



# OBESITY IN PRIMARY CARE

# Obesity- definition

- Is a chronic disease
- In ICD 10 –E66
- Overweight and obesity are defined as abnormal or excessive fat accumulation that may impair health .
- Obesity is a leading preventable cause of death worldwide, with increasing rates in adults and children
- one of the most serious public health problems of the 21st century

# World health organisation categorisation of obesity

BMI classification	
Underweight	< 18.5
Normal range	18.5 - 24.9
Overweight	$\geq 25.0$
<i>Preobese</i>	25.0 - 29.9
Obese	$\geq 30.0$
<i>Obese class I</i>	30.0 - 34.9
<i>Obese class II</i>	35.0 - 39.9
<i>Obese class III</i>	$\geq 40.0$

# Waist circumference

- the waist circumference is measured at a level midway between the lowest rib and the iliac crest

Waist Girth and Health Risk		
	Men	Women
Normal	78-94cm	64-80cm
Overweight (Elevated Risk)	94-102cm	80-88cm
Obese (High Risk)	>102cm	>88cm

# Index WHR ( waist-hip ratio)

- normal WHR  $< 0.7$  for women and  $< 0.9$  for men
- abdominal obesity is defined as a waist–hip ratio above 0.90 for males and above 0.85 for females
- WHR has been found to be a more efficient predictor of mortality in older people than waist circumference or BMI

# Children- obesity, overweight definition

- Because children grow at different rates, depending on their age and gender, the definitions of overweight and obesity in children and adolescents differ from those in adults.
- In children and adolescents age 2 to 20 years old, a BMI in the 85<sup>th</sup> to 94<sup>th</sup> percentiles for age and gender is considered overweight; a BMI in the 95<sup>th</sup> percentile or higher is considered obese.

