroom, Alström syndroom, 16p11.2 deletie syndroom


Identifying Patients with Central Adiposity (Apple Shape)
More weight
above waist
More weight
below waist
Apple Shape
Pear Shape



Normal/ Non-obese

↑ Bacteroidetes
↑ Proteobacteria
↑ Diversity + stability

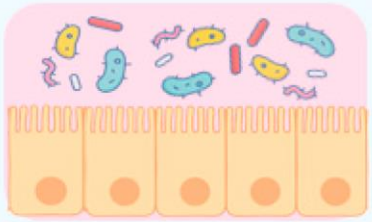
↑ TJ integrity
↑ IEC differentiation
↑ SFCA production

↑ Insulin sensitivity
↑ Adaptive immunity
↓ Inflammation
↓ CVD risk

Balanced Microbiome

Gut Microbiome

Gut Epithelium



Metabolic Outcomes

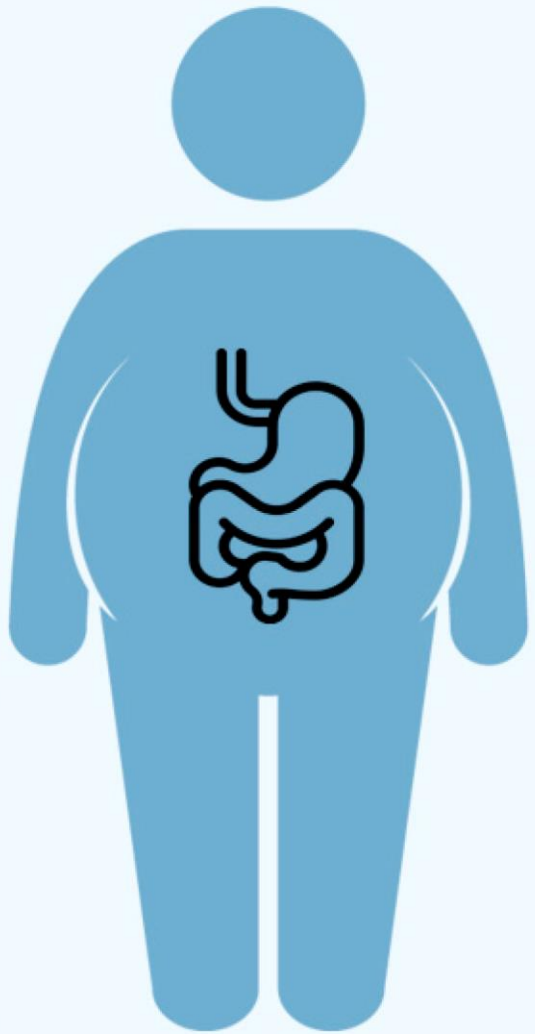
Obese/ MetS

↑ Firmicutes
↑ Gram negative
↓ Diversity + Stability

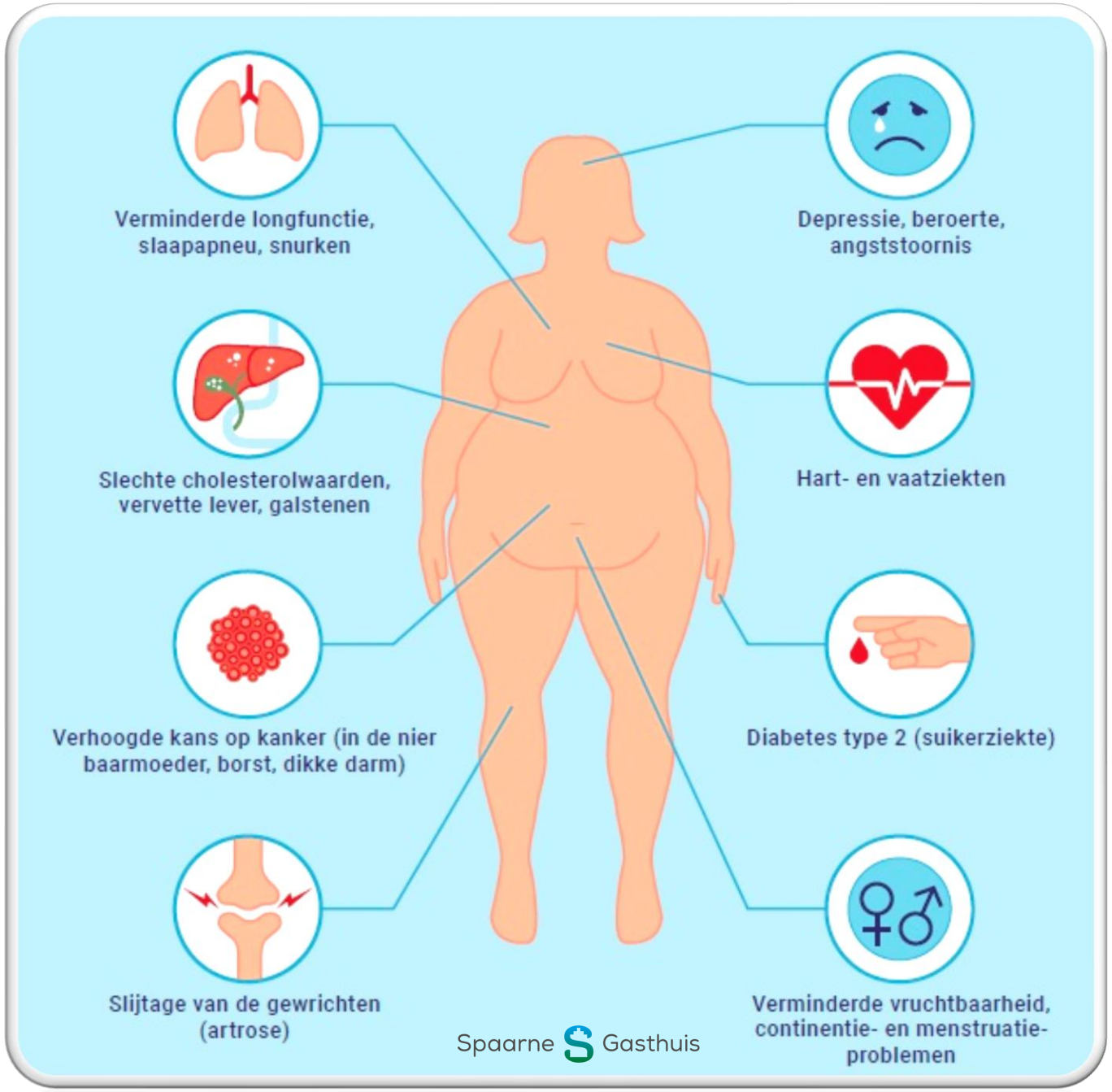
↑ LPS, inflammation
↓ TJ integrity
↓ Energy harvest

↑ Insulin resistance
↑ LDL-C, triglycerides
↑ Adiposity
↑ Insulin resistance

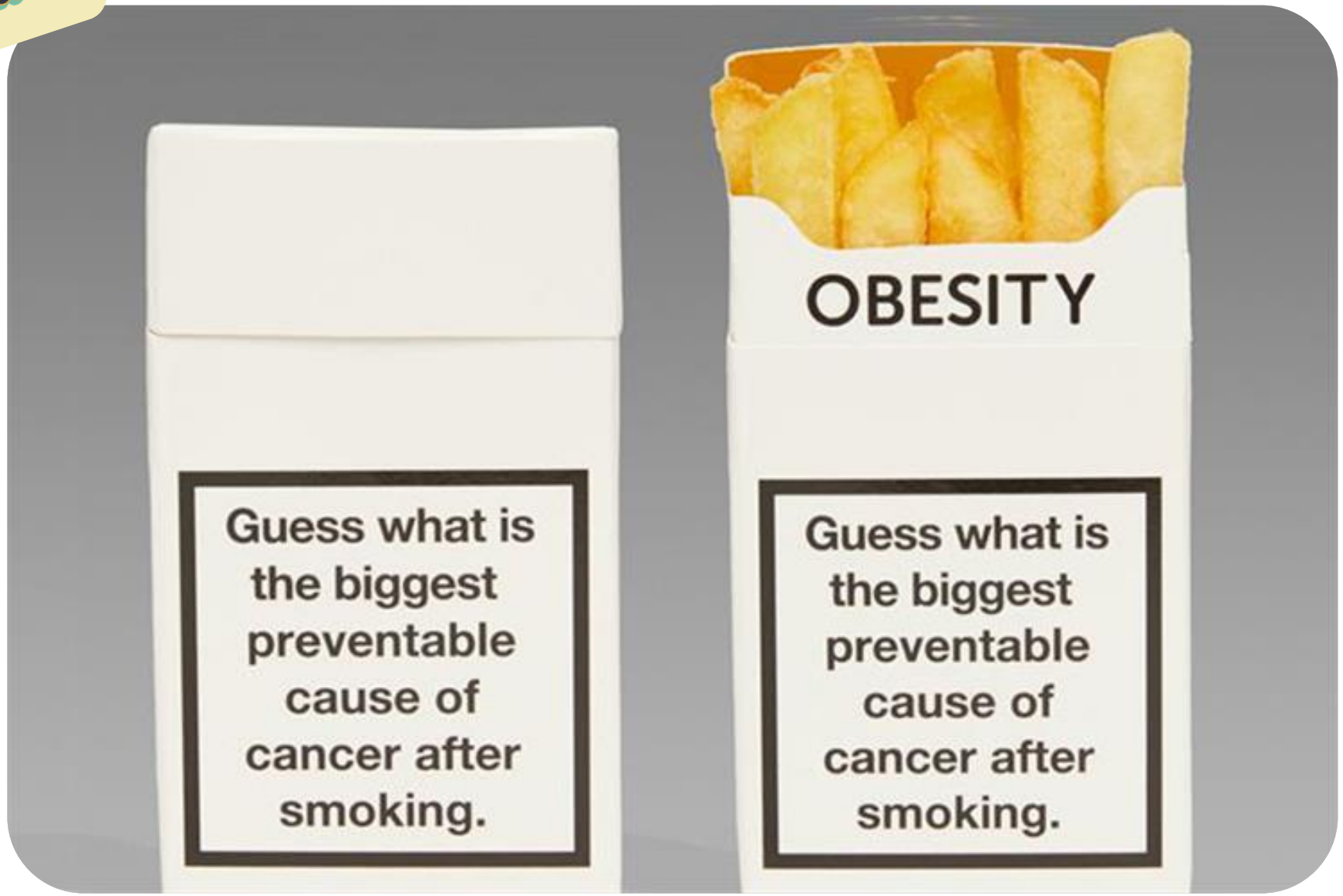
Dysbiotic Microbiome



BAD NEWS

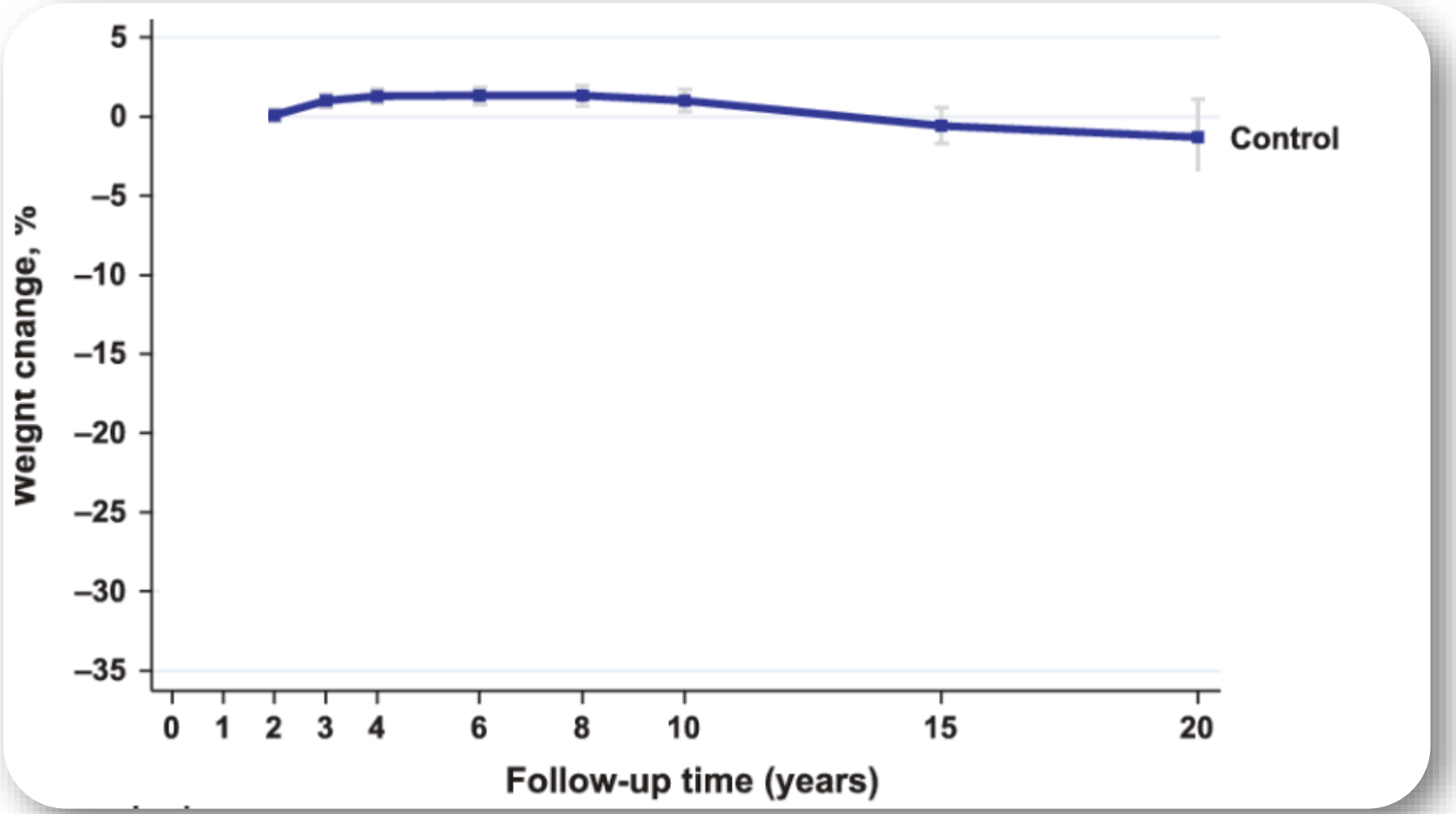

Verminderde longfunctie, slaapapneu, snurken
Depressie, beroerte, angststoornis
Slechte cholesterolwaarden, vervette lever, galstenen
Hart- en vaatziekten
Verhoogde kans op kanker (in de nier baarmoeder, borst, dikke darm)
Diabetes type 2 (suikerziekte)
Slijtage van de gewrichten (artrose)
Verminderde vruchtbaarheid, continentie- en menstruatie-problemen
Spaarne Gasthuis

