

Lower High Cholesterol

Reduce Your Chance of Having a Stroke

Because you have high cholesterol you should:

Know your cholesterol levels.

Take the medicine to lower cholesterol that your doctor has told you to take.

Follow your doctor's treatment plan.

Keep your appointments with your doctors.

Make other lifestyle changes that your doctor wants you to make.

Your cholesterol levels

If you had a stroke caused by plaque in the blood vessels of your neck or your brain, you will likely be prescribed a medicine called a statin to lower cholesterol. The guidelines say you no longer need to get LDL (bad) cholesterol levels down to a specific target number. This is a major change from how doctors have treated cholesterol for years. While research clearly shows that lowering LDL lowers the risk for heart attack and stroke, there is no evidence to prove that one target number is best.

The next pages provide more information about the types of cholesterol, how to understand your numbers, and lifestyle changes that can help you if your cholesterol is not where your doctor wants it to be.

Questions or concerns

If you have any questions or concerns about any symptoms you have, or your medicines, talk with your health care provider or call your Post-Acute Care Coordinator _____ at _____.



More about High Cholesterol

High cholesterol (**hypercholesterolemia**) is a major risk factor for stroke. Experts say people do not take high cholesterol seriously enough. Because it does not cause symptoms, people may not pay attention.

What is cholesterol?

Cholesterol is a fat-like, waxy substance found in food from animals – meat, dairy products and eggs. Your body also makes cholesterol in the liver and in other cells. Cholesterol travels through the blood attached to a protein. This cholesterol-protein package is called a **lipoprotein**. There are three types of cholesterol or blood fats that your doctor checks:

- LDL (low density lipoprotein, also called "bad" cholesterol)
- HDL (high density lipoprotein, also called "good" cholesterol)
- Triglycerides (fats carried in the blood from the food we eat)

The body needs some cholesterol to work properly but only a limited amount. When there is too much of some types or too little of others, it causes health problems.

How does it harm the body?

The inside layer of arteries is harmed by high cholesterol, smoking, or high blood pressure. When this layer (the **endothelium**) is harmed, then it lets the LDL ("bad") cholesterol enter the artery wall where it builds up. The body sends blood cells to "clean up" the LDL. Over time, this layer-building and clean-up process makes a bump on the artery wall called **plaque**. This is a thick, hard bump and it may narrow the space for the blood to flow. After awhile, this also causes **atherosclerosis**, a hardening of the arteries. The plaque can close down an artery that supplies blood to the brain or it can break loose and block an artery, causing a stroke. If you have had a stroke or have another form of atherosclerosis, reducing your risk is even more important.

What causes cholesterol to be too high?

Age and sex. As we get older, cholesterol levels rise. Before menopause, women usually have lower total cholesterol levels than men the same age. After menopause women's LDL levels tend to rise as men's do.

Heredity. Some families have a history of abnormal cholesterol, with high LDL cholesterol or too little HDL cholesterol, which is also a problem.

Diet. Saturated fat and cholesterol in the food we eat increases cholesterol levels.

Weight. Being overweight can increase your LDL cholesterol.

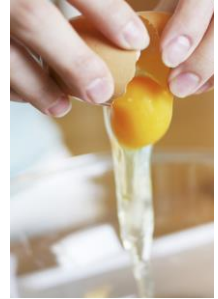
Diabetes. Poorly controlled diabetes increases LDL cholesterol levels.

Other causes. Certain medicines or medical conditions can cause high LDL.

How do they test for cholesterol?

A blood test called a **lipid profile** can tell about your cholesterol. The components of this test are high density lipoprotein (HDL), low density lipoprotein (LDL) or very low density, depending on how much protein there is in relation to fat. Results of your blood test are in numbers. Here is how to read cholesterol numbers:

Total Cholesterol is a measure of LDL cholesterol, HDL cholesterol, and other lipid components. Doctors recommend total cholesterol levels below 200.



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LDL cholesterol, called "bad" cholesterol, can cause build up of plaque in the arteries. The more LDL there is, the greater the risk of blood vessel disease. The lower your LDL cholesterol number, the better.

If you have heart disease or blood vessel disease, **you will likely be prescribed a medicine called a statin to lower cholesterol. The guidelines say you no longer need to get LDL cholesterol levels down to a specific target number. This is a major change from how doctors have treated cholesterol for years. While research clearly shows that lowering LDL lowers the risk for heart attack and stroke, there is no evidence to prove that one target number is best.**

HDL Cholesterol, called "good" cholesterol, protects against blood vessel disease by taking the "bad" cholesterol out of your blood and keeping it from building up in your arteries. If your levels of HDL are low, your risk of disease increases. The higher the HDL cholesterol level, the better.