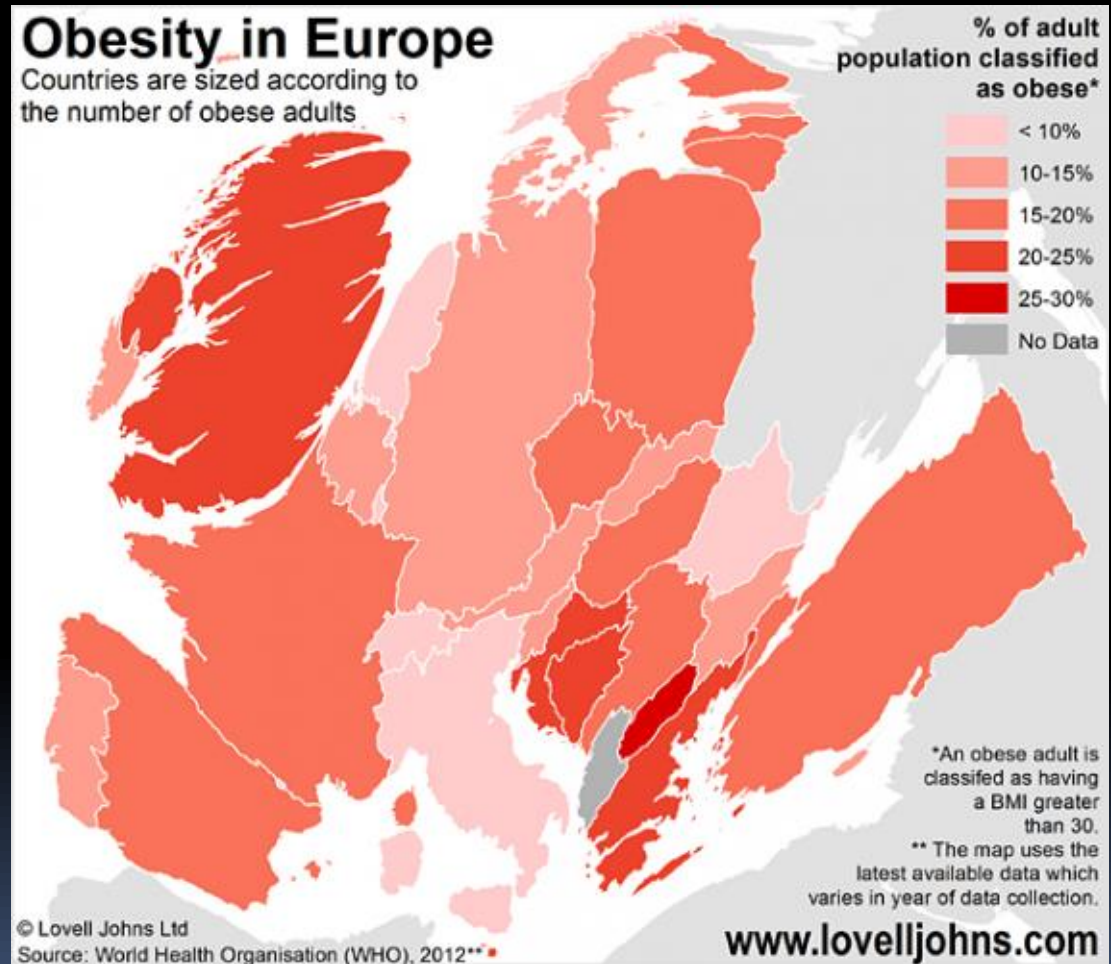
# Epidemiology

- Before the 20th century, obesity was rare;
- in 1997 the World Health Organization (WHO) formally recognized obesity as a global epidemic
- As of 2008, The World Health Organization claimed that 1.5 billion adults were overweight and of these over 200 million men and nearly 300 million women were obese
- WHO in 2015 probably will be 2,3 billion adults overweight and of these over 700 million obese
- Worldwide obesity has nearly doubled since 1980

# Epidemiology of obesity- Europe

In the UK the rate of obesity has increased about fourfold over the last 30 years, reaching levels of 22-24% in 2008/9. The United Kingdom now has one of the highest rates of obesity in Europe.

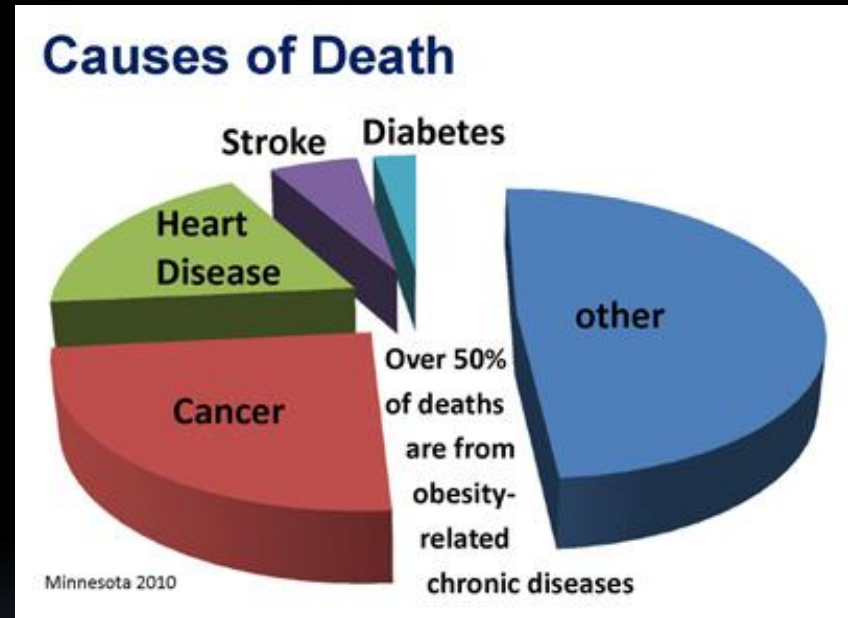
Low rates of obesity:  
Norway, Italy, Austria,  
Netherlands





