

About Cholesterol

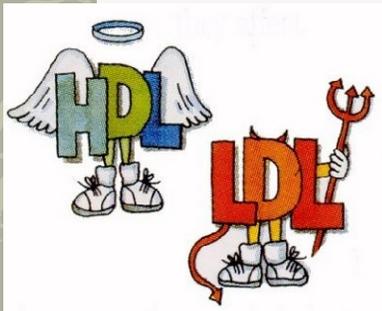
In the bloodstream cholesterol is carried in lipid particles called lipoproteins. There are several versions of these lipoproteins, but two are relevant in cholesterol control:

HDL—High density lipoproteins, or good cholesterol, which attempts to remove fatty deposits of plaque from your arteries.

LDL—Low density lipoproteins, or bad cholesterol, which tends to leave fatty deposits that accumulate in your bloodstream and build up on

arterial walls. Eventually this buildup can narrow your arteries and cause a blood clot to form, which may lead to a heart attack or a stroke.

A person's cholesterol level is one part of the equation for determining risk for cardiovascular disease (CVD). Other risks for CVD include smoking, obesity, high blood pressure, family history of heart disease, and age (older than 45 for men and older than 55 for women).



SPECIAL POINTS OF INTEREST:

- ◆ Types of Cholesterol
- ◆ Cholesterol guidelines for children
- ◆ Cholesterol guidelines for adults.
- ◆ LDL
- ◆ HDL
- ◆ Facts & Statistics

Cholesterol Guidelines for Children and Adults

Cholesterol Level Guidelines for Children* (mg/dL):

Total Cholesterol

Acceptable = less than 170

Borderline = 170 to 199

High = 200 or greater

LDL Cholesterol

Acceptable = less than 110

Borderline = 110 to 129

High = 130 or greater

Cholesterol Level Guidelines for Adults* (mg/dL):

Total Cholesterol

<200 Desirable

200-239 Borderline high

>240 High

LDL Cholesterol

<100 Optimal

100-129 Near /above optimal

130-159 Borderline high

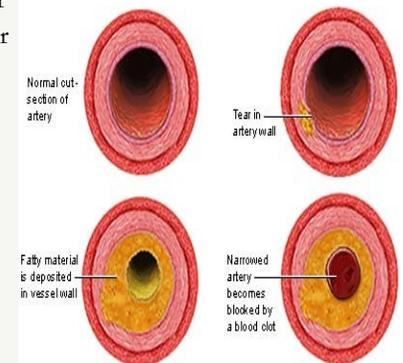
160-189 High

>190 Very high

HDL Cholesterol

<40 Low

>60 High



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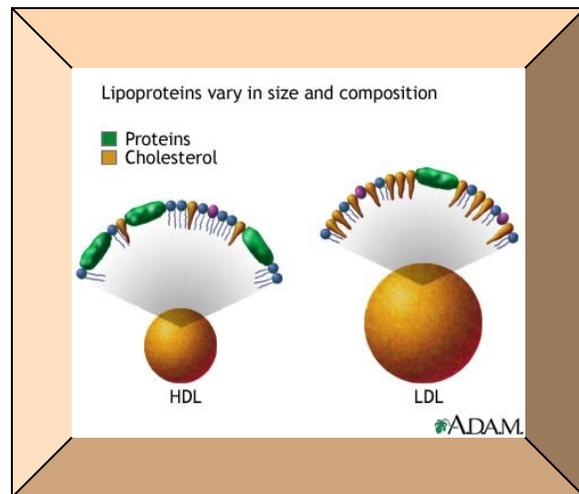
*Cholesterol guidelines are evaluated and updated by the National Cholesterol Education Program (NCEP) Expert Panel by the National Institutes of Health, National Heart, Lung, and Blood Institute. The latest version of the ATP III Classification of LDL, Total, and HDL Cholesterol (mg/dL) is the Third Report by the Panel. National Cholesterol Education Program's Expert Panel on Blood Cholesterol in Children and Adolescents sets the acceptable level for children and adolescents.

Facts About LDL Cholesterol

- High cholesterol level, particularly high LDL cholesterol, is a major risk factor for coronary heart disease, heart attack, and stroke.
- LDL levels in the blood are controlled by the liver and the intestines. Liver synthesizes LDL cholesterol, and disposes it, and the intestinal track is the site of lipoprotein absorption. Many drugs can be used to block the absorption of cholesterol from the intestinal track.
- In order to lower your LDL cholesterol levels, limit foods that are high in saturated fats and trans fats.
- Individuals with high LDL blood cholesterol levels, or those who are on cholesterol lowering medication, should eat less than 200 mg of cholesterol daily.
- Postmenopausal women who are diagnosed with heart disease should treat high LDL levels with drug therapy together with a diet that is rich in fruits, vegetables, whole grains, high fiber foods, and low fat dairy products.
- Substituting soy protein for animal protein has been shown to lower LDL cholesterol levels.
- In order to reduce LDL cholesterol you should: exercise regularly; eat a diet that is low in cholesterol, saturated fat, and trans fat, maintain a healthy weight and BMI (body mass index = weight in pounds multiplied by 703, then divide the total by your height in inches squared), and avoid smoking.
- Limit cholesterol intake to 300 mg daily.

