



# Surgery's Role in the Management of Obesity



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North London Obesity Surgery Service



- The Problem
- The Cause
- Multi-disciplinary Management and Role of Surgery

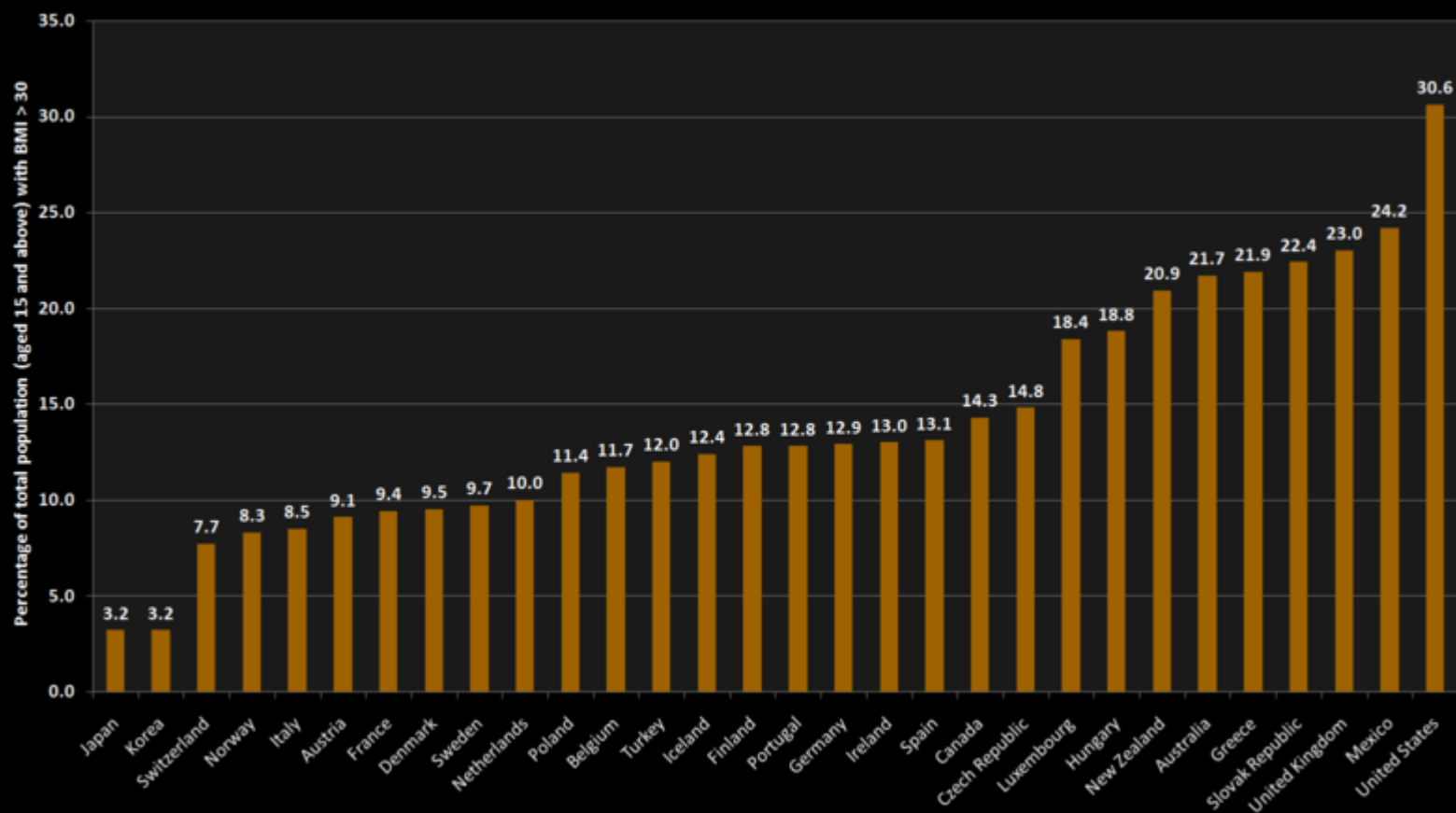
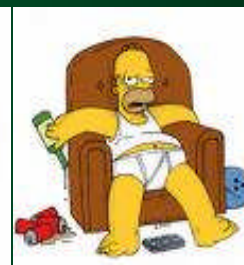
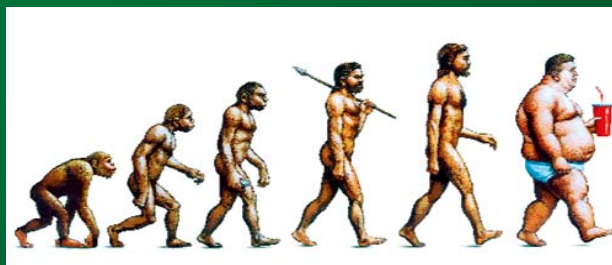




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# A Global Epidemic

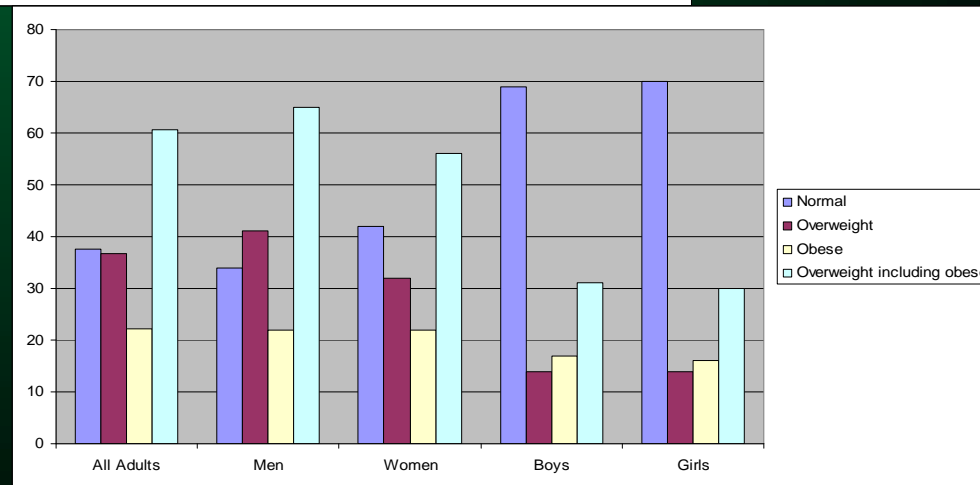
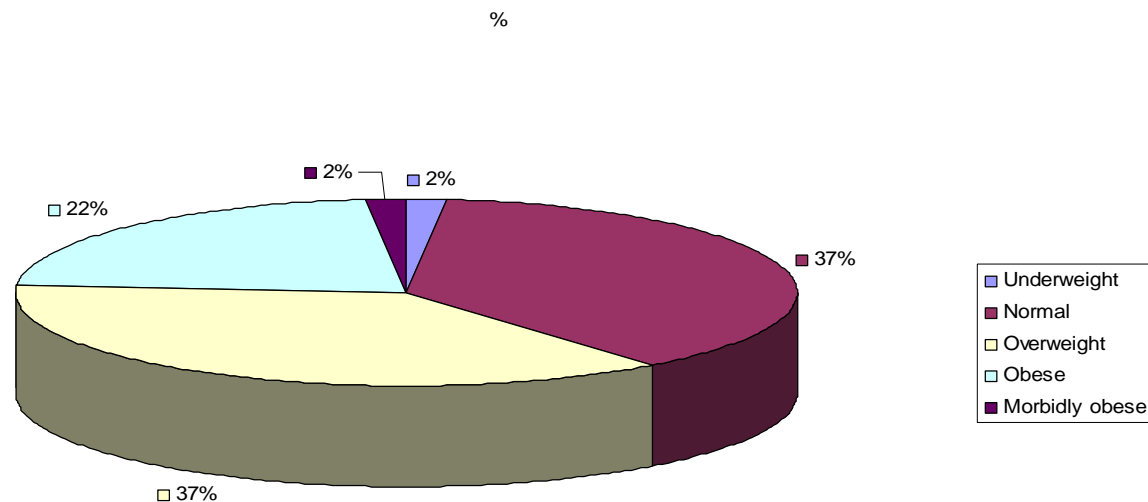




