



Effective Health Care Program

# Treating High Cholesterol

## A Guide for Adults



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## Fast Facts

- High cholesterol can lead to heart attacks and strokes.
- There are different kinds of medicines to treat high cholesterol.
- Medicines called statins are used the most.
- If your cholesterol is still too high when you are taking a statin, there are options. Your doctor or nurse can increase your statin dose or add a different kind of cholesterol medicine.
- Research can't tell us yet if taking a statin and another kind of cholesterol medicine lowers cholesterol more than taking only a statin.
- Research also can't tell us yet if taking a statin and another kind of cholesterol medicine helps prevent more heart attacks or strokes than taking only a statin.

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## What Does This Guide Cover?

Keeping your cholesterol at a good level can help lower your chance of heart attacks and strokes. This guide can help you talk with your doctor or nurse about medicines to treat high cholesterol. It covers:

- Different kinds of cholesterol medicines.
- How the medicines work.
- Side effects of cholesterol medicines.
- The information in this guide comes from a government-funded review of research about cholesterol medicines.

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## What Is Not Covered in This Guide?

This guide does not compare all the ways to lower cholesterol. It does not compare cholesterol medicines with herbal treatments or dietary treatments (like oatmeal). It also does not compare all the combinations of medicines. This guide does not cover the treatment of high cholesterol in people under 18 years old.



## Learning About Cholesterol

Cholesterol is a building block of our body's cells. The liver makes cholesterol. Cholesterol travels to the body's cells in the blood. We all need some cholesterol, but our bodies can make all the cholesterol we need. Certain foods are an added source of cholesterol.

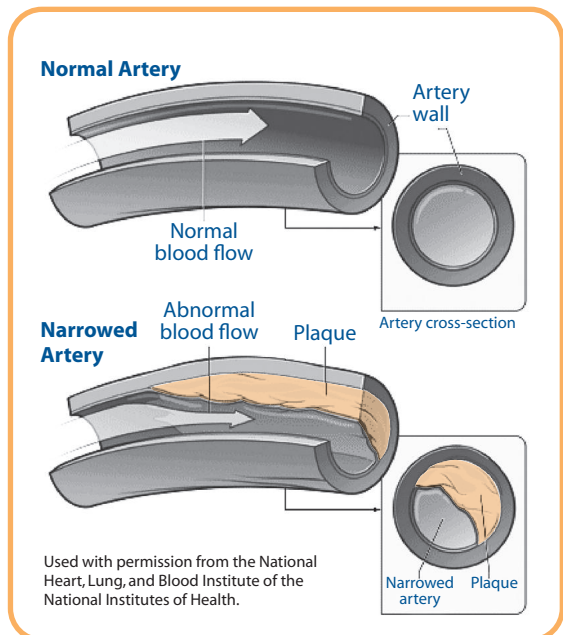
Many people have the right amount of cholesterol. Other people have too much. High cholesterol sometimes runs in families.

There are different types of cholesterol. The two main types are often called "bad" and "good." The bad cholesterol can damage the heart and arteries, but good cholesterol does not cause damage.

### Bad Cholesterol (LDL Cholesterol)

Everyone should try to keep bad (LDL) cholesterol as low as possible. If your doctor or nurse tells you that you have high cholesterol, it means that your bad cholesterol is too high.

When you have too much bad (LDL) cholesterol in your blood, it can build up on the walls of your arteries. This build-up is called plaque (pronounced "plak"). Plaque can narrow your arteries and make it harder for blood to flow. Plaque can lead to heart attacks and strokes. Keeping bad cholesterol at a low level can help avoid these problems.



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## **Good Cholesterol (HDL Cholesterol)**

Good (HDL) cholesterol helps remove extra cholesterol from the body. When your good cholesterol is higher, your chance of heart disease is lower. If your good cholesterol is 60 or higher, that helps protect against heart attacks and strokes.

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## **Triglycerides**

Triglycerides (try-GLIS-uh-rides) are a kind of fat found in your blood. The body makes triglycerides. They are also found in food. Your body needs this kind of fat, but it's best to keep your triglycerides low. Less than 150 is usually the goal.

