



*ACCF Special Report*

# Managing Your Cholesterol



# Living Well

TOGETHER, YOU AND YOUR DOCTOR can form a plan to keep your cholesterol within limits and reduce your risk of heart disease and stroke.



Cholesterol is a soft, fat-like, waxy substance found in the bloodstream and in all your body's cells. As a lipid, or fat-like substance, it's an important part of a healthy body because it's used for building cells. But a high blood cholesterol level is a major risk for coronary heart disease, which can lead to heart attack. It's also a risk factor for stroke.

**Talk to your doctor, use this guide and go to [www.nhlbi.nih.gov](http://www.nhlbi.nih.gov) to learn more about cholesterol.**

An estimated 105 million American adults have total blood cholesterol levels of 200 milligrams per deciliter (mg/dL) and up, which is considered too high. Men ages 35 and older and women ages 45 and older should routinely have their cholesterol checked. Work with your doctor to monitor your cholesterol and develop a plan to reduce it if your readings are too high.

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*Cholesterol, a fat-like substance in your blood, can build up inside your arteries and lead to a heart attack or stroke.*

## Too Much Can Hurt You

### Body Makes Cholesterol

Cholesterol is a fatty, wax-like substance that, together with other substances, can reduce the flow of blood to the heart or brain by slowly building up plaque. If the shape of the plaque or a rupture in the plaque creates a blood clot, the clot can break off and block the blood flow to the heart or the brain and cause a heart attack or stroke.

You get cholesterol in two ways. Your body makes some of it, and the rest comes from cholesterol in animal products that you eat, such as fatty meats, poultry, fish, eggs, butter, cheese and whole milk. Plant foods—such as fruits, vegetables and cereals—lack cholesterol.

Some foods that don't contain animal products may contain saturated fats and/or trans fats, which cause your body to make more cholesterol.

### Too Much Can Be Harmful

Too much cholesterol in your blood—together with other substances—can contribute to a gradual buildup of plaque, which slows the flow of blood to the heart or the brain. Eating foods that contain cholesterol can raise your blood cholesterol. Eating meals (see page 5) that are low in cholesterol and saturated fat helps reduce the level of cholesterol in your blood.

Try to eat less than 200 mg of cholesterol a day. The only way to keep track of the cholesterol you consume is to read the labels on the foods you eat.

### HDL-C, LDL-C

Cholesterol is carried in the bloodstream by high-density lipoproteins (HDL) and low-density lipoproteins (LDL). A lipoprotein is a combination of fat and protein as it moves through the body from your liver to other tissues.

HDL cholesterol (HDL-C) is called “good” cholesterol. It helps prevent cholesterol buildup on the walls of your arteries. A high reading of HDL-C in your blood helps protect your heart and arteries.

LDL cholesterol (LDL-C) is called “bad” cholesterol. It helps cholesterol stick to the inner walls of your arteries, which, together with other substances, eventually restricts the flow of blood. LDL-C readings in your blood should be low to help protect your heart and arteries.

Cholesterol in very low-density lipoproteins (VLDL) plus the cholesterol in LDL are sometimes called non-HDL cholesterol and can contribute to heart disease.

### What Are Triglycerides?

Triglycerides are a type of fat in your blood. Like cholesterol, high levels of triglycerides can lead to blocked arteries. Being overweight, diabetes, family history and lack of physical activity can contribute to high triglyceride levels in your blood. If you already have high triglycerides, you should limit your intake of alcohol—one to two drinks a day for men, one drink a day for women.



# Raising Your Risk

*Certain factors can determine how high your cholesterol level goes and how much damage is done to your body.*

Your cholesterol and other lipid levels can be affected by your lifestyle habits, genetics and medical conditions.

## Causes and Factors

- **Diet.** Foods high in saturated fats and cholesterol can increase your levels of LDL and total cholesterol.
- **Overweight.** Excess weight can raise your LDL, total cholesterol and triglycerides.
- **Smoking.** Tobacco smoke contributes to high triglycerides and low HDL levels.
- **Exercise.** Physical activity can raise HDL, and the lack of physical exercise contributes to being overweight.
- **Genes.** If your family members, especially your parents, have high LDL, high total cholesterol, high triglycerides or low HDL, you may inherit these conditions.
- **Age.** Elevated lipids are common in people over age 65.

These medical conditions also can affect your cholesterol and triglycerides:

- Liver disease
- Underactive thyroid
- Kidney disease
- Diabetes
- Pancreatic disease

## Effects of Elevated Cholesterol

High cholesterol can lead to atherosclerosis, a disease causing deposits of chole-

sterol on the inside walls of your arteries.

