

This SmartCare article is prepared exclusively for:

Institute Of Endocrinology Diabetes Health And Hormones

Cholesterol - drug treatment

Description

Your body needs cholesterol to work properly. But extra cholesterol in your blood causes deposits to build up on the inside walls of your blood vessels. This buildup is called plaque. It narrows your arteries and can reduce or stop blood flow. This can lead to heart attack, stroke, and narrowing of the arteries elsewhere in your body.

Statins are thought to be the best drugs to use for people who need medicines to lower their cholesterol.

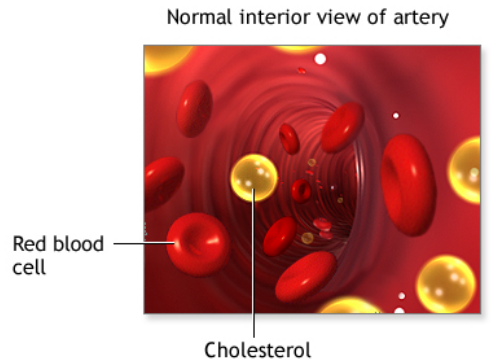
Alternative names

Hyperlipidemia - drug treatment;
Hardening of the arteries - statin

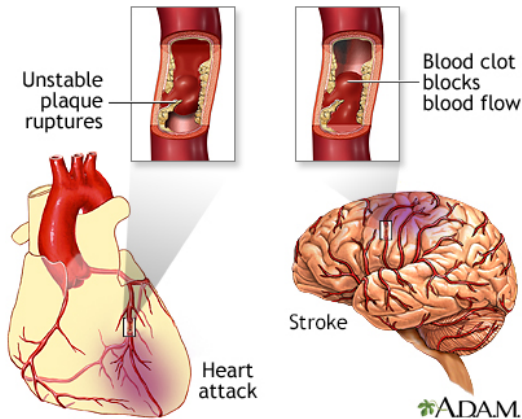
Statins for Cholesterol

Statins reduce your risk of heart disease, stroke, and other related problems. They do this by lowering your LDL (bad) cholesterol.

Most of the time you will need to take this medicine for the rest of your life. In some cases, changing your lifestyle and losing extra weight may allow you to stop taking this medicine.



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Who Should Take Statins to Lower Cholesterol?

Having low LDL and total cholesterol reduces your risk of heart disease. But not everyone needs to take statins to lower cholesterol.

Your health care provider will decide on your treatment based on:

- Your total, HDL (good), and LDL (bad) cholesterol levels
- Your age
- Your history of diabetes, high blood pressure, or heart disease
- Other health problems that may be caused by high cholesterol
- Whether or not you smoke
- Your risk of heart disease
- Your ethnicity

You should take statins if you are 75 or younger, and you have a history of:

- Heart problems due to narrowed arteries in the heart
- Stroke or TIA (mini stroke)
- Aortic aneurysm (a bulge in the main artery in your body)
- Narrowing of the arteries to your legs

If you are older than 75, your provider may prescribe a lower dose of a statin. This may help lessen possible side effects.

You should take statins if your LDL cholesterol is 190 mg/dL (4.92 mmol/L) or higher. You should also take statins if your LDL cholesterol is between 70 and 189 mg/dL (1.81 to 4.90 mmol/L) and:

- You have diabetes and are between ages 40 and 75
- You have diabetes and a high risk of heart disease
- You have a high risk of heart disease

You and your provider may want to consider statins if your LDL cholesterol is 70 to 189 mg/dL (1.81 to 4.90 mmol/L) and:

- You have diabetes and a medium risk for heart disease
- You have a medium risk for heart disease

If you have a high risk for heart disease and your LDL cholesterol stays high even with statin treatment, your provider may consider these drugs in addition to statins:

- Ezetimibe
- PCSK9 inhibitors, such as alirocumab and evolocumab (Repatha)

How low Should Your LDL Cholesterol be?

Doctors used to set a target level for your LDL cholesterol. But now the focus is reducing your risk for problems caused by narrowing of your arteries. Your provider may monitor your cholesterol levels. But frequent testing is rarely needed.

You and your provider will decide what dose of a statin you should take. If you have risk factors, you may need to take higher doses. or add other types of drugs. Factors that your provider will consider when choosing your treatment include:

- Your total, HDL, and LDL cholesterol levels before treatment
- Whether you have coronary artery disease (history of angina or heart attack), a history of stroke, or narrowed arteries in your legs
- Whether you have diabetes
- Whether you smoke or have high blood pressure

Higher doses may lead to side effects over time. So your provider will also consider your age and risk factors for side effects.

