

February, 2015 • Members

# Heart Disease

## Atherosclerotic cardiovascular disease (ASCVD)

ASCVD is the most common type of heart disease. People get it when plaque builds up in the arteries (blood vessels) of the heart. Plaque is made up of lipids (fat) and other things which stick to the inside wall of the artery. As plaque builds up, the arteries become hard and narrow. Blood can't flow through freely the way it's supposed to, so the arteries become clogged. Eventually, the blood clots and blocks the flow of blood to the heart. This deprives the heart of oxygen and nutrients. The result can be chest pain, shortness of breath, or a heart attack.

## Lipids and lipoproteins

There are several types of lipids. Cholesterol is the main type of lipid in plaque. It is white and waxy. Cholesterol and other lipids can't travel in the blood by themselves. They act like an oil droplet in a glass of water—they don't mix. So lipids must bind to proteins in order to move through the blood vessels. Lipids combined with proteins form lipoprotein particles. The two most important lipoproteins that carry cholesterol are:

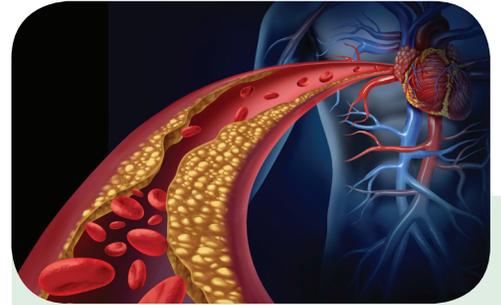
- Low-density lipoprotein (LDL)
- High-density lipoprotein (HDL)

## Lipoproteins and cholesterol

LDL and HDL particles have different roles. LDL carries cholesterol to the cells. Cells need cholesterol to do their work. On its way to the cells, cholesterol carried by LDL (LDL-C) sometimes gets stuck in the artery and becomes part of a plaque. This happens when there is too much cholesterol in the body. Since this leads to heart disease, LDL-C is called the "bad" cholesterol.

HDL acts as a scavenger. It carries excess cholesterol from cells in the body to the liver. The liver breaks down the cholesterol and gets rid of it. Cholesterol carried by HDL (HDL-C) doesn't stick on the walls of blood vessels. So HDL-C doesn't contribute to the buildup of plaque. High amounts of HDL-C lower the risk of heart disease. This is why HDL-C is often called "good" cholesterol.

LDL-C and HDL-C are risk factors for ASCVD. A *high* blood level of LDL-C increases the risk of ASCVD. A *low* level of HDL-C also increases the risk of ASCVD.



## Lipids aren't all bad

Lipids have a bad reputation because of their link to heart disease. But in reality, our body needs lipids. For example, cholesterol provides:

- Fuel for the body
- Building block for the membranes that surround all cells
- Building block for some hormones
- Building block for vitamin D
- Building block for bile acids, which help with digestion

The important thing is to get the right amount of the right types of lipids.

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### Lipoprotein subfractions

LDL and HDL can be divided into smaller subfractions. These are based on the size and density of the particles. Different people have different amounts of these subfractions. Sometimes doctors test people for these subfractions to learn more about a person's risk for ASCVD. These subfractions are risk factors for ASCVD:

- Large amount of small-sized LDL particles
- Large amount of medium-sized LDL particles
- Majority of small-sized LDL particles (called LDL pattern B)
- Large number of LDL particles
- Low amount of large-sized HDL particles

If you have these risk factors, treatment can help you get rid of them.

### How the laboratory can help

Laboratory testing can help you and your doctor find out what your risk for ASCVD is. Adults and children should be tested for blood lipid levels. Adults should be tested every 5 years or so, depending on test results.<sup>1</sup> All children should be tested when they are 9 to 11 years old.<sup>2</sup> They should be tested again when they are 17 to 21 years old.<sup>2</sup> Some children should be tested when they are between 12 and 16 too.<sup>2</sup>

### How to protect yourself from ASCVD

To have a healthy heart, you need to have more HDL-C and less LDL-C. It's a balancing act. You'll be happy to know that you can increase your HDL-C and lower your LDL-C by adopting a few healthy habits. Taking action may slow or even stop the buildup of plaque in your arteries. This can decrease your risk of getting ASCVD.

### Adopt a heart-healthy diet

Cholesterol comes from two sources: your body and the foods you eat. Cholesterol is made in the liver. It's also in animal-based foods such as meat, eggs, butter, cheese, and whole milk. Eating too much of these foods can result in too much cholesterol in your blood and plaque in your arteries. Remember that foods like potato chips, donuts, crackers, cakes, and pies can have a lot of cholesterol in them, too. That's because they are often made using animal-based foods. So look for the fat content on food labels. To be heart-healthy, limit total fat and saturated fat.

Remember, a heart-healthy diet consists of more:

- Fruits
- Vegetables
- Whole grains (oatmeal, brown rice, whole-wheat pasta)
- Low-fat or nonfat dairy products

### Additional Information

You can find more information about high cholesterol and coronary artery disease at these Web sites:

- National Heart, Lung, and Blood Institute: [nhlbi.nih.gov/health/health-topics/topics/cad](http://nhlbi.nih.gov/health/health-topics/topics/cad)
- American Heart Association: [heart.org/HEARTORG/Conditions/Conditions\\_UCM\\_001087\\_SubHomePage.jsp](http://heart.org/HEARTORG/Conditions/Conditions_UCM_001087_SubHomePage.jsp)

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### Get moving

Getting plenty of exercise helps keep your heart and blood vessels healthy. You can have a more active lifestyle by:

- Working out at the gym
- Walking up and down the stairs instead of taking an elevator
- Walking or riding a bicycle several times a week
- Limiting the amount of time you sit around watching TV or playing on the computer

### Watch your weight

If you are overweight or obese, talk with your doctor about a weight loss plan. The good news is that a heart-healthy diet and exercise both help you get to a healthy weight.

### References

1. Final recommendation statement. Lipid disorders in adults (cholesterol, dyslipidemia): screening. U.S. Preventive Services Task Force Web site. [uspreventiveservicestaskforce.org/Page/Document/RecommendationStatementFinal/lipid-disorders-in-adults-cholesterol-dyslipidemia-screening](http://uspreventiveservicestaskforce.org/Page/Document/RecommendationStatementFinal/lipid-disorders-in-adults-cholesterol-dyslipidemia-screening). Updated December 2014. Accessed December 10, 2014.
2. Expert Panel on Integrated Guidelines for Cardiovascular Health and Risk Reduction in Children and Adolescents. Expert panel on integrated guidelines for cardiovascular health and risk reduction in children and adolescents: summary report. *Pediatrics*. 2011;128 (suppl 5):S213-S256.