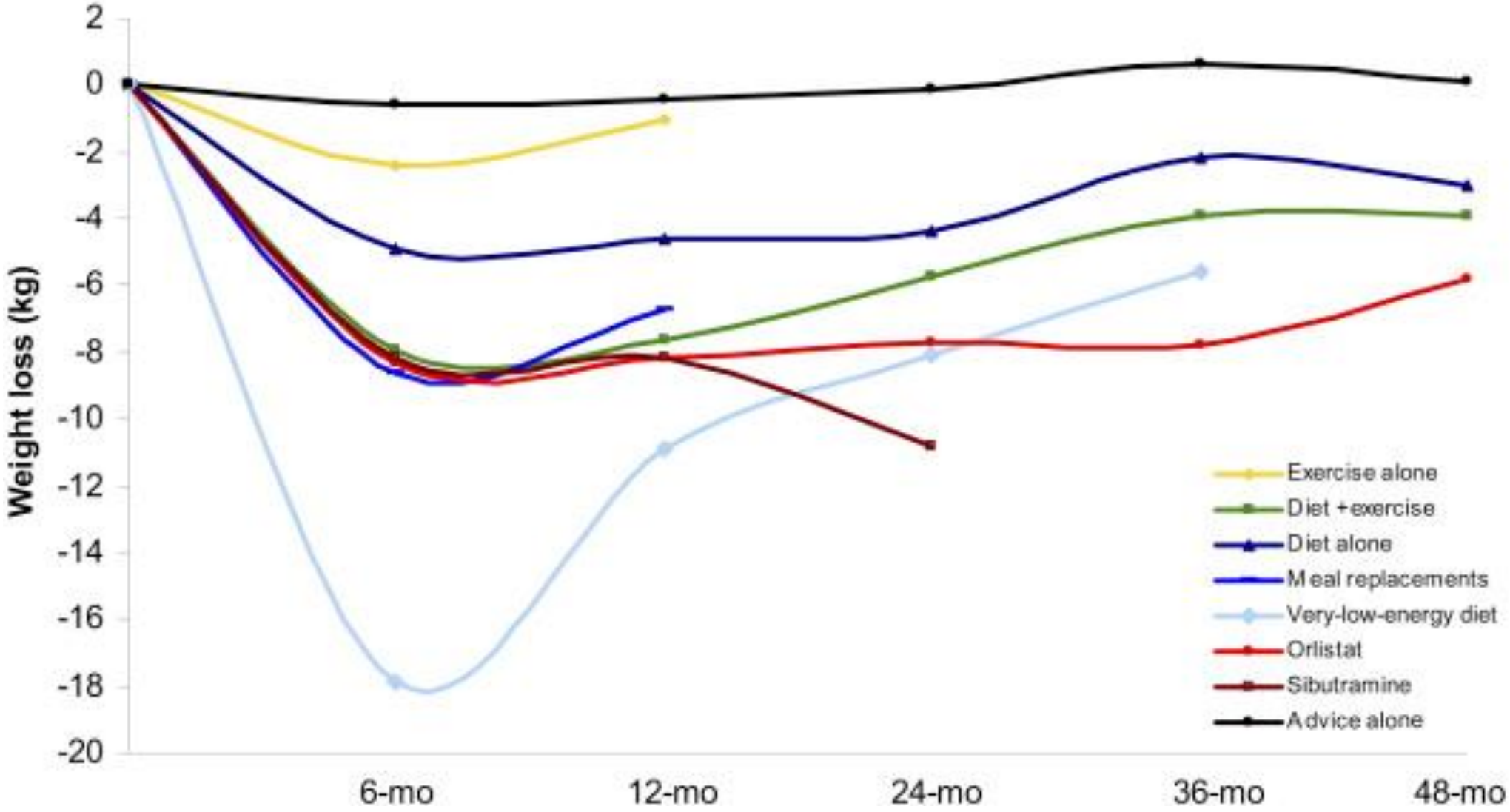
Wist je dat?


Guess what is the biggest preventable cause of cancer after smoking.
OBESITY
Guess what is the biggest preventable cause of cancer after smoking.


KEEP
CALM
AND
LOSE
WEIGHT

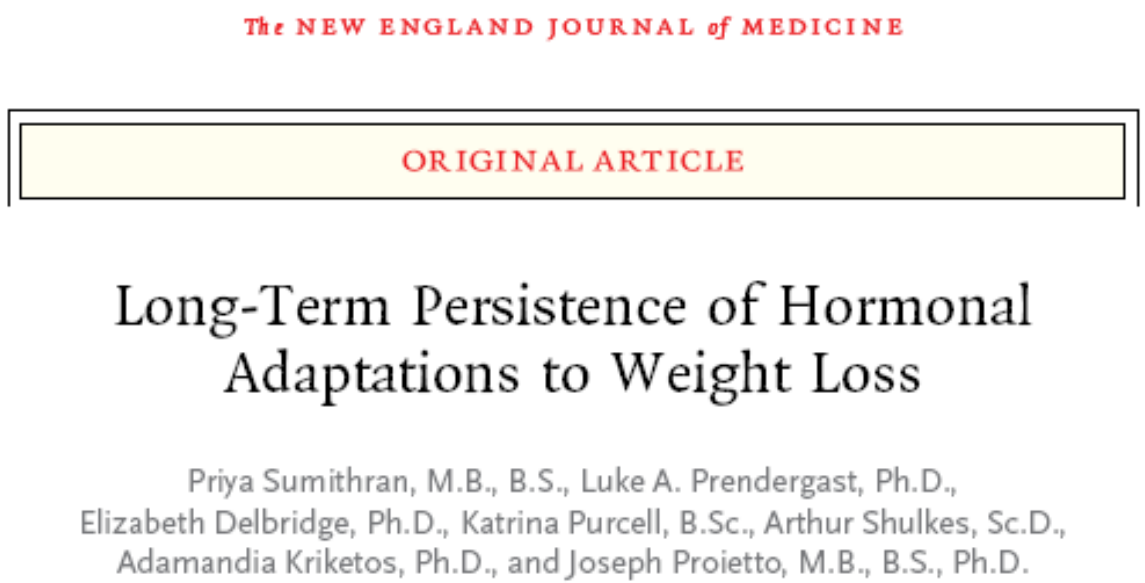
gewichtsverlies met o.a.dieet




Weight loss (kg)
2
0
-2
-4
-6
-8
-10
-12
-14
-16
-18
-20
6-mo
12-mo
24-mo
36-mo
48-mo
Exercise alone
Diet +exercise
Diet alone
Meal replacements
Very-low-energy diet
Orlistat
Sibutramine
Advice alone


BEFORE
AFTER
AFTER
THE AFTER

jo-jo effect



The NEW ENGLAND JOURNAL of MEDICINE

ORIGINAL ARTICLE

Long-Term Persistence of Hormonal Adaptations to Weight Loss

Priya Sumithran, M.B., B.S., Luke A. Prendergast, Ph.D., Elizabeth Delbridge, Ph.D., Katrina Purcell, B.Sc., Arthur Shulkes, Sc.D., Adamandia Kriketos, Ph.D., and Joseph Proietto, M.B., B.S., Ph.D.

- Ghreline
- GLP-1
- Gastric inhibitory polypeptide (GIP)
- Amylin
- Peptide YY (PYY)
- Insuline
- Leptine
- Cholecystokinine (CKK)

hormonen

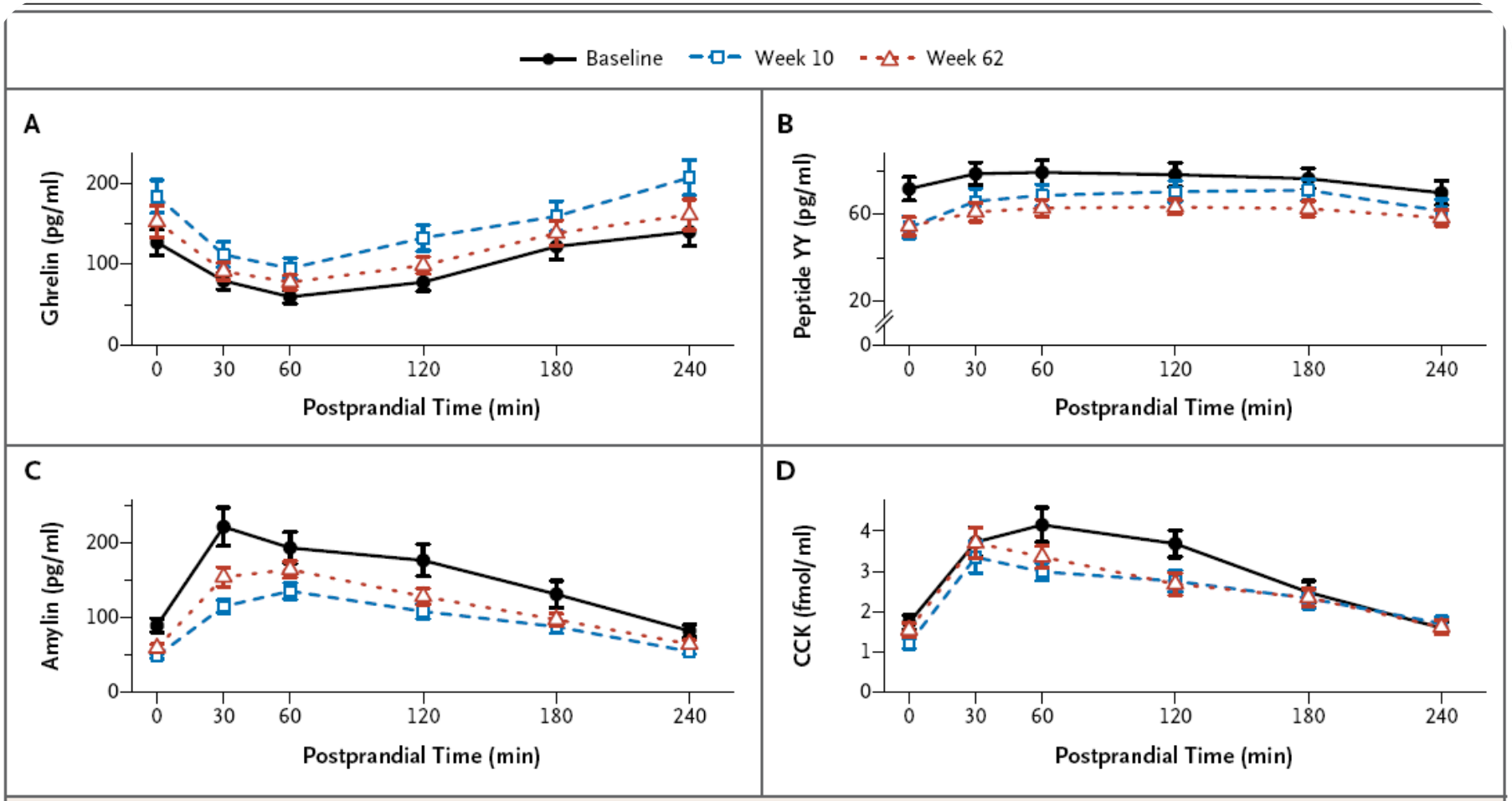


Figure 2. Mean (±SE) Fasting and Postprandial Levels of Ghrelin, Peptide YY, Amylin, and Cholecystokinin (CCK) at Baseline, 10 Weeks, and 62 Weeks.

honger

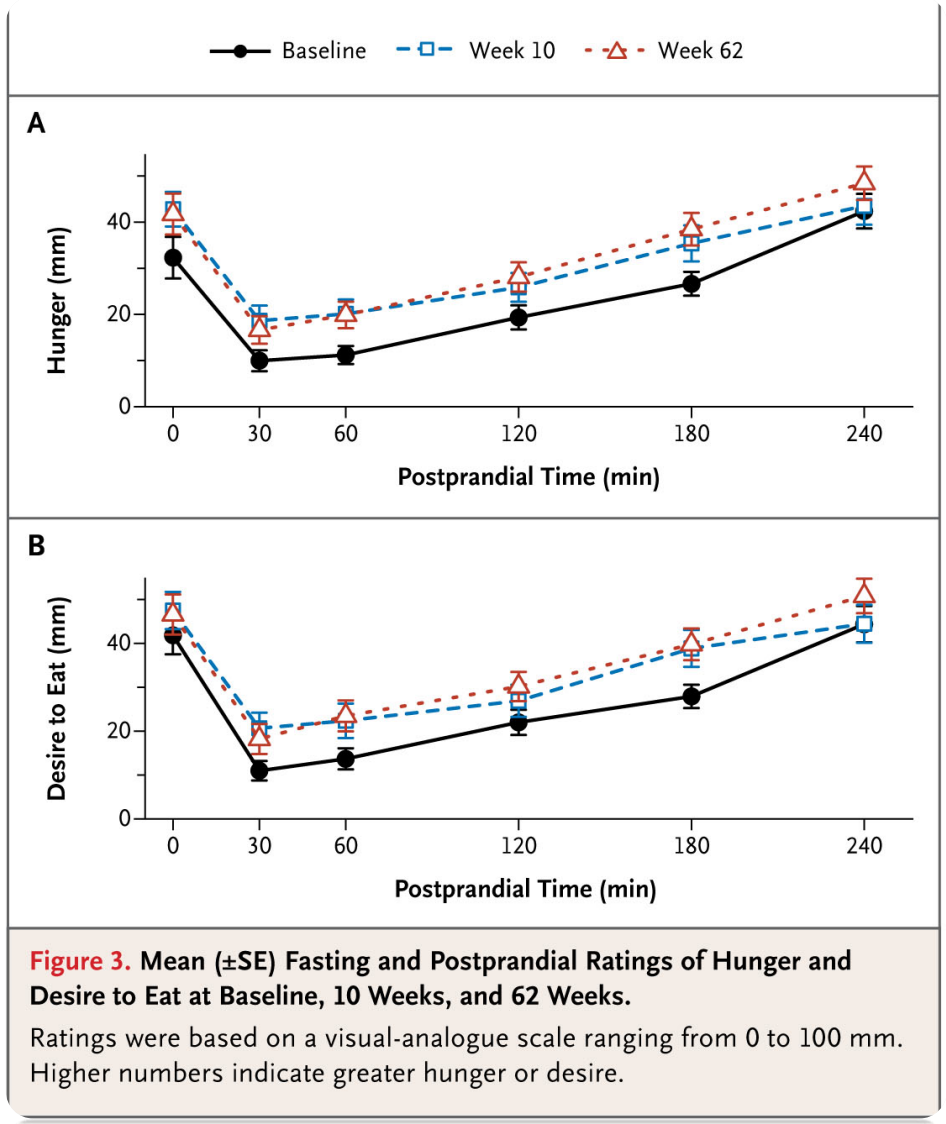


Figure 3. Mean (±SE) Fasting and Postprandial Ratings of Hunger and Desire to Eat at Baseline, 10 Weeks, and 62 Weeks.

Ratings were based on a visual-analogue scale ranging from 0 to 100 mm. Higher numbers indicate greater hunger or desire.

energierekening

Gender: Male

Measure System: Metric Weights

Age: 40

What is your activity level? MODERATELY ACTIVE

CM: 177

Weight: 70

*Use Kilograms for metric weights

Re-Assess My Goal

Healthy BMI Range 18.5 - 24.9

To maintain current weight: 2497 calories

To lose weight: 1997 calories

VS

Gender: Male

Measure System: Metric Weights

Age: 40

What is your activity level? MODERATELY ACTIVE

CM: 177

Weight: 140

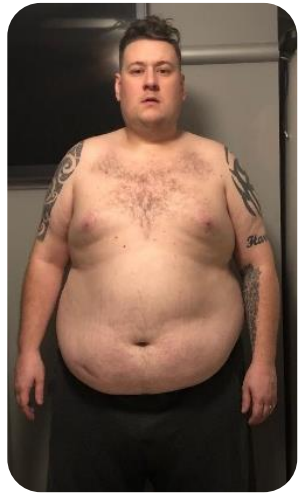
*Use Kilograms for metric weights

Re-Assess My Goal

Healthy BMI Range 18.5 - 24.9

To maintain current weight: 3582 calories

To lose weight: 3082 calories




Spaarne Gasthuis
OBESITAS CHIRURGIE

Metabole chirurgie is een effectieve behandeling voor ernstig overgewicht en **niet een 'last resort'** behandeling die pas in zicht komt nadat andere lifestyle interventies gefaald hebben


REPLACE
FEAR OF
HE UNKNOWN
ITH
URIOSITY

indicaties voor bar-chir

- **BMI ≥ 40 kg/m²**
- **BMI > 35 kg/m² en relevante co-morbiditeiten**
- **BMI ≥ 35 kg/m² patiënt met een Aziatische of Hindoestaanse achtergrond**
- **DM2: BMI 30 tot 35 kg/m² (als alles faalt)**
- **Alle slecht instelbare DM2-pt met BMI 35 en 40 kg/m²**
- **Alle DM2 –pt met BMI > 40 kg/m² (ook de goed ingestelden)**
- **Leeftijd >65 is i.p. geen belemmering**
- **Moeilijk behandelbare astma met BMI boven de 35 kg/m²**

Wist je dat?

