What Is Cholesterol?

Cholesterol is a waxy, fatlike substance found in your body's cells. Your liver makes all the cholesterol your body needs to perform important functions in nerve cells and the brain, produce hormones and bile acids that aid digestion, and provide structural support to the outer covering (membrane) of cells.1,2

Additional cholesterol enters your body when you eat foods that come from animal sources (meat, fish, poultry, eggs, and dairy products) and foods high in saturated fats and trans fats (found in hydrogenated oils). All of that added cholesterol ends up in your bloodstream. Other factors that may increase the amount of cholesterol in your blood include getting older, being physically inactive, being overweight, and having an inherited cholesterol disorder.3

Why Is High Cholesterol a Health Risk?

Cholesterol is necessary for you body to function normally, but too much cholesterol in your bloodstream increases your risk for heart disease. Cholesterol can build up on the walls of your arteries, which are blood vessels that carry oxygen-rich blood to your organs and tissues. The cholesterol deposits—or plaques—may clog your arteries, so less blood is able to flow through them, and your organs and tissues receive less oxygen. When the heart muscle does not get enough oxygen, it becomes weak, and this can cause chest pain (angina). If plaques burst (rupture), cholesterol and fat released into your bloodstream may cause a blood clot to form and cause a blockage in a blood vessel. A blood clot in an artery that supplies blood to your heart or brain could cause you to have a heart attack or stroke.

How Is High Cholesterol Diagnosed?

High blood cholesterol does not cause symptoms, so the only way for you to know if your cholesterol level is elevated is to have a cholesterol test. According to guidelines established by the National Cholesterol Education Program, all adults age 20 and older should have their blood cholesterol level measured at least once every five years.3 This can provide important information about the health of your heart and blood vessels. Your doctor will consider the results of your cholesterol test, along with other risk factors for cardiovascular disease, when deciding whether you need to make lifestyle changes or receive medical treatment to help prevent heart disease or a possible heart attack. Additional risk factors for heart disease and heart attack include1,3:

- Previously diagnosed heart disease.
- Diabetes.
- Cigarette smoking.
- High blood pressure (140/90 mg/dL or higher), or taking blood pressure medication.
- Low HDL cholesterol (less than 50 mg/dL for women, less than 40 mg/dL for men).
- Family history of early heart disease (heart disease in a father or brother before age 55 or in a mother or sister before age 65).
- Age (45 years and older for men, 55 years and older for women).

References


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If your test results indicate that you would benefit from lowering your total and LDL cholesterol, your target cholesterol level will depend upon either the number of heart disease risk factors you have or whether you already have known coronary heart disease or an equivalent condition, such as peripheral vascular disease, diabetes, symptomatic carotid artery disease, or aortic aneurysm. The greater the number of risk factors, the lower your target cholesterol level will be.

If you are already taking measures to control an elevated cholesterol level, your doctor is likely to recommend that you have cholesterol tests on a regular basis to monitor how well your therapy is working.

What Is an Expanded Lipid Profile? Your doctor may order a standard lipid profile to measure your cholesterol. This is a group of tests that measures your total cholesterol level as well as the amount of different cholesterol components—HDL (“good” cholesterol), LDL (“bad” cholesterol), very-low-density lipoprotein (VLDL), and triglycerides—in your blood. Some of those components, especially LDL cholesterol, may increase your risk of developing heart disease when levels are elevated. HDL cholesterol protects you from heart disease when it is present in great enough quantities but is a heart disease risk factor when levels are low. If your doctor believes that more extensive information about your lipoprotein levels would be useful in determining your risk for heart disease, heart attack, or stroke, he or she may order an expanded lipid profile. An expanded lipid profile may also guide your doctor in prescribing medication and/or monitoring your therapy. The expanded lipid profile provides information about specific factors that may increase your risk for cardiovascular disease, which may help your doctor customize your therapy.

An expanded lipid profile may include the following tests:

VAP® cholesterol test. This test provides measurements of all the components included in a lipid profile plus cholesterol subclasses that play important roles in the development of heart disease. It also measures the components of metabolic syndrome. This condition may be present when you have 3 or more of the following health problems at the same time: abdominal obesity, high blood pressure, cholesterol abnormalities, insulin resistance (a condition in which the body’s cells do not use insulin properly and excess sugar, or glucose, builds up in the body), and an increased risk for clotting. Metabolic syndrome greatly increases your risk of developing diabetes and cardiovascular disease.3

NMR LipoProfile®. This test measures the number and size of the LDL particles (LDL-P) in your blood. The smaller the LDL size and the greater the number of LDL particles, the greater your risk for heart disease.4

How Do I Prepare for an Expanded Lipid Profile? Depending on which test your doctor is going to perform, you may have to fast (have nothing to eat or drink) for a certain amount of time. The VAP cholesterol test requires a 10- to 12-hour fast. The NMR LipoProfile test requires a 12- to 14-hour fast. Your doctor will tell you which test will be performed and whether fasting is required.

If you are taking any medications that may affect your blood cholesterol levels, your doctor may advise you to stop taking them prior to the test.

How Is a Lipid Profile Performed? Both standard and expanded lipid profiles are obtained by performing tests on a sample of blood that has been drawn from a vein in your arm. The blood draw may take place in your doctor’s office or in a special blood draw center.

After the blood draw is complete, you may resume your usual daily activities and, if you were required to fast before the test, resume your usual diet. Follow your doctor’s instructions about when to start taking your medications again.

How Is High Cholesterol Treated? The main goal of treatment is to lower your LDL level enough to reduce your risk of developing heart disease or having a heart attack.1 Depending on your level of risk, your doctor may recommend one or both of the following treatments:

Lifestyle changes. Sometimes high cholesterol can be reversed by following a cholesterol-lowering diet (the Therapeutic Lifestyle Changes, or TLC, diet), quitting smoking, getting regular exercise, and managing your weight.

Drug treatment. If lifestyle changes alone aren’t enough to lower your cholesterol and control other risk factors for heart disease, your doctor may prescribe one or more cholesterol-lowering medications. Medications that may help lower your cholesterol level include statins, bile acid sequestrants, nicotinic acid, fibric acids, and cholesterol absorption inhibitors.6 Your doctor will determine which drug or combination of drugs is appropriate for you based on your risk factors and overall health.

What Can I Do to Maintain My Health?

• If your cholesterol level is within a desirable range, do what you can to keep it there by eating a low-fat, high-fiber diet, exercising regularly, and maintaining a healthy body weight.

• If you have been diagnosed with high cholesterol, follow your doctor’s recommendations for making lifestyle changes that may help lower your cholesterol. Eating a low-cholesterol diet, exercising regularly, and losing weight are essential for managing high cholesterol, even if you are taking cholesterol-lowering medications.

• Take cholesterol-lowering medications exactly as prescribed by your doctor.

• If you smoke, quit.

• Cholesterol testing is often used to monitor the effectiveness of treatment and make adjustments as needed. Follow your doctor’s recommendation on how often you should have your cholesterol tested.