

# Cholesterol: treatments for high cholesterol



## Why you have been prescribed lipid-lowering medicine

If you have so-called 'high cholesterol' your doctor will usually have given you dietary guidelines and lifestyle modifications to follow for at least 6 weeks. If adjusting your diet and increasing your physical activity do not improve your cholesterol levels, your doctor may prescribe medicine to lower the level of cholesterol or fats in your body. These medicines are often called lipid-lowering drugs by doctors. This is because the cholesterol and other types of fat are known as lipids.

Your body needs some cholesterol and other lipids to carry out its essential functions, however, too much of the bad kind of lipids can cause atherosclerosis.

Atherosclerosis is when lipids build up in the inside wall of your arteries causing narrowing of the blood vessel, which slows the blood flow. Sometimes clots can form which block the artery completely. This has severe consequences when it happens in the coronary arteries.

The coronary arteries supply the heart muscle with blood, bringing it oxygen so it can pump. If they become blocked, part of the heart muscle may die causing a heart attack. Taking lipid-lowering medicines can slow the progression of atherosclerosis.

## Different types of lipids

When your doctor sends you for a blood test to measure your cholesterol, the test will usually measure your total cholesterol, which is made up of low-density lipoprotein (LDL) cholesterol and high-density lipoprotein (HDL) cholesterol, and also your triglycerides. LDL cholesterol is the so-called 'bad' cholesterol. The level of LDL in a person's blood is linked to atherosclerosis and can predict their risk of having coronary heart disease.

HDL is often called the 'good' cholesterol as it can actually help carry cholesterol away from the arteries to the liver, where it is processed and excreted from the body. A high proportion of HDL in your total cholesterol level may be beneficial in reducing the risk of coronary heart disease.

Although LDL is the main culprit in terms of risk of atherosclerosis, high levels of triglycerides in the blood are also considered to be important predictors of future coronary problems, and very high levels of triglycerides may cause inflammation of the pancreas (pancreatitis).

## Keeping your cholesterol within healthy limits

The Heart Foundation publishes guidelines on healthy blood levels of cholesterol and triglycerides and your doctor will probably use these to decide whether to treat you. In addition to just looking at your lipid levels your doctor will examine other factors that determine your overall level of risk of cardiovascular (heart and blood vessel) disease to decide how beneficial treatment would be.

In addition to lifestyle and diet adjustments which may help keep your lipid levels in the healthy range, your doctor may prescribe medicine to help keep your lipid levels under control.

## Medicines used for lipid lowering

Your doctor will make a decision on the type of medicine you should take based on the results of your blood test. This tells your doctor which type of lipids you have too much of and he or she will treat you accordingly.

### Statins

The statin class of medicines includes: atorvastatin (brand name Lipitor); fluvastatin (Lescol or Vastin); pravastatin (Pravachol); rosuvastatin (Crestor) and simvastatin (Lipex or Zocor). Doctors sometimes refer to this group of medicines as the HMG CoA reductase inhibitors.

Statins work by interfering with an enzyme which the body uses to make cholesterol — this means that the body can't make as much cholesterol as before. Statins also increase the amount of cholesterol that the liver takes up and removes from the blood.

The net result is that statins can reduce the amount of LDL cholesterol by about 20 to 55 per cent, depending on the dose and the type of statin being taken. They can also produce a small increase (5 to 15 per cent) in 'good' cholesterol, that is, HDL cholesterol, depending on the dose and type of statin being taken.

Your doctor will advise you how to take your statin medicine. Statins should not be used in pregnancy because of potential risk to the unborn baby — if you are a woman of childbearing age it is recommended that you use effective contraception while taking statins. People with liver disease and breast feeding women should also avoid statins.

The most common side effects of the statin drugs are stomach upset and headache. Statins can occasionally cause muscle damage, which can have serious complications in some cases. So if you develop pain in your muscles or any tenderness or weakness, make an appointment to see your doctor as soon as possible.

Your doctor will probably want you to have regular blood tests when you start treatment with statins so that your progress can be monitored.

### Ezetimibe

Ezetimibe (brand name Ezetrol) is the first available medicine in a new class of cholesterol-lowering agents known by doctors as cholesterol absorption inhibitors. Ezetimibe reduces total cholesterol, LDL or 'bad' cholesterol and triglycerides, and increases HDL ('good') cholesterol.

Ezetimibe lowers cholesterol by reducing its absorption from the intestine into the bloodstream. Your doctor may prescribe ezetimibe if you are already using a statin and your cholesterol level is still raised, because taking both of these medicines together can be

more effective in lowering LDL cholesterol than taking a statin alone.

