CONDITION

# High blood cholesterol levels

High blood cholesterol means there is more cholesterol in your blood than is healthy for your heart and blood vessels.

**WHAT IT IS**
Excess cholesterol circulating in the blood

**BODY SYSTEM**
Heart and circulation

**MAIN SYMPTOMS**
Usually none, tendon lumps, eyelid deposits, corneal rings

**WHAT CAUSES IT**
Inherited traits, health conditions, diet, and some medicines

**HOW IT IS DIAGNOSED**
Blood lipid panel

**MAIN TREATMENT**
Lifestyle changes and cholesterol-lowering medicines

**CAN IT BE CURED?**
Sometimes - reversible causes can resolve

**IS IT AN EMERGENCY?**
No - but heart attack or stroke symptoms are

**LONG-TERM OUTLOOK**
Usually manageable with lasting treatment and monitoring

## Overview

Cholesterol is a waxy substance that your body needs to make cell membranes, hormones, and vitamin D. Your liver produces cholesterol, and some also comes from food.

Cholesterol travels through the blood in particles called lipoproteins. A lipid blood test usually reports several measurements:

High blood cholesterol usually means that LDL or non-HDL cholesterol is above the level considered suitable for your overall health. The number that matters for you is influenced by your risk of heart attack and stroke, not just whether a result is marked "high" on a laboratory report.

Over years, excess LDL cholesterol can enter artery walls. This helps create plaques, which are

areas containing cholesterol, inflammatory cells, and scar-like tissue. The process is called atherosclerosis. Plaques can narrow an artery or rupture and trigger a blood clot.

High cholesterol is a condition rather than a symptom. You can feel completely well while it is affecting your arteries, which is why testing and long-term risk assessment matter.

- LDL cholesterol carries cholesterol from the liver to the body. Persistently high levels can contribute to fatty deposits in artery walls.
- HDL cholesterol helps move cholesterol back toward the liver. A higher HDL level does not cancel out the risk from a high LDL level.
- Triglycerides are another type of blood fat. They are not cholesterol, but they are measured on the same test.
- Non-HDL cholesterol includes LDL and other particles that can contribute to artery disease.

## Symptoms

High blood cholesterol usually causes no symptoms. It does not normally cause headaches, dizziness, tiredness, chest discomfort, or a noticeable change in how you feel.

Symptoms may appear only after artery disease has developed. For example, narrowed heart arteries can cause chest pressure during activity, while narrowed leg arteries can cause calf pain when walking. These are complications, not direct symptoms of the cholesterol level itself.

People with very high cholesterol caused by an inherited condition may develop visible signs. These can include:

These findings can have other causes. Their presence does not confirm high cholesterol without blood testing.

- Firm cholesterol deposits in tendons, especially around the knuckles or Achilles tendon
- Yellowish deposits around the eyelids, called xanthelasma
- A pale ring around the coloured part of the eye at an unusually young age

## Causes and risk factors

Your cholesterol level reflects a combination of genes, liver function, health conditions, medicines, diet, and other factors.

Many people inherit several common gene variations that raise LDL cholesterol. A smaller number have familial hypercholesterolaemia, often shortened to FH. FH causes a high LDL level from birth and can lead to artery disease earlier than usual. It may affect several people across generations of a family.

Other factors that can raise LDL or non-HDL cholesterol include:

Age-related changes can increase cholesterol, but high cholesterol is not limited to older adults. People who are young, active, or in a smaller body can also have it, particularly when inherited factors are involved.

A medicine should not be stopped because it might affect cholesterol without first discussing the benefits and risks with the prescriber.

- Eating a diet high in saturated or trans fats
- Having an underactive thyroid
- Diabetes or insulin resistance
- Some kidney or liver conditions
- Excess body weight, particularly around the waist
- Limited physical activity
- Smoking
- Some medicines, including certain hormone, immune, psychiatric, and blood pressure treatments

## Diagnosis

A lipid panel is the main test. It measures total cholesterol, HDL cholesterol, and triglycerides. LDL may be measured directly or calculated from the other results.

Many lipid tests can be done without fasting. A fasting sample may be requested when triglycerides are high, a previous result was unclear, or more specific information is needed. Follow the instructions given with the test.

