

CHOLESTEROL

This factsheet explains what cholesterol is and why too much cholesterol in your blood is harmful. It also provides information regarding cholesterol testing and tips to help reduce your blood cholesterol and your risk of heart disease and stroke.

What is cholesterol?

Cholesterol is a fatty, waxy material (lipid) carried in your blood. It is essential to keep your body healthy. The main functions of cholesterol are to:

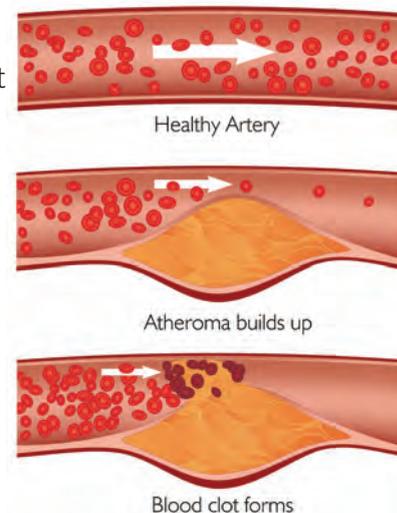
- Help make the outer layer of the cells in your body (the cell membrane)
- Produce bile acids which help to digest and absorb dietary fat
- Help make vitamin D and hormones, like oestrogen and testosterone, in your body

Cholesterol is produced naturally within your body – mainly in your liver. Although some of the foods we eat contain cholesterol (for example eggs, liver and shellfish), it is not easily absorbed. It is the saturated and trans fats (hydrogenated fats) in your diet that will usually have more of an effect on your blood cholesterol.

Why is too much cholesterol harmful?

If there is too much cholesterol in your blood, fatty patches can build up on the walls of your blood vessels (like limescale furring up a water pipe). These fatty patches are called atheroma. Over time, the build up of atheroma narrows the blood vessel and reduces the flow of blood. Sometimes a blood clot forms at a patch of atheroma and the blood vessel becomes completely blocked. Depending on the blood vessel involved, this can cause a heart attack or other serious heart problem, or a stroke.

High cholesterol therefore contributes to your risk of developing heart disease and stroke. However, it is just one of a number of 'risk factors' that increase your risk of heart disease and stroke. These risk factors interact with each other and have to be looked at together rather than in isolation.



FACTSHEET

Understanding your cholesterol test

You may have an initial blood test which will give a total cholesterol level. This reading will tell your doctor whether they need to know about your cholesterol levels in more detail. Ideally your total cholesterol should be below 5mmol/L.

If your total cholesterol is high, your doctor may decide that you need a further blood test called a lipid profile.

A lipid profile provides a detailed breakdown of the cholesterol and triglycerides (other fatty substances) in your blood. The results of this test provide a more accurate picture of what is going on and will help your doctor to assess your overall risk of heart disease and stroke.



I have heard of 'good' and 'bad' cholesterol; what does this mean?

Cholesterol and triglycerides are carried around your body by substances called lipoproteins. There are several groups of lipoproteins and each has a different function in the transportation and storage of cholesterol and triglycerides. Measuring the amounts of these lipoproteins can give an indication of how much harmful fat is being carried in your blood stream.

- LDL (low-density lipoprotein) cholesterol is known as 'bad cholesterol' because it contributes to the build up of fatty patches or atheroma in the arteries. The recommended LDL-cholesterol level is below 3.0mmol/L. A higher LDL-cholesterol indicates an increased risk.
- HDL (high-density lipoprotein) cholesterol is known as 'good cholesterol' because it carries surplus cholesterol from the tissues back to your liver to be recycled or excreted. The recommended HDL-cholesterol level is above 1.2mmol/L. A higher HDL-cholesterol indicates a lower risk.

What is a total cholesterol/HDL ratio?

A good (high) HDL-cholesterol level or a bad (high) LDL-cholesterol level is not usually enough information on its own. A comparison of total cholesterol and HDL-cholesterol can give a more accurate indicator of risk.

This is called the 'total cholesterol / HDL ratio'. Generally a number greater than 4.5 indicates increasing risk. The examples below show how this works.