Afvalpoging bij diëtist geen voorwaarde meer voor bariatrische chirurgie

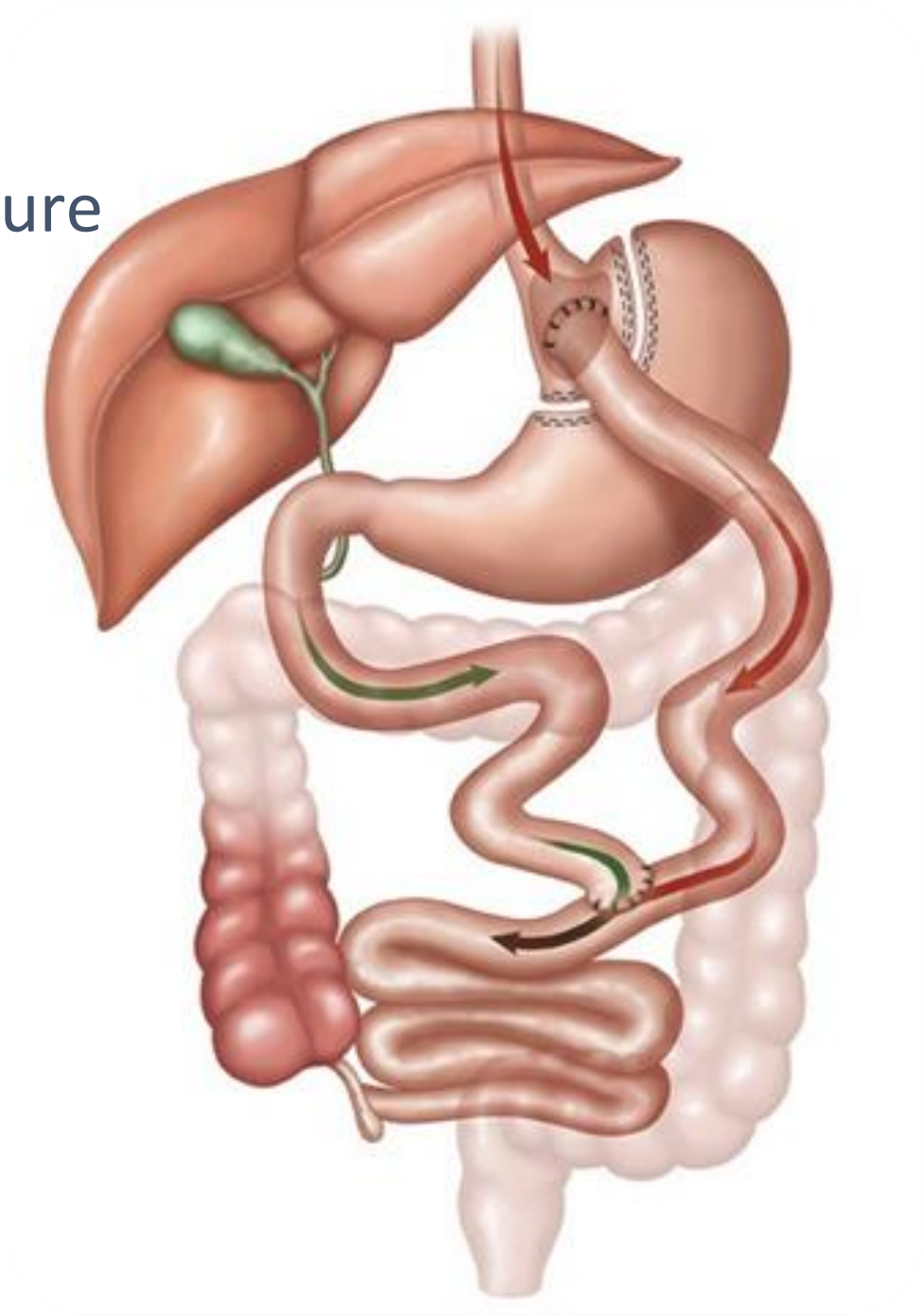
In het verleden werd bariatrische chirurgie beschouwd als een laatste redmiddel. Er waren strikte voorwaarden voor toelating, zoals een serieuze afvalpoging van minimaal 4 maanden onder begeleiding van een diëtist. In de recent verschenen richtlijn “Chirurgische behandeling bij obesitas” is deze voorwaarde geschrapt. Ook zijn de BMI- en leeftijdsgrenzen losgelaten.

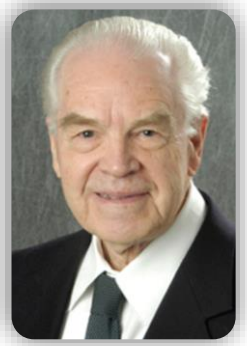
Verruiming van indicatie

De nieuwe richtlijn is een herziening van de richtlijn “Behandeling van morbide obesitas” uit 2011. De naam is aangepast omdat het niet langer meer alleen gaat over morbide obesitas (BMI>40) of ernstig overgewicht (BMI>35) met comorbiditeit. In de nieuwe richtlijn zijn deze BMI-grenzen losgelaten en wordt er een individuele afweging gemaakt. Hierdoor kan bariatrische chirurgie bijvoorbeeld overwogen worden bij slecht ingestelde diabetespatiënten met een BMI vanaf 30 en bij patiënten met een Aziatische of Hindoestaanse achtergrond met een BMI vanaf 35. Ook de leeftijdsgrenzen zijn losgelaten: de ingreep mag ook worden uitgevoerd bij patiënten jonger dan 18 jaar of ouder dan 65 jaar.

Screenings Traject

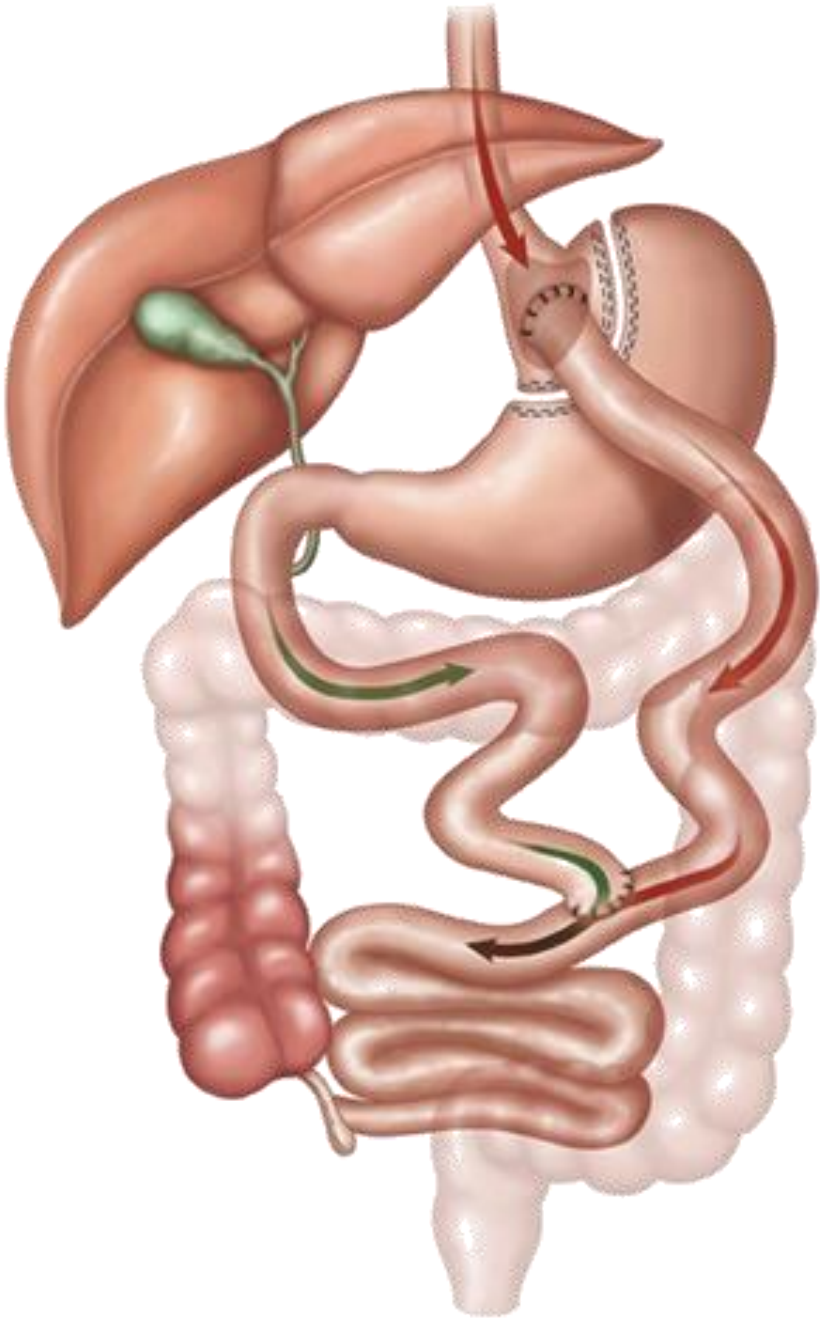
Gastric Bypass Procedure





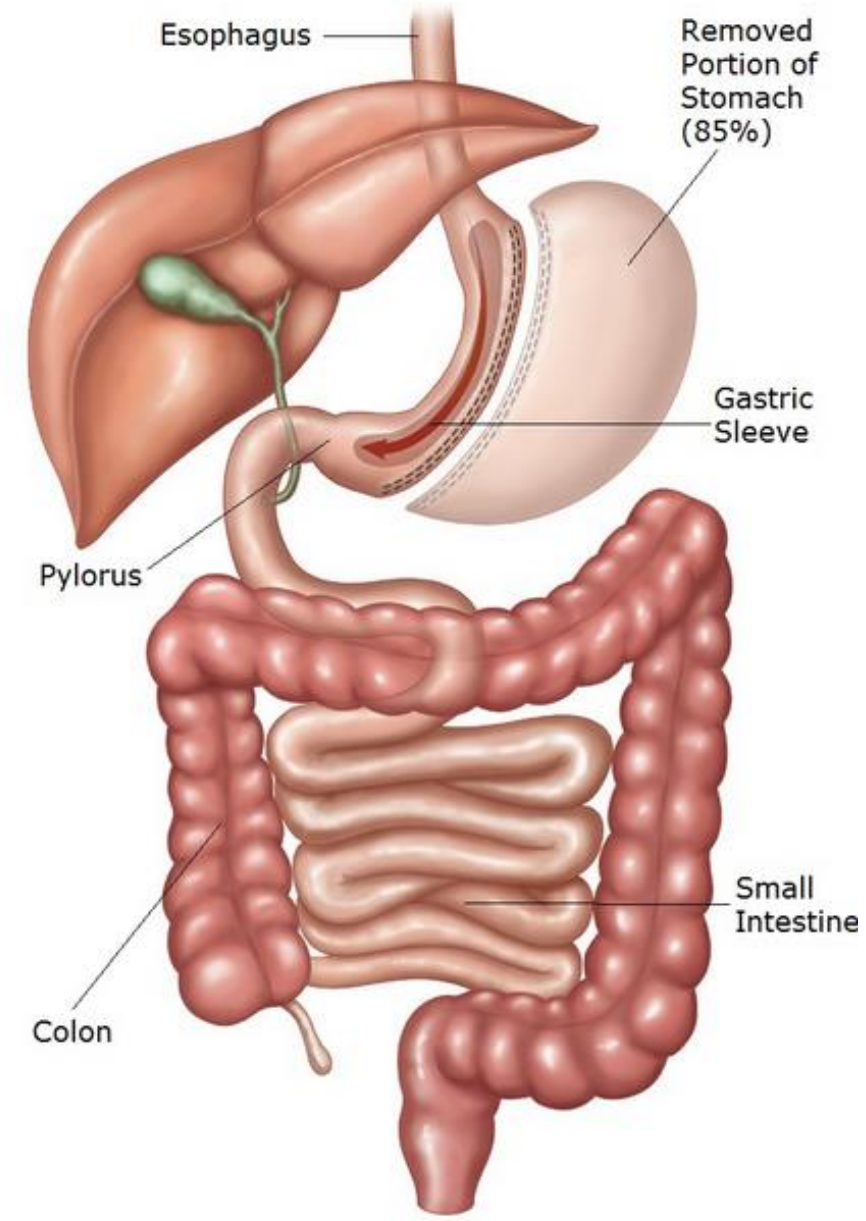
Dr E. Mason,
U of Iowa, 1966

Spaarne Gasthuis



Roux en Y Gastric Bypass

- Golden standard operation
- Mainly restrictive, some malabsorption.
- Pouch: 30-50ml
- Bypassing duodenum, hormonal changes (Ghrelin, GLP-1, PYY, etc)
- TWL: 33% @ 2 yrs
  25% @ 10 yrs
- High rate of diabetes resolution (>75%)



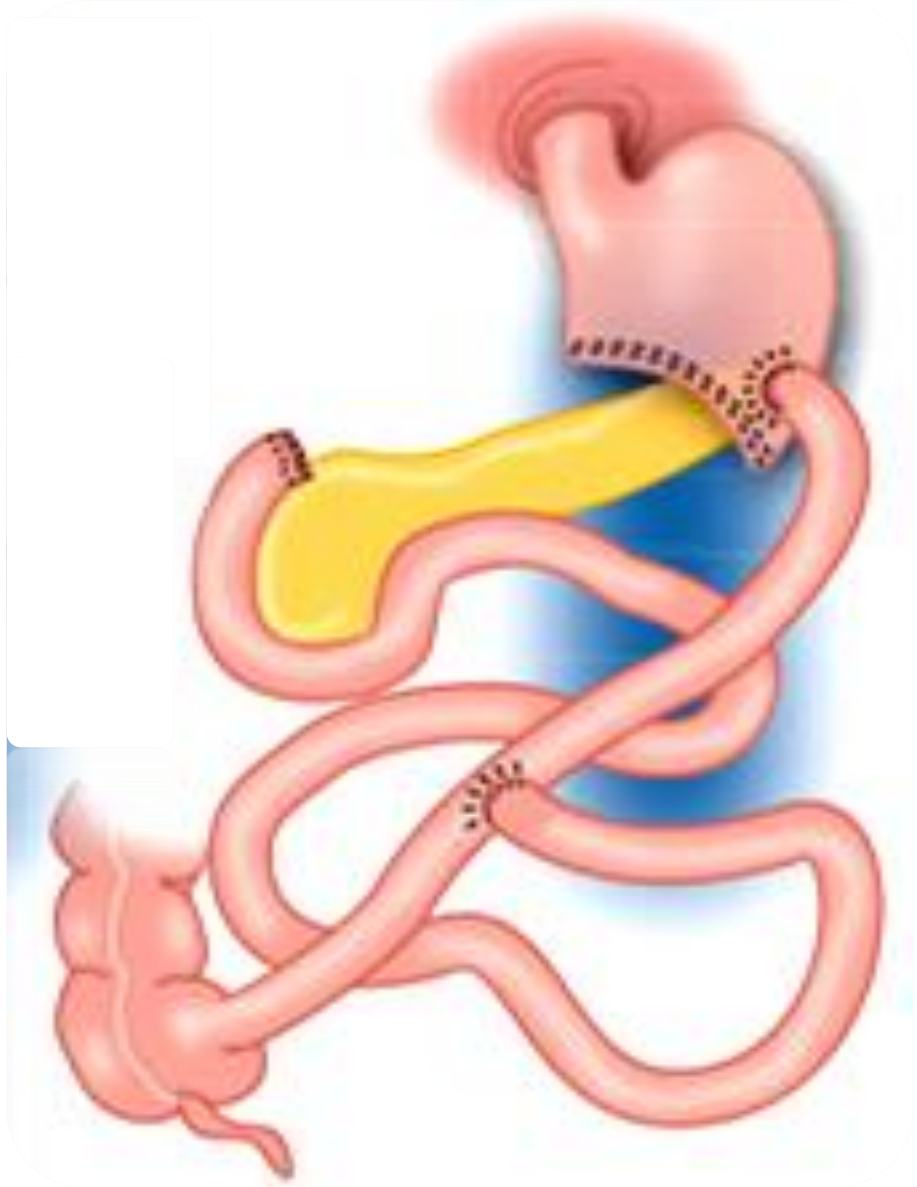
Sleeve gastrectomy

- Restrictive procedure
- 1990
- Possible hormonal changes due to resection of fundus (ghrenlin)
- TWL: +/- 30% @ 2yrs
- Long term results not yet known

