

## HYPERCHOLESTEROLEMIA

### About Your Diagnosis

Hypercholesterolemia is a high cholesterol level in the blood. High blood cholesterol is one of the risk factors for atherosclerosis (hardening of the arteries) and heart disease. Heart disease from atherosclerosis and coronary artery disease is the leading cause of death in the United States.

Cholesterol is a lipid, a type of fat. It performs many normal functions in the body. Cholesterol is made in the liver for involvement in the formation of hormones. It is also part of the cell structure. It transports fats in the blood stream. Cholesterol is part of fat-protein structures in the blood called lipoproteins. Lipoproteins are classified on the basis of their density from very low-density lipoproteins (VLDLs) to high-density lipoproteins (HDLs). The more cholesterol in the lipoprotein, the denser is the cell. VLDLs are mostly fat and can clog the arteries. Denser lipoproteins, the HDLs, can help remove fats (lipids) from the bloodstream. That is why HDLs are considered the good cholesterol.

### Living With Your Diagnosis

Cholesterol levels are determined by means of analysis of blood samples. Most persons with high blood cholesterol have no symptoms. The fat deposits in their blood vessels do not produce symptoms until the vessels are nearly closed or become clogged. Some persons with high cholesterol have xanthomas, which are small fatty deposits under the skin.

A desirable cholesterol level is less than 200 milligrams per deciliter (mg/dl). If your cholesterol level is less than 200 mg/dl, have your level checked every 3 to 5 years.

A borderline high cholesterol level is 200 to 239 mg/dl. A borderline high cholesterol level is especially important if you have two or more other risk factors for cardiac disease (male sex, female sex after menopause without estrogen replacement, age older than 55 years, family history of heart disease, smoking, obesity, diabetes, high blood pressure, lack of activity, and high fat and cholesterol intake). You need to try to lower your blood cholesterol to a desirable level.

A cholesterol levels greater than 240 mg/dl is considered high, and this by itself is a risk factor for heart disease. You need to lower your cholesterol level.

Some genetic conditions can cause high or low cholesterol and high or low levels of HDLs. Women tend to have higher HDL levels because of the influence of the female hormone estrogen. HDL levels can be increased with endurance exercise, low body fat (leanness), consumption of moderate amounts

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of alcohol (particularly those with high flavinoids such as red wine), and with insulin and lipid-lowering drugs. HDL levels are made decreased by male hormones, menopause (lack of the female hormone estrogen), obesity, a sedentary lifestyle, a high triglyceride level, diabetes, and cigarette smoking.

Because it is produced in the body by the liver, no one needs to consume cholesterol. The best way to lower cholesterol level is to decrease intake and promote removal by raising levels of HDLs. Diseases such as diabetes must be carefully monitored and managed.

### Treatment

Lipid-lowering drugs are used to treat persons who are unsuccessful at reducing blood cholesterol levels. Continuation of the measures discussed earlier is important even after starting the lipid-lowering medicines. The main classes of medicines for management of hypercholesterolemia include bile acid—binding resins, nicotinic acid, statins (HMG CoA reductase inhibitors), and fibric acid (gemfibrozil).

Bile acid—binding resins are the primary treatment of most patients who need drugs; they include cholestyramine and colestipol. These drugs increase the passage of cholesterol into the intestines for removal through the colon (large bowel). Nicotinic acid (niacin) helps lower VLDL levels and increase HDL levels. The statins (atovarstatin, fluvastatin, lovastatin, pravastatin, simvastatin) decrease production of cholesterol and LDLs. Gemfibrozil helps increase the removal of VLDL.

These medicines each can have an unpleasant taste and can cause nausea, abdominal pain, and diarrhea or constipation. Niacin can cause facial flushing and itching. It cannot be used by persons with liver disease, diabetes, or gout.

### The DOs

- \* Lower your cholesterol and raise your HDLs as follows by eating a diet low in cholesterol and saturated fats.
- \* Eat fruits and vegetables and high-fiber foods such as oat bran. Cook with oils high in polyunsaturated fats such as safflower oil, sunflower oil, and corn oil (omega-6 fatty acids).
- \* Eat fish, because fish oils contain omega-3 fatty acids, which may help lower cholesterol.
- \* Stop smoking.
- \* Lose weight to lower body fat. This is best accomplished through dietary changes (reducing calories and fat) and participating in regular aerobic exercise such as walking, jogging, bicycling, or swimming. The exercise should be done for at least 30 minutes a day 3 to 4 days per week. Exercise helps lower your body weight and body fat, helps control your blood pressure, strengthens the heart, and helps most persons with diabetes control the disease.
- \* Ask your physician if you should take estrogen replacement therapy. Postmenopausal women can obtain cardiac protective benefits from estrogen replacement (if they do not smoke and have no history of clotting disorders or breast or gynecologic cancer). Consume moderate amounts of

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alcohol (usually a glass or two of red wine a day). Not everyone should consume alcohol. Discuss this with your physician.

- \* Take your medications as directed.

#### The DON'Ts

- \* Do not forget to treat any other medical conditions and take your regular medications as directed.

#### When to Call Your Doctor

- \* If you have hypercholesterolemia, have regular follow-up visits with your doctor to monitor your blood cholesterol and heart disease. Discuss the progress of your diet and exercise and any side effects of your medications.

#### For More Information

The American Heart Association has information on healthy-heart diets. Call 1-800-242-8721 and ask for the literature department.

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