Total cholesterol/HDL ratio	Above 4.5 indicates increasing risk
A high risk total cholesterol of 8.3 divided by a good HDL cholesterol of 1.3	$8.3 \div 1.3 = \mathbf{6.38}$ (high risk)
A lower risk total cholesterol of 5 divided by a poor HDL of 0.9	$5 \div 0.9 = \mathbf{5.56}$ (high risk)

How is my cholesterol level used to assess my risk of heart disease or stroke?

Most health professionals use a risk calculator to help identify your 'cardiovascular risk', that is how likely you are to develop heart disease or stroke in the future. As well as your cholesterol levels, this will take into account risk factors such as your age, weight and blood pressure, whether you smoke, and whether there is a history of early cardiovascular disease in your close family.

See the CHSS booklets '*Reducing the risk of stroke*' and '*Reducing the risk of heart disease*' for more information.

What can I do to reduce my cholesterol level?

If you have a low cardiovascular risk you may be advised initially to try and get your cholesterol down yourself over a period of time. A healthy diet can help to reduce your cholesterol.

- Reduce your total fat intake – limiting the number of calories you take in that come from any fat can have a beneficial effect but it is also important to consider the types of fat you eat.
- Reduce your intake of saturated fats and trans fats – these increase LDL-cholesterol and therefore increase your cardiovascular risk.
- Increase your intake of unsaturated fats – these increase HDL-cholesterol and help to reduce LDL-cholesterol, therefore reducing your cardiovascular risk.

Which foods contain these different types of fats?

- **Saturated fats** are mainly found in animal sources, such as butter, full-fat dairy and the fat on meat. Choose lower fat options of these, and remove the fat where possible; for example, use low-fat spreads and take the skin off chicken.
- **Trans fats** are found mainly in processed foods. Reduce your intake of foods like biscuits, cakes and pastries. Replace with healthier options such as fruit or unsalted popcorn.
- **Unsaturated fats** are mostly found in plant sources and fish (for example olive oil, nuts and seeds, and oily fish such as salmon).



What treatment will I get?

If your cholesterol levels remain too high or if you have a higher cardiovascular risk, your doctor may recommend that you take a medicine called a statin to lower the amount of cholesterol your body makes. If you are at high risk, or you already have cardiovascular disease, you will be recommended to take a statin even if your cholesterol is not high. This is because statins are known to reduce risk even if your cholesterol is currently at an acceptable level.

Usually statins have to be taken for life, as the body reverts back to overproducing cholesterol when they are stopped. Your doctor will monitor long-term statin treatment with blood tests and discuss possible side effects and any possible interactions (such as avoiding grapefruit juice when taking simvastatin). If you have any questions about your treatment, phone the Advice Line on 0808 801 0899.

If you already have cardiovascular disease, you will probably be prescribed a daily low dose of aspirin as well. This will help to prevent blood clots forming on the patches of atheroma.

What can I do to reduce my cardiovascular risk?

- Eat at least 5 portions of fruit and vegetables each day (one portion is about the amount you can hold in your palm).
- Choose a moderate amount of carbohydrates, preferably wholegrain or wholemeal (pasta, cereals, rice, bread). Include some at each meal (about 1/3 of your plate).
- Limit your salt intake to 6g or less a day.
- Reduce the amount of sugar you eat.
- Maintain a healthy weight, or lose weight if needed.
- Try to be active for at least 30 minutes on most days of the week. Choose an activity that you enjoy, such as walking, swimming, dancing or yoga.
- Limit your alcohol to recommended levels – men and women should not regularly drink more than 14 units a week. Spread this over 3 days or more and have at least 2 alcohol-free days a week.
- Don't smoke.

See the CHSS factsheets 'Get Moving', 'Healthy Eating', 'Losing Weight', 'Salt' and 'Stopping Smoking' for more information.



Familial hypercholesterolaemia

Some people have an inherited condition known as familial hypercholesterolaemia in which they have a consistently high concentration of cholesterol in their blood. This is caused by a genetic fault and is passed down from generation to generation, it can cause early cardiovascular disease if left untreated.

Further support and advice about this condition is available from Heart UK.

Heart UK

7 North Road, Maidenhead

Berkshire SL6 1PE

Helpline: 0345 450 5988

Email: ask@heartuk.org.uk

Website: heartuk.org.uk

If you would like to speak to one of our nurses in confidence,
please call the **Chest Heart & Stroke Scotland Advice Line Nurses**

0808 801 0899

Call FREE from landlines and mobiles