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# Prevalence of Obesity in UK 2007

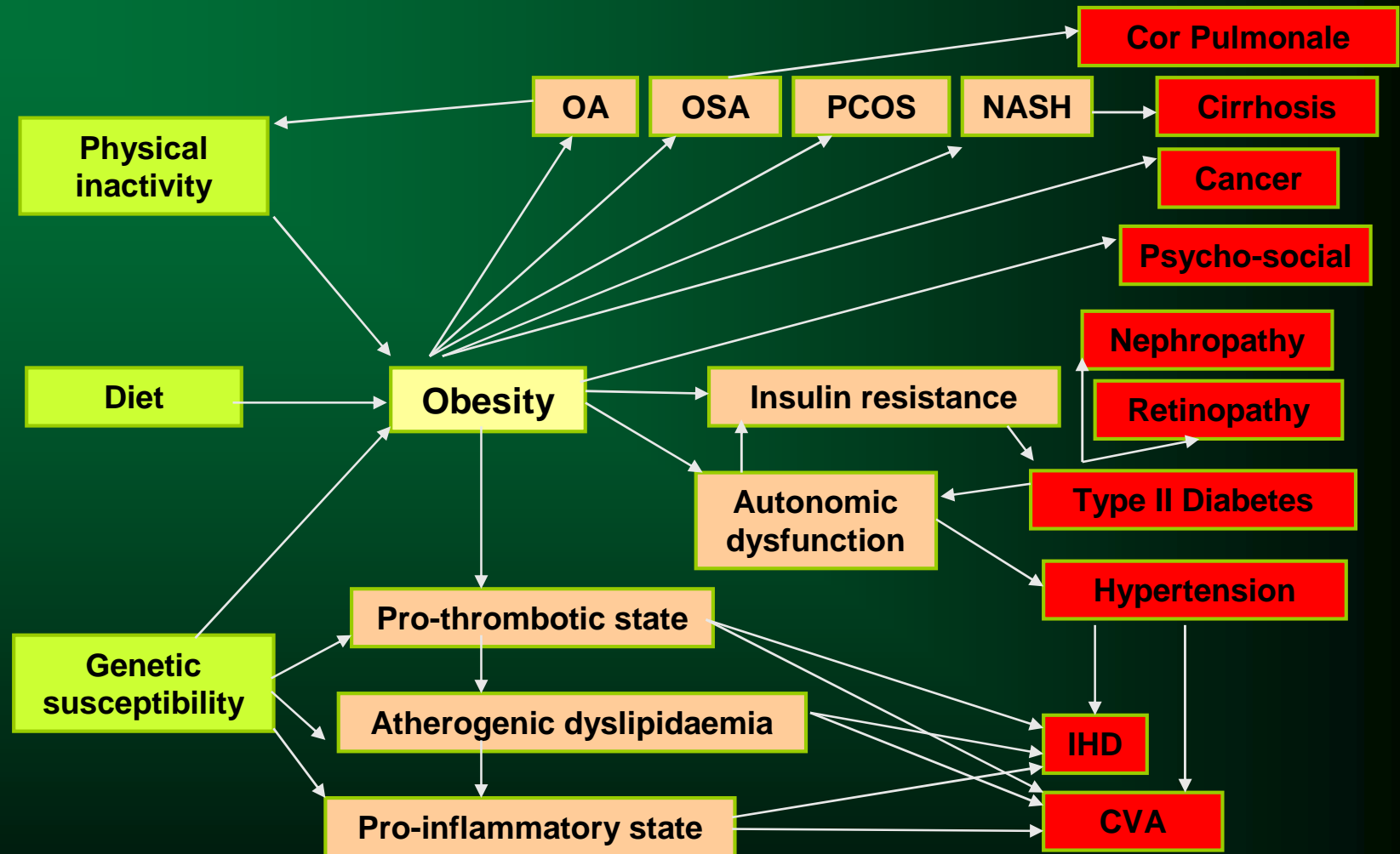




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# Obesity Related Morbidity

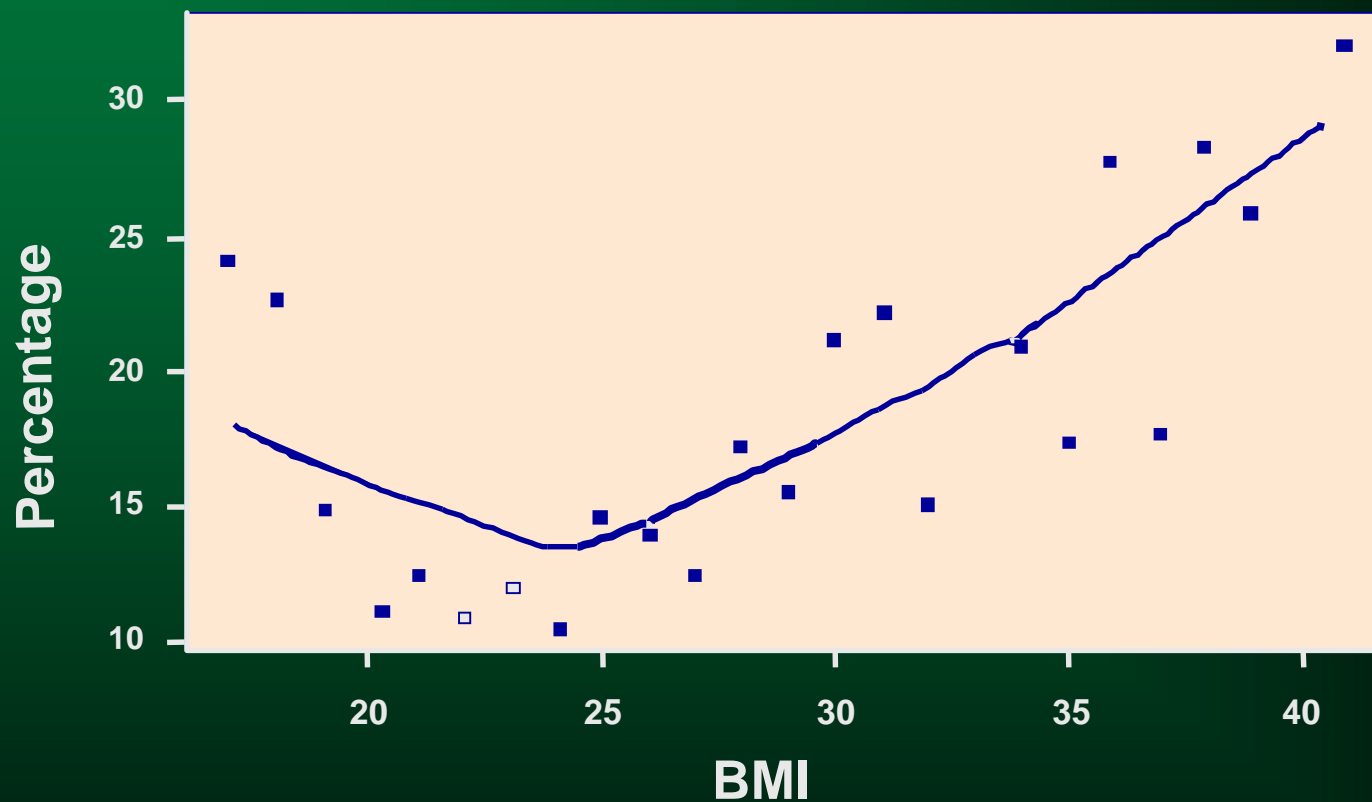




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# Impact of Obesity on GP Consultations



Brown WJ et al. Int J Obes 1998;22:520-528.