Just having high cholesterol does not cause any symptoms. Most people do not know they have high cholesterol unless they get tested. Having a blood test to check your cholesterol will tell you if your levels are on target.

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## **Checking Your Cholesterol Levels**

Cholesterol is measured by a blood test done at your doctor's office or a lab. A cholesterol test will tell you your total cholesterol level. It will also tell you the levels of your good (HDL) and bad (LDL) cholesterol and your triglycerides.

How often you have this blood test may depend on your personal risk for heart attacks or strokes. Talk to your doctor or nurse about how often your cholesterol should be checked.



## Setting Your Cholesterol Goal

The target for your bad (LDL) cholesterol depends on your risk factors for heart disease. Risk factors are things that increase your chance of having a heart attack or stroke. If you have more risk factors, your doctor or nurse will recommend a lower target for your bad cholesterol. Talk with your doctor or nurse about setting your cholesterol goal.

### Risk Factors

These are some risk factors for heart disease.

- Age.
  - For men—being 45 or older.
  - For women—being 55 or older.
- Family history of early heart disease.
- Smoking.
- High blood pressure.
- Low levels of good (HDL) cholesterol.

### People at Moderate Risk

People with two or more risk factors (listed above) are at moderate risk for heart attacks and strokes.

### People at High Risk

People who already have heart disease or diabetes are at high risk for heart attacks and strokes. Others with certain risk combinations also fall into this group. Ask your doctor or nurse whether you fall into this high-risk group.



## How Is High Cholesterol Treated?

The first step in controlling your cholesterol is to eat a balanced diet and to be more active. Even small changes can make a big difference. Your doctor or nurse may recommend a special cholesterol-lowering diet. The cholesterol-lowering diet follows simple guidelines like:

- Eating a variety of foods, including fresh fruits, vegetables, and whole grains.
- Limiting fat calories to 35 percent or less of total calories eaten each day.
- Limiting foods with cholesterol in them, like egg yolks.
- Eating foods with fiber in them, like whole grains.

Some people can reach their cholesterol goals by eating a balanced diet and exercising. But many people will also need medicine to lower their cholesterol.

## Learning About Cholesterol Medicines

Different kinds of cholesterol medicines work in different ways to improve your cholesterol levels. Some medicines can lower your triglycerides. Most people start with a statin because statins usually work well to lower bad (LDL) cholesterol. If your bad cholesterol is still too high, your doctor or nurse may increase your statin dose or add a different kind of cholesterol medicine to help you reach your goal. This chart shows the different kinds of cholesterol medicines and how they work.





## Kinds of Cholesterol Medicines and How They Work

<i>Generic Name</i>	<i>Brand Name</i>	<i>How They Work</i>
<b>Statins</b>		
Atorvastatin	Lipitor®	Block the liver from making cholesterol.
Fluvastatin	Lescol®	
Lovastatin	Mevacor®, Altoprev®	
Pravastatin	Pravachol®	
Rosuvastatin	Crestor®	
Simvastatin	Zocor®	
<b>Bile Acid Binders</b>		
Cholestyramine	Questran®	Decrease the amount of fat absorbed from food.
Colesevelam	Welchol®	
Colestipol	Colestid®	
<b>Cholesterol Absorption Inhibitor</b>		
Ezetimibe	Zetia®	Decreases the amount of cholesterol absorbed from food. Also lowers triglycerides.
<b>Fibrates</b>		
Gemfibrozil	Lopid®	Help the liver break down bad (LDL) cholesterol. Also lower triglycerides.
Fenofibrate	TriCor®, Lofibra®	
<b>Vitamins and Supplements</b>		
Niacin	Niacor®, Niaspan®	Blocks the liver from removing good (HDL) cholesterol. Also lowers triglycerides.
Omega-3 fatty acids	Lovaza®	Increase the level of good (HDL) cholesterol. Also lower triglycerides.

## Are Two Medicines Better Than One?

### Preventing Heart Attacks and Strokes

Research can't tell us yet if taking a statin and another kind of cholesterol medicine helps prevent more heart attacks or strokes than taking only a statin. This is because most of the research didn't include very many people or last very long.

