

# Yelverton Surgery

## High cholesterol

Cholesterol is a type of fat (lipid) made by the body. It is essential for good health and is found in every cell in the body. However, a high cholesterol level in the blood (hypercholesterolaemia) is associated with an increased risk of various problems, such as coronary heart disease (CHD) and stroke.

### Why is high cholesterol a problem?

The main risk associated with high cholesterol is coronary heart disease (CHD). This is caused by blood vessels becoming narrowed with fatty deposits called plaques, which cholesterol contributes to. The narrowed blood vessels reduce blood flow to the heart. This can result in angina (chest pain) or, if the vessel is blocked completely, a heart attack.

High cholesterol can also increase the risk of other conditions, depending on which blood vessels are narrowed or blocked. These include stroke if the blood supply to part of the brain is reduced

There is also a risk of peripheral vascular disease. This is caused by narrowed blood vessels in the limbs, particularly the legs. It may result in leg pain, ulcers, infections and eventually gangrene.

### Types of cholesterol

Cholesterol is transported around the body in the blood attached to a protein. This fat-protein combination is called a lipoprotein. Lipoproteins can be high density (HDL), low density (LDL) or very low density (VLDL), depending on how much protein there is in relation to fat.

#### LDL (low density lipoprotein)

About 70% of cholesterol is transported as LDL. This is mostly fat and not much protein.

LDL causes cholesterol to be deposited in the arteries. High levels of LDL are associated with an increased risk of heart disease. LDL is sometimes referred to as "bad cholesterol".

#### HDL (high density lipoprotein)

About 20% of cholesterol is transported as HDL, which is mostly protein and not much fat.

HDL actually helps prevent cholesterol building up in the arteries. Low levels of HDL are associated with an increased risk of heart disease. HDL is sometimes referred to as "good cholesterol". Women tend to have a higher HDL cholesterol level than men.

If the total cholesterol level is too high, this is one risk factor for health problems. However, it's important to consider the relative amounts of HDL and LDL. A high level of HDL and a low level of LDL is desirable.

### Triglycerides

Triglycerides are a different type of fat, which mostly come from fats in food. Calories that are eaten and not used immediately are converted into triglycerides and transported to fat cells for storage.

Although most triglycerides are stored in fat tissue, low levels are also found in the blood. They are carried in the blood as very low density lipoproteins (VLDL).

A raised level of blood triglycerides together with high LDL can increase the risk of heart disease.

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## What causes high cholesterol?

There are several factors that may contribute to high blood cholesterol:

- a diet that's high in saturated fat and, less so, high in cholesterol (see below)
- lack of exercise may increase LDL ("bad") cholesterol and decrease HDL ("good") cholesterol
- family history - people are at a higher risk of high cholesterol if they have a direct male relative aged under 55 or female relative aged under 65 affected by coronary heart disease
- being overweight, which may increase LDL ("bad") cholesterol and decrease HDL ("good") cholesterol
- age and sex - cholesterol generally rises slightly with increasing age, and men are more likely to be affected than women
- drinking alcohol excessively

Rarely, high cholesterol can be caused by a condition that runs in the family called a lipid disorder (familial hypercholesterolaemia).

Other health conditions such as poorly controlled diabetes, certain kidney and liver diseases and an underactive thyroid gland may also cause cholesterol levels to rise. Some medicines such as beta-blockers, steroids or thiazides (a type of diuretic) may also affect blood lipid levels.

## How diet affects blood cholesterol

Only about 20% of cholesterol comes directly from the diet - the other 80% is produced by the liver. However, a diet high in saturated fats and cholesterol can cause the liver to produce more LDL ("bad") cholesterol. The amount that diet influences cholesterol levels varies from person to person and is probably an inherited characteristic. Some people who eat high-fat diets have high cholesterol levels; others may have normal or low cholesterol levels.

## Measuring cholesterol

Cholesterol is measured in units called millimoles per litre of blood, usually shortened to "mmol/litre" or "mmol/l". America uses the units milligrams per decilitre of blood: mg/dl instead. It is desirable to have a total cholesterol level under 5 mmol/l, and an LDL level under 3 mmol/l.

In order to estimate the risk of a person getting CHD, doctors look at the ratio between total cholesterol and HDL ("good" cholesterol), called the TC:HDL ratio. A lower ratio is desirable, indicating that the level of HDL is high.

Measuring cholesterol involves a simple blood test. A blood sample may be taken either by using a needle and a syringe, or by using a finger prick. This may be done at a GP's surgery, at a hospital appointment, or as part of a health assessment examination.

Home-testing kits for cholesterol are not recommended because they are not usually very reliable. Also, cholesterol is just one of the risk factors for heart disease. It should ideally be measured under medical supervision so that other important issues, such as blood pressure, age and whether or not you smoke, are taken into account.

## Who should have a cholesterol test?

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Anyone who has any cardiovascular disease, such as coronary heart disease, peripheral vascular disease (disease in the blood vessels that supply the limbs) or stroke, should have their cholesterol measured by a doctor.

Anyone, even children, with a family history of familial hypercholesterolaemia should have their cholesterol measured.

Anyone aged 35 or over should consider having their cholesterol measured if they have one or more of the following risk factors for CHD: family history of early heart disease, diabetes, high blood pressure, or if they smoke.

## **Diagnosis**

Having a high cholesterol level does not cause symptoms. Most people find out they have high cholesterol when they have their blood cholesterol measured as part of a medical check-up. Alternatively, it may be identified after other health problems have been diagnosed, such as heart disease.

## **Treatment**

The main aim of lowering cholesterol is to reduce the risk of heart disease. The type of treatment depends on the overall risk of heart disease.

There are two ways to treat high cholesterol. The first is with simple lifestyle changes including changing diet, managing weight and increasing exercise. The second is to combine lifestyle changes with cholesterol-lowering medicines. Your doctor will discuss this with you.

### **Diet**

Healthy eating can reduce cholesterol. Your diet should be low in saturated fats in particular, and low in fat overall. Biscuits, cakes, pastries, red meat, hard cheese, butter and foods containing coconut or palm oil all tend to be high in saturated fats.

Large amounts of cholesterol are found in a few foods, including eggs and offal such as liver and kidneys. Although dietary cholesterol does not usually contribute much to blood cholesterol, it is still advisable to limit these foods to three servings a week if you have high cholesterol.

It's also important to eat plenty of fibre, especially soluble fibre, which is thought to lower cholesterol. It's found in fruits and vegetables, beans and oats. Aim to eat at least five portions of fruit and vegetables each day.

There is some evidence that foods containing substances called plant sterols or plant stanols, such as the brand Benecol or Flora pro.activ, in combination with a low fat diet, can help to lower cholesterol.

### **Medicines**

Cholesterol-lowering medicines are considered for people who already have CHD, or are at high risk of getting it because they have other risk factors.

The main group of medicines for lowering cholesterol are statins. Examples include simvastatin (Zocor) and atorvastatin (Lipitor). They work by reducing the production of cholesterol in the liver. Occasionally these drugs have side-effects such as indigestion and muscle pains. Other types of drugs to reduce cholesterol are called fibrates and nicotinic acids, but these are generally less effective or have more side-effects.

## **Reducing the risk of heart disease**

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A healthy lifestyle - exercising on most days, eating a low fat diet, not smoking and drinking alcohol within the recommended limits - will help reduce the risk of coronary heart disease.

### **Further information**

**The British Heart Foundation**

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<http://www.bhf.org.uk>

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