Maagband

- 1986
- Reversibele operatie
- 40% hebben 2e operatie nodig
- redo-procedure

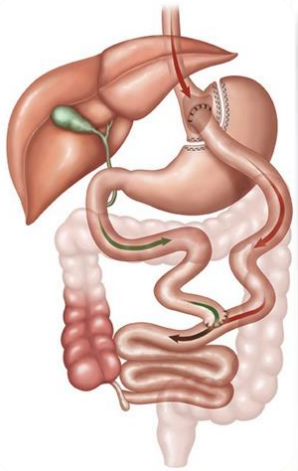
Spaarne Gasthuis



Bilio-Pancreatic Diversion

- Scopinaro procedure
- Malabsorptieve procedure
- Excellent long term weight loss and resolution of co-morbidities
- Hoog risico op deficienties

Spaarne Gasthuis

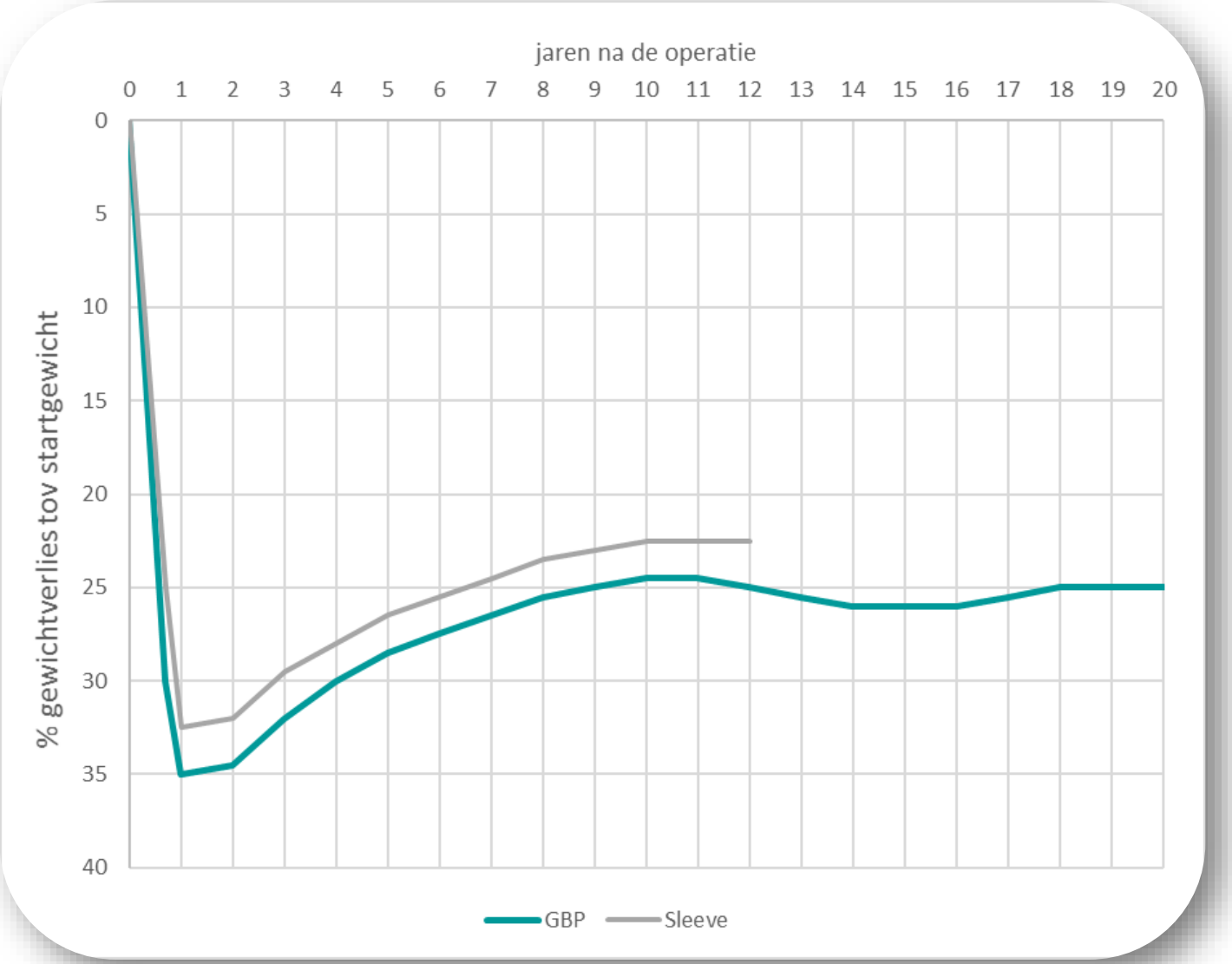


Resultaten
Bariatrische chirurgie

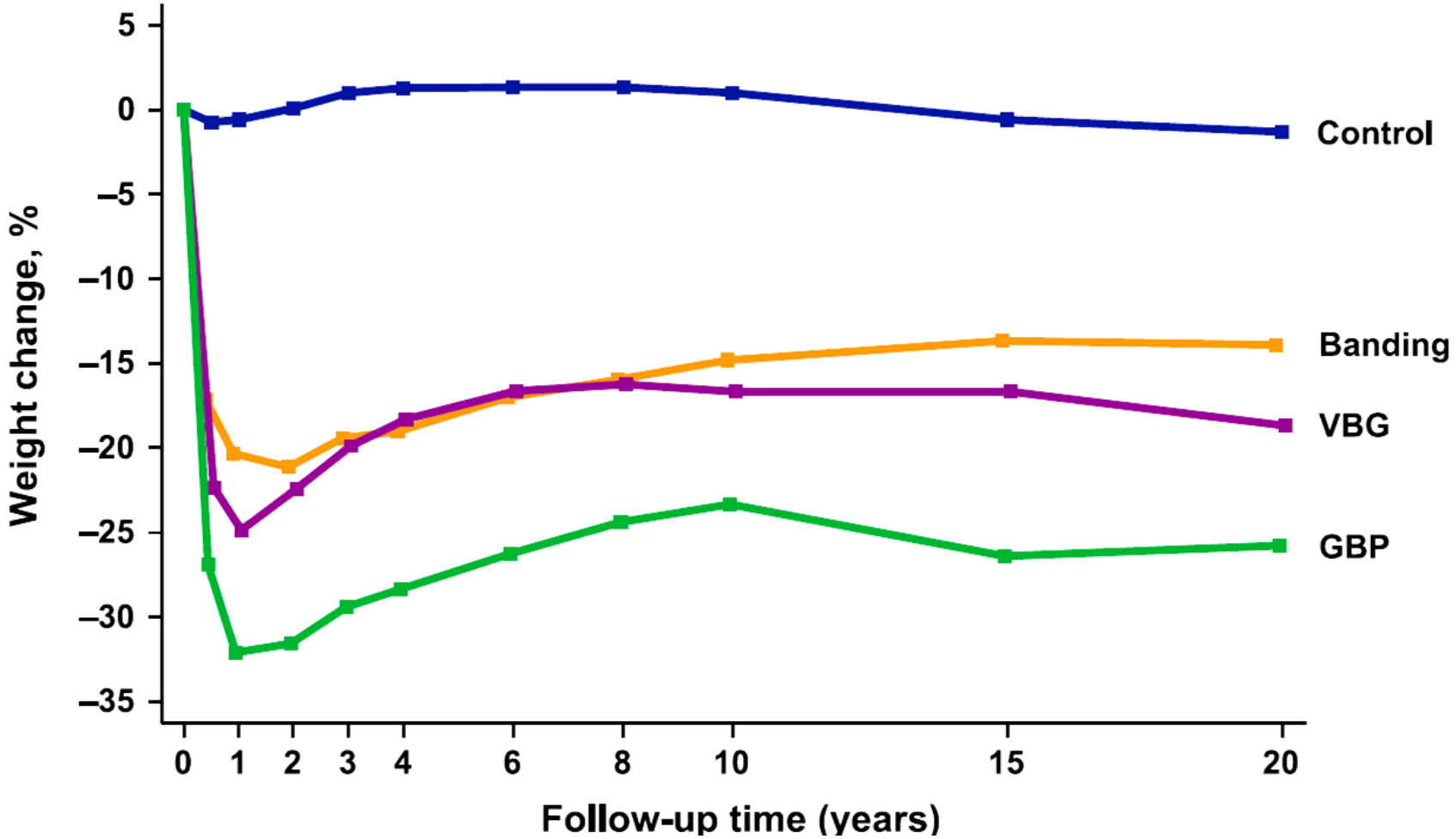
Spaarne Gasthuis Baria Nederland

Gewichtsverlies

Total Weight Loss(TWL- gemiddeld)



SOS update: 20 yrs FU



Who Would Have Thought It?

An Operation Proves to Be the Most Effective Therapy for Adult-Onset Diabetes Mellitus

ANNALS OF SURGERY
Vol. 222, No. 3, 339–352

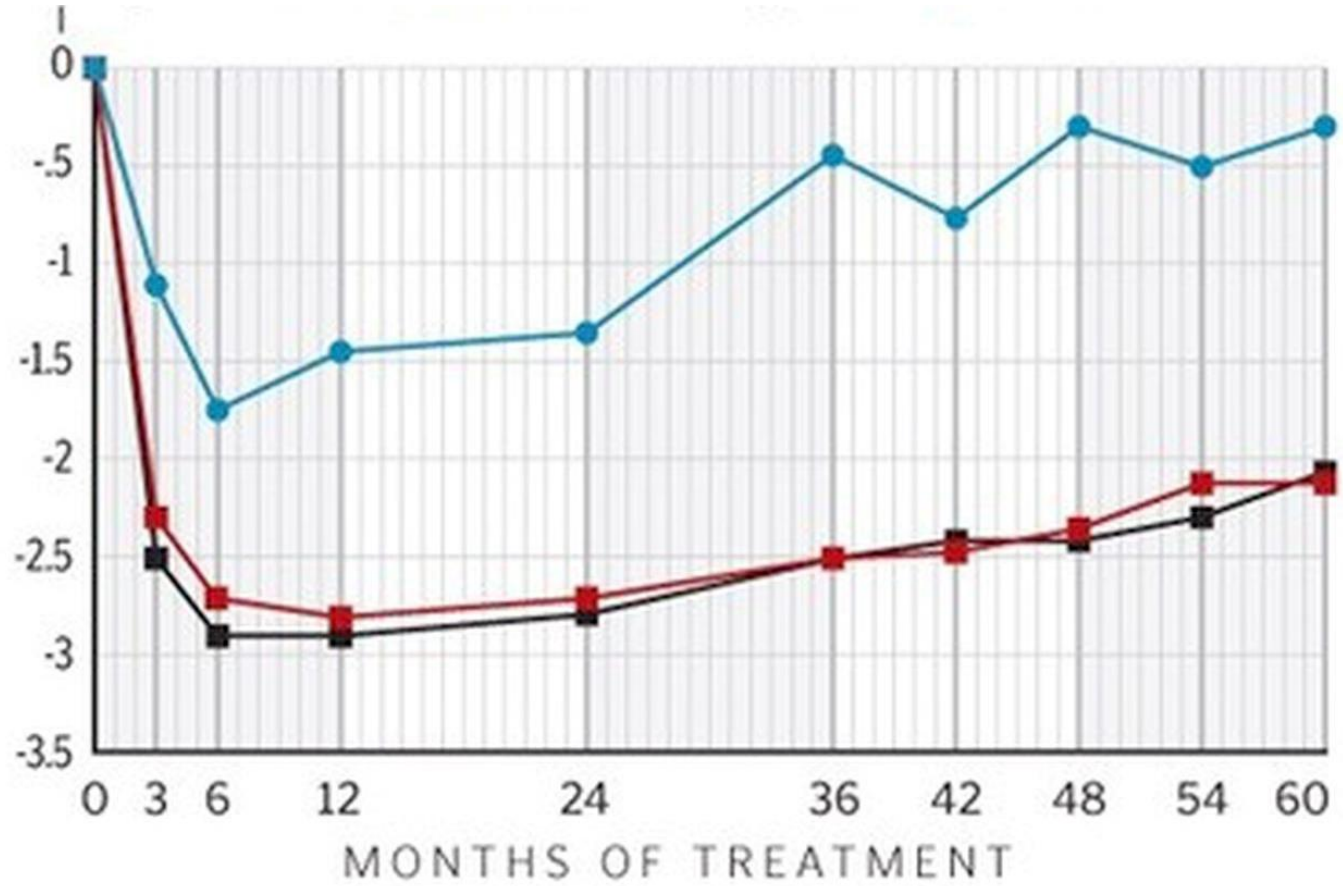
Walter J. Pories, M.D., Melvin S. Swanson, Ph.D., Kenneth G. MacDonald, M.D., Stuart B. Long, B.S., Patricia G. Morris, B.S.N., Brenda M. Brown, M.R.A., Hisham A. Barakat, Ph.D., Richard A. deRamon, M.D., Gay Israel, Ed.D., Jeanette M. Dolezal, Ph.D., and Lynis Dohm, Ph.D.

From the Departments of Surgery and Biochemistry of the School of Medicine and the Human Performance Laboratory of East Carolina University, Greenville, North Carolina

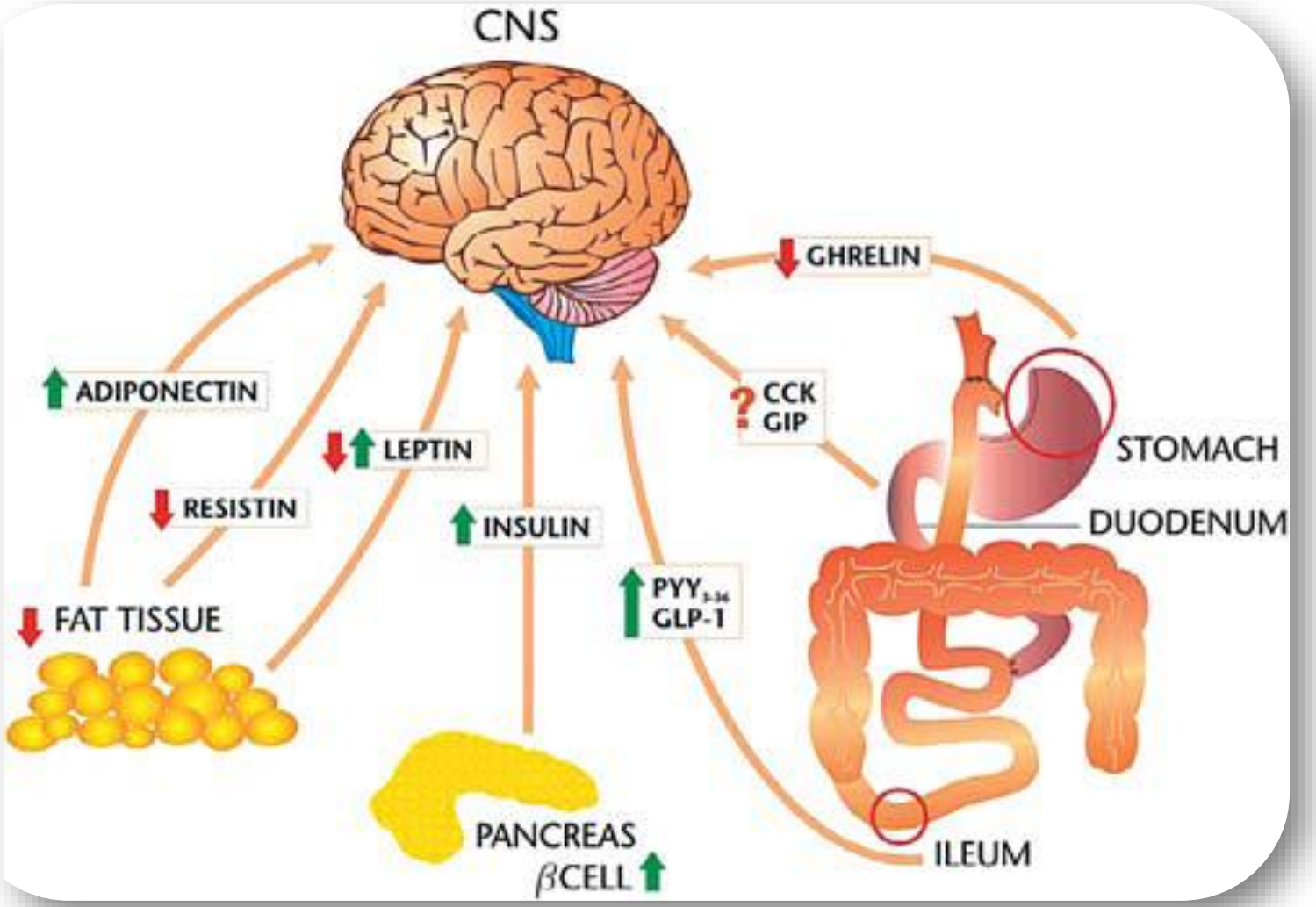
Walter J. Pories
Professor of Surgery, Biochemistry and Kinesiology
East Carolina University, USA

Mean changes in blood glucose by type of diabetes control, baseline to 5 years

Shown are the percentage change in glycated hemoglobin (HbA1c) levels over a 5-year period among patients receiving intensive medical therapy only, sleeve gastrectomy, or gastric bypass. Glycated hemoglobin is a type of blood protein used to measure glucose in the bloodstream.