# Effects on health of obesity morbidity

- obesity reduces life expectancy by six to seven years
- BMI of 30–35 kg/m<sup>2</sup> reduces life expectancy by two to four years
- severe obesity (BMI > 40 kg/m<sup>2</sup>) reduces life expectancy by ten years



Excessive body weight is associated with various diseases, particularly cardiovascular diseases, diabetes mellitus type 2, obstructive sleep apnea, certain types of cancer, osteoarthritis and asthma

**Table 1. Disease Risk\* Relative to Normal Weight and Waist Circumference<sup>[4]</sup>**

	BMI (kg/m <sup>2</sup> )	Obesity Class	Waist Circumference	
			Men (≤40 in) Women (≤35 in)	Men (>40 in) Women (>35 in)
Underweight	<18.5		—	—
Normal†	18.5 - 24.9		—	—
Overweight	25.0 - 29.9		Increased	High
Obesity	30.0 - 34.9	I	High	Very high
	35.0 - 39.9	II	Very high	Very high
Extreme obesity	≥40	III	Extremely high	Extremely high

\*Disease risk for type 2 diabetes, hypertension, and cardiovascular disease.


†Increased waist circumference can also be a marker for increased risk even in persons of normal weight.

# Comorbidity in obesity

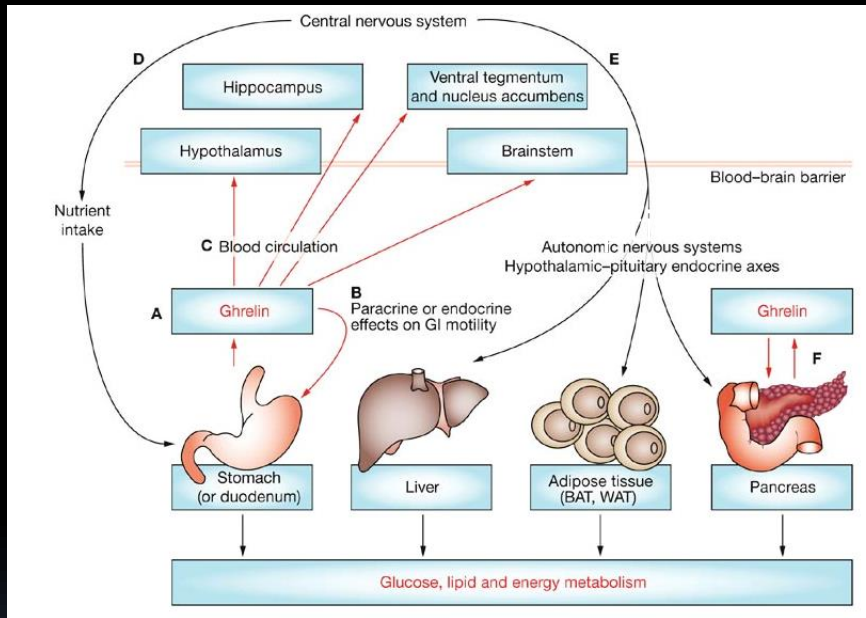
- Dyslipidemia
  - High level of TG
  - Low level of HDL
  - LDL normal
  - High level of VLDL
- disorders of carbohydrate metabolism
  - 28% DM
  - 12% IFG
  - 11 % IGT