Because cholesterol can change with illness and other short-term factors, an unexpected result may be repeated. Pregnancy, recent infection, major weight change, and some medicines can also affect the numbers.

A cholesterol result is considered alongside your overall chance of developing cardiovascular disease. This assessment may include your:

Further blood tests may look for causes such as an underactive thyroid, diabetes, or kidney or

liver problems.

Familial hypercholesterolaemia may be suspected when LDL is especially high or there is a strong family history of early cardiovascular disease. A specialist assessment can include family records, an examination, and sometimes genetic testing. A genetic result can confirm FH in some families, but not every inherited cause is found by current tests.

- Age, blood pressure, and smoking history
- Diabetes, kidney disease, or other medical conditions
- Personal history of heart or blood vessel disease
- Family history of early heart attack or stroke
- Current medicines and lipid results

## Treatment and management

Treatment aims to lower LDL and reduce the chance of heart attack, stroke, and other circulation problems. The plan is based on your overall cardiovascular risk, the likely cause, and how high the cholesterol is.

Heart-supportive eating patterns emphasise vegetables, fruit, whole grains, beans, nuts, seeds, fish, and unsaturated oils. Replacing foods high in saturated fat with sources of unsaturated fat can help lower LDL. Saturated fat is found in foods such as fatty and processed meats, butter, ghee, cream, and many pastries. Trans fats also raise cardiovascular risk, although their use has fallen in many countries.

Regular physical activity can improve cardiovascular health and triglyceride levels. If relevant to you, stopping smoking and working toward a sustainable weight can further reduce risk. These changes are useful even when they do not bring cholesterol into the desired range.

Statins like atorvastatin or simvastatin are the most widely used cholesterol-lowering medicines. They reduce cholesterol production in the liver and increase the liver's removal of LDL from the blood. Their benefit is greatest for people who already have cardiovascular disease or have a higher chance of developing it.

Some people need a different medicine or more than one treatment. Options include medicines that reduce cholesterol absorption in the intestine, increase LDL removal by the liver, or change how the liver processes cholesterol. Injectable treatments may be considered for certain people with very high cholesterol, FH, established cardiovascular disease, or an inadequate response to other treatment.

Muscle aches can occur while taking a statin, but muscle pain is common for many unrelated

reasons. A clinician can assess the timing, check for interactions or other causes, and consider a different dose or medicine. Severe muscle weakness or dark urine needs prompt medical assessment.

Blood tests are usually repeated after starting or changing treatment and then at suitable intervals. Monitoring shows whether LDL is falling and helps identify side effects. Do not stop prescribed treatment solely because a later cholesterol result is lower; the medicine may be the reason it improved.

If you are pregnant, breastfeeding, or planning a pregnancy, discuss cholesterol medicines with the prescribing team because treatment may need to change.

## Complications

The main concern is atherosclerotic cardiovascular disease. Cholesterol-containing plaque can affect arteries throughout the body and contribute to:

Risk builds over time. A high result does not mean that a heart attack or stroke is certain, and a lower result cannot remove every risk. Blood pressure, smoking, diabetes, age, family history, and other factors also matter.

Very high triglycerides can cause inflammation of the pancreas, called pancreatitis. This is separate from the long-term artery risk linked to LDL cholesterol and may require more urgent management.

- Coronary heart disease, angina, and heart attack
- Ischaemic stroke or a transient ischaemic attack
- Peripheral artery disease affecting the legs
- Reduced blood flow to other organs

## Prevention

Not every case can be prevented. Inherited cholesterol conditions, including familial hypercholesterolaemia, are present because of genetic changes. Healthy habits remain helpful, but they may not lower LDL enough on their own.

For cholesterol that is not mainly inherited, eating less saturated fat, staying physically active, avoiding smoking, and maintaining a weight that supports your health may reduce the chance of developing high levels. Treating diabetes, thyroid disease, and other contributing conditions can also help.

Testing does not prevent high cholesterol, but it can find the condition before complications develop. People with cardiovascular disease, diabetes, kidney disease, or a strong family history may need assessment earlier or more often than people at lower risk.