Review Date: February 23, 2022.

Reviewed By: Thomas S. Metkus, MD, Assistant Professor of Medicine and Surgery, Johns Hopkins University School of Medicine, Baltimore, MD. Also reviewed by David Zieve, MD, MHA, Medical Director, Brenda Conaway, Editorial Director, and the A.D.A.M. Editorial team.



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This SmartCare article is prepared exclusively for:

Institute Of Endocrinology Diabetes Health And Hormones

Cholesterol - what to ask your doctor

Definition

Your body needs cholesterol to work properly. When you have too much cholesterol in your blood, it builds up inside the walls of your arteries (blood vessels), including the ones that go to your heart. This buildup is called plaque.

Plaque narrows your arteries and slows or stops the blood flow. This can cause a heart attack, stroke, or other serious heart disease.

Below are some questions you may want to ask your health care provider to help you take care of your cholesterol.

Questions

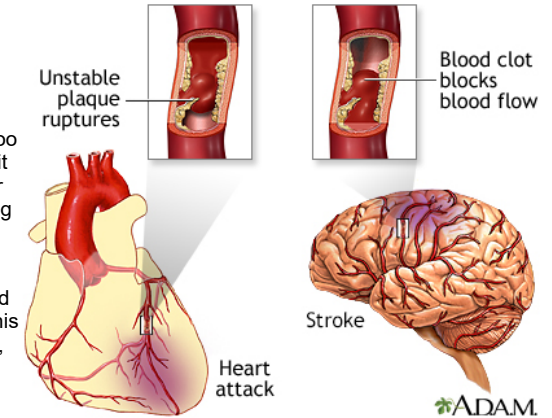
What is my cholesterol level? What should my cholesterol level be?

- What are HDL (good) cholesterol and LDL (bad) cholesterol?
- Does my cholesterol need to be better?
- How often should I have my cholesterol checked?

What medicines am I taking to treat high cholesterol?

- Do they have any side effects?
- What should I do if I miss a dose?
- Are there foods, other medicines, vitamins, or herbal supplements that may change how well my cholesterol medicines work?

What is a heart-healthy diet?



- What are low-fat foods?
- What types of fat are OK for me to eat?
- How can I read a food label to know how much fat it has?
- Is it ever OK to eat something that is not heart healthy?
- What are some ways to eat healthy when I go to a restaurant? Can I ever go to a fast-food restaurant again?
- Do I need to limit how much salt I use? Can I use other spices to make my food taste good?
- Is it OK to drink any alcohol?

What can I do to stop smoking?

Should I start an exercise program?

- Is it safe for me to exercise on my own?
- Where should I exercise, inside or outside?
- Which activities are better to start with?
- Are there activities or exercises that are not safe for me?
- Can I exercise most days?
- How long and how hard can I exercise?
- What symptoms may I need to watch out for?

Hyperlipidemia - what to ask your doctor; What to ask your doctor about cholesterol

Review Date: August 23, 2022.

Reviewed By: Thomas S. Metkus, MD, Assistant Professor of Medicine and Surgery, Johns Hopkins University School of Medicine, Baltimore, MD. Also reviewed by David C. Dugdale, MD, Medical Director, Brenda Conaway, Editorial Director, and the A.D.A.M. Editorial team.



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This SmartCare article is prepared exclusively for:

Institute Of Endocrinology Diabetes Health And Hormones

Cholesterol and lifestyle

Description

Your body needs cholesterol to work well. But cholesterol levels that are too high can harm you.

In the US, blood cholesterol is most often measured in milligrams per deciliter (mg/dL). Extra cholesterol in your blood builds up inside the walls of your blood vessels. This buildup is called plaque, or atherosclerosis. Plaque reduces or stops blood flow. This can cause a:

- Heart attack
- Stroke
- Serious heart or blood vessel disease

Saturated fats are found in animal products such as butter, cheese, whole milk, ice cream, cream, and fatty meats, and oils such as coconut, palm, and palm kernel oil



Your Cholesterol Numbers

All men should have their blood cholesterol levels tested every 5 years, starting at age 35 years. All women should do the same, starting at age 45 years. Many adults should have their blood cholesterol levels tested at a younger age, possibly as early as age 20 years, if they have risk factors for heart disease. Children with risk factors for heart disease should also have their blood cholesterol levels checked. Some expert groups recommend cholesterol testing for all children ages 9 to 11 and again between ages 17 and 21. Have your cholesterol checked more often (probably every year) if you have:

- Diabetes
- Heart disease
- Blood flow problems to your feet or legs
- A history of stroke

A blood cholesterol test measures the level of total cholesterol. This includes HDL (good) cholesterol and LDL (bad) cholesterol.