# Causes of obesity

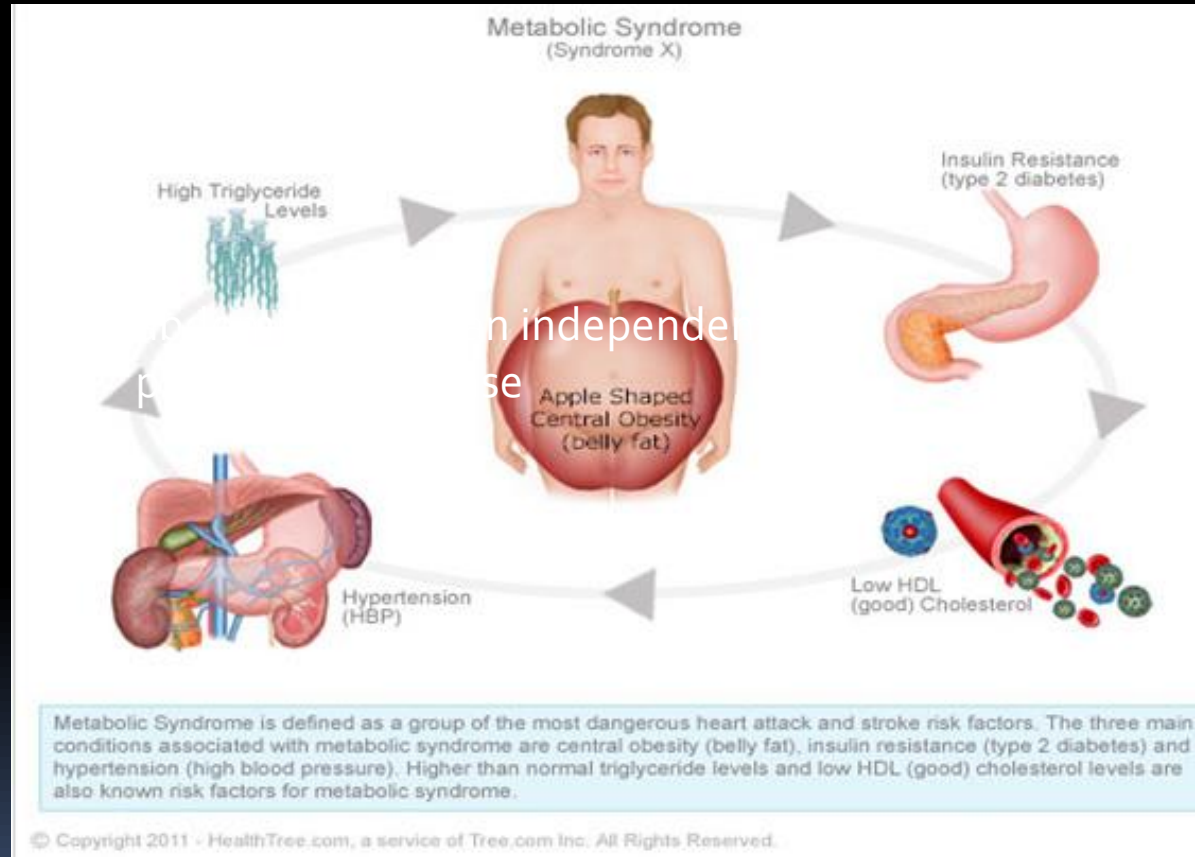
- Dietary energy supply an increased intake of energy-dense foods that are high in fat
  - **Sedentary lifestyle** an increase in physical inactivity
  - **Genetic factors** Polymorphisms in various genes controlling appetite and metabolism predispose to obesity
  - **Other illnesses** rare genetic syndromes , hypothyroidism, Cushing's syndrome, growth hormone deficiency, endocrineopathy
  - Medications insulin, sulfonylureas, thiazolidinediones, atypical antipsychotics, antidepressants, steroids, anticonvulsants
  - **Social determinants**
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# Neurohormonal regulation



- Leptin and ghrelin are considered to be complementary in their influence on appetite, with ghrelin produced by the stomach modulating short-term appetitive control

Central obesity is worse, abdominal fat is an independent predictor of disease risk.