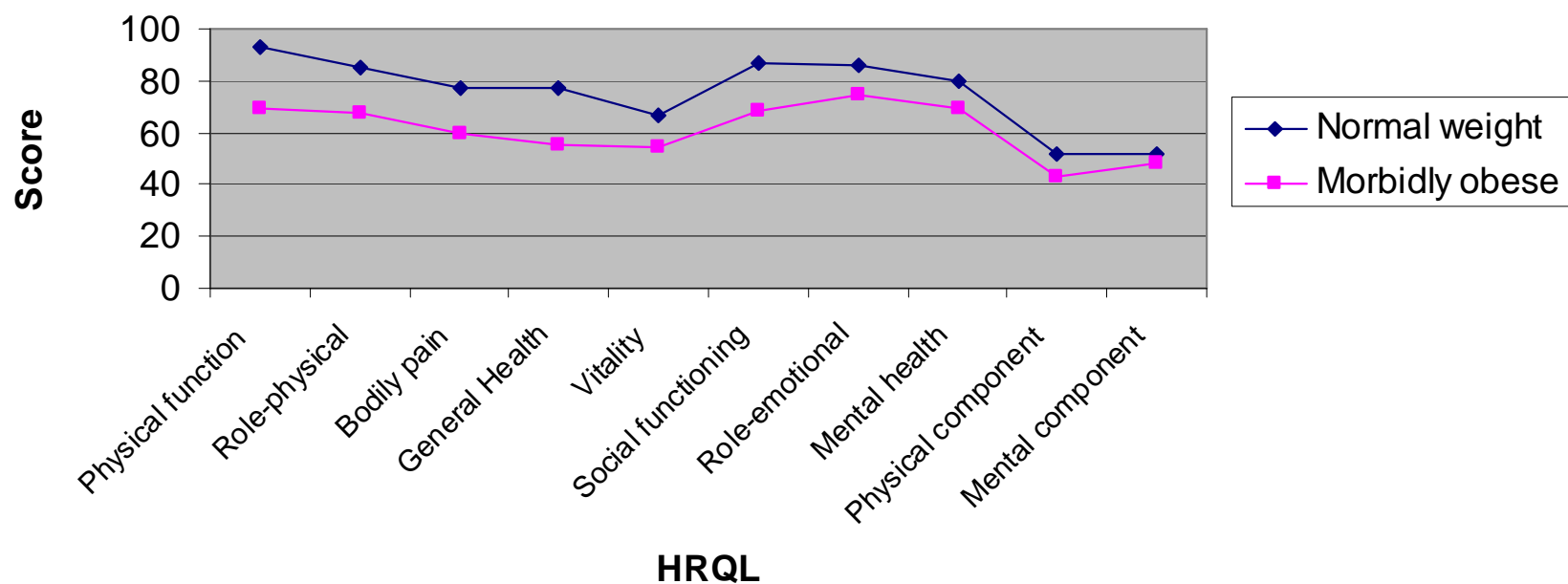


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# Impact of Obesity on HRQL

Quality of Life in the Obese



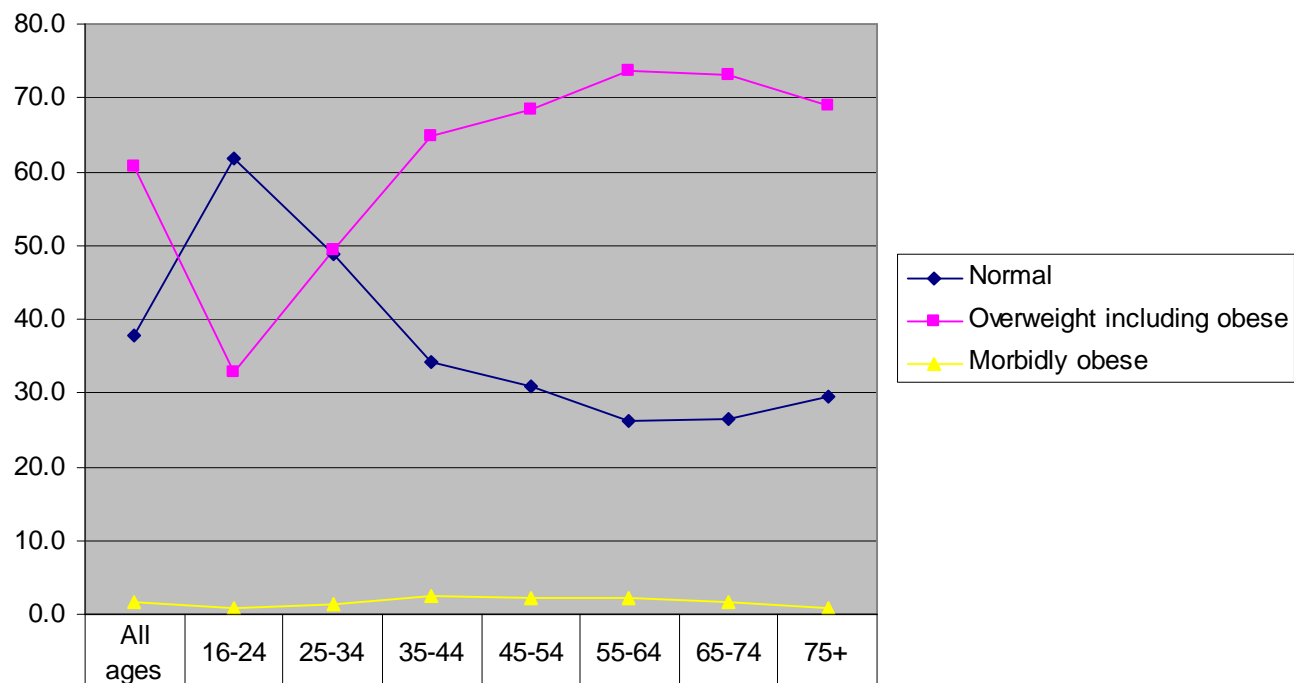
Larsson U et al. International Journal of Obesity (2002) 26, 417 – 424.



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# Obese Die Early



Normal	37.7	61.8	48.9	34.3	30.9	26.1	26.4	29.5
Overweight including obese	60.8	32.9	49.3	64.8	68.4	73.5	73.0	69.0
Morbidly obese	1.8	0.8	1.4	2.5	2.1	2.1	1.7	0.8

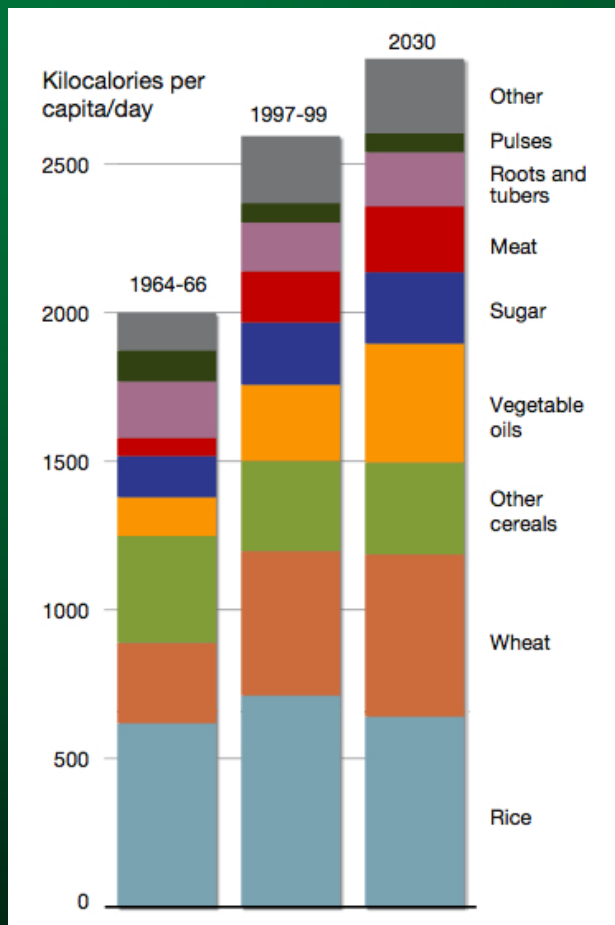




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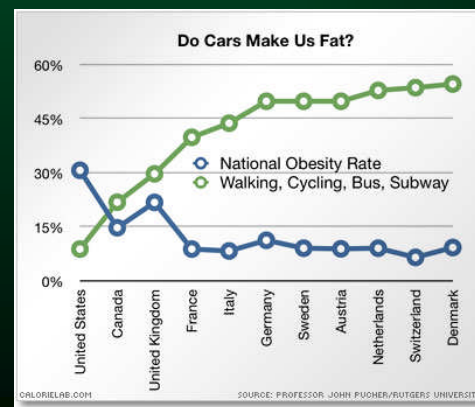


# Changes in Calorie Consumption and Use



Activity	Kcal/week: 1950s	Kcal/week: 2000s
<b>Grocery shopping (90%↓)</b>	2400 (on foot)	276 (driving)
<b>Washing clothes (80%↓)</b>	1500 (by hand)	270 (by machine)
<b>Heating (100%↓)</b>	1300 (making a coal fire)	Almost zero (lighting a gas fire)
<b>Making a bed (50%↓)</b>	575 (with blankets)	300 (with duvet)

[http://nationalobesityforum.org.uk/images/stories/PDF\\_training\\_resource/in-depth-background.pdf](http://nationalobesityforum.org.uk/images/stories/PDF_training_resource/in-depth-background.pdf)



<http://www.grida.no/publications/rr/food-crisis/page/3560.aspx>





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# Average Calorie Requirement

Age (yr)	Calories per day	
	Boys	Girls
1–3	1,230	1,165
4–6	1,715	1,545
7–10	1,970	1,740
11–14	2,220	1,845
15–18	2,755	2,110
Adults	2,550	1,940

Small **biscuit** (50 cal)  $\approx$  10 min walk



Large **cookie** (250 cal)  $\approx$  50 min walk



A **doughnut** (300 cal)  $\approx$  60 min walk



A **fast food "meal"** (1500 cal)  $\approx$  5 hr walk  
running at a 10 min/mile pace for 2½ hours  
 $\approx$  BMR  $\pm$  60 min walk