Your LDL level is what health care providers watch most closely. You want it to be low. If it gets too high, you will need to treat it.

Treatment includes:

- Eating a healthy diet
- Losing weight (if you are overweight)
- Exercising

You may also need medicine to lower your cholesterol.

You want your HDL cholesterol to be high. Exercise can help raise it, but only a small amount.

Eating Right

It is important to eat right, keep a healthy weight, and exercise, even if:

- You do not have heart disease or diabetes.
- Your cholesterol levels are in the normal range.

These healthy habits may help prevent future heart attacks and other health problems.

Eat foods that are low in fat. These include whole grains, fruits, and vegetables. Using low-fat toppings, sauces, and dressings will help.

Look at food labels. Avoid foods that are high in saturated fat. Eating too much of this type of fat can lead to heart disease.

- Choose lean protein foods, such as soy, fish, skinless chicken, very lean meat, and fat-free or 1% dairy products.
- Look for the words "hydrogenated", "partially hydrogenated", and "trans fats" on food labels. Do not eat foods with these words in the ingredients lists.
- Limit how much fried food you eat.
- Limit how many prepared baked goods (for example, donuts, cookies, and crackers) you eat. They may contain a lot of fats that are not healthy.
- Eat fewer egg yolks, hard cheeses, whole milk, cream, and ice cream.
- Eat less fatty meat and smaller portions of meat, in general.
- Use healthy ways to cook fish, chicken, and lean meats, such as broiling, grilling, poaching, and baking.

Eat foods that are high in fiber. Good fibers to eat are oats, bran, split peas and lentils, beans (kidney, black, and navy beans), some cereals, and brown rice.

Learn how to shop for, and cook, foods that are healthy for your heart. Learn how to read food labels to choose healthy foods. Stay away from fast foods, where healthy choices can be hard to find.

Get plenty of exercise. And talk with your provider about what kinds of exercises are best for you.

Hyperlipidemia - cholesterol and lifestyle; CAD - cholesterol and lifestyle; Coronary artery disease - cholesterol and lifestyle; Heart disease - cholesterol and lifestyle; Prevention - cholesterol and lifestyle; Cardiovascular disease - cholesterol and lifestyle; Peripheral artery disease - cholesterol and lifestyle; Stroke - cholesterol and lifestyle; Atherosclerosis - cholesterol and lifestyle

Review Date: July 30, 2022.

Reviewed By: Stefania Manetti, RD/N, CDCES, RYT200, My Vita Sana LLC - Nourish and heal through food, San Jose, CA. Review provided by VeriMed Healthcare Network. Also reviewed by David C. Dugdale, MD, Medical Director, Brenda Conaway, Editorial Director, and the A.D.A.M. Editorial team.



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This SmartCare article is prepared exclusively for:

Institute Of Endocrinology Diabetes Health And Hormones

Cholesterol testing and results

Description

Cholesterol is a soft, wax-like substance found in all parts of the body. Your body needs a little bit of cholesterol to work properly. But too much cholesterol can clog your arteries and lead to heart disease.

Cholesterol blood tests are done to help you and your health care provider better understand your risk for heart disease, stroke, and other problems caused by narrowed or blocked arteries.

The ideal values for all cholesterol results depend on whether you already have heart disease, diabetes, or other risk factors. Your provider can tell you what your goal should be.

Cholesterol Tests

Some types of cholesterol are considered good and some are considered bad. Different blood tests can be done to measure each type of cholesterol.

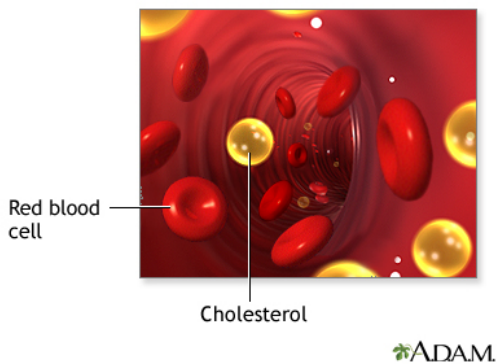
Your provider may order only a total cholesterol level as the first test. It measures all types of cholesterol in your blood.