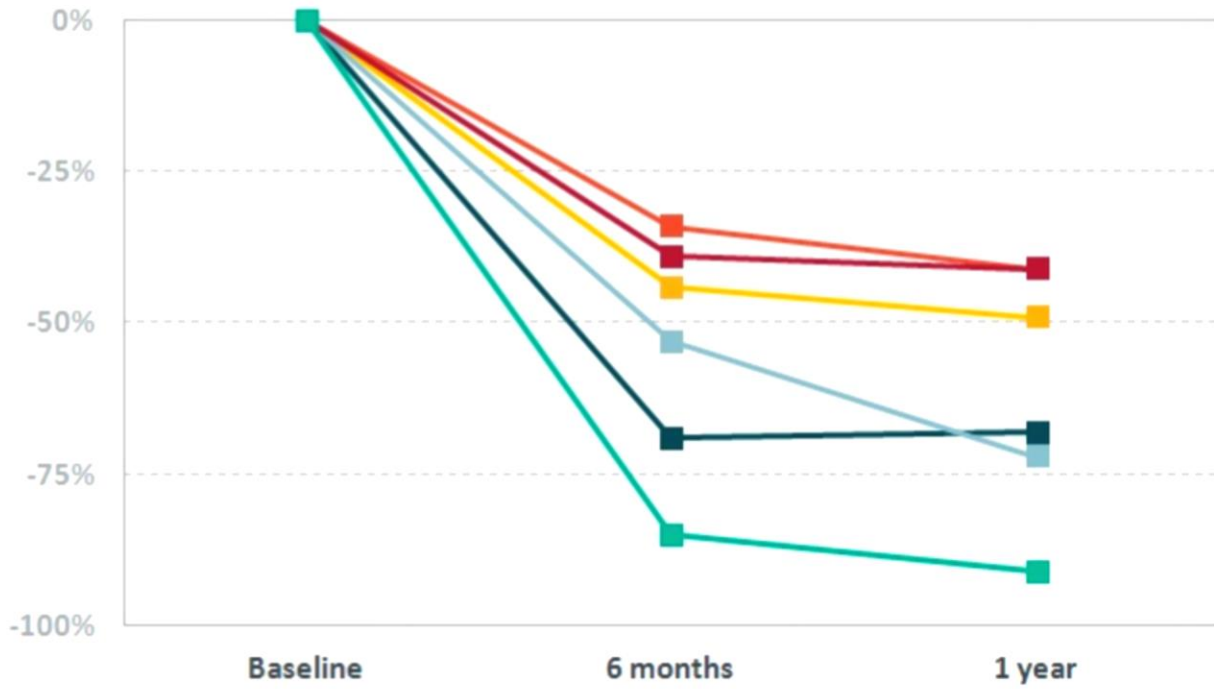


Hormonen na bariatrische chirurgie



The International Federation for the Surgery of Obesity and Metabolic Disorders

Patients can expect significant reductions in obesity-related conditions



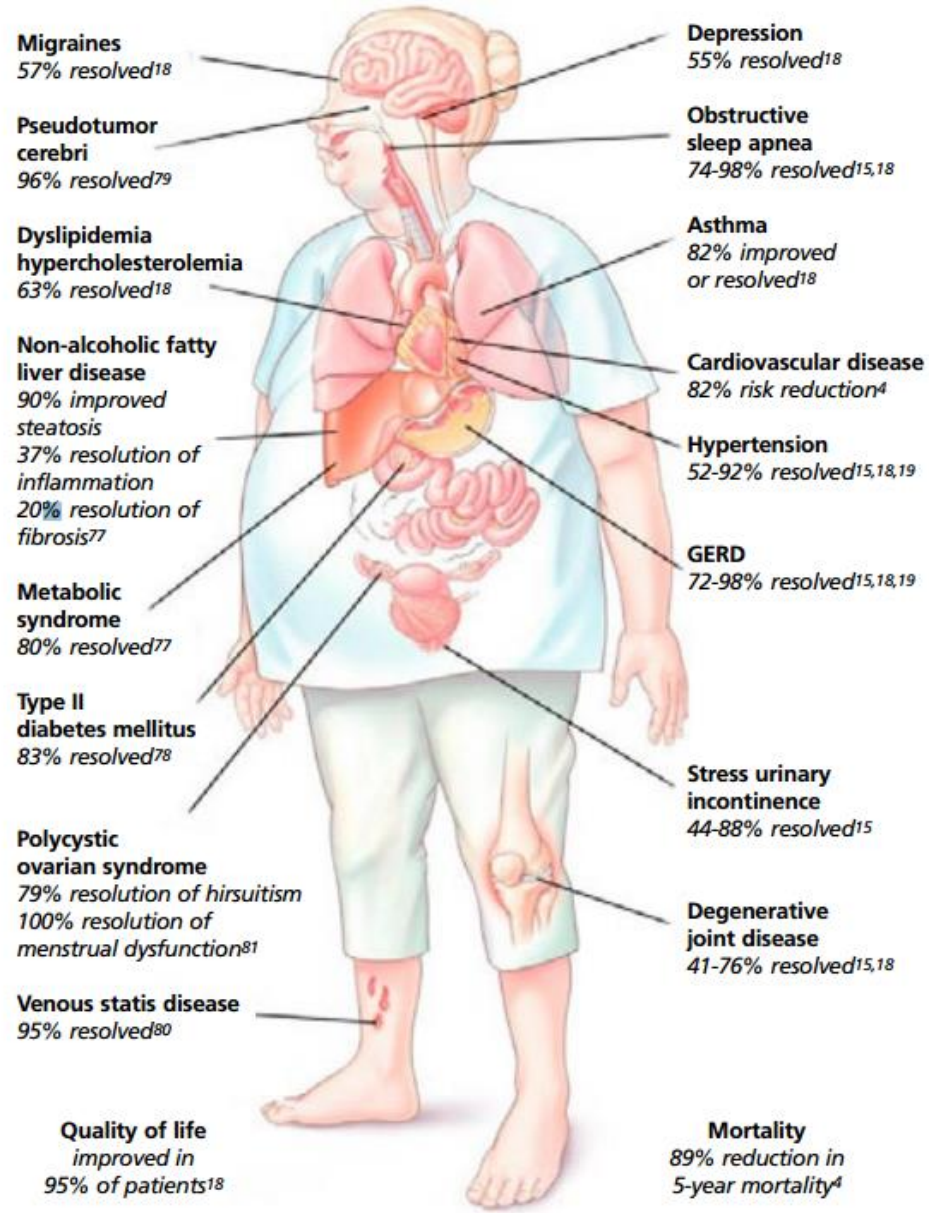
KEY

- Hyperlipidemia
- Hypertension
- Sleep apnea
- Reflux
- Diabetes
- Reduction in one or more conditions

Effect op co-morbiditeit

	DM2	hyperchol	HT	OSAS
Band	47.8%	71.1%	38.4%	94.6%
GBP	83.8%	93.6%	75.4%	86.6%
BPD/DS	97.9%	99.5%	81.3%	95.2%

Benefits of bariatric surgery



Migraines
57% resolved[18]

Pseudotumor cerebri
96% resolved[79]

Dyslipidemia hypercholesterolemia
63% resolved[18]

Non-alcoholic fatty liver disease
90% improved steatosis
37% resolution of inflammation
20% resolution of fibrosis[77]

Metabolic syndrome
80% resolved[77]

Type II diabetes mellitus
83% resolved[78]

Polycystic ovarian syndrome
79% resolution of hirsuitism
100% resolution of menstrual dysfunction[81]

Venous statis disease
95% resolved[80]

Quality of life
improved in 95% of patients[18]

Depression
55% resolved[18]

Obstructive sleep apnea
74-98% resolved[15,18]

Asthma
82% improved or resolved[18]

Cardiovascular disease
82% risk reduction[4]

Hypertension
52-92% resolved[15,18,19]

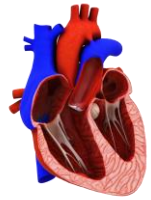
GERD
72-98% resolved[15,18,19]

Stress urinary incontinence
44-88% resolved[15]

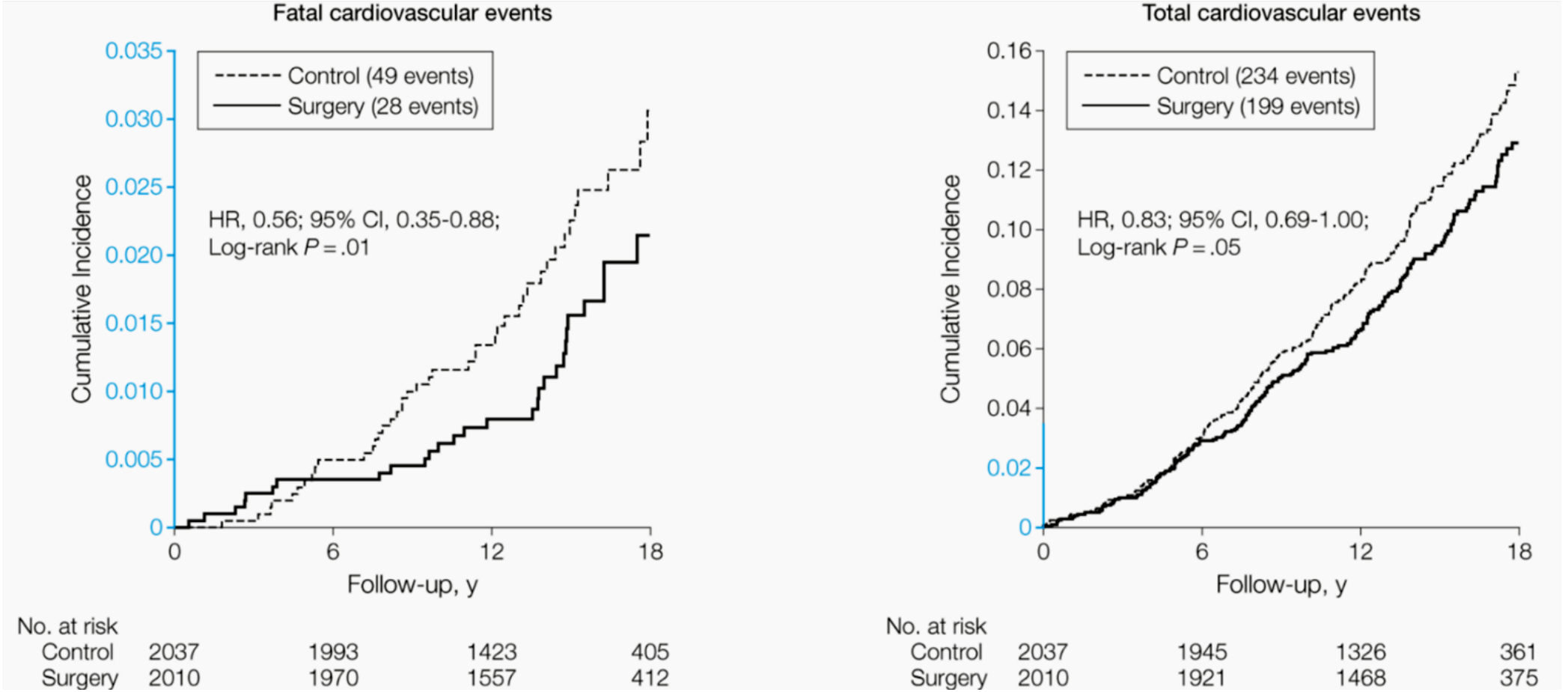
Degenerative joint disease
41-76% resolved[15,18]

Mortality
89% reduction in 5-year mortality[4]

Cardiovascular events

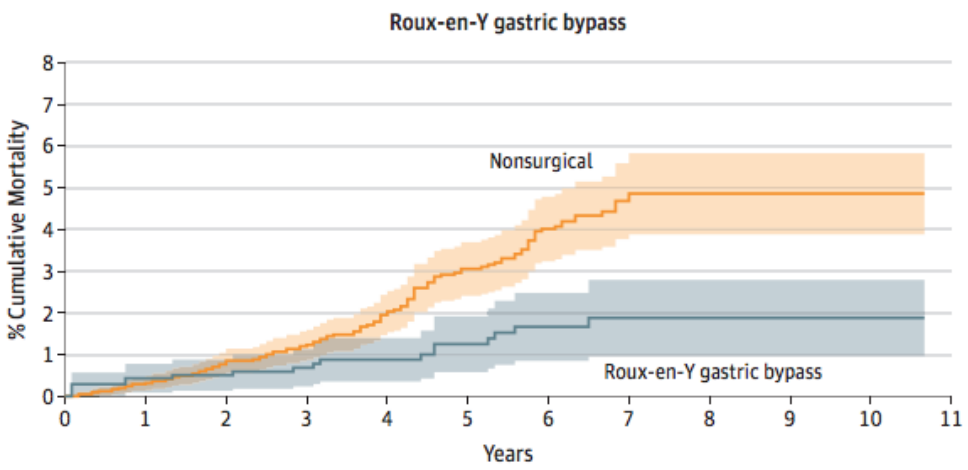


- Bariatric Surgery and Long-term Cardiovascular Events, JAMA. 2012;307(1)

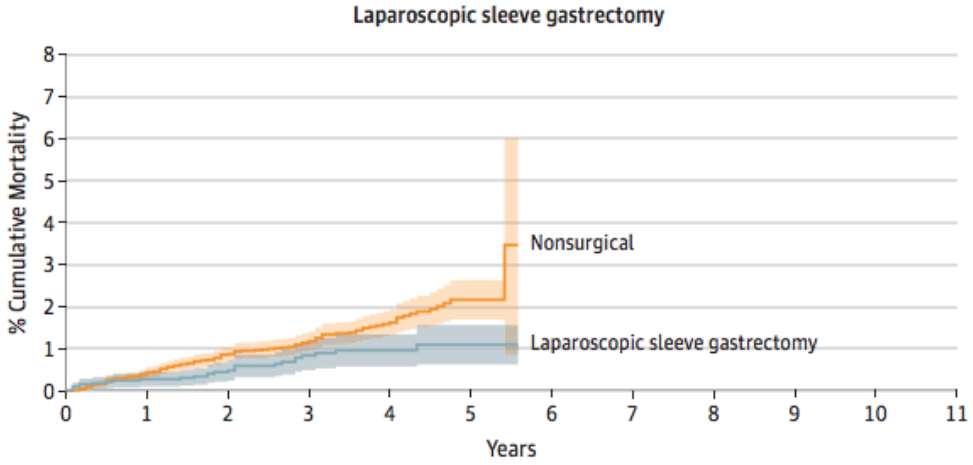


Overleving bariatrische chirurgie

JAMA January 16, 2018 Volume 319, Number 3



No. of patients											
Nonsurgical	4164	4073	3450	2930	2383	2022	1681	536	136	48	10
Roux-en-Y gastric bypass	1388	1332	1202	1044	867	753	636	209	53	20	5