HDL Cholesterol	HDL-Cholesterol Category
60 and above	High; optimal; helps to lower risk of heart disease
Less than 40 in men and less than 50 in women	Low; considered a risk factor for heart disease

Triglycerides are how most fat is stored in the body. Your body changes unneeded calories, alcohol, or sugar into triglycerides and stores them in fat cells throughout the body. You need some triglycerides for good health, but high triglycerides can raise your risk of artery disease. If you have high levels, your doctor may ask you to limit or stop using alcohol as it affects triglycerides. The levels are in the next table.

Triglycerides	Triglyceride Category
Less than 150	Normal
150 - 199	Borderline high
200 - 499	High
500 or higher	Very high

How do I reduce my high cholesterol?

Eating and cooking. Cholesterol is in some foods, so changes in what you eat and how you cook can help lower your cholesterol and your risk of stroke:

- **Watch how much cholesterol you eat each day.** Limit the cholesterol you eat each day to less than 300 milligrams. Cholesterol comes from "anything with eyes", e.g., meat, fish, poultry and products like eggs, milk, and cheese. All of these have cholesterol. Eat less red meats. Read food labels to find the amount of

cholesterol in each so you can plan to keep the cholesterol you eat under 300 milligrams every day.

- **Limit saturated fat.** No more than 10 grams of the fat you eat each day should be saturated fat. Limit butter consumption and, if you use margarine, use the soft “tub” or liquid forms. Avoid foods that have partially hydrogenated vegetable oil in the ingredient list. Healthier fats, such as mono-unsaturated fats, are in olive and canola oil, almonds and avocados. Reading labels and measuring oils and margarine will help.
- **Eat a low-fat diet.** Eat lots of vegetables and fruits as they have lower calories and a lot of fiber. Fiber, especially soluble fiber, lowers LDL cholesterol. Use low-fat dairy products and lean meat (fish or chicken). Omega 3 Fatty Acids, from two (2) servings of fish per week or 1 gram of fish oil supplement per day, will give you the amount the American Heart Association suggests.
- **Cook the low-fat way.** Cook food by baking, broiling, steaming or grilling rather than frying. If you do fry, use non-stick cookware, non-stick spray or small amounts of olive oil.



These may sound like a lot of work but, to avoid having a stroke, these changes are worth making. Start with one change; stick with it for a while and it will become a habit. Then add the next change, and soon your diet will help you become much healthier. Ask your doctor which changes are most important for your health.

Other Ways to Lower Cholesterol

A few other changes can help lower your cholesterol and your risk of stroke:

- **Quit smoking.** Smoking doubles the risk of having a stroke. Smoking damages the inside layer of the blood vessels, making plaque and/or clots more likely to form. It also lowers the HDL (“good”) cholesterol. If you quit smoking, your HDL will increase and your risk of stroke will start to go down.
- **Get exercise.** Regular exercise can lower LDL and raise HDL cholesterol. It also seems to slow down or stop the clogging of blood vessels by fatty deposits. Be physically active for 30 minutes on most days. The amount of activity seems to have the biggest impact on improving cholesterol rather than how hard the effort.
- **Lose weight.** Losing weight can help lower your LDL, triglycerides, and total cholesterol levels as well as increase HDL cholesterol.
- **Control diabetes.** People with diabetes are at greater risk of heart disease and stroke. With improved blood sugar control, cholesterol levels can fall.



- **Take medicine.** If diet changes and exercise have not been enough, your doctor may want you to use a cholesterol-lowering medicine. You may have to try several medicines to find the right one. This is very common, so talk with your doctor if you have problems with your medicine. Take this medicine as your doctor tells you to, even when you feel fine.

High Cholesterol Medicines

One main type of medicines is the group known as “**statins**.” These help lower total cholesterol and LDL cholesterol while improving HDL cholesterol. They may also prevent heart attacks. The best time to take a statin is in the evening with dinner or at bedtime. The medicine seems to work better when taken at this time. Your doctor may order a blood test to check your liver before you start a statin and at other times while you take it. Statins include: lovastatin (Mevacor), atorvastatin (Lipitor), simvastatin (Zocor), pravastatin (Pravachol), and rosuvastatin (Crestor). Talk with your doctor about which one is best for you. If a person cannot take statins, other medicines can help decrease cholesterol.

Finally

High cholesterol does not have symptoms that you will notice, so you will not know if yours is lower unless you see your doctor regularly for blood tests. Follow your doctor’s advice about diet, exercise, and medicine. Managing your cholesterol is a lifelong process. Working together, you and your doctor can lower your cholesterol, help your overall health and prevent a stroke.

Resources for this information include: National Heart, Lung and Blood Institute of the National Institute of Health – nhlbi.nih.gov/health/health/public/heart/chlol/wyntk/; Mayo Clinic – mayoclinic.com/health/high-blood-cholesterol/DS00178; Center for Disease Control (CDC) – cdc.gov/cholesterol; American Heart Association Website – heartorg.HEARTORG/Conditions/cholesterol/