# Metabolic Syndrome

**Diagnostic Criteria for Metabolic Syndrome**

Parameters	The IDF defines metabolic syndrome as a combination of <b>central obesity plus <math>\geq 2</math></b> of the following:	The National Cholesterol Education Program <b>Adult Treatment Panel III (NCEP – ATP III)</b> identifies Metabolic Syndrome as the presence of any <b>3</b> of the following:
<b>Central obesity</b>	<p>Europids: Sub-Saharan, Africans, Eastern Mediterranean, and Middle East (Arabs)</p> <ul style="list-style-type: none"> <li>• Male: <math>\geq 94</math> cm</li> <li>• Female: <math>\geq 80</math> cm</li> </ul> <p>South Asians, Malaysians, Asians, Indian, Chinese, Japanese, ethnic South and Central Americans</p> <ul style="list-style-type: none"> <li>• Male: <math>\geq 90</math> cm</li> <li>• Female: <math>\geq 80</math> cm</li> </ul>	<p>Men <math>&gt; 102</math> cm (<math>&gt; 40</math> inches)            Women <math>&gt; 88</math> cm (<math>&gt; 35</math> inches)</p>
<b>Triglycerides</b>	$\geq 1.7$ mmol/L	$\geq 1.7$ mmol/L ( $\geq 150$ mg/dL)
<b>HDL cholesterol</b>	Men $< 1.0$ mmol/L <b>or</b> $< 40$ mg/dL Women $< 1.3$ mmol/L <b>or</b> $< 50$ mg/dL	Men $< 1.0$ mmol/L <b>or</b> $< 40$ mg/dL Women $< 1.3$ mmol/L <b>or</b> $< 50$ mg/dL
<b>Blood pressure</b>	$\geq 130$ <b>or</b> $\geq 85$ mmHg	SBP $\geq 130$ <b>or</b> DBP $\geq 85$ mmHg
<b>Fasting glucose</b>	$> 5.6$ mmol/L <b>or</b> $\geq 100$ mg/dL	$\geq 5.6$ mmol/L ( $\geq 100$ mg/dL)

DBP: Diastolic blood pressure; HDL: High density lipoprotein; IDF: International Diabetes Federation; SBP: Systolic blood pressure

Ref: Leiter LA et al. Canadian Journal of Cardiology 27 (2011) e1– e33)



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# Benefits of weight loss 10 kg

- 20% reduction of total mortality
- 30% reduction in diabetes+related death, obesity related cancers death
- 50% reduction in fasting glucose level
- 10 mmHg reduction in SBP
- 20 mmHg reduction in DBP
- 10% reduction in total Cholesterol
- 15% reduction in LDL ch
- 30 % reduction in TG
- 8% increase HDL cholesterol