Ezetimibe may also be prescribed by your doctor if statins are not suitable for you.

Ezetimibe can be taken with or without food, at any time of the day (but should be taken at about the same time every day). If you are pregnant, breast feeding or have any liver problems, ezetimibe may not be an appropriate medicine for you. As with statins, if you are taking ezetimibe and you develop muscle aches, you should see your doctor as soon as possible.

## Cholestyramine and colestipol

Cholestyramine (Questran Lite) and colestipol (Colestid granules) are known by doctors as bile-acid-binding resins. This is because they bind to bile acids in the intestine, preventing them from being reabsorbed into the body and so releasing the bile acids in the faeces. To make more bile acids, the body needs cholesterol. This results in a higher demand for cholesterol by the body, helping to reduce the blood level of cholesterol.

Cholestyramine comes in sachets of powder which need to be mixed with water, juice or other fluid. If you find it too gritty you can mix the dose and stand it in the refrigerator for 4 hours or even overnight.

Colestipol also comes as powder in sachets and needs to be mixed with water. It can be taken with or without food.

Bile-acid-binding resins can sometimes cause constipation.

## Gemfibrozil and fenofibrate

Gemfibrozil (Ausgem, Lopid) and fenofibrate (Lipidil) are known to doctors as fibrates. They work mainly on reducing triglycerides in the blood, by increasing the rate that triglycerides are cleared from the blood. Fibrates can also help increase the amount of 'good' cholesterol (HDL cholesterol).

Gemfibrozil may be suggested by your doctor if other lipid-lowering medicines do not agree with you. Gemfibrozil is usually prescribed by your doctor when you have predominantly high triglycerides as opposed to other lipids. Gemfibrozil comes as tablets and is usually taken twice a day.

Fenofibrate (brand name Lipidil) is an alternative to gemfibrozil for the treatment of high triglycerides. Fenofibrate can also be used to lower total cholesterol. Fenofibrate tablets are usually taken once per day. You may get an upset stomach from taking gemfibrozil or fenofibrate. Fibrates are not suitable during pregnancy or for people with liver or gallbladder disease or severe kidney disease, and gemfibrozil should not be taken while breast feeding.

## Nicotinic acid

It is not entirely clear how nicotinic acid works to lower lipid levels. However, nicotinic acid can lower LDL cholesterol (the 'bad' cholesterol) and triglycerides and also increases the 'good' cholesterol (HDL cholesterol). Nicotinic acid is often used where the lipid that is predominantly raised is triglyceride.

Nicotinic acid tablets are usually taken 3 times a day, with food. They may cause flushing of your face and neck. This often goes away after 2–6 weeks, but sometimes comes back if you have missed doses. See your doctor if this happens because he or she may be able to give you something to stop the flushing.

Your doctor may also want you to have some blood tests while you are taking nicotinic acid in order to monitor your progress.

If you have recently had a heart attack, if you have liver disease or if you are pregnant or breast feeding, nicotinic acid will not be suitable for you.

## Fish oil

Fish oil is commonly available (e.g. Maxepa). Fish oil is used for lowering triglycerides and does not seem to have many side effects. Sometimes your doctor may suggest fish oil in combination with a statin or one of the other lipid-lowering medicines mentioned here. Eating fish in moderate quantities may achieve the same result as taking fish oil, so your doctor may recommend that you eat fish at least twice a week.

## Plant sterols

Plant sterol margarines and spreads are another option for lowering cholesterol — usually in combination with lipid-lowering medicines. A daily intake of 1 to 1.5 tablespoons is the recommended amount. Eating more than this has no additional benefit. Because these spreads are relatively new, doctors are still collecting data on their long-term safety.

Plant sterols can interfere with the absorption of nutrients called carotenoids, such as beta-carotene. Carotenoids seem to have anti-cancer, antioxidant and heart protective effects, so people using plant-sterol enriched spreads should make sure that they eat orange and yellow vegetables and fruits each day to ensure they're still getting enough carotenoids.

## Combination therapy

Not everyone will be able to control their lipid levels with a single medicine — sometimes a combination of different medicines is needed. For example, fish oil or ezetimibe may be prescribed with statins if necessary.

If both your triglycerides and cholesterol are too high, you may be advised to take both a statin and fenofibrate. As this combination is associated with a higher risk of muscle damage than with a statin alone, your doctor will monitor you carefully and it is important that you report any muscle pains. If you can't take statins, your doctor may suggest a combination of ezetimibe and fenofibrate.

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