Cholesterol overview

When your blood cholesterol is too high you are at increased risk of heart attack, stroke and other cardiovascular diseases.

On its own, a high blood cholesterol level is not necessarily a problem, but coupled with one or more other risk factors for heart disease, it is often 'the straw that breaks the camel's back'. Some other risk factors for heart disease include having diabetes or high blood pressure, having a family history of heart disease, and lifestyle factors such as smoking or obesity. Many people have more than one risk factor for heart disease and the level of risk increases with the number of risk factors.

It is, therefore, really important to know what your cholesterol levels are, and to keep them at a healthy level before you have any problems. Here are some guidelines on controlling cholesterol.

What is cholesterol?

Cholesterol is a white, waxy substance which, despite its bad reputation, is essential for life. It is a member of the lipid (fat) family. Without cholesterol our bodies could not manufacture a number of important hormones, and it also is an essential component of the outer membrane of some cells.

Where does cholesterol come from?

Our liver manufactures most of our cholesterol, while the rest comes from the food we eat.

Why is high cholesterol a problem?

Because our liver makes all the cholesterol we need, if we eat a lot more, we get too much circulating around in our blood and it tends to get stuck in the blood vessel walls, making them narrow and harder. This increases the risk of heart disease.

While a high blood cholesterol level is usually due to a diet that is too high in fat, in some people it is because they have a genetic (inherited) susceptibility to high blood cholesterol. If any member of your family has this condition (known as familial hypercholesterolaemia), it is important to have your cholesterol levels checked.

What is 'good' and 'bad' cholesterol?

Cholesterol, like fat, cannot move around the body in the blood on its own. That's because fat does not mix with water, the major ingredient of blood. So it hitches a ride with some proteins, called lipoproteins.

There are several types of lipoproteins:

- very low-density lipoproteins (VLDL);
- low-density lipoproteins (LDL); and
- high-density lipoproteins (HDL).

VLDLs are made in the liver and their job is to carry fats to different parts of the body. Once they drop off some of their fat load, they become LDLs, which carry the remaining cholesterol around the body. LDL cholesterol has been dubbed the 'bad' cholesterol; it's important to have low levels of LDL cholesterol.

HDL, on the other hand, carries cholesterol back to the liver. HDL cholesterol is therefore called 'good' cholesterol, and you want to have high levels of HDL in your blood as a kind of cholesterol police, picking up the bad cholesterol.

How do I keep my 'bad' cholesterol levels low and my 'good' cholesterol levels high?

Here are some tips to keep your lipid balance right.

- Eat less fat, especially saturated animal fats and foods containing trans fats. Foods that are high in saturated or trans fat can lead the body to make excess cholesterol and should be eaten sparingly. The more saturated or trans fat you eat, the more VLDLs your liver makes, and these eventually become LDLs. If, at the same time, you don't have many HDLs, you end up with too much cholesterol in your blood, and sticking around in your arteries.
- Achieve and maintain a healthy body weight. The more you weigh, the more your body stores fat and cholesterol.
- Keep physically active. Physical activity raises your HDL levels, helps you lose weight and lowers your other heart risks. Try to accumulate at least 30 minutes of moderate physical activity on most days. Find enjoyable activities that you can stick to, and try to put a little more activity into each day.

Different types of dietary fats

Saturated fats

Saturated fats are found mainly in animal foods such as meat, butter, cream, cheese, dripping and lard. Two vegetable oils, coconut and palm oil, are high in saturated fat, and are often used in commercially baked biscuits and cakes. Saturated fats increase LDL cholesterol and should be eaten very sparingly.

Trans fats

Trans fats are unsaturated fats that because of their chemical structure act like saturated fats. They raise your LDL cholesterol levels and lower your HDL cholesterol levels. They are found naturally in very small quantities in full fat dairy products, beef, lamb and veal. They are also produced during food manufacturing processes involving the partial hydrogenation of liquid oil to semi-solid fats. Foods that may contain trans fats include deep-fried foods and baked goods such as pastries and cakes.

Polyunsaturated fats

Polyunsaturated fats occur in the oils of seeds and grains, such as sunflower, safflower, corn, soybeans and nuts. Many polyunsaturated fats decrease LDL cholesterol, but at very high levels they may also reduce the level of HDL cholesterol. They

should be eaten in moderation.