Your arteries are like water pipes, with clean, slick walls when they are new. Water pipes build up deposits of iron and calcium on the inside over time. These deposits reduce the inside openings of the pipes, and less water can flow through them.

When you are born, your arteries are clean “pipes.” As you grow, cholesterol is deposited on the inside of your arteries in much the same way that deposits build up in water pipes.

If you have high cholesterol levels, these deposits, or plaques, build up more quickly. The inside walls of your arteries get “rough,” and the openings of the arteries get smaller. This is called atherosclerosis. As atherosclerosis gets worse, the muscular walls of your arteries get thicker on the inside, making the openings even narrower.

Blood cells called platelets may “stick” to these rough areas in your arteries as atherosclerosis continues. Clumps of platelets help form blood clots, blocking the arterial opening completely and cutting off the flow of oxygen-carrying blood to your organ tissues. Without oxygen, the tissues die. This can lead to a heart attack, chest pain (angina), abnormal or irregular heart rhythms, stroke and other diseases.

These conditions are preventable because high blood cholesterol can be treated. Be sure to talk to your doctor about the best plan for you to keep your cholesterol under control.



# *You Are What* **You Eat**



*One method of reducing high cholesterol levels is following a healthy diet by limiting foods high in cholesterol and saturated fats and eating more whole grains, fruits, vegetables and lean meats.*

Foods to avoid include those cooked in lard or butter, creams, fatty red meats and baked goods with fats—especially “tropical fats” such as palm and coconut oils, which are highly saturated.

The National Heart, Lung and Blood Institute (NHLBI) recommends the following foods to keep cholesterol at a healthy level:

- **Foods low in saturated fat and low in total fat.** Foods containing fat have both saturated and unsaturated fats. Saturated fat raises cholesterol levels, so choose foods low in this fat such as whole grains, fruits and vegetables. Trans fats (trans fatty acids), which are man-made fats used in artificial butter and prepared baked goods, also raise cholesterol levels.
- **Foods high in fiber.** Fruits, vegetables and whole grains are low in cholesterol and saturated fat. They also contain soluble fiber, which dissolves in water and can reduce LDL and total cholesterol.
- **Foods low in cholesterol.** Your liver produces all the cholesterol required by your body, so eating animal products and other fatty foods raises cholesterol levels. Even though some animal products are low in saturated fat, they are high in cholesterol (such as egg yolks and liver).

The American Heart Association (AHA) also recommends eating no more than five ounces of lean meat, poultry or fish per day, and using low-fat and skim/fat-free dairy products. Protein from animal products can be replaced by protein from vegetables such as beans.

The AHA recommends being mindful of eating reasonably sized portions of all foods.

### **The NHLBI suggests the following low-fat snacks for people watching their cholesterol levels:**

1. Bagels, bread sticks, Melba toast, rice cakes, rye crisp or soda crackers
2. Unsweetened, ready-to-eat cereals
3. Fresh fruit or dried fruit
4. Pretzels
5. Baked tortilla chips
6. Air-popped popcorn (plain)
7. Animal crackers, graham crackers or ginger snaps
8. Fig/fruit bars
9. Sherbet, sorbet or fruit ices
10. Frozen low-fat or nonfat yogurt

## Controlling Your Cholesterol

Drug therapy can be considered for patients who need help beyond lifestyle changes. The presence of the coronary heart disease risk factors listed below may be the determining factor in deciding on whether to use cholesterol-lowering drugs, and you and your doctor should discuss whether or not taking the medication is necessary.

- **Age:** Men older than 45, and women above age 55
- **Family history:** Anyone whose father, brother or son has a history of coronary artery disease before age 55, or whose mother, sister or daughter had coronary artery disease before age 65
- **Tobacco smoke:** Anyone who smokes, or lives or works around people who smoke
- **High blood pressure:** Anyone with a blood pressure reading of 140/90mm Hg or above on two or more occasions
- **HDL cholesterol:** Men with HDL cholesterol below 40 mg/dL and women with HDL cholesterol below 50 mg/dL
- **Diabetes:** Anyone with a fasting blood sugar level of 126 mg/dL or above

### Medications

Five groups of drugs are used to reduce cholesterol and other lipids:

- Bile acid resins help your body get rid of cholesterol. If cholesterol levels are very high, these drugs may be used in combination with other lipid-lowering drugs, such as fibrates and statins.
- Statin drugs reduce the levels of cholesterol and triglycerides in the blood. Statins are inhibitors that block the enzyme HMG-CoA reductase, which is used by the liver to manufacture cholesterol. Statins have been shown to reduce cardiovascular events in



patients with high or normal cholesterol and other risk factors.