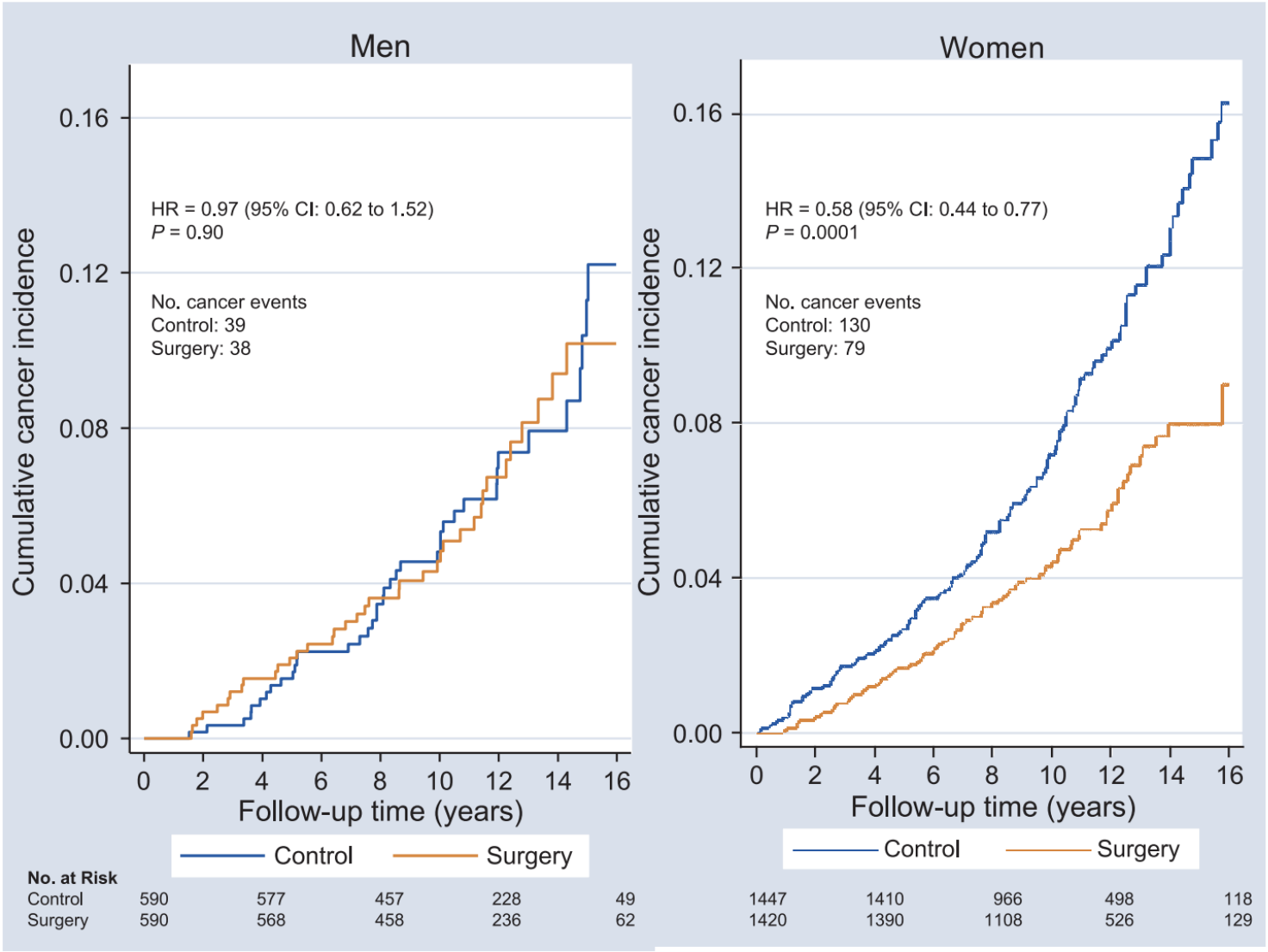


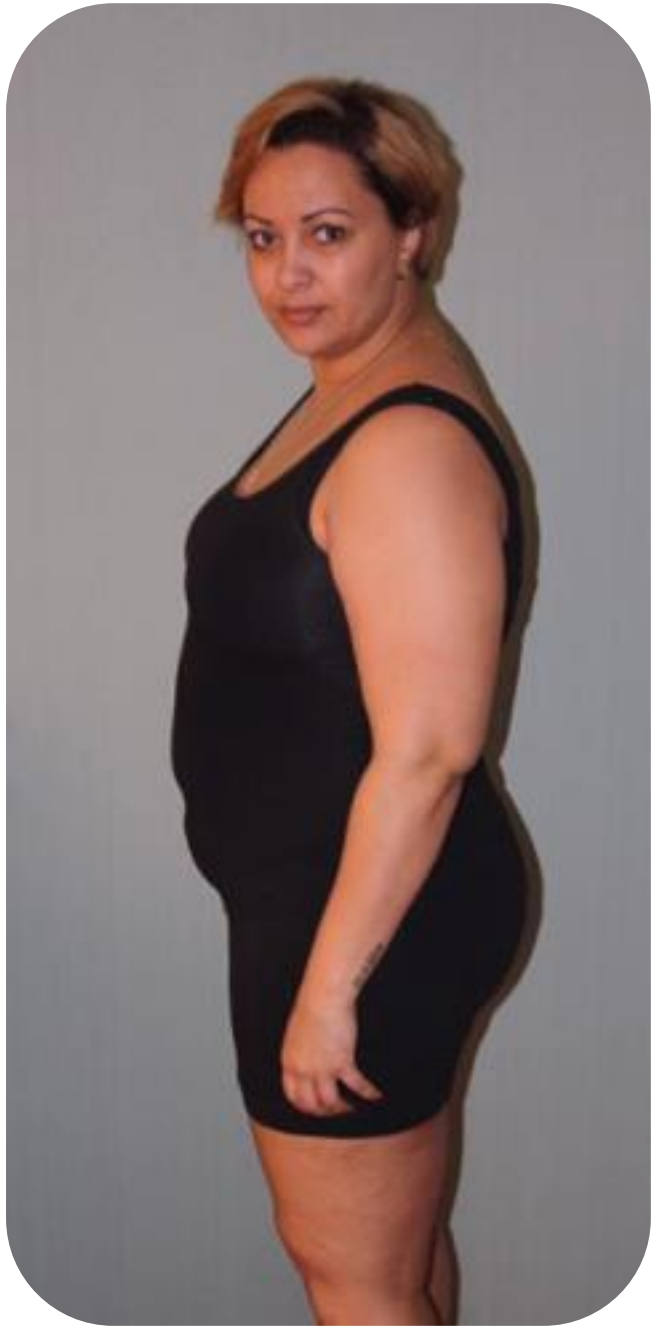
No. of patients						
Nonsurgical	10086	9789	7748	5044	2729	772
Laparoscopic sleeve gastrectomy	3362	3353	2721	1808	1008	292

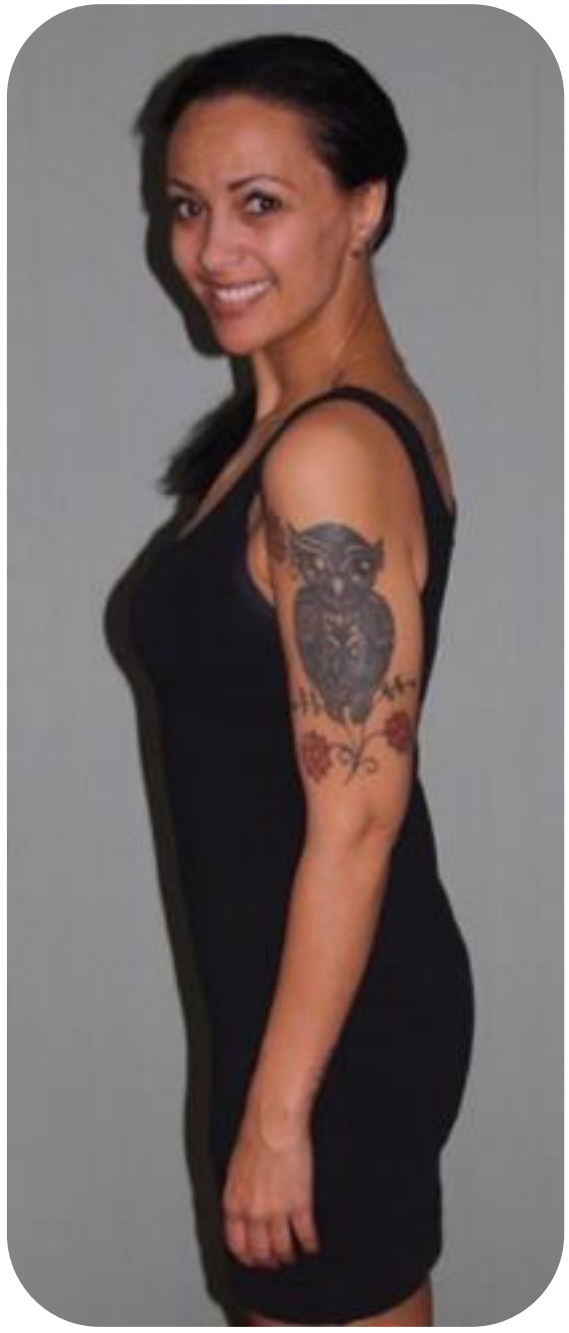
Bariatrie reduceert:

- Mortaliteit (NEJM 2007)
- Cardiovasculaire events (JAMA 2012)
- Overall Cancer (Lancet Oncol 2009)
- Female cancer (Gynecol oncol 2017)
- Preventief DM (NEJM 2012)
- Remissie DM (JAMA 2014 & Lancet 2017)
- Reductie ziektekosten (Lancet 2015)

Fig. 6 *Unadjusted cumulative fatal plus nonfatal cancer incidence by gender during 16 years of follow-up in surgically treated obese individuals and in obese control individuals in the Swedish Obese Subjects study. Calculations are based on data available on 31 December 2005. From Sjöström L et al., Lancet Oncol 2009 with permission [36].*





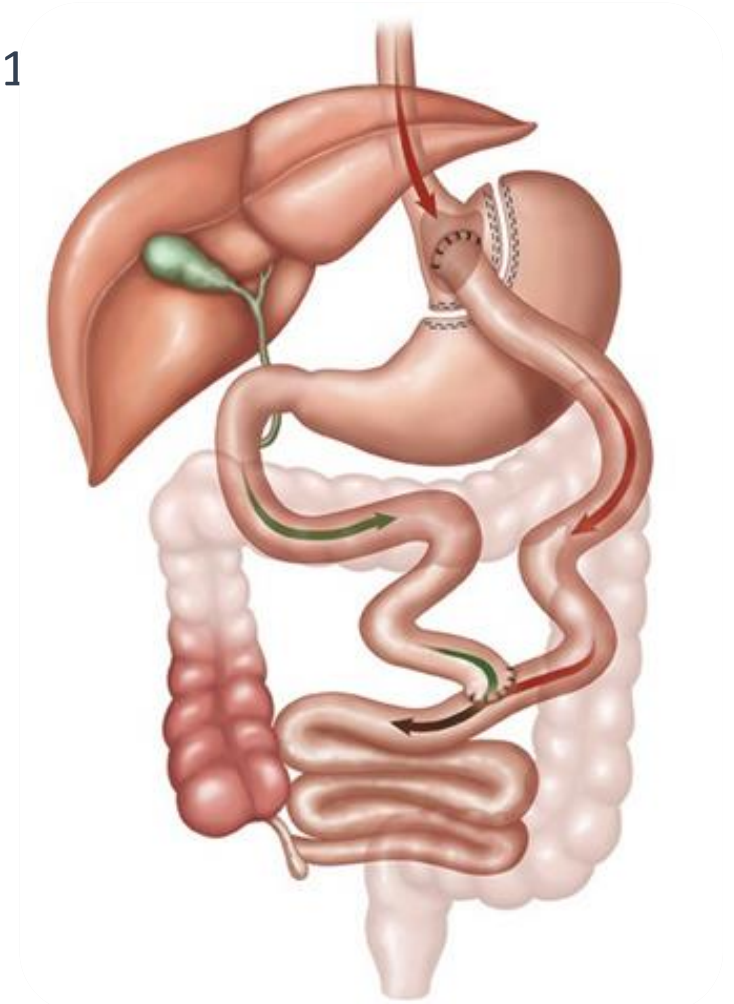


Complicaties bariatrische chirurgie

Spaarne Gasthuis Baria Nederland

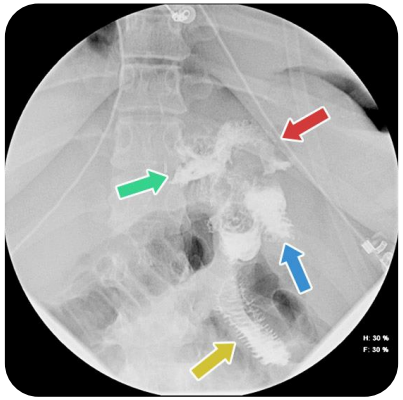
Gastric Bypass

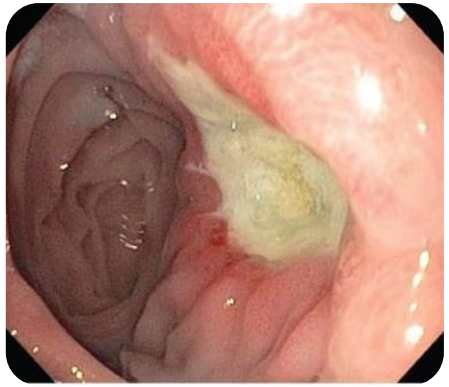
- Mortaliteit 0.2%, inmiddels <0,1
- Complicaties
  - Wond infectie 2.98%
  - Naadlekkage 1.00%
  - darmbloeding 1.93%
  - longembolie 0.41%
- Late complicaties
  - vernauwing 3-4%
  - zweer 2%
  - inwendige herniatie 3-5%
  - vitamine tekorten 10-25%

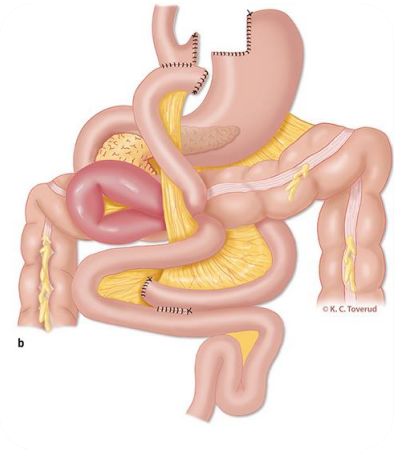


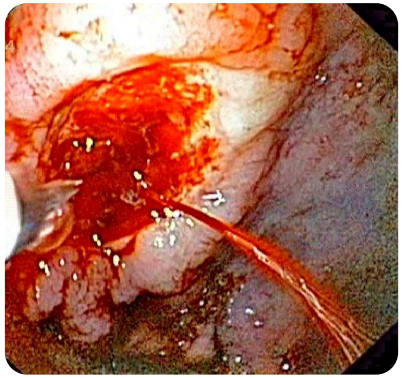
Spaarne Gasthuis

complicaties









Tandheelkundige manifestaties na bar-chir

- We zien en horen tandheelkundige problemen bij FU
- Data: beperkt = handje vol studies
- Literatuur: mn tand erosie, cariës en overgevoeligheid
- Prevalentie / Incidentie (nog) niet bekend
- Vragenlijsten: 1/3 van patiënten ging vaker naar de tandarts post bar-chir

Observational Study > Arq Bras Cir Dig. 2019 Dec 9;32(3):e1458.
doi: 10.1590/0102-672020190001e1458. eCollection 2019.

DENTAL WEAR AND TOOTH LOSS IN MORBID OBESE PATIENTS AFTER BARIATRIC SURGERY

[Article in English, Portuguese]
Fabiano Duarte Aznar [1], Fabio D Aznar [1], José R Lauris [1], Elinton Adami Chaim [2], Everton Cazzo [2], Silvia Helena de Carvalho Sales-Peres [1]

Affiliations + expand

PMID: 31826085 PMCID: PMC6902887 DOI: 10.1590/0102-672020190001e1458
Free PMC article

Conclusion: Individuals submitted to Roux-en-Y gastric bypass, regardless of the surgery period, presented more dental wear on the incisal/occlusal surfaces, and the anterior teeth were the most affected. Dental wear was associated with age and number of missing teeth.

Tandheelkundige manifestaties na bar-chir

- Braken (sleeve & band>> bypass)
- Gastro-oesofageale reflux
- Inname van zoete producten / zure (frisdranken) middelen
- Reductie in speeksel productie
- Verandering orale microbiota (?)