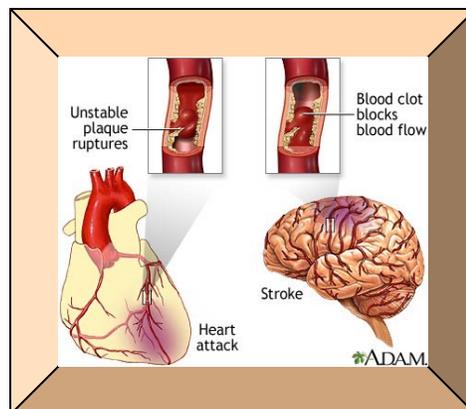
Facts About HDL Cholesterol

- HDL cholesterol assists in the removal of cholesterol from the bloodstream. When LDL cholesterol is too high, cholesterol begins to be deposited into the walls of arteries. This attracts other material such as fat, calcium, cholesterol, cellular waste, and fibrin. Plaque begins to build up and overtime, atherosclerosis develops. This may eventually lead to a heart attack or even a stroke. High HDL lowers your chance of getting atherosclerosis or heart disease, by removing the cholesterol and preventing the plaque buildup.
- An HDL level less than 40 is a risk factor for heart disease.
- HDL levels that are greater than 60 tend to have cardio-protective effects.
- Ways to raise your HDL Cholesterol levels include: exercise regularly, maintain a healthy weight and BMI, avoid smoking, cut trans fats from your diet, add soluble fiber such as fruits, oats, beans, and nuts), and increase the amount of monounsaturated fats.
- Consuming no more than 1 or 2 servings of alcoholic beverages per day.



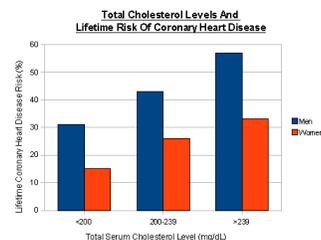
Cholesterol Facts

- Coronary heart disease is the leading cause of death in the United States.
- Over 43 percent of hospital patients treated for coronary heart disease are under the age of 65.
- According to the United States Center for Disease Control, 106.9 million American adults have a blood cholesterol level of 200 mg/dL or greater; 37.7 of which have cholesterol levels higher than 240 mg/dL. This places them at an increased risk of having heart disease or a stroke.
- Everyone 20 and older should have their cholesterol levels checked at least once every five years.
- The overweight and obese are likely to have higher cholesterol level than the lean. However, even lean individuals can have high cholesterol level due to familial hypercholesterolemia.
- The liver makes cholesterol, which is used to make bile acids. The liver also assists in the removal of cholesterol from the blood.
- The intestines have the ability to absorb cholesterol. Sources of cholesterol in the intestinal track are food and bile.
- Estrogen, a female hormone, tends to raise HDL cholesterol levels. This property of estrogen tends to protect premenopausal women from having high levels of LDL (bad) cholesterol or be at risk for cardiovascular disease.
- Cholesterol levels tend to increase as we age.
- The process of developing atherosclerosis, usually begins in childhood. High fat diet in childhood can lead to fatty deposit in the bloodstream of children (Bogalusa Heart Study).
- High intake of Omega-3 fatty acids, commonly found in fish, is known to reduce the risk of heart disease.
- A diet that is rich in soluble fiber, fruits and whole grains will lower blood cholesterol levels.
- Ways to help keep control of your cholesterol levels include: attending periodic checks with your physician, maintaining a healthy weight and BMI, participating in moderate intensity exercise for at least 30 minutes per day, and eating a diet that is low in cholesterol, saturated fat, and trans fat.
- When selecting food, keep in mind that the first ingredient on the Nutrition Facts Panel is the one that is the main ingredient in the food.
- Always choose foods that have fats and oils listed later on in the list of ingredients.



- Keep your sodium intake at 2300 mg or less daily (1 teaspoon). This will help with blood pressure control and the work load on the heart, particularly if you have high level of LDL cholesterol.
- Use margarine in place of butter to avoid saturated fats. Choose margarines that have zero grams of trans fat.
- It is important to follow a heart healthy diet from childhood which includes plenty of fresh fruits and vegetables, whole grains and lean meats, and includes physical activity. You can be a role model by being active and enjoying a variety of healthful foods.

High intake of Omega-3 fatty acids, commonly found in fish, is known to reduce the risk of heart disease.



Source: "Lifetime Risk of Coronary Heart Disease by Cholesterol Levels at Selected Ages" - Archives of Internal Medicine, September 2003

Your Risk for Heart Disease

DETERMINE YOUR OTHER RISK FACTORS FOR HEART DISEASE

If you have already diagnosed coronary heart disease, atherosclerosis, or diabetes, the guidelines would place you into the high risk category, even if you have no symptoms of heart disease.

In addition to high LDL, atherosclerosis or diabetes, other important risk factors for heart disease are:

- Cigarette smoking
- High blood pressure (140/90 mm Hg and above or on blood pressure medication)

- low HDL cholesterol
- family history of early coronary heart disease
- age (for men, age 45 or older; for women, age 55 or older)

IMPROVE YOUR CHOLESTEROL NUMBERS

The new guidelines emphasize preventing heart disease in the short- and long-term, and recommend "therapeutic lifestyle changes (TLC)" to lower LDL. These involve:

- Reducing saturated fat and cholesterol intake

- Increasing intake of soluble fiber
- Reducing weight if you are overweight - especially if you have metabolic syndrome
- Increasing physical activity—regular physical activity is recommended for everyone.
- Controlling high blood pressure
- Quitting smoking

Working with a dietitian or nutritionist is extremely helpful.

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- Clinical Obesity Research
- Experimental Obesity
- Functional Foods
- Health and Performance Enhancement
- Nutrition and Chronic Diseases
- Nutrition and the Brain
- Dementia, Alzheimer's and healthy aging
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The research fostered in these areas can have a profound impact on healthy living and on the prevention of common chronic diseases, such as heart disease, cancer, diabetes, hypertension and osteoporosis.

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