

High Cholesterol Frequently Asked Questions (FAQ)

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What is Cholesterol?

Cholesterol is a soft, fat-like, waxy substance found in the bloodstream and in all your body's cells. It's normal to have cholesterol. Cholesterol is an important part of a healthy body because it's used for producing cell membranes and some hormones, and serves other needed bodily functions. But too much cholesterol in the blood is a major risk for coronary heart disease (which leads to heart attack) and for stroke. Hypercholesterolemia is the medical term for high levels of blood cholesterol.

LDL and HDL Cholesterol: What's Bad and What's Good?

Cholesterol can't dissolve in the blood. It has to be transported to and from the cells by carriers called lipoproteins. Low-density lipoprotein, or LDL, is known as "bad" cholesterol. High-density lipoprotein, or HDL, is known as "good" cholesterol. These two types of lipids, along

with triglycerides and Lp(a) cholesterol, make up your total cholesterol count, which can be determined through a blood test.

LDL (Bad) Cholesterol

When too much LDL (bad) cholesterol circulates in the blood, it can slowly build up in the inner walls of the arteries that feed the heart and brain. Together with other substances, it can form plaque, a thick, hard deposit that can narrow the arteries and make them less flexible. This condition is known as [atherosclerosis](#). If a clot forms and blocks a narrowed artery, heart attack or stroke can result.

HDL (good) Cholesterol

About one-fourth to one-third of blood cholesterol is carried by high-density lipoprotein (HDL). HDL cholesterol is known as “good” cholesterol, because high levels of HDL seem to protect against heart attack. Low levels of HDL (less than 40 mg/dL) also increase the risk of heart disease. Medical experts think that HDL tends to carry cholesterol away from the arteries and back to the liver, where it's passed from the body. Some experts believe that that HDL removes excess cholesterol from arterial plaque, thus slowing its buildup.

Triglycerides

Triglyceride is a form of fat made in the body. Elevated triglycerides can be due to overweight/obesity, physical inactivity, cigarette smoking, excess alcohol consumption, and a diet very high in carbohydrates (60 percent of total calories or more). People with high triglycerides often have a high total cholesterol level, including a high LDL (bad) level and a low HDL (good) level. Many people with heart disease and/or diabetes also have high triglyceride levels.

Lp(a) Cholesterol

Lp(a) is a genetic variation of LDL (bad) cholesterol. A high level of Lp(a) is a significant risk factor for the premature development of fatty deposits in arteries. Lp(a) isn't fully understood, but it may interact with substances found in artery walls and contribute to the buildup of fatty deposits.

What Can Cholesterol Do?

High cholesterol is one of the major controllable risk factors for coronary heart disease, heart attack and stroke. As your blood cholesterol rises, so does your risk of coronary heart disease. If you have other risk factors (such as high blood pressure or diabetes) as well as high cholesterol, this risk increases even more. The more risk factors you have, the greater your chance of developing coronary heart disease. Also, the greater the level of each risk factor, the more that factor affects your overall risk.

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What do Your Cholesterol Levels Mean?

Your test report will show your cholesterol levels in milligrams per deciliter of blood (mg/dL). To determine how your cholesterol levels affect your risk of heart disease, your doctor will also take into account other risk factors such as age, family history, smoking and high blood pressure.

A complete fasting lipoprotein profile will show:

- Your total blood (or serum) cholesterol level
- Your HDL (good) cholesterol level
- Your LDL (bad) cholesterol level
- Your triglyceride level

Your Total Blood (or Serum) Cholesterol Level

Less than 200 mg/dL: Desirable

If your LDL, HDL and triglyceride levels are also at desirable levels and you have no [other risk factors](#) for heart disease, total blood cholesterol below 200 mg/dL puts you at relatively low risk of coronary heart disease. Even with a low risk, however, it's still smart to eat a heart-healthy diet, get regular physical activity and avoid tobacco smoke. Have your cholesterol levels checked every five years or as your doctor recommends.

200–239 mg/dL: Borderline-High Risk

If your total cholesterol falls between 200 and 239 mg/dL, your doctor will evaluate your levels of LDL (bad) cholesterol, HDL (good) cholesterol and triglycerides. It's possible to have borderline-high total cholesterol numbers with normal levels of LDL (bad) cholesterol balanced by high HDL (good) cholesterol. Work with your doctor to create a prevention and treatment plan that's right for you. Make lifestyle changes, including eating a heart-healthy diet, getting regular physical activity and avoiding tobacco smoke. Depending on your LDL (bad) cholesterol levels and your other risk factors, you may also need medication. Ask your doctor how often you should have your cholesterol rechecked.

240 mg/dL and over: High Risk

People who have a total cholesterol level of 240 mg/dL or more typically have twice the risk of coronary heart disease as people whose cholesterol level is desirable (200 mg/dL). If your test didn't show your LDL cholesterol, HDL cholesterol and triglycerides, your doctor should order a fasting profile. Work with your doctor to create a prevention and treatment plan that's right for you. Whether or not you need cholesterol-regulating medication, make lifestyle changes, including eating a heart-healthy diet, getting regular physical activity and avoiding tobacco smoke.