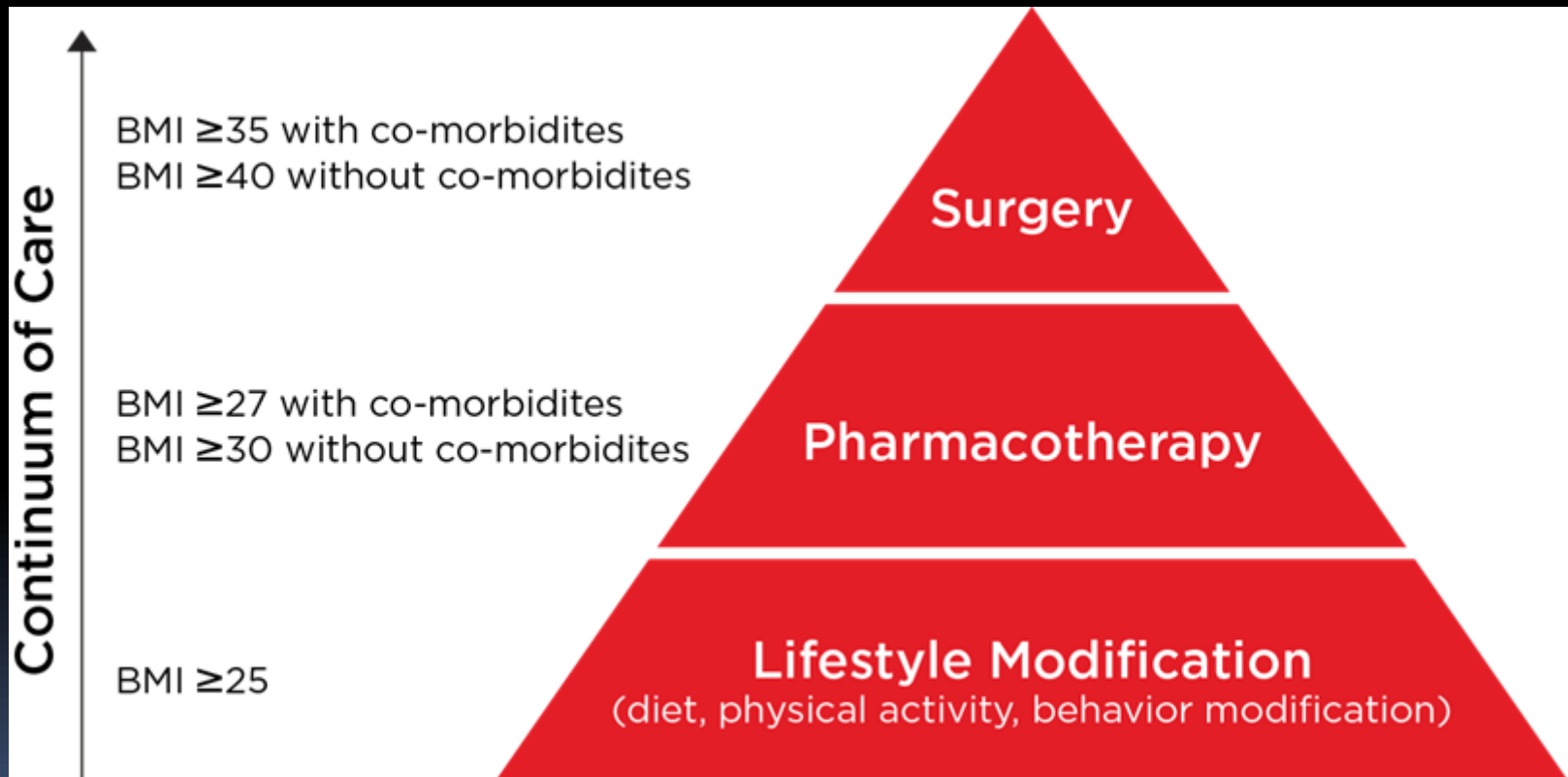
# Diagnosis

- **Assessment of a patient's weight involves evaluation of three key measures:**
    - **BMI**
    - **waist circumference**
    - **and an individual's risk factors for diseases and conditions associated with obesity**
  - **Assess comorbidities**
  - **Dietary history**
  - **Exercise history**
  - **Laboratory evaluation**
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# Treatment

- The aim of a treatment program should be to reduce weight and maintain lowered weight.
- The goals of treatment should be tailored to the individual.
- In general, the primary goal is a 10% reduction from the initial weight
- The main treatment for obesity consists of diETING and physical exercise

# The Obesity Treatment Decision Pyramid



# Dietary interventions

- Diet programs may produce weight loss over the short term, specific 5 to 10% over 6 months but maintaining this weight loss is frequently difficult
- Success rates of long-term weight loss maintenance with lifestyle changes are low ranging from 2 to 20%
- Diets to promote weight loss are generally divided into four categories: low-fat, low-carbohydrate, low-calorie, and very low calorie



# Dietary interventions

- A meta-analysis of six randomized controlled trials found no difference between three of the main diet types (low calorie, low carbohydrate, and low fat),
- Studies have found significant benefits in mortality in certain populations from weight loss.

# Why is it so hard to maintain a lower weight in the long term ?

- adaptive mechanisms of the body restricting weight loss
- hormonal control (reduction of fat causes a decrease of leptin and ghrelin increase leading to increased appetite and decrease of energy consumption)
- adaptation of thermogenesis (weight loss, increases energy efficiency and lowers the body's energy consumption at rest)
- Any intervention involving the drastic reduction in calories causes permanent memory effect of hormone.



# Exercise

- recommends a minimum of 30 minutes of moderate exercise at least 5 days a week. 2800 kcal-weekly
- Goal is to increase up to an additional 1000 calories per week or 10,000 total steps per day
- While exercise alone results in only modest weight loss, randomized controlled trials consistently show the maintenance of weight loss for 2 years.
- A combination of diet and exercise generally produces more weight loss than diet alone.

