# A red heart with a black background  Description automatically generatedHigh cholesterol - symptoms, causes & levels

High cholesterol is when you have too much cholesterol in your blood, which can increase the risk of having a heart attack or stroke. Find out more about high cholesterol, including symptoms and causes, and what you can do to lower your cholesterol level.

On this page we answer the most common questions people have about high cholesterol, including:

* High cholesterol explained
* Causes of high cholesterol
* Types of cholesterol
* Symptoms of high cholesterol
* Getting a cholesterol test
* Primary and secondary prevention
* Cholesterol levels
* Treating high cholesterol
* Managing your cholesterol
* Heart Helpline and other support

## High cholesterol explained

Cholesterol is a natural fatty substance in your blood. It’s produced in the liver and it's also in some of the foods we eat. Cholesterol is important to keep the cells in our bodies healthy.

High cholesterol means that you have too much cholesterol in your blood. There are many things that can cause this. If you do not take steps to lower high cholesterol, it can increase your risk of heart attack and stroke.

## Causes of high cholesterol

Anyone can develop high cholesterol. It can be caused by many different things, some you can control, and others you cannot.

Things that cause high cholesterol which you can control:

Your lifestyle:

* eating too much saturated fat – this reduces the liver’s ability to remove cholesterol, so it builds up in the blood
* being physically inactive – being active raises the level of ‘good’ cholesterol and reduces the level of ‘bad’ cholesterol
* smoking - this can lead to high cholesterol levels and it causes tar to build up in your arteries, making it easier for cholesterol to stick to your artery walls.

Things that cause high cholesterol which you cannot control:

Your age, biological sex and ethnic background:

* getting older – having higher cholesterol is more likely as we age
* if your biological sex is male (you were assigned male at birth) – males are more likely to have high cholesterol
* your ethnic background – if you are from a South Asian background, you are more likely to have high cholesterol.

Your genes:

Genes carry the information that determine your features or characteristics that are passed on to you, or inherited from your parents.

Familial hypercholesterolaemia (FH), is an inherited condition, meaning you were born with it. It's often passed down through families in faulty genes and can lead to very high levels of cholesterol, even if you do not have other risk factors.

Lipoprotein (a), or LP(a), is made in your liver and carries fats around the body. High LP(a) is a condition that can cause heart problems like heart attack and stroke. This is because LP(a) is ‘sticky’ and can build up in your arteries. It's usually an inherited condition but there are other causes.

Your general health:

* kidney disease - when your kidneys are not working well, it also changes the way your body handles cholesterol, which can lead to high cholesterol
* liver disease – an important job of the liver is to produce cholesterol and clear it from the body, but if the liver isn’t working well it struggles to do this, increasing your risk of high cholesterol
* if you live with excess weight, especially around your middle
* if you have type 2 diabetes, you are at greater risk of having high cholesterol
* having an underactive thyroid (hypothyroidism – when your body doesn’t make enough thyroid hormone)
* growth hormone deficiency (when not enough of the growth hormone is made).

## Types of cholesterol

Cholesterol is used by all the cells in your body to keep them healthy. It is carried around your body to the cells that need it by proteins in your blood. Proteins are substances in your body that do most of the work in your cells and help keep your body’s tissues and organs working as they should.

When cholesterol and proteins combine, they're called lipoproteins. There are two main types of lipoproteins. One is good for your health, the other is bad.

**High-density lipoproteins** or HDL is known as ‘good’ cholesterol. It gets rid of the ‘bad’ cholesterol from your blood by taking cholesterol you don’t need back to the liver, where it is broken down and removed from your body.

**Non-high-density lipoproteins** or non-HDL is known as 'bad' cholesterol. Too much non-HDL leads to a build-up of fatty deposits inside the walls of the blood vessels (channels that carry blood throughout your body). This builds up and narrows blood vessels, increasing the risk of a heart attack or stroke.

You may also have heard 'bad' cholesterol being called 'LDL' cholesterol. This used to be the main measure of harmful types of cholesterol, but we now know that other forms of non-HDL cholesterol can also affect your health.

### Triglycerides

Our blood also contains a type of fat called triglycerides (found in fat cells), which can also contribute to narrowed arteries. Having excess weight, eating a lot of fatty and sugary foods or drinking too much alcohol can cause high triglyceride levels.

If you have had results from a lipid profile (a test that looks at all aspects of your cholesterol), you may see your triglycerides level, your doctor will be able to tell you if it's too high.