Your HDL (Good) Cholesterol Level

With HDL (good) cholesterol, higher levels are better. Low HDL cholesterol (less than 40 mg/dL for men, less than 50 mg/dL for women) puts you at higher risk for heart disease. In the average

man, HDL cholesterol levels range from 40 to 50 mg/dL. In the average woman, they range from 50 to 60 mg/dL. An HDL cholesterol of 60 mg/dL or higher gives some protection against heart disease.

Smoking, being overweight and being sedentary can all result in lower HDL cholesterol. To raise your HDL level, avoid tobacco smoke, maintain a healthy weight and get at least 30–60 minutes of physical activity more days than not.

People with high blood triglycerides usually also have lower HDL cholesterol and a higher risk of heart attack and stroke. Progesterone, anabolic steroids and male sex hormones (testosterone) also lower HDL cholesterol levels. Female sex hormones raise HDL cholesterol levels.

Your LDL (Bad) Cholesterol Level

The lower your LDL cholesterol, the lower your risk of heart attack and stroke. In fact, it's a better gauge of risk than total blood cholesterol. In general, LDL levels fall into these categories:

LDL Cholesterol Levels	
Less than 100 mg/dL	Optimal
100 to 129 mg/dL	Near Optimal/ Above Optimal
130 to 159 mg/dL	Borderline High
160 to 189 mg/dL	High
190 mg/dL and above	Very High

Your [other risk factors](#) for heart disease and stroke help determine what your LDL level should be, as well as the appropriate treatment for you. A healthy level for you may not be healthy for your friend or neighbor. Discuss your levels and your treatment options with your doctor to get the plan that works for you.

Your Triglyceride Level

Triglyceride is a form of fat. People with high triglycerides often have a high total cholesterol level, including high LDL (bad) cholesterol and low HDL (good) cholesterol levels.

Your triglyceride level will fall into one of these categories:

- Normal: less than 150 mg/dL
- Borderline-High: 150–199 mg/dL
- High: 200–499 mg/dL
- Very High: 500 mg/dL

Many people have high triglyceride levels due to being overweight/obese, physical inactivity, cigarette smoking, excess alcohol consumption and/or a diet very high in carbohydrates (60 percent or more of calories). High triglycerides are a lifestyle-related risk factor; however, underlying diseases or genetic disorders can be the cause.

The main therapy to reduce triglyceride levels is to change your lifestyle. This means control your weight, eat a heart-healthy diet, get regular physical activity, avoid tobacco smoke, limit alcohol to one drink per day for women or two drinks per day for men, and limit beverages and foods with added sugars. Visit your healthcare provider to create a plan of action that will incorporate all these lifestyle changes. Sometimes, medication is needed in addition to a healthy diet and lifestyle.

A triglyceride level of 150 mg/dL or higher is one of the risk factors of metabolic syndrome. Metabolic syndrome increases the risk for heart disease and other disorders, including diabetes.

What is Atherosclerosis?

Atherosclerosis is a type of arteriosclerosis. The name comes from the Greek words *athero* (meaning gruel or paste) and *sclerosis* (hardness). It's the term for the process of fatty substances, cholesterol, cellular waste products, calcium and fibrin (a clotting material in the blood) building up in the inner lining of an artery. The buildup that results is called plaque.

Arteriosclerosis is a general term for the thickening and hardening of arteries. Some hardening of arteries normally occurs when people grow older.

Plaque may partially or totally block the blood's flow through an artery. Two things that can happen where plaque occurs are:

- There may be bleeding (hemorrhage) into the plaque.
- A blood clot (thrombus) may form on the plaque's surface.

If either of these occurs and blocks the whole artery, a heart attack or stroke may result.

Atherosclerosis affects large and medium-sized arteries. The type of artery and where the plaque develops varies with each person.

Atherosclerosis is a slow, progressive disease that may start in childhood. In some people this disease progresses rapidly in their third decade. In others it doesn't become threatening until they're in their 50s or 60s.

How does atherosclerosis start?

It's a complex process. Exactly how atherosclerosis begins or what causes it isn't known, but some theories have been proposed. Many scientists think atherosclerosis starts because the

innermost layer of the artery becomes damaged. This layer is called the endothelium. Three possible causes of damage to the arterial wall are:

- Elevated levels of cholesterol and triglyceride in the blood
- High blood pressure
- Cigarette smoke

Cigarette smoke greatly aggravates and speeds up the growth of atherosclerosis in the coronary arteries, the aorta and the arteries of the legs.

Because of the damage, over time fats, cholesterol, platelets, cellular debris and calcium are deposited in the artery wall. These substances may stimulate the cells of the artery wall to produce still other substances. This results in more cells accumulating in the innermost layer of the artery wall where the atherosclerotic lesions form. These cells accumulate, and many of them divide. At the same time, fat builds up within and around these cells. They also form connective tissue.