- Fibrates are drugs that lower cholesterol and triglyceride levels in the blood and raise HDL cholesterol levels. Fibrates usually are used in combination with statins and can increase the effectiveness of medications that thin the blood, requiring a doctor to closely monitor anyone taking the drugs.
- Niacin (nicotinic acid), or vitamin B3, is used either individually or in combination with other drugs and is especially effective in raising HDL levels. Niacin works in the liver by affecting the body's production of blood fats. Niacin is available in two forms: prescription and supplement. Prescription preparations of niacin are reviewed by the FDA for both efficacy and safety. Dietary supplement niacins, which are not reviewed by the FDA, can vary widely in strength, composition and safety. Before taking any preparation you should consult with your doctor.
- Cholesterol-absorption inhibitors, such as ezetimibe, help lower cholesterol by reducing the amount of cholesterol that is absorbed by your intestines. These are often prescribed in combination with a statin drug and have proved effective in treating patients with a moderate to high risk of coronary heart disease.

If you are taking any cholesterol-lowering drugs, you should have your doctor monitor your progress to ensure maximum effectiveness and avoid adverse reactions.

## *Knowing* the Facts

### **1. Using margarine instead of butter will help lower my cholesterol.**

Both margarine and butter are high in fat, and should be used in moderation. From a dietary perspective, the major factor affecting blood cholesterol is how much saturated fat is in the food—not the amount of cholesterol. Reducing your intake of saturated fat is key to helping control cholesterol. Most soft or liquid margarines have less saturated fat and so are preferable to the stick forms for a heart-healthy diet. However, eat all fatty foods in moderation. A new margarine called Benecol<sup>®</sup> actually works to lower cholesterol by using one tablespoon three times daily, and is the preferred margarine if you are trying to lower blood cholesterol.

### **2. My doctor hasn't said anything about my cholesterol, so I don't have to worry.**

Your health is your responsibility. Ask your doctor if a blood cholesterol test is indicated for you. If you get one, have your doctor explain what the numbers mean. If you're in a high or borderline-high range, discuss options with your doctor.

### **3. Since I started taking medication for my high cholesterol, I don't have to worry about what I eat.**

Unless your cholesterol is dangerously high, it's best to try to reduce it by changing your diet. Drug therapy is usually prescribed for those who—despite adequate dietary changes, regular physical activity and weight loss—still have elevated levels of cholesterol. Making lifestyle changes along with taking medication are the best ways to help prevent heart disease. Reducing the amount of fat and cholesterol in your diet and getting 30 to 60 minutes of physical activity on most or all days of the week are recommended, even if you're taking cholesterol-lowering medication.



### **4. I'm a woman, so I don't have to worry. High cholesterol is a man's problem.**

Heart disease kills more women every year than breast cancer, including younger, premenopausal women. High cholesterol is equally risky for women and men, yet women are less likely to be treated for high cholesterol. Postmenopausal women may find that even a heart-healthy diet and regular exercise aren't enough to keep their cholesterol from rising. If you're approaching menopause, it's especially important to have your cholesterol checked and to talk with your doctor about your options.



# Heart Specialists

## What is the American College of Cardiology?

The American College of Cardiology is a nonprofit professional medical society and teaching institution. Its membership consists of 31,000 physicians, nurses, nurses' assistants and nurse practitioners. ACC is dedicated to fostering optimal cardiovascular care and disease prevention through professional education, promotion of research, leadership in the development of standards and guidelines, and the formulation of health care policy.



## What is a cardiologist?

A **cardiologist** has special training and skill in finding, treating and preventing diseases of the heart and blood vessels in adults. Any time you have a significant heart or related condition, you may require the attention of a cardiologist. After four years of medical school, these highly trained doctors spend from six to eight more years in specialized training. A cardiologist receives three years of training in internal medicine and three or more years in specialized cardiology training.

## What's an "FACC"?

If your cardiovascular specialist adds F.A.C.C.—Fellow of the American College of Cardiology—to his or her name, it is a sign of significant accomplishment and commitment to a profession, to a specialty and to the provision of the best health care for the patient.

Election to ACC membership is based on training, specialty board certification, scientific and professional accomplishments, length of active participation in a cardiovascular-related field, and peer recognition. Members are expected to conform to high moral and ethical standards.

**For more information about cardiologists and cardiology, visit [www.acc.org](http://www.acc.org).**

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