You can have a normal level of HDL and non-HDL cholesterol, but still have a high triglyceride level. If you are found to have this, you may wish to speak to your GP to discuss what it means for you.

## Symptoms of high cholesterol

There are usually no symptoms of high cholesterol. But if left untreated, it can lead to heart attack and stroke.

It's often a hidden risk factor which means it can happen without us knowing until it's too late. That is why it's so important to get your cholesterol level checked.

However, if you have familial hypercholesterolaemia, you may have visible signs of high cholesterol. These include:

* Tendon xanthomata - swellings made from cholesterol on the knuckles of your hands, your knees or the Achilles tendon at the back of your ankle.
* Xanthelasmas - small, yellow lumps of cholesterol near the inner corner of your eye.
* Corneal arcus - this is a pale white ring around the coloured part of your eye, your iris.

## Getting a cholesterol test

You can ask your GP to check your cholesterol levels, which are measured using a simple blood test. It is sometimes referred to as a ‘lipid profile’. Your GP or practice nurse will take a blood sample, to check for the following:

* levels of good cholesterol (HDL)
* levels of bad cholesterol (non-HDL)
* triglycerides.

You will also get a total cholesterol result.

You may be offered a finger-prick cholesterol test. This can be done in some pharmacies, or as part of the NHS Health Check in England.

Cholesterol levels vary from person to person, but in general, for a healthy heart you need a low level of non-HDL level and a higher level of HDL.

## Primary and secondary prevention

You may hear ‘primary prevention’ and ‘secondary prevention’ mentioned when talking to your doctor about cholesterol.

Primary prevention means making changes to your life to stop you from getting a heart condition or from having something like a heart attack or stroke. The changes are normally focused on lifestyle, including things like doing more exercise and eating better. Sometimes medications like statins will be prescribed to you.

Secondary prevention means making changes to your life when you already have a heart condition to stop you from getting worse or from having another event like a heart attack. This may include lifestyle changes like eating better and exercising, as well as taking medications such as statins.

Other medications may be prescribed by your doctor to help lower your cholesterol. This is more likely to happen if your cholesterol is still high after taking statins for a while. It may also happen even if your cholesterol levels are currently well-managed.

## Cholesterol levels

The information below is a guide. What matters is your individual risk. Talk to your doctor about your results and what levels you should aim for.

|  |  |
| --- | --- |
| Result | Healthy level (mmol/L) |
| Total cholesterol | 5 or below |
| HDL (good cholesterol) | 1 or above |
| Non-HDL (bad cholesterol) | 4 or below |
| Fasting triglycerides (when you're asked not to eat for several hours before the test) | 1.7 or below |
| Non-fasting triglycerides (when you eat as normal before the test) | 2.3 or below |
| Total cholesterol to HDL cholesterol ratio | 6 or below |

If you’ve been told you have a high cholesterol level, it means you have too much 'bad' cholesterol in your blood, which increases your risk of a heart attack or stroke. But a high level of 'good' (HDL) cholesterol can help keep that 'bad' (non-HDL) cholesterol in check.

If you are getting secondary prevention treatment for your heart condition, you may have different LDL-cholesterol and non-HDL cholesterol levels to aim for. The guidelines say you should aim for:

* LDL cholesterol level of 2.0mmol or less.
* Non-HDL cholesterol level of 2.6mmol or less.
* If you’re unsure of what levels you should be aiming for, discuss this with your doctor.

## Treating high cholesterol

There is lots you can do to help lower your cholesterol:

* You can try ways of getting more active, which will help lower your cholesterol but also help you sleep better and feel more energetic.
* You can cut down on alcohol and stop smoking.
* You can enjoy trying healthy foods and recipes that are good for your heart.

If lifestyle changes are not enough to lower your high cholesterol, your doctor may suggest medication. If you are diagnosed with high cholesterol, your GP should invite you for a blood test every year to check your levels and adjust your treatment if necessary.

Statins are the main type of medicine used to reduce cholesterol. But there are other treatments available. Your doctor will let you know if you need to take any other drugs which help control your cholesterol levels. They may also refer you to a specialist called a lipidologist.

If you have questions about your medicines, speak with your doctor or contact our [Heart Helpline](https://www.bhf.org.uk/informationsupport/heart-helpline).

## Get support

If you live in England and are aged 40-74 you can ask for an NHS health check. Your doctor should write to you every five years about this.

If you have high cholesterol, it's important to know that you're not alone. Find support from healthcare professionals and the people around you.

Learn more about your heart and how to look after it. Visit bhf.org.uk/informationsupport

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