The innermost layer of the artery becomes markedly thickened by these accumulating cells and surrounding material. If the wall is thickened sufficiently, the diameter of the artery will be reduced and less blood will flow, thus decreasing the oxygen supply.

Often a blood clot forms and blocks the artery, stopping the flow of blood. If the oxygen supply to the heart muscle is reduced, a heart attack can occur. If the oxygen supply to the brain is cut off, a stroke can occur. And if the oxygen supply to the extremities occurs, gangrene can result.

Risk Factors and Coronary Heart Disease

Extensive clinical and statistical studies have identified several factors that increase the risk of coronary heart disease and heart attack.

- **Major risk factors** are those that research has shown **significantly increase the risk** of heart and blood vessel (cardiovascular) disease.

- **Contributing risk factors** are **associated with increased risk** of cardiovascular disease, but their significance and prevalence haven't yet been precisely determined.

The more risk factors you have, the greater your chance of developing coronary heart disease. Also, the greater the level of each risk factor, the more that factor affects your overall risk.

Major risk factors that can't be changed

Increasing age: About 83 percent of people who die of coronary heart disease are 65 or older. At older ages, women who have heart attacks are more likely than men are to die from them within a few weeks.

Gender (male): Men have a greater risk of heart attack than women do, and they have heart attacks earlier in life. Even after menopause, when women's death rate from heart disease increases, it's not as great as men's.

Heredity (including Race): Children of parents with heart disease are more likely to develop it themselves. African Americans have more severe high blood pressure than Caucasians and a higher risk of heart disease. Heart disease risk is also higher among Mexican Americans, American Indians, native Hawaiians and some Asian Americans. This is partly due to higher rates of obesity and diabetes. Most people with a strong family history of heart disease have one or more other risk factors. Just as you can't control your age, sex and race, you can't control your family health history. Therefore, it's even more important to treat and control any other risk factors you have.

Major risk factors that can be modified, treated or controlled by lifestyle changes or medication

Tobacco smoke: Smokers' risk of dying from coronary heart disease is 2–3 times that of nonsmokers. Cigarette smoking also acts with other risk factors to greatly increase the risk for

coronary heart disease. People who smoke cigars or pipes seem to have a higher risk of death from coronary heart disease (and possibly stroke) but their risk isn't as great as cigarette smokers'. Exposure to other people's smoke increases the risk of heart disease even for nonsmokers.

High blood cholesterol: As blood cholesterol rises, so does risk of coronary heart disease. When other risk factors (such as high blood pressure and tobacco smoke) are present, this risk increases even more. Your cholesterol level can be affected by your age, gender, family health history and diet.

High blood pressure: High blood pressure increases the heart's workload, causing the heart to thicken and become stiffer. It also increases your risk of stroke, heart attack, kidney failure and congestive heart failure. When high blood pressure exists with obesity, smoking, high blood cholesterol levels or diabetes, the risk of heart attack or stroke increases several times.

Physical inactivity: An inactive lifestyle is a risk factor for coronary heart disease. Regular moderate-to-vigorous physical activity helps prevent heart and blood vessel disease. The more vigorous the activity, the greater your benefits. However, even moderate-intensity activities help if done regularly and long term. Regular physical activity can help control blood cholesterol, diabetes and obesity, as well as help lower blood pressure in some people.

Obesity and overweight: People who have excess body fat — especially if a lot of it is at the waist — are more likely to develop heart disease and stroke even if they have no other risk factors. Excess weight increases the heart's work. It also raises blood pressure and blood cholesterol and triglyceride levels, and lowers HDL (good) cholesterol levels. It can also make diabetes more likely to develop. Many obese and overweight people may have difficulty losing weight. But by losing even as few as 10 pounds, you can lower your heart disease risk.

Diabetes mellitus: Diabetes seriously increases your risk of developing cardiovascular disease. Even when glucose levels are under control, diabetes increases the risk of heart disease and stroke, but the risks are even greater if blood sugar is not well controlled. About three-quarters of people with diabetes die of some form of heart or blood vessel disease. If you have diabetes, it's extremely important to work with your healthcare provider to manage it and control any other risk factors you can.

What are some contributing factors?

Stress: Individual response to stress may be a contributing factor. Some scientists have noted a relationship between coronary heart disease risk and stress in a person's life, their health behaviors and socioeconomic status. Stress may affect established risk factors. For example, people under stress may overeat, start smoking or smoke more than they otherwise would.

Alcohol: Drinking too much alcohol can raise blood pressure, cause heart failure and lead to stroke. It can contribute to high triglycerides, cancer and other diseases, and produce irregular heartbeats. It contributes to obesity, alcoholism, suicide and accidents. The risk of heart disease in people who drink moderate amounts of alcohol (an average of one drink for women or two drinks for men per day) is lower than in nondrinkers. One drink is defined as 1-1/2 fluid ounces (fl. oz.) of 80-proof spirits (such as bourbon, Scotch, vodka, gin, etc.), 1 fl. oz. of 100-proof spirits, 4 fl. oz. of wine or 12 fl. oz. of beer. It's not recommended that nondrinkers start using alcohol or that drinkers increase the amount they drink.