One tsp **sugar** (20cal)  $\approx$  4 min walk



One can **coke** (160cal)  $\approx$  30 min walk

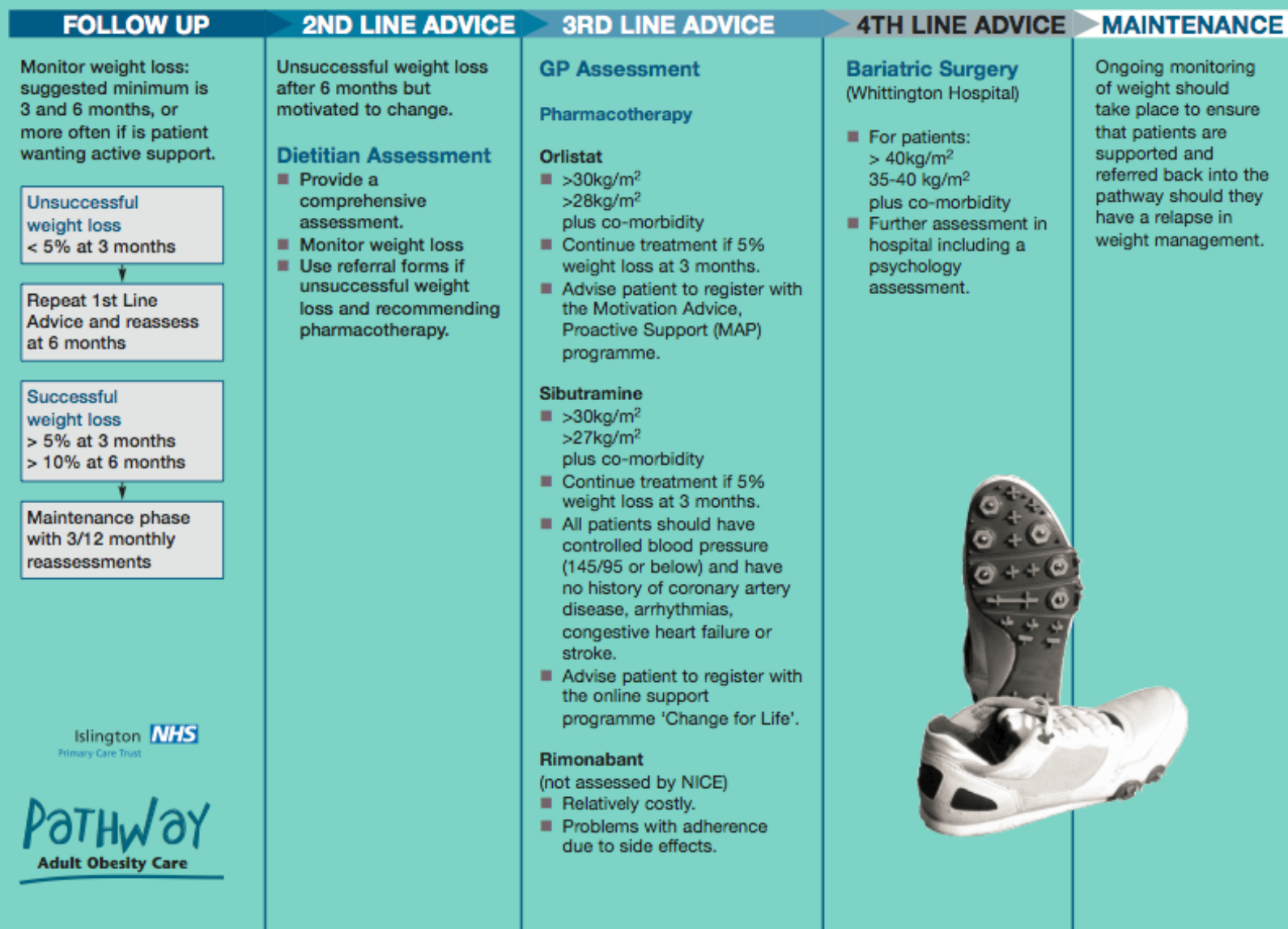




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# Obesity Care Pathways



Islington **NHS**  
Primary Care Trust

**PATHWAY**  
Adult Obesity Care





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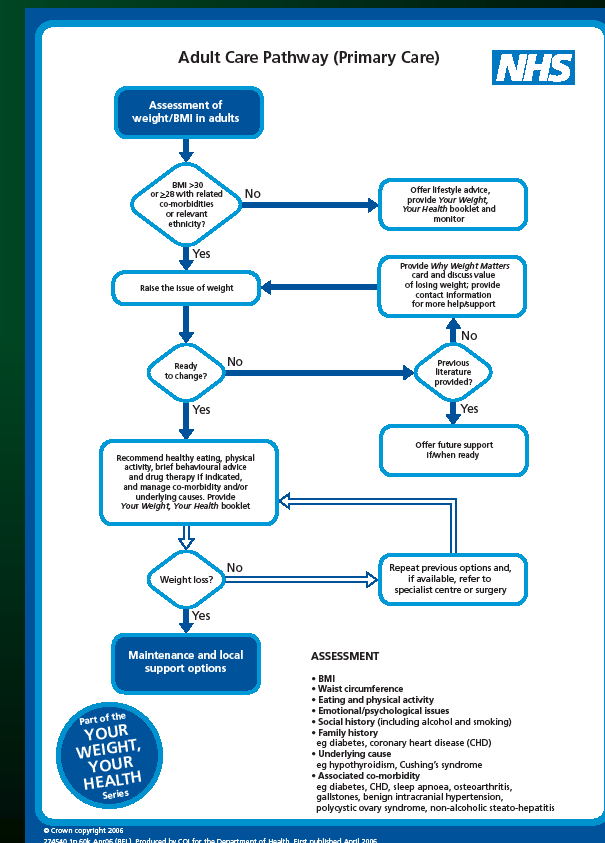
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# Care Pathway – Primary Care

- Assess weight and evaluate, exclude endocrine cause
- Discuss obesity and provide information
- Recommend healthy lifestyle, supervised diet, medication etc
- Manage co-morbidity: blood sugar, serum lipids, hypertension
- Reevaluate and repeat if necessary
- Refer for bariatric surgery