# Pharmacotherapy

## INDICATIONS FOR PHARMACOTHERAPY OF OBESITY

- BMI  $\geq 30$   
OR
- waist circumference  $\geq 35$  "(women) or  $\geq 40$ " (men)  
OR
- BMI  $\geq 27$  with presence of an additional risk factor for obesity-related disease (such as
- hyperlipidemia, diabetes, or hypertension)



# Bariatric surgery

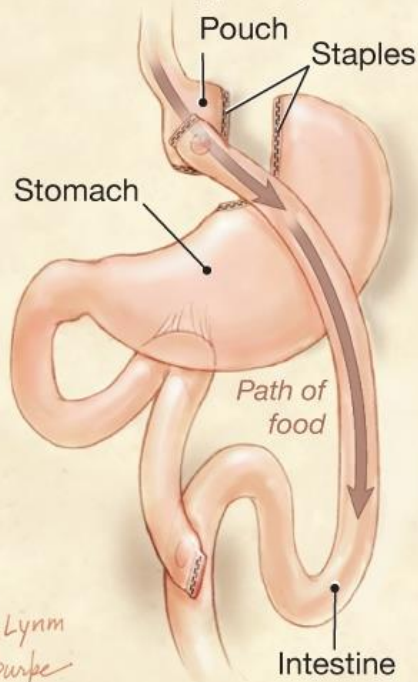
- Indications for surgical treatment :patients with a BMI > 40 or BMI > 35, and diseases which result from obesity when other treatments have failed
- Surgical treatment of obesity reduces the risk of death by 40%
- Is effective- annual weight loss of 30-40 kg
- Operation restrictive digestion and absorption of food and influencing the neurohormonal regulation of eating

# Bariatric surgery

- operations restriction limiting the capacity of the stomach (band adjustable-reversible, vertical plastic girdle stomach, glands, gastric resection)
- Operations excluding (op way Rou-en-Y gastric bypass, biliary-pancreatic exclusion)
- Laparoscopy technic

# The most common surgical techniques.

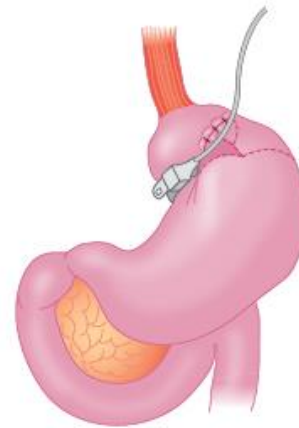
## Gastric Bypass (Roux-en-Y Gastric Bypass)



The size of the stomach is permanently reduced to an egg-sized pouch.

The pouch is reattached to a 2-foot-long tube of intestine that bypasses the stomach.

The amount of food taken in is restricted by the size of the pouch and the size of the connection of the pouch to the intestine.



## Laparoscopic Adjustable Gastric Banding

Risks:	1% bowel perforation 2-25% slippage/prolapse 0-2% band erosion 1-7% tube or port malfunction 0.1% mortality rate
Benefits:	40-60% excess weight loss 55% resolution of diabetes 60% improvement in hyperlipidemia 45% resolution of hypertension 95% resolution of sleep apnea

# Role of the family physician in the care of patients with overweight and obese

- prevention of obesity in children and adults
- promotion of healthy lifestyles
- screening tests in all patients every 2 years (BMI, waist circumference)
- Minimal intervention anty obesity -5A  
diagnosis of patients with obesity (BMI,WC, determine the risk factors, comorbidity assessment,individual risk assessment)

# Role of the family physician in the care of patients with overweight and obese

- Treatment of obesity, dietary modification, exercise, pharmacotherapy

Referral to a dietitian, other specialists, bariatric, endocrinologist

- Referral to bariatric surgery
- Leading to weight loss programs, specialist centers
- Care of patients after bariatric surgery