Cholesterol

AHA Scientific Position

Cholesterol is a soft, waxy substance found among the lipids (fats) in the bloodstream and in all your body's cells. It's an important part of a healthy body because it's used to form cell membranes, some hormones and other needed tissues. But a high level of cholesterol in the blood -- hypercholesterolemia (hi"per-ko-les"ter-ol-E'me-ah) -- is a major risk factor for coronary heart disease, which leads to heart attack.

Cholesterol and other fats can't dissolve in the blood. They have to be transported to and from the cells by special carriers called lipoproteins (lip"o-PRO'te-inz). There are several kinds, but the ones to be most concerned about are low-density lipoprotein (LDL) and high-density lipoprotein (HDL).

What is LDL cholesterol?

Low-density lipoprotein is the major cholesterol carrier in the blood. If too much LDL cholesterol circulates in the blood, it can slowly build up in the walls of the arteries feeding the heart and brain. Together with other substances it can form plaque, a thick, hard deposit that can clog those arteries. This condition is known as atherosclerosis (ath"er-o-skleh-RO'sis). A clot (thrombus) that forms in the region of this plaque can block the flow of blood to part of the heart muscle and cause a heart attack. If a clot blocks the flow of blood to part of the brain, the result is a stroke. A high level of LDL cholesterol (160 mg/dL and above) reflects an increased risk of heart disease. That's why LDL cholesterol is often called "bad" cholesterol. Lower levels of LDL cholesterol reflect a lower risk of heart disease.

What is HDL cholesterol?

About one-third to one-fourth of blood cholesterol is carried by high-density lipoprotein or HDL. Medical experts think HDL tends to carry cholesterol away from the arteries and back to the liver, where it's passed from the body. Some experts believe HDL removes excess cholesterol from atherosclerotic (ath"er-o-skleh-ROT'ik) plaques and thus slows their growth. HDL cholesterol is known as "good" cholesterol because a high level of HDL seems to protect against heart attack. The opposite is also true: a low HDL level (less than 40 mg/dL) indicates a greater risk. A low level of HDL cholesterol also may raise stroke risk.

What is Lp(a) cholesterol?

Lp(a) is a genetic variation of plasma LDL. A high level of Lp(a) is an important risk factor for developing atherosclerosis (ath"er-o-skleh-RO'sis) prematurely. How an increased Lp(a) contributes to heart disease isn't clear. The lesions in artery walls contain substances that may interact with Lp(a), leading to the buildup of lipids in atherosclerotic plaques.

What about cholesterol and diet?

People get cholesterol in two ways. The body -- mainly the liver -- produces varying amounts, usually about 1,000 milligrams a day. Another 400 to 500 mg (or more) can come directly from foods. Foods from animals (especially egg yolks, meat, poultry, fish, seafood and whole-milk dairy products) contain it. Foods from plants (fruits, vegetables, grains, nuts and seeds) don't contain cholesterol. Typically the body makes all the cholesterol it needs, so people don't need to consume it. Saturated fatty acids are the chief culprit in raising blood cholesterol, which increases your risk of heart disease.

Trans fats also raise blood cholesterol. But dietary cholesterol also plays a part. The average American man consumes about 337 milligrams of cholesterol a day; the average woman, 217 milligrams.

Some of the excess dietary cholesterol is removed from the body through the liver. **Still, the American Heart Association recommends that you limit your average daily cholesterol intake to less than 300 milligrams. If you have heart disease, limit your daily intake to less than 200 milligrams. Still, everyone should remember that by keeping their dietary intake of saturated fats low, they will also be able to significantly lower their dietary cholesterol intake. Foods high in saturated fat generally contain substantial amounts of dietary cholesterol.**

People with severe **hypercholesterolemia** (hi"per-ko-les"ter-ol-E'me-ah) may need an even greater reduction. Since cholesterol is present in all foods from animal sources, care must be taken to eat no more than six ounces of lean meat, fish and poultry per day and to use skim (fat-free) and low-fat dairy products. High-quality proteins from vegetable sources such as beans are good substitutes for animal sources of protein.

How does exercise (physical activity) affect cholesterol?

For some people, exercise affects blood cholesterol level by increasing HDL ("good") cholesterol. A higher HDL cholesterol is linked with decreased risk of heart disease. Exercise can also help control weight, diabetes (di"ah-BE'teez or di"ah-BE'tis), and high blood pressure. Exercise that uses oxygen to provide energy to large muscles (aerobic exercise) raises your heart and breathing rates. Regular exercise such as brisk walking, jogging and swimming also condition your heart and lungs.

Physical inactivity has been established as a major risk factor for heart disease. Even moderate-intensity activities, if done daily, help reduce your risk. Examples are walking for pleasure, gardening, yard work, housework, dancing and prescribed home exercise.