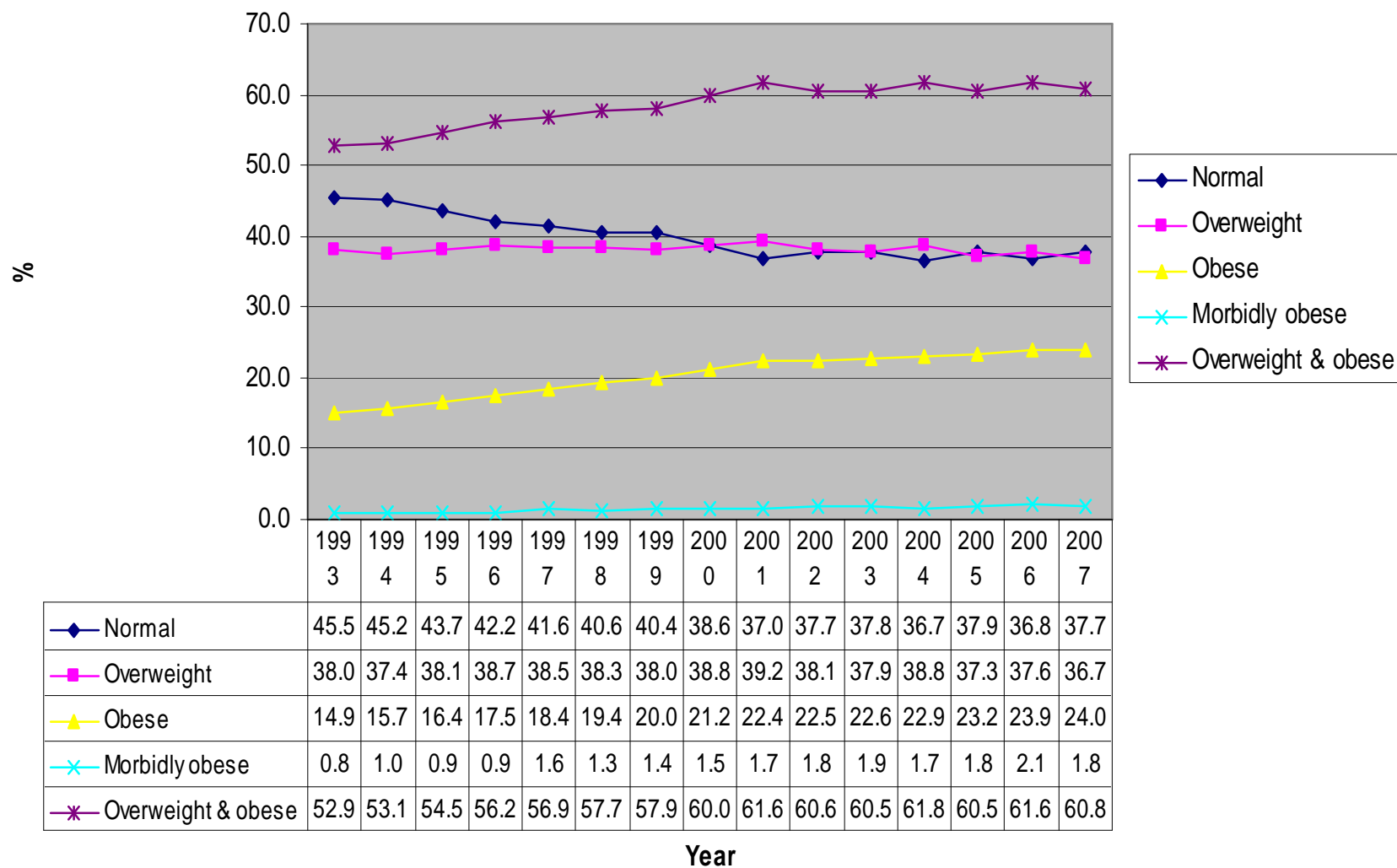




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# Prevalence of Adult Obesity

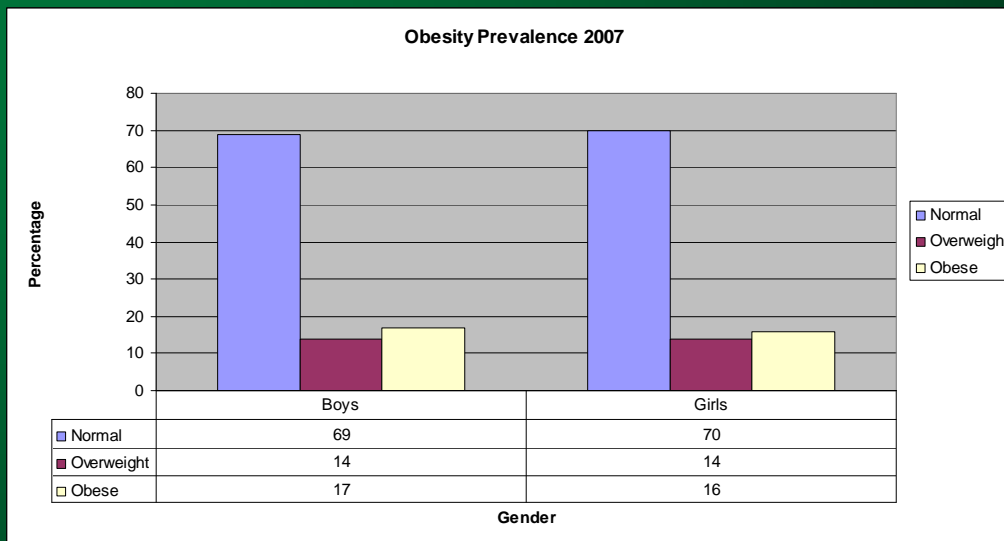




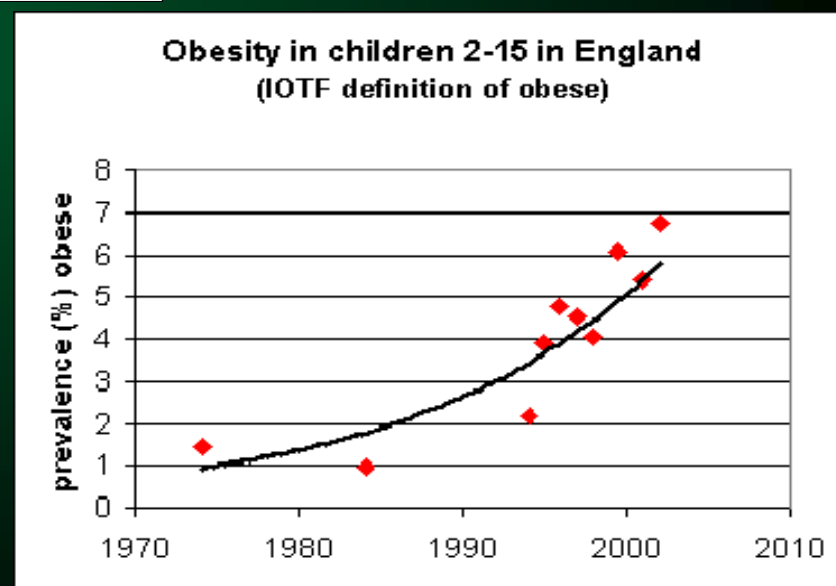
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# Prevalence of Obesity in Children