When FH is diagnosed, testing close biological relatives can identify others who may have inherited it.

## Living with it and what to expect

High cholesterol is often a long-term condition. It usually does not change how you feel from day to day, so treatment decisions cannot be guided by symptoms.

Lifestyle changes and medicines can lower cholesterol within weeks to months, but reducing cardiovascular risk is a long-term process. Repeat testing helps show whether the approach is working. Your treatment may change over time as you age, develop other health conditions, or start different medicines.

Many people continue cholesterol-lowering medication for years. If treatment is stopped, cholesterol often rises again because the underlying tendency remains. This is especially likely with inherited high cholesterol.

Most people with high cholesterol carry on with their usual work, exercise, travel, and family life. The condition does not normally limit activity. Managing blood pressure, avoiding smoking, and controlling diabetes are also important because cardiovascular risks can add together.

Even with good treatment, no approach removes all risk. The aim is to reduce it meaningfully while choosing care that is practical and acceptable for you.

## When to get medical help

Arrange routine follow-up if a blood test shows high cholesterol. This is usually not an emergency. Follow-up can confirm the result, look for a cause, assess your overall cardiovascular risk, and discuss treatment.

Seek a timely appointment if you have a strong family history of early heart attack or stroke, visible tendon deposits, or relatives with familial hypercholesterolaemia. These features can suggest inherited high cholesterol.

Contact a healthcare service promptly if you develop severe unexplained muscle pain or weakness while taking cholesterol medicine, especially with fever, marked illness, or dark urine.

Call emergency services for possible heart attack symptoms, such as persistent chest pressure or tightness, pain spreading to an arm or jaw, sweating, nausea, or shortness of breath.

Also call emergency services for possible stroke symptoms, including sudden facial drooping, arm weakness, speech difficulty, loss of vision, severe imbalance, or confusion. Do not wait for these symptoms to pass.

## Common questions

Can I feel when my cholesterol is high?

Usually not. High cholesterol is generally found through a blood test. Feeling well does not show whether your cholesterol is within a healthy range.

Can I lower cholesterol without medication?

Some people achieve a useful reduction through changes to food, activity, smoking, and weight. Others still need medicine because of inherited factors, a very high LDL level, or their overall cardiovascular risk. Lifestyle measures and medicine are often used together.

What foods can help lower LDL cholesterol?

Replacing saturated fats with unsaturated fats can help. Useful choices include nuts, seeds, olive or rapeseed oil, oily fish, beans, and avocado. Foods containing soluble fibre, such as oats, barley, beans, lentils, fruit, and vegetables, can also support LDL reduction.

Will I need to take a statin forever?

Statins control cholesterol rather than permanently removing its cause. If a statin is stopped, LDL commonly rises again. Whether long-term treatment is appropriate is reviewed according to its benefits, side effects, and your cardiovascular risk.

Is HDL the "good" cholesterol?

HDL is commonly called good cholesterol because it helps transport cholesterol toward the liver. However, a high HDL number does not make a high LDL level harmless. Treatment usually focuses on lowering LDL and managing overall risk.

Can a thin or active person have high cholesterol?

Yes. Body size and fitness do not rule it out. Genes, thyroid function, diabetes, kidney or liver conditions, medicines, and diet can all influence cholesterol.

## Sources

- National Institute for Health and Care Excellence. Cardiovascular disease: risk assessment and reduction, including lipid modification . NICE guideline NG238, 2023
- National Institute for Health and Care Excellence. Familial hypercholesterolaemia: identification and management . Clinical guideline CG71, updated 2019
- Centers for Disease Control and Prevention. About Cholesterol . CDC
- Grundy SM, Stone NJ, Bailey AL, et al. 2018 AHA/ACC Guideline on the Management of Blood Cholesterol . Circulation. 2019;139:e1082-e1143
- Mach F, Baigent C, Catapano AL, et al. 2019 ESC/EAS Guidelines for the management of dyslipidaemias: lipid modification to reduce cardiovascular risk . European Heart Journal. 2020;41:111-188
- US Preventive Services Task Force. Statin Use for the Primary Prevention of Cardiovascular Disease in Adults: Preventive Medication . JAMA. 2022;328:746-753