Omega 3 fatty acids

Omega 3 fatty acids, which are a type of polyunsaturated fat, are found in oily fish, canola-based oils and margarines, flaxseed and walnut oils. They may help reduce the risk of heart disease, but probably not by lowering cholesterol.

Monounsaturated fats

Monounsaturated fats are widely found in both animals and plants. Olive and canola oil are rich sources; others include avocado and peanuts. Monounsaturated fats decrease LDL cholesterol and increase HDL cholesterol and are a better choice but should also be eaten in moderation. It is not clear whether their cholesterol-lowering effect is due to replacement of saturated fat with monounsaturated fat, thus reducing saturated fat consumption, or is a positive effect of monounsaturated fats.

All fats, including unsaturated ones, are energy rich and will contribute to weight gain if eaten in large amounts.

How do I eat less saturated and trans fats?

- Use small amounts of polyunsaturated or monounsaturated oils and margarines instead of butter and other animal fats (such as dripping).
- Cut fat off meat.
- Remove skin from chicken.
- Grill, steam, bake or microwave meat instead of frying.
- Choose lower fat cheeses (such as Edam, mozzarella or cottage cheese).
- Use low-fat milk (less than 2 per cent).
- Avoid deep-fried, takeaway foods.
- Have snacks such as cakes, biscuits, pastries and chocolate as occasional treats rather than everyday foods.

My doctor says I have high blood cholesterol. What should I eat?

Cut the fat, as above. In addition:

- place even more emphasis on eating fresh fruit, vegetables and wholegrain products;
- include at least 2 servings each day of low-fat milk;
- eat fish at least twice weekly, preferably fish and shellfish with a high oil content such as tuna, trevally, kingfish, John Dory, salmon, sardines and eel;
- avoid full-fat dairy food, meat fat or hardened vegetable fats in cooking, spreads and as ingredients in home-baked foods, and avoid commercially prepared foods containing these products;
- limit your red meat intake to about 150 g per uncooked weight a day (roughly what fits in the palm of your hand); and
- avoid pre-prepared foods, snacks and meals unless the fat and salt content are known and acceptable.

How do I know if I have high blood cholesterol?

Your blood cholesterol level can be measured from a sample of blood. This can be arranged by your family doctor. They will most likely test your total cholesterol, LDL cholesterol and HDL cholesterol levels, as well as your levels of triglycerides, another type of fat in the blood. To obtain accurate cholesterol and triglyceride levels you will need to fast before you have the test. Your doctor is also likely to consider other risk factors that affect your risk of heart disease at the same time as measuring your cholesterol.

The National Heart Foundation of Australia recommends that all adults aged 45 years and above should have regular blood lipid testing (cholesterol tests). If a person is younger than 45 and is at higher risk of coronary heart disease because of other (non-cholesterol-related) risk factors, for example, diabetes or kidney failure, then they should also have regular cholesterol tests. Aboriginal and Torres Strait Islander people are at a higher risk of cardiovascular disease and should, therefore, have their blood lipid levels measured each year from the age of 18 years. Your doctor will be able to advise you whether your cholesterol levels are too high.

According to the National Heart Foundation, people who need to be treated for high cholesterol should aim for a total cholesterol reading of about 4 mmol/L, of which no more than 2.5 mmol/L is LDL cholesterol. For people with existing cardiovascular disease, an LDL cholesterol level of 2.0 mmol/L is recommended. However, any lowering of total cholesterol and LDL cholesterol would be beneficial, even if you don't reach the target levels.

Should I buy cholesterol-free foods?

Health claims on food products can be misleading. Some foods are labelled as being ‘cholesterol-free’ when they have never contained cholesterol, but are still high in fat (for example, cooking oils). Plant foods such as fruits, vegetables and cereal grains do not contain cholesterol. Read labels carefully, especially the amount and type of fat. Choose foods that are low in fat, especially saturated fat.

What else can I do to reduce my risk of heart disease?

Lowering cholesterol is just one way to look after your heart. Being active regularly, stopping smoking, controlling your blood pressure and diabetes (if you have it), and reducing stress in your life are also important.

Last Reviewed: 05/08/2009