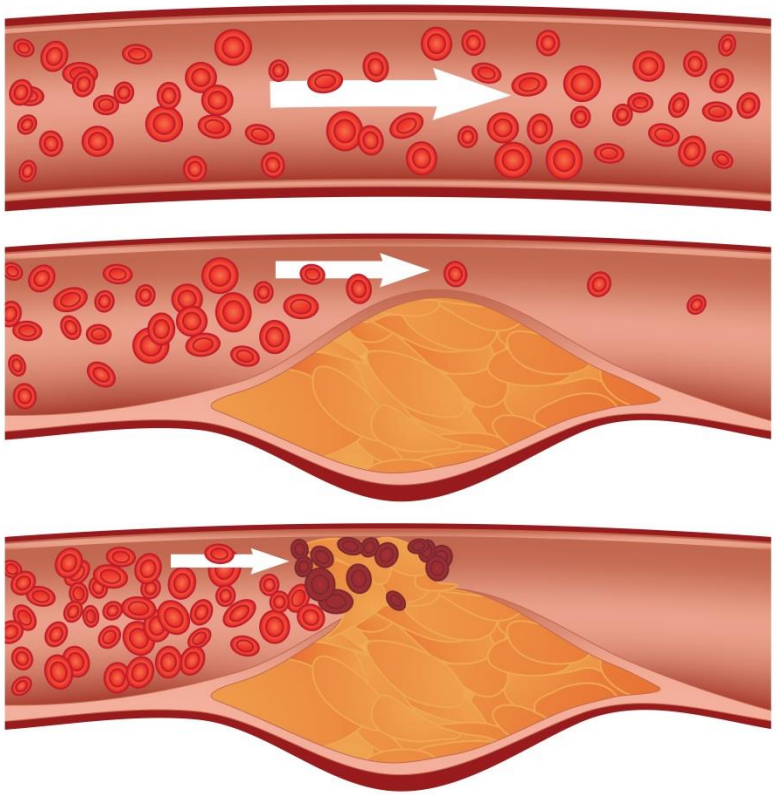
Hypercholesterolaemia



Unit: Understanding medical conditions for exercise referral

Hypercholesterolaemia

- High levels of cholesterol in the blood
- A form of hyperlipidaemia (elevated blood lipid levels)
  - cholesterol is not water soluble
  - is transported in the blood attached to lipoproteins
- May be the result of:
  - Diet
  - Heredity
  - other conditions, such as diabetes and obesity

Classification

- Generally classified as either:
  - familial (primary) caused by specific genetic abnormalities
  - acquired (secondary) when resulting from another underlying disorder
- Levels of total cholesterol categories:
  - ideal level: less than 5mmol/l
  - mildly high level: between 5 to 6.4mmol/l
  - moderately high level: between 6.5 to 7.8mmol/l
  - very high level: above 7.8mmol/l

For those classified at high risk these levels are reduced.

Classification

- The National Institute for Health and Clinical Excellence (NICE) and Department of Health cholesterol guidelines are:
  - Total cholesterol - less than 5.0mmol/L.
  - LDL cholesterol - less than 3.0mmol/L.
  - HDL cholesterol – above 1.0mmol/L.

The NICE guidelines for testing for cholesterol were amended in 2014 to state that tests should now measure total cholesterol and non-HDL cholesterol.

Prevalence

- In the UK, two out of three adults have a total cholesterol level of 5mmol/L or above.

- On average, in England
  - men have a cholesterol level of 5.5mmol/L
  - women have a cholesterol level of 5.6mmol/L

Lipoprotein abnormalities are regarded as a modifiable risk factor for cardiovascular disease due to their influence on atherosclerosis

Cost to the nation

- The number of people prescribed cholesterol-lowering drugs is considerably less than the number who could benefit from the treatment.

- This treatment gap contributes to more than 7,000 unnecessary heart attacks each year

- The Joint British Societies guidance recommends cholesterol targets of 4mmol/L and LDL cholesterol targets of under 2mmol/L.

Causes

The most common causes of hypercholesterolaemia are:

- diet
- diabetes mellitus
- use of drugs such as diuretics, beta blockers, and oestrogens

Other conditions that may lead to hypercholesterolaemia include:

- hypothyroidism
- renal failure and nephrotic syndrome
- alcohol abuse
- some rare endocrine metabolic disorders

Presentation

- Generally, symptoms are not apparent
- A high level combined with other risk factors can lead to:
  - atherosclerosis
  - symptoms of cardiovascular disease

Risk factors

- Blood cholesterol level is affected by:
  - what is eaten
  - how quickly the body makes and disposes of LDL cholesterol

- Risk factors that determine whether LDL-cholesterol level is high or low, include:
  - Heredity
  - Diet
  - Weight
  - Age and sex
  - Alcohol
  - Stress

Part two

ACCEPTED TREATMENTS

Common medications

Pharmacological intervention
is the primary modality for
reducing lipid and lipoprotein levels.

Medications include:

- Bile acid binders
- Fibrates
- Statins

Side effects may include

- Bile acid binders - Unpalatable and may cause GI problems, raised triglycerides, gallstones, rash, acute pain in calf or thigh muscle if kidney function impaired

- Statins - generally well tolerated

- Consider the impact of other medications (CVD medication)

Lifestyle intervention

Daily exercise is advocated because of its favourable effects on glucose intolerance (which contributes to hypercholesterolaemia).

Dietary recommendations (NHS Choices. 2011) include:

- reduce saturated fat intake, moderate unsaturated fat
- replace fatty foods (pastries, crisps) with healthier options (fruit and vegetables)
- eat foods high in soluble fibre (beans, lentils, porridge, fruit and vegetables)
- eat oily fish (tuna, salmon etc.) that is rich in Omega 3 fatty acids
- modest alcohol intake
- reduce simple carbohydrate intake (sugar and sweets)
- manage body weight and central/trunk body fat
- reduce waist circumference

Part three

EXERCISE GUIDELINES AND CONSIDERATIONS

Rationale for exercise

- Beneficial changes include:
  - Lower triglyceride concentrations
  - Reduced post-prandial lipid levels
  - Higher HDL-C concentrations
  - Decreased concentration of small LDL particles
  - Increased number of large LDL particles
  - Increased lipoprotein lipase (LPL) activity
  - Improved glycaemic control

Exercise guidelines

Mode of exercise	FIT principles
Aerobic	• 40%-80% peak heart rate • 40%-80% heart rate reserve • >5 days/week • 20-60mins per session or 2-3 sessions per day of 10-30 mins each
Resistance	• 2-4 sets 8-12 reps • 60%-80% 1RM • 2-3 days/week
Flexibility	• Static stretches hold for 10-30 secs • 2-3 days/week

Comorbidities

- Consider
  - Any change in risk stratification?
  - Effects of medications
  - Exercise recommendations for other conditions
  - Further adaptations and modifications?