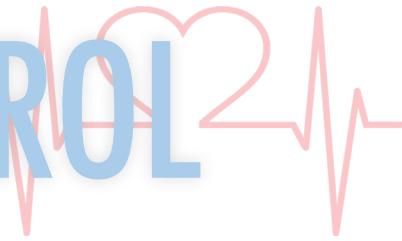


Nutrition & Health Info Sheet:

CHOLESTEROL



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2017

What is CHOLESTEROL?

Cholesterol is a fat-like substance with waxy appearance that is found in many parts of the body, particularly in the blood, brain, kidneys, and liver. The body needs cholesterol to make vitamin D, essential hormones such as estrogen and testosterone, maintain healthy cellular structure, and synthesize bile acids to digest food.^{1,2}



Why do we care about cholesterol?

It is important to be aware of blood cholesterol values because having high blood cholesterol, specifically the low-density lipoprotein (LDL) or “bad” cholesterol, raises the risk for heart attack and stroke. The risk for heart attack and stroke increases as blood LDL values increase.

Where do we find cholesterol?

Cholesterol is produced in the body and is found in our diet. However, it is important to note that cholesterol from food does not affect LDL-cholesterol blood levels. For this reason, the current US Dietary Guidelines for Americans 2015-2020 no longer recommend reducing dietary cholesterol intake.³

Cholesterol in Diet

Dietary cholesterol only comes from animal sources. Vegetables, fruits, or grains do not contain cholesterol.



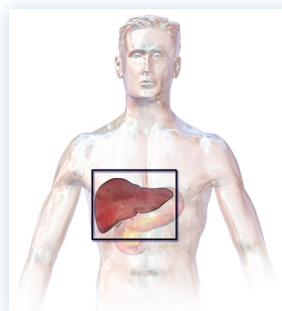
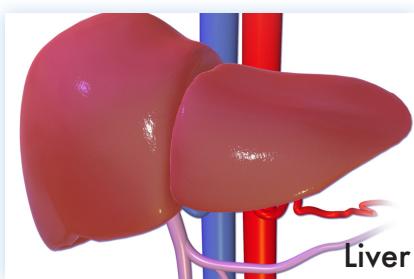
Some sources of cholesterol include:^{4,5}

- Dairy products such as milk, butter, and cheese
- Egg yolks
- Meat, poultry, and seafood
- Lard

Cholesterol in Body

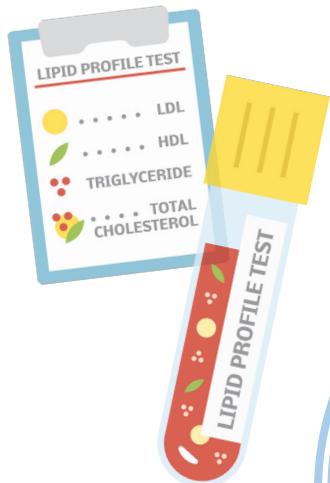
Our livers can make adequate cholesterol on their own.^{4,6}

However, some people are not able to control the amount of cholesterol produced in the body and are prone to having high blood cholesterol levels.⁵



3 Main Liproteins in our Blood

High Density Lipoprotein, Low Density Lipoprotein, and Very-Low Density Lipoprotein



LOW DENSITY LIPOPROTEIN (LDL)

Known as the "bad" cholesterol because it may lead to a build up of cholesterol or plaques in blood vessels, which can interfere with blood circulation.

LDL cholesterol is found in the highest amounts in the blood-stream⁸

21-27 nm in diameter

VERY-LOW DENSITY LIPOPROTEIN (VLDL)

Unlike HDL and LDL cholesterol, VLDL does not carry cholesterol in blood and contains mostly triglycerides (fat).

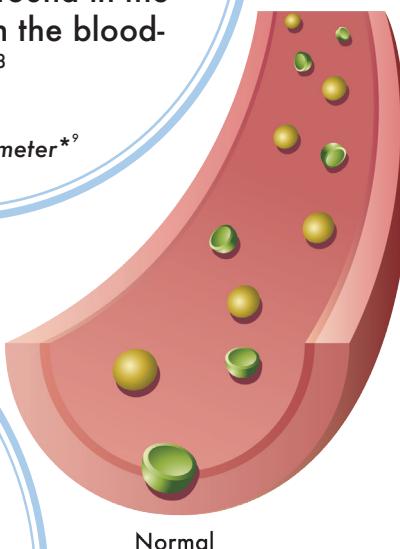
30-90 nm in diameter

VLDL is the largest in size among 3 main lipoproteins!

HIGH DENSITY LIPOPROTEIN (HDL)

Known as the "good" cholesterol, HDL-cholesterol is believed to carry cholesterol from other parts of the body to the liver, where it removes cholesterol from the body.⁷

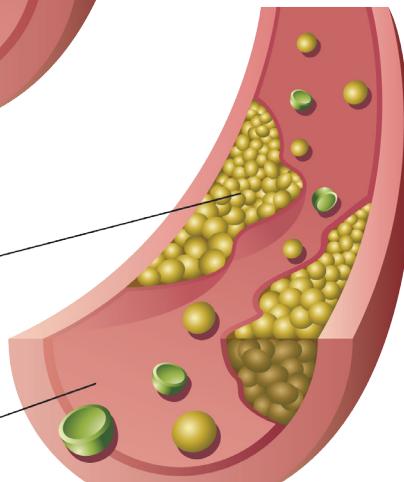
7-13 nm in diameter



Normal

Atherosclerotic Plaque (LDL accumulation)

Artery



Atherosclerosis

build up of cholesterol or plaques in arteries may lead to atherosclerosis



What is atherosclerosis?¹⁰

Atherosclerosis refers to build up of cholesterol or plaques in arteries. As plaques build up, arterial walls get thicker, reducing blood and oxygen flow. Eventually, clogged arteries may block blood flow and lead to coronary heart disease (CHD) and heart attack.

Where do your cholesterol numbers fall?¹

	Desirable (mg/dL)	Borderline (mg/dL)	High Risk (mg/dL)
Total cholesterol	<200	200-239	>240
LDL-cholesterol	<130, but <100 optimal	130-159	>160
HDL-cholesterol	>60, but 40-59 normal range	<40 for men <50 for women	<35
TG	<150	150-199	>200

What are the guidelines for cholesterol levels?

For adults, keeping total blood cholesterol below 200 mg/dL is desirable for healthy blood vessels. Total cholesterol levels above 240 mg/dL is at high risk for heart attack and stroke and need treatment.

The American Heart Association's recommendations for Americans 2 years and older include:⁴

- Eating healthy sources of fat such as fish, nuts, and non-tropical vegetable oils
- Limiting intake of saturated fat to less than 7 percent of total daily calories
- Limiting trans fats to less than 1 percent of total daily calories
- Substituting saturated fats in diet with monounsaturated and polyunsaturated fats

What can we do to reduce cholesterol levels?

The American Heart Association Diet and Lifestyle Recommendations include:⁴

Make a variety of healthier food choices

- Include more fruits, vegetables, and legumes
- Go for fiber-rich whole grains when choosing grains
- Buy skinless poultry and fish 
- Include a variety of fish at least two times a week, especially fish containing omega-3 fatty acids such as salmon, trout,  and herring.
- Consider snacking on some mixed nuts as healthy snack 
- Use non-tropical vegetable oils when cooking
- Select fat-free and low-fat dairy product
- Limit foods and beverages with add-sugars



Make healthier lifestyle changes



- Be active! Aim for at least 150 minutes of moderate physical activity or 75 minutes of vigorous activity each week
- Do not smoke tobacco and avoid second-hand smoke 

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