<http://www.ic.nhs.uk/pubs/opadjan08>



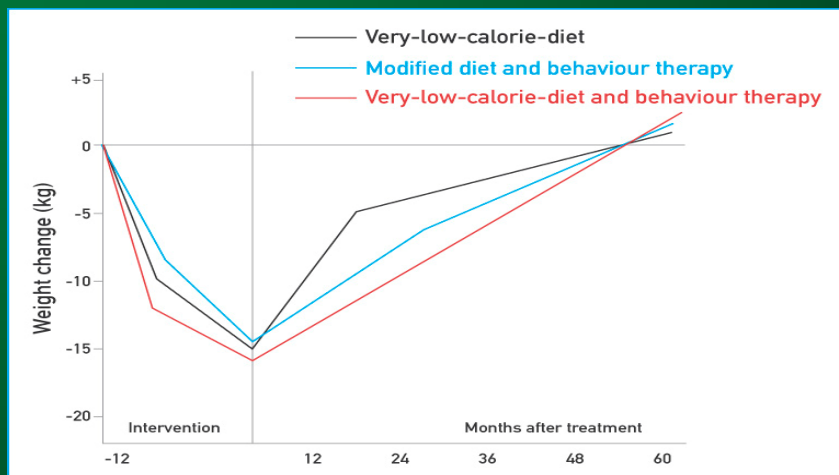
<http://www.iotf.org/childhood/>



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# Effect of Diet and Surgery on Weight



Changes In Energy Expenditure Resulting From Altered Body Weight

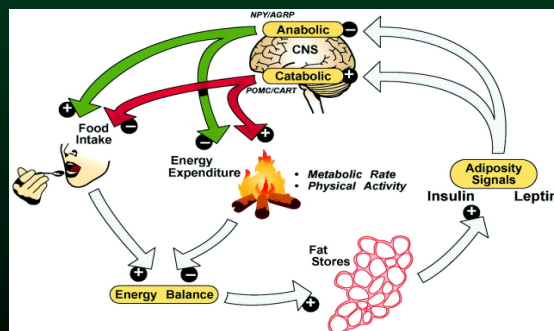
<http://content.nejm.org/cgi/reprint/332/10/621.pdf>

Is the Energy Homeostasis System Inherently Biased Toward Weight Gain

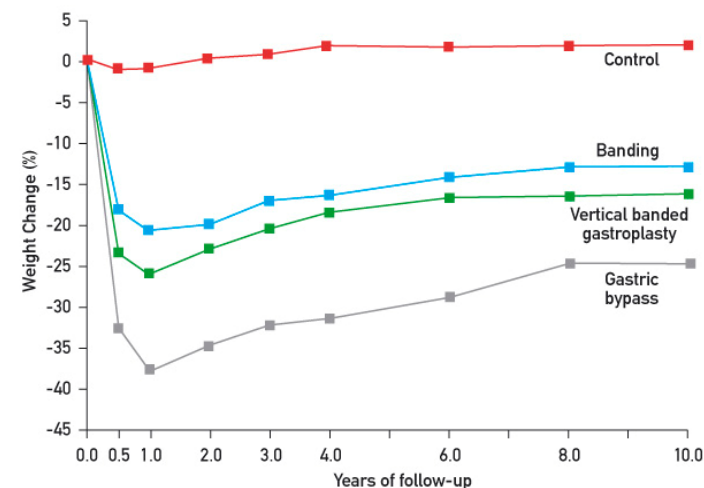
<http://diabetes.diabetesjournals.org/content/52/2/232.full.pdf+html>

Pyruvate and Satiety: Can We Fool the Brain?

<http://endo.endojournals.org/cgi/reprint/146/1/1.pdf>



- Diet & exercise effective up to 6m
- 60% failure at 1 yr
- 80% failure at 2 yrs
- 100% failure at 5 yrs
- Surgery effective indefinitely



No. of Subjects

Control	627	585	594	587	577	563	542	535	627
Banding	156	150	154	153	149	150	147	144	156
Vertical banded gastroplasty	451	438	438	438	429	417	412	401	451
Gastric bypass	34	34	34	34	33	32	32	29	34

Figure 1. Weight Changes among Subjects in the SOS study over a 10-Year Period.

All data are for subjects who completed 10 years of the study. The average weight change in the entire group of surgically treated subjects was almost identical to that in the subgroup of subjects who underwent vertical banded gastroplasty. The I bars represent the 95 percent confidence intervals.



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# NICE Guideline (CG43 - 2006)

- Bariatric surgery is recommended as a treatment option for adults with obesity if all of the following criteria are fulfilled:
  - **BMI  $\geq 40 \text{ kg/m}^2$  or more**, or **between 35 - 40  $\text{kg/m}^2$**  and **other significant disease** (for example, type 2 diabetes or high blood pressure) that could be improved if they lost weight
  - all appropriate **non-surgical measures have failed** to achieve or maintain adequate, clinically beneficial weight loss for at least **6 months**
  - the person has been receiving or will receive intensive management in a **specialist obesity service**
  - the person is **generally fit** for anaesthesia and surgery
  - the person **commits to the need for long-term follow-up**.
- Bariatric surgery is also recommended as a first-line option (instead of lifestyle interventions or drug treatment) for adults with a **BMI of more than 50  $\text{kg/m}^2$**  in whom surgical intervention is considered appropriate.