### Lowering Cholesterol

Research can't tell us yet if taking a statin and another kind of cholesterol medicine lowers cholesterol more than taking only a statin. This is because the research studies did not all measure cholesterol in the same way. Some measured total cholesterol; some only measured bad (LDL) or good (HDL) cholesterol.

## Side Effects of Cholesterol Medicines

### Minor Side Effects

All the medicines in this guide can cause minor side effects, like heartburn, upset stomach, and diarrhea. These problems often go away and are not usually serious. Tell your doctor or nurse if these symptoms are severe or do not go away.

### Serious Side Effects

#### Muscle problems

It is rare, but some cholesterol medicines can cause muscle damage. If you are taking a cholesterol medicine and get muscle aches, tell your doctor or nurse right away.

#### Liver problems

It is rare, but some cholesterol medicines can cause liver damage. You might need a blood test to check your liver before you start these medicines.

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Research can't tell us yet if combining cholesterol medicines leads to more or fewer side effects than taking only a statin.

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## Talking With Your Doctor About High Cholesterol

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### **Can I control my cholesterol by eating healthy and being active?**

Everyone with high cholesterol should be on a cholesterol-lowering diet. Exercising can help too. If you can't get to your cholesterol goal with diet and exercise alone, you may need to start a cholesterol medicine. Work with your doctor or nurse to set up a plan that works for you.

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### **Are all these medicines taken the same way?**

Most cholesterol medicines are pills. A few come as powders that you mix into a drink. Some are taken once a day. Others need to be taken more often. With some combinations, the medicines can't be taken at the same time. Talk with your doctor or nurse about what kind of schedule will be easiest for you to follow.

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### **What about the cost?**

Some medicines are available as generics, which cost less. If prescriptions are part of your health insurance plan, ask about the cost to you. If you need help paying for cholesterol medicines, there may be a program for you. Contact the Partnership for Prescription Assistance. Web site: [pparx.org](http://pparx.org). Phone: 888-477-2669.

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## What else can I do to keep my heart healthy?

Lowering your cholesterol is an important step. But it's also important to control other health problems that can put you at risk for heart attacks and stroke, like diabetes and high blood pressure. Stopping smoking is important too.

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## If I lower my cholesterol enough with medicine, can I stop taking the medicine?

Most people have to continue taking the medicine in order to keep their cholesterol low. Cholesterol medicines are usually safe no matter how long you have to take them.

## Track Your Cholesterol Levels

Use this table to track your cholesterol levels. Each time you have your cholesterol checked, fill in a row of the table. That way, you and your doctor or nurse will be able to see how your levels change over time.

<b>My Cholesterol Levels</b>				
Date	Total cholesterol	Good (HDL) cholesterol	Bad (LDL) cholesterol	Triglycerides



# Track Your Cholesterol Medicines

Use this table to keep a record of the cholesterol medicines you take. It will help you keep track of the medicines that work best for you.

<b>My Cholesterol Medicines</b>			
Medicine	Dose	When did I start taking this medicine?	If I am no longer taking it, why did I stop?

## For More Information

Visit [www.effectivehealthcare.ahrq.gov](http://www.effectivehealthcare.ahrq.gov).

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For free print copies of this guide, call 800-358-9295. Ask the Publications Clearinghouse for AHRQ Publication Number 09(10)-EHC024-A.

To learn more about cholesterol, visit [www.nlm.nih.gov/medlineplus/cholesterol.html](http://www.nlm.nih.gov/medlineplus/cholesterol.html).



## Source

The information in this guide comes from a detailed review of 102 research reports. The review is called *Comparative Effectiveness of Lipid-Modifying Agents* (2009), and was written by the Johns Hopkins Evidence-based Practice Center.

The Agency for Healthcare Research and Quality (AHRQ) created the Eisenberg Center at Oregon Health & Science University to make research helpful for consumers. This guide was written by Bruin Ruge, M.D., Martha Schechtel, R.N., Rachelle Nicolai, B.A., Susan Severance, M.P.H., and David Hickam, M.D., of the Eisenberg Center. People with high cholesterol helped them develop this guide.