Reductie pH → veroorzaakt of faciliteert tand demineralisatie en hypersensibiliteit

Research Article

Awareness and Attitude of Surgeons regarding Dental Erosion on Patients Who Underwent Bariatric Surgery

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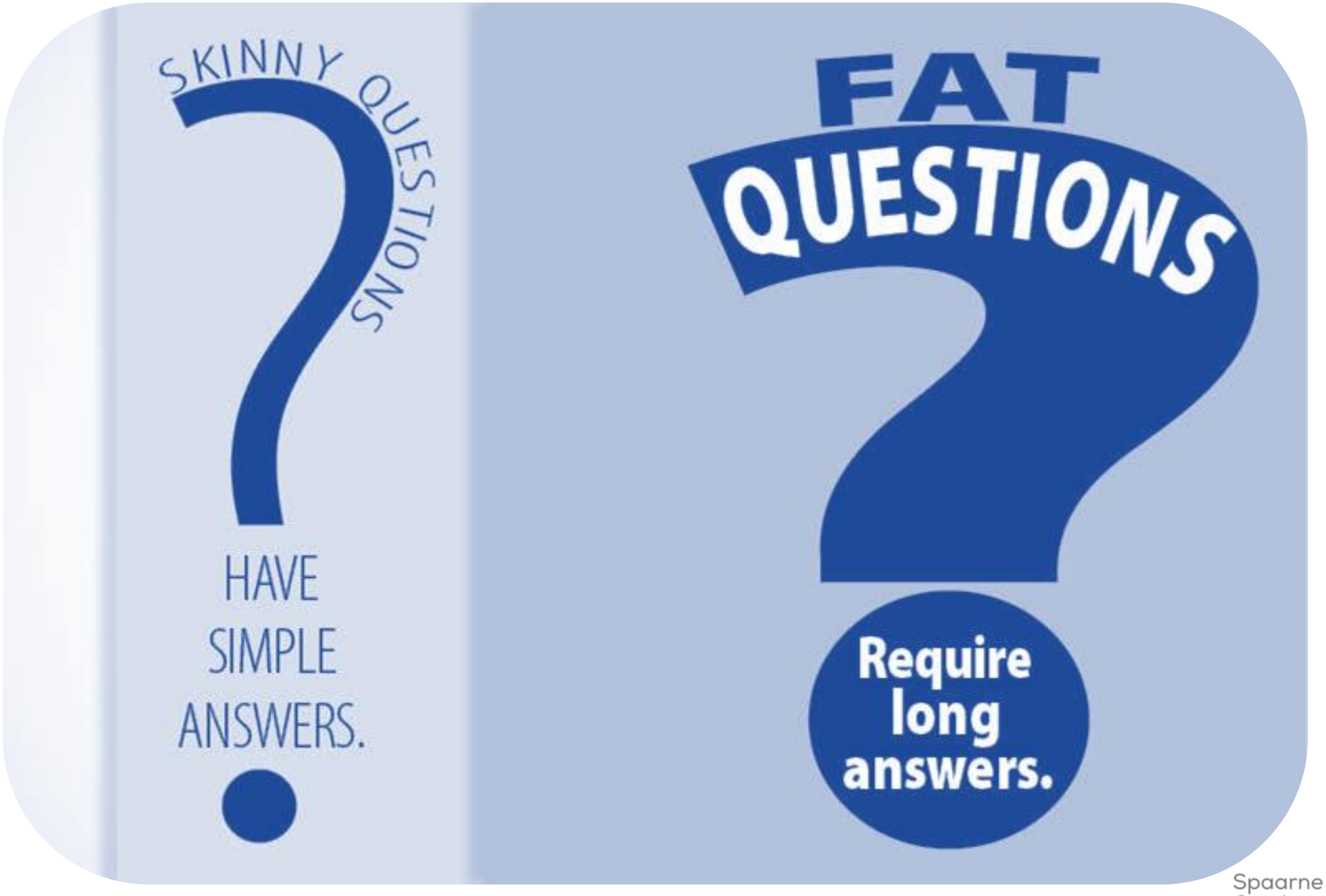
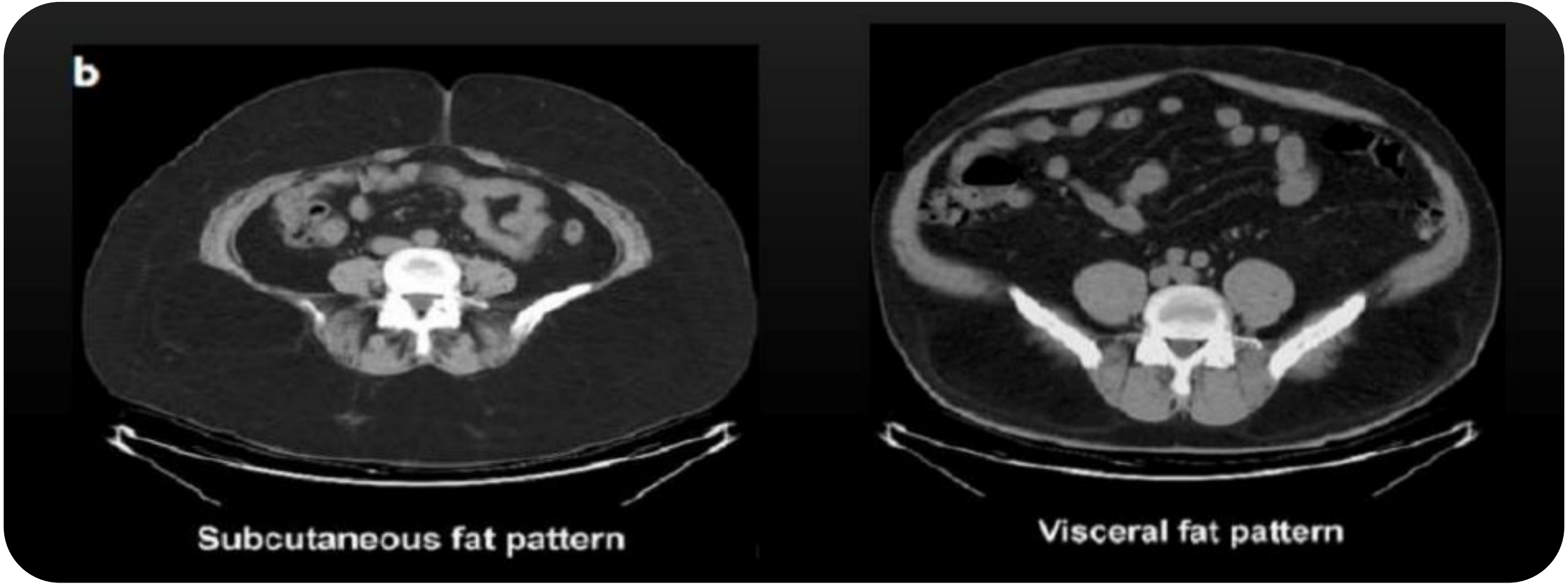
Background. The obesity epidemic is co odern medicine. It has been proven that bariatric surgery is more effective than non iated comorbidities. The general surgeon needs to understand how tooth erosion a who have had bariatric surgery. Dental erosion caused due to gastric reflux begins wi ve coating that covers our teeth. While it is tough, it is prone to an extremely acidic to soften and demineralize, gradually wearing away and exposing the more sensitive ar pularity of this subspecialty, general surgeons should develop a basic clinical and surgica dures and complications, regardless of their interest in obesity surgery. *Aim*. This cross-sectiona ness and attitude of surgeons regarding dental erosion on patients who underwent bariatric surgery. is cross-sectional study was conducted on general surgeons from different regions of Saudi Arabia who perfo es. Data collection was done by sending the questionnaire to the general surgeons by different means of social media p, e-mail, Facebook, etc.), and it was also distributed through the Saudi Arabia Society of Metabolic and Bariatric Surgery. *Resu* total of 25 general surgeons responded to the survey. Half of the respondents know what dental erosion is, 52%. Most of them, 72%, are not aware of the relationship between dental erosion and acid reflux or vomiting. They reported that 52% of patients complain of gastroesophageal reflux disorder. *Conclusion*. The general surgeons had inadequate awareness and attitude regarding dental erosion on bariatric surgery patients. Our findings suggest that a lack of adequate awareness and a negative attitude among general surgeons are grounds for concern and that more should be done to avoid oral health complications.

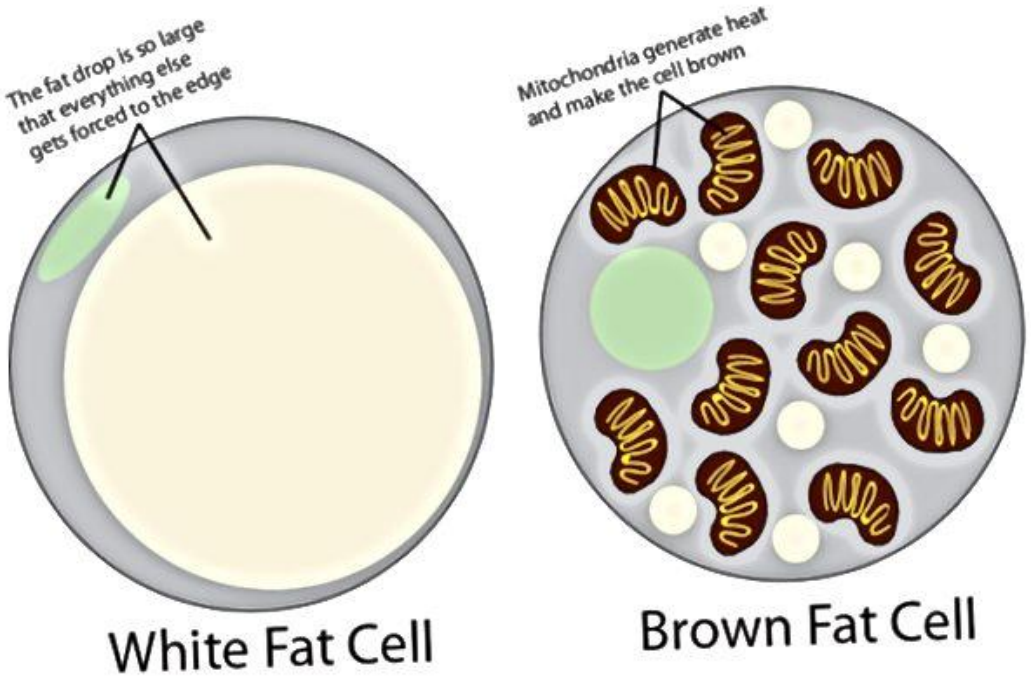


Maak kennis met *VET*

- een van de grootste organen (!)
- visceraal vs perifeer / subcutaan
- twee soorten: bruin vet en wit vet
- maakt belangrijke hormonen aan en communiceert met de hersenen
- beïnvloedt onze eetlust en ons verzadigingsgevoel
- te veel kan ziek maken: vet uit balans en ‘ontstoken’

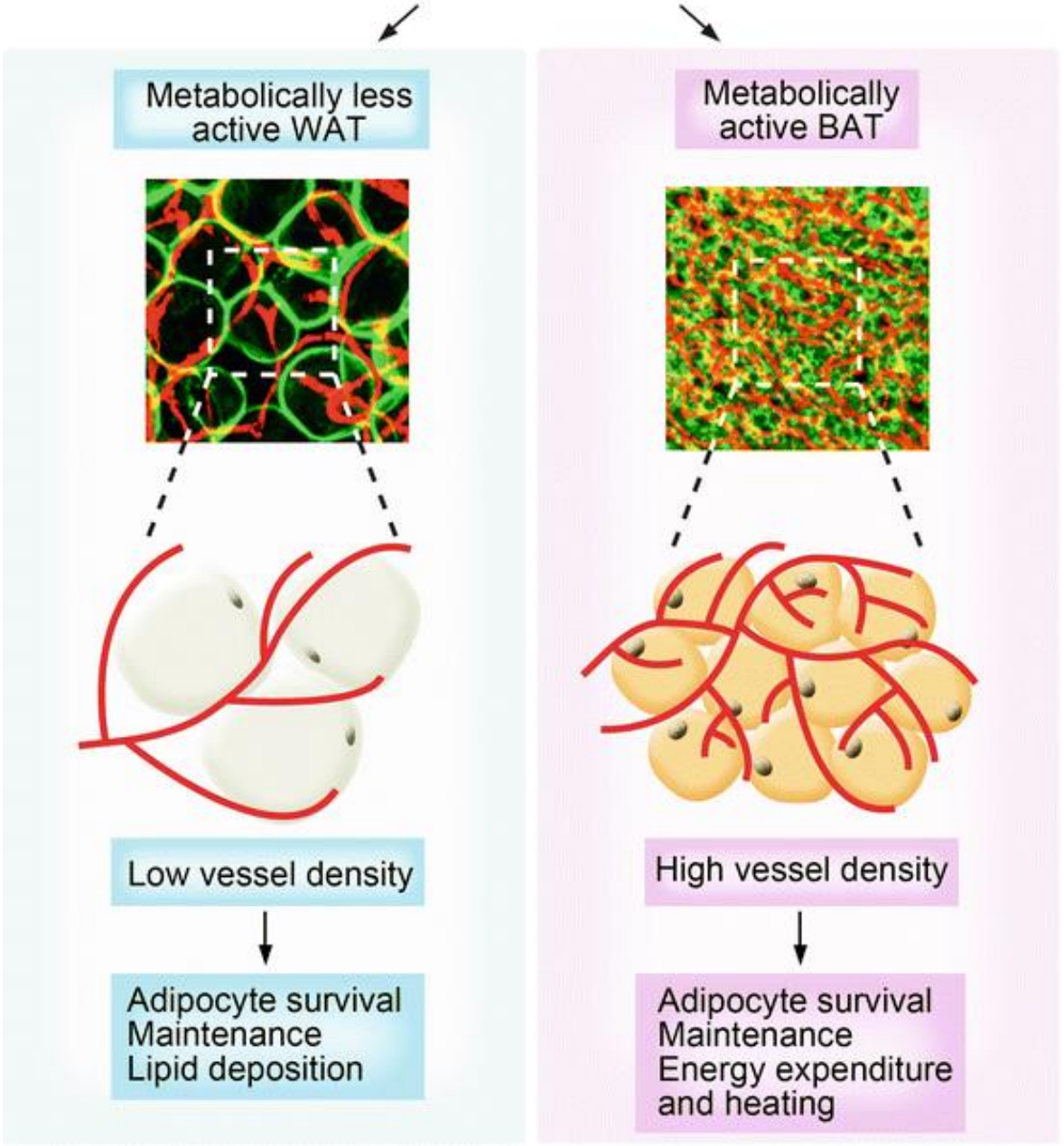
CT scan: buikvet





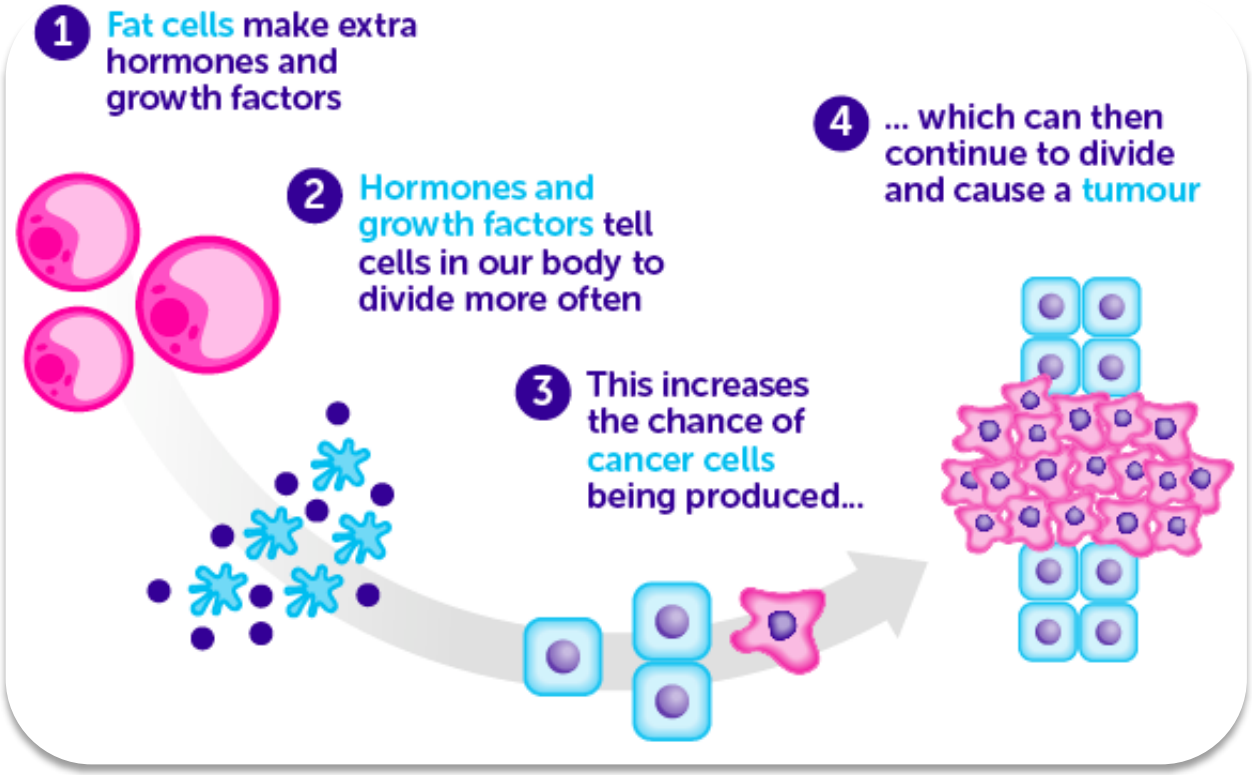
wit vet	bruin vet
onstaat na de geboorte	neonataal al aanwezig
neemt toe met de leeftijd	neemt af met leeftijd
groot formaat	klein
weinig bloedvaten	veel bloedvaten
subcutaan, visceraal	nek, supraclav., paravertebraal
opslag van ‘energie’	genereert warmte
	kan toenemen door koude douche

vetweefsel


Metabolically less active WAT
Metabolically active BAT
Low vessel density
High vessel density
Adipocyte survival
Maintenance
Lipid deposition
Adipocyte survival
Maintenance
Energy expenditure and heating