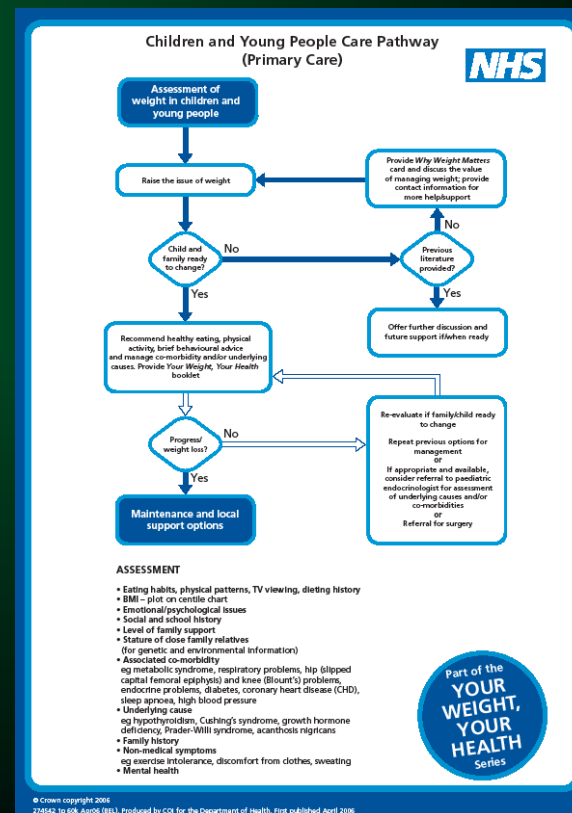
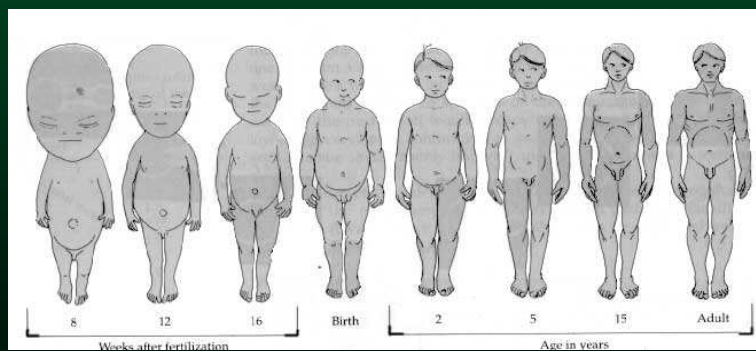
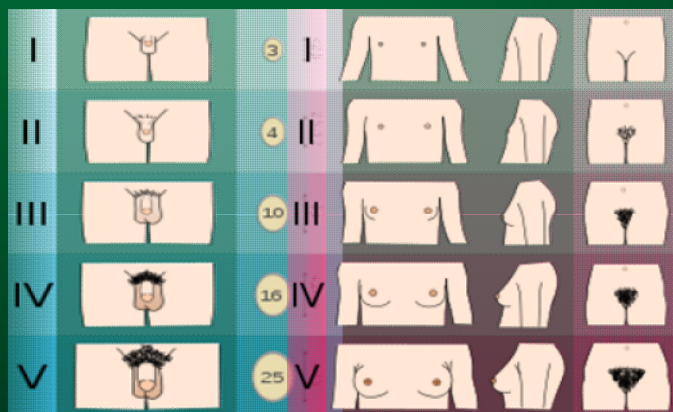


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# Childhood Obesity – NICE 2006

- Bariatric surgery should be considered only if child is
  - morbidly obese (**BMI ≥ 40**).
  - achieved or nearly achieved physiological **maturity** / attained majority of skeletal maturity (13 yrs for girls and 15 yrs for boys).
  - have obesity related **co-morbidities** remediable with weight loss and
  - if **6 months** of supervised weight loss attempts fail





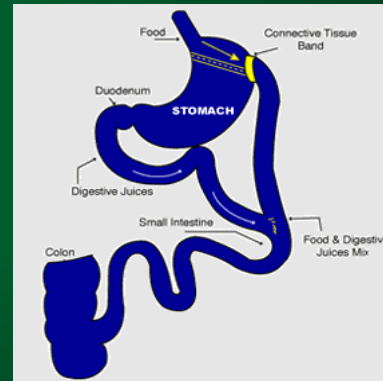
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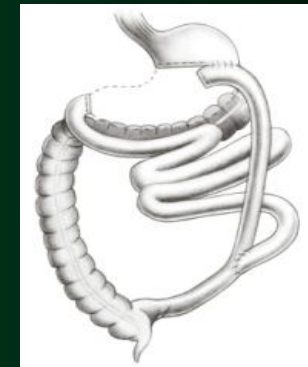
# Obesity Surgical Procedures:



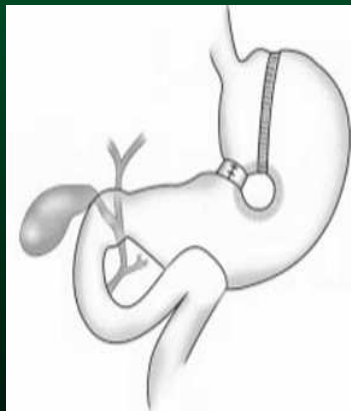
AGB



RY Gastric bypass



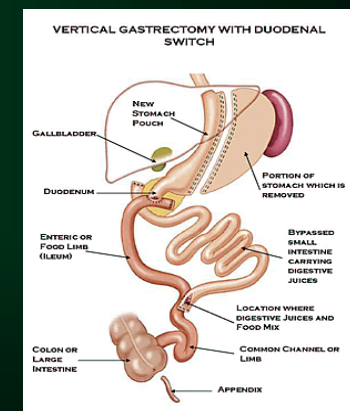
BPD



VBG



JIB



BPDDS



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# Who will benefit from Bariatric Surgery ?

## ➤ Adults

- 90% - 95% of BMI of  $\geq 35$  kg/m<sup>2</sup> with co-morbidities or BMI  $\geq 40$  kg/m<sup>2</sup> unlikely to achieve or maintain clinically beneficial weight loss through non-surgical means.
- For Asian ethnicity, the referral criteria should be 3 BMI points less!
- In England, 390,000 people (0.8%), have BMI 35-39.9 kg/m<sup>2</sup> with at least one co-morbidity:
  - Type II diabetes mellitus
  - Hypertension, Cardiomyopathy, IHD and CVA
  - Obstructive sleep apnoea, Pulmonary hypertension
  - Osteoarthritis
- Failure of conservative measures beyond 6 months.

## ➤ Adolescents

- BMI  $\geq 40$  kg/m<sup>2</sup>
- Failure of conservative measures beyond 6 months

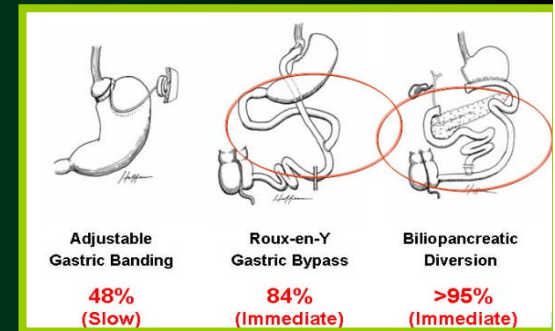


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# Beneficial Effects of Adequate Surgery

- 40% reduction in all cause mortality
  - 37.6 v 57.1 deaths/10,000 person years ( $P < 0.001$ )
  - 56% reduction CVD death
  - 92% reduction in diabetes death
  - 60% reduction in cancer death
- 50-85% EBWL maintained in 80%  $\geq$  8-years
- 60-80% remission of diabetes II
- 40-60% remission or improvement of hypertension
- 100% remission of sleep apnoea
- Improvement in
  - Serum cholesterol levels
  - Risks of IHD
  - Metabolic syndrome
  - Osteoarthritis etc.
- Reduce the risks for gestational diabetes, hypertension, DVT, stress incontinence, preeclampsia, cephalopelvic disproportion, macrosomia, and caesarean delivery



Adams et al. 2007. *NEJM* ;357:8

Sjöström et al. 2007. *NEJM*