Kankersoorten gelinked aan overgewicht/obesitas:

- Post-menopauzale borstkanker
- Colorectaal
- Baarmoeder & endometrium
- Niercel
- Hoofd - Hals
- Slokdarm
- Pancreas
- Prostaat
- Galblaas
- Schildklier



Association of BMI with overall and cause-specific mortality: a population-based cohort study of 3·6 million adults in the UK

Krishnan Bhaskaran, Isabel dos-Santos-Silva, David A Leon, Ian J Douglas, Liam Smeeth

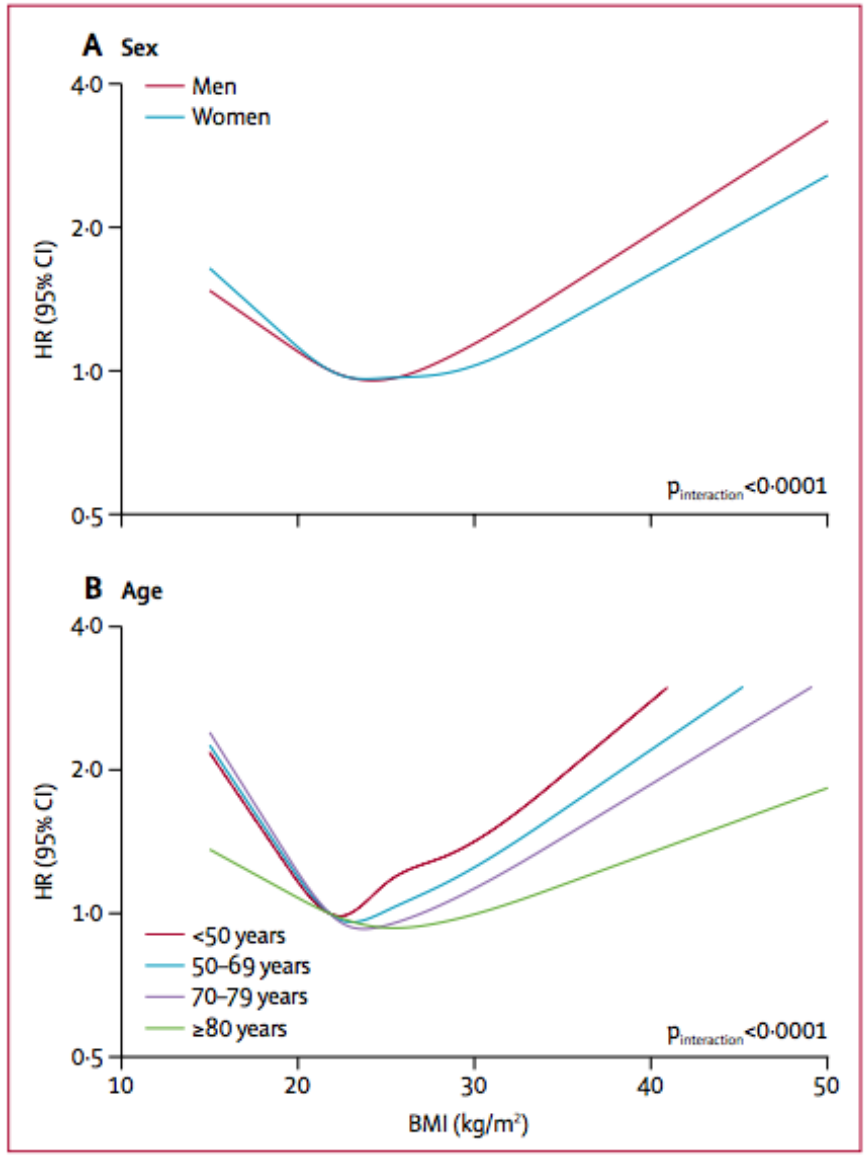


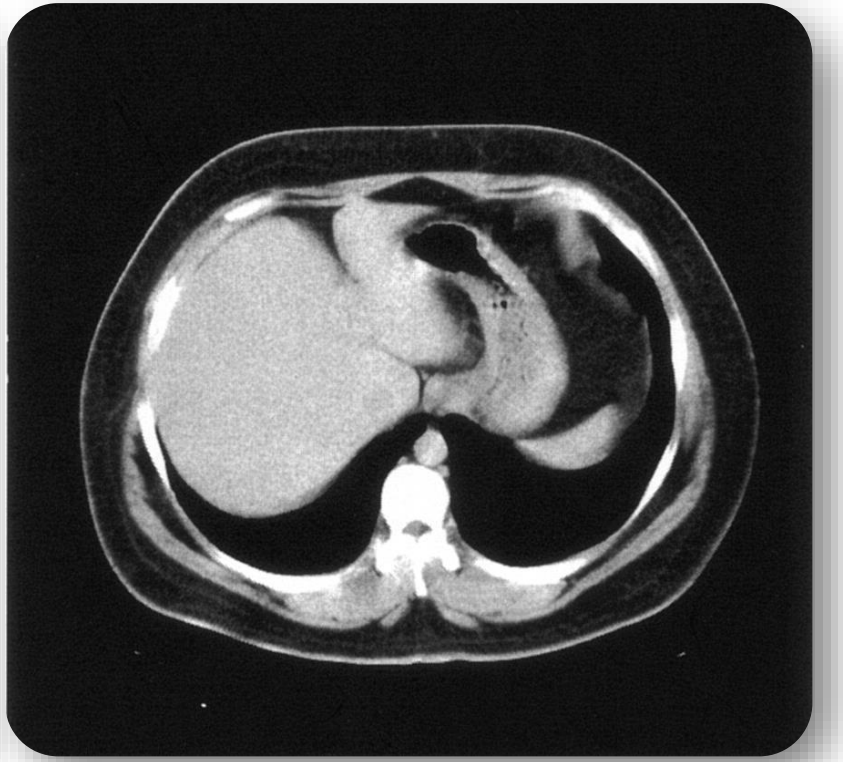
***Figure 3*: Association between BMI and all-cause mortality among never-smokers, by sex (A) and age (B)**

5-year exclusion period applied for person-time and events after a BMI record; estimates adjusted for age, deprivation, calendar year, diabetes, and alcohol status (all as defined at date of BMI measure) and stratified by sex. HR=hazard ratio.

waarom afvallen?

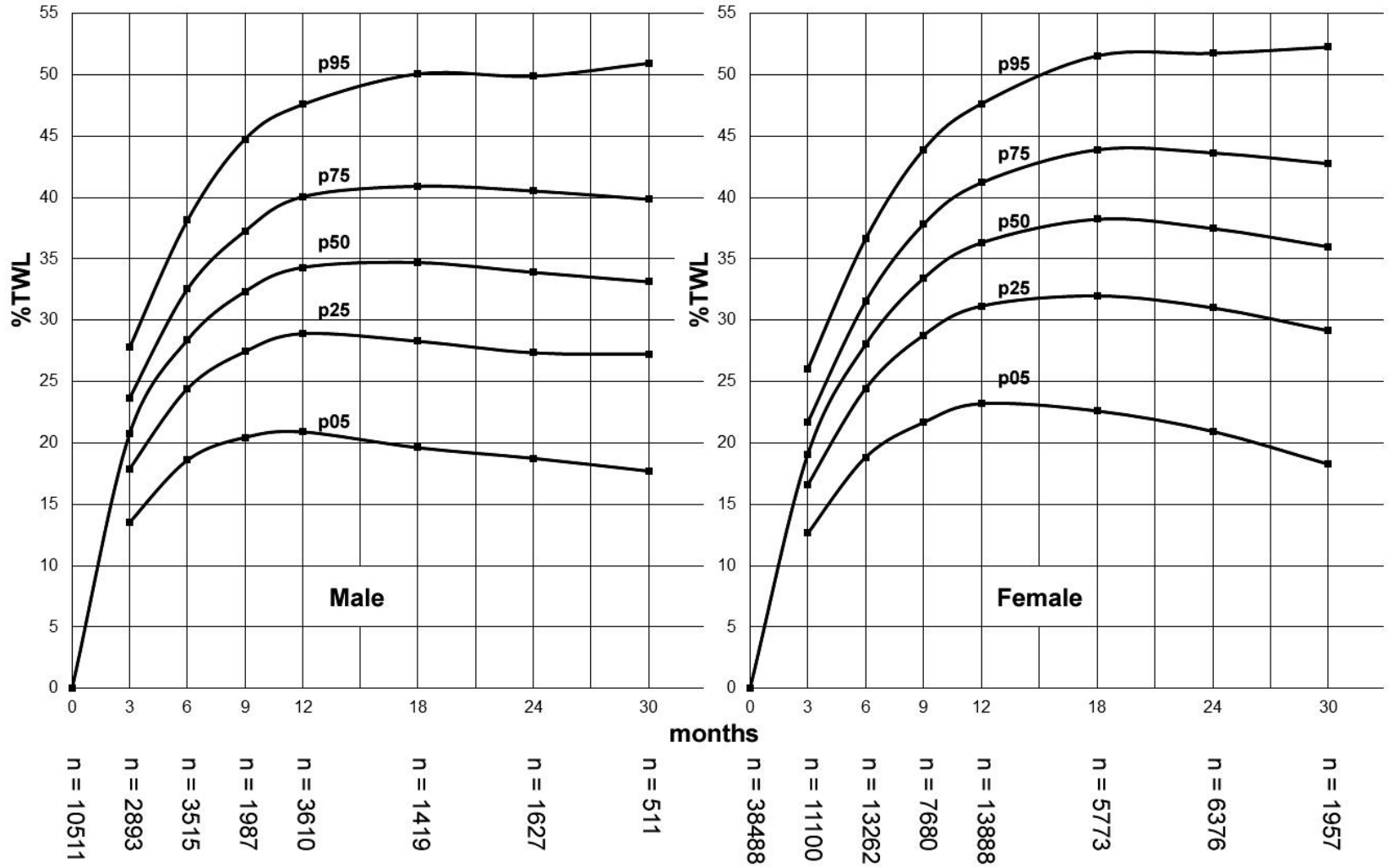
baseline

week 12



35-y-old man, initial liver volume 3.7 L, final liver volume of 2.4 L
→ 35% reduction in liver size, 18 kg weight loss

Percentiles primary GBP

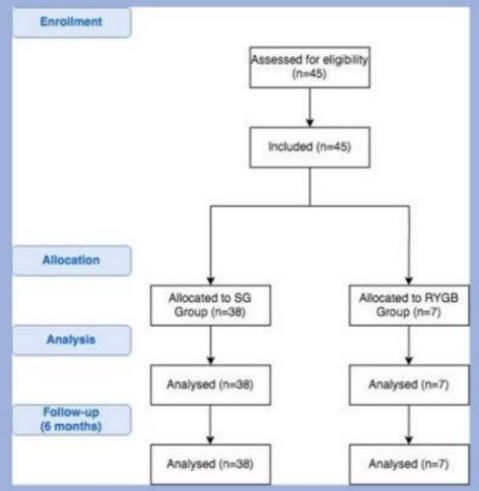


Percentiles (p95, p75, p50, p25 and p05) of total weight loss (%TWL) results at 3 months ±¼ month, 6 months ±½ month, 9 months ±¾ month, 1 year ±1 month, 18 months ±1½ months, 2 years ±2 months and 30 months ±2½ months after primary fully laparoscopic Roux-en-Y gastric bypass for men and women separately. The number of patients (n) analyzed at each interval is given at the bottom.

Changes in the composition of oral and intestinal microbiota after sleeve gastrectomy and Roux-en-Y gastric bypass and their impact on outcomes of bariatric surgery

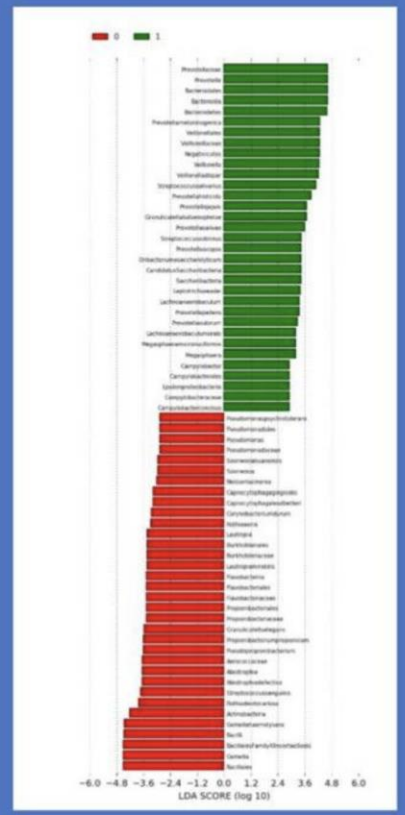
METHODS

- We aimed to assess the changes in composition of bacterial microbiota at two levels of the digestive tract: oral cavity and large intestine in patients 6 months after bariatric surgery.
- This was a prospective cohort study.
- Before surgery and 6 months after the procedure oral swabs were obtained and stool samples were provided.

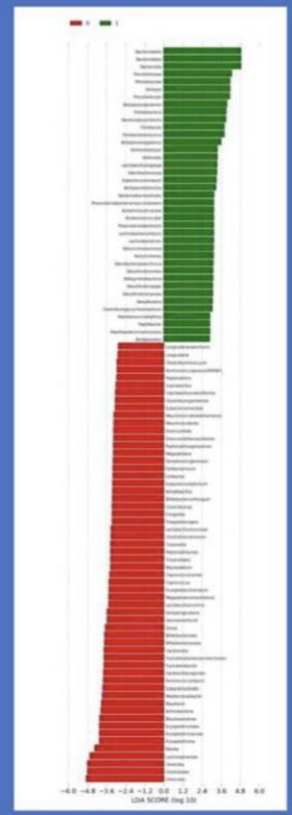


RESULTS

Differences in oral microbiota before (0) and after (1) bariatric surgery



Differences in intestinal microbiota before (0) and after (1) bariatric surgery



CONCLUSIONS

- Bariatric surgery introduces a significant change in composition of oral and intestinal microbiota.
- Both oral and intestinal microbiota seem to be significantly more abundant in bacteria from phylum Bacteroidetes after the procedure.
- Population of bacteria from phylum Firmicutes seems to decrease after bariatric surgery.

Tomasz Stefura, Barbara Zapała, Tomasz Gosiewski, Oksana Skomarovska, Michał Pędziwiatr, Piotr Major

OBESITY SURGERY
The Journal of Metabolic Surgery and Allied Care