You may also have a lipid (or coronary risk) profile, which includes:

- Total cholesterol
- Low density lipoprotein (LDL cholesterol)
- High density lipoprotein (HDL cholesterol)
- Triglycerides (another type of fat in your blood)
- Very low density lipoprotein (VLDL cholesterol)

Lipoproteins are made of fat and protein. They carry cholesterol, triglycerides, and other fats, called lipids, in the blood to various parts of the body.

Normal interior view of artery



When Should You Be Tested?

Everyone should have their first screening test by age 35 for men, and age 45 for women. Some guidelines recommend starting at age 20 or even earlier depending on a person's overall health.

You should have a cholesterol test done at an earlier age if you have:

- Diabetes
- Heart disease
- Stroke
- High blood pressure
- A strong family history of heart disease

Follow-up testing should be done:

- Every 5 years if your results were normal.
- More often for people with diabetes, high blood pressure, heart disease, stroke, or blood flow problems to the legs or feet.
- As your provider recommends if you are taking medicines to control high cholesterol.

Total Cholesterol

A total cholesterol of less than 200 mg/dL (5.18 mmol/L) is considered best (lower numbers are better).

You may not need more detailed cholesterol tests if your cholesterol is in this normal range.

LDL (Bad) Cholesterol

LDL cholesterol is sometimes called "bad" cholesterol. LDL can clog your arteries.

You want your LDL to be low. Having too much LDL is linked to heart disease and stroke.

Your LDL is always considered to be too high if it is 190 mg/dL (4.92 mmol/L) or higher.

Levels from 70 to 189 mg/dL (1.81 to 4.90 mmol/L) are most often considered too high if:

- You have diabetes and are between ages 40 to 75
- You have diabetes and a high risk of heart disease
- You have a medium or high risk of heart disease
- You have heart disease, history of a stroke, or poor circulation to your legs

In these circumstances, your provider will often recommend medicine to lower your LDL cholesterol level.

Health care providers have traditionally set a target level for your LDL cholesterol if you are being treated with medicines to lower your cholesterol.

- Some newer guidelines now suggest that providers no longer need to target a specific number for your LDL cholesterol. Higher strength medicines are used for the highest risk patients.
- However, some guidelines still recommend using specific targets.

HDL (Good) Cholesterol

You want your HDL cholesterol to be high. Studies of both men and women have shown that the higher your HDL, the lower your risk of coronary artery disease. This is why HDL is sometimes referred to as "good" cholesterol.

HDL cholesterol levels greater than 40 to 60 mg/dL (1.04 to 1.55 mmol/L) are desired.

VLDL (Bad) Cholesterol

VLDL contains the highest amount of triglycerides. VLDL is considered a type of bad cholesterol, because it helps cholesterol build up on the walls of arteries.

Normal VLDL levels are from 2 to 30 mg/dL (0.05 to .78 mmol/L).

Considerations

Sometimes, your cholesterol levels may be low enough that your provider will not ask you to change your diet or take any medicines.

Cholesterol test results; LDL test results; VLDL test results; HDL test results; Coronary risk profile results; Hyperlipidemia-results; Lipid disorder test results; Heart disease - cholesterol results

Review Date: January 01, 2023.

Reviewed By: Michael A. Chen, MD, PhD, Associate Professor of Medicine, Division of Cardiology, Harborview Medical Center, University of Washington Medical School, Seattle, WA. Also reviewed by David C. Dugdale, MD, Medical Director, Brenda Conaway, Editorial Director, and the A.D.A.M. Editorial team.

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Facts about monounsaturated fats

Definition

Monounsaturated fat is a type of dietary fat. It is one of the healthy fats, along with polyunsaturated fat. Monounsaturated fats are liquid at room temperature but start to harden when chilled.

Saturated fats and trans fats are solid at room temperature. These unhealthy fats can increase your risk for heart disease and other health problems.

Monounsaturated fats are found in plant foods, such as nuts, avocados, and vegetable oils. Eating moderate amounts of monounsaturated (and polyunsaturated) fats in place of saturated and trans fats can benefit your health.

How Monounsaturated Fats Affect Your Health

Monounsaturated fats are good for your health in several ways:

- They can help lower your LDL (bad) cholesterol level. Cholesterol is a soft, waxy substance that can cause clogged, or blocked, arteries (blood vessels). Keeping your LDL level low reduces your risk for heart disease and stroke.
- Monounsaturated fats help develop and maintain your cells.

How Much You Can Eat

Your body needs some fats for energy and other functions. Monounsaturated fats are a healthy choice.

How much should you get every day? Here are recommendations from the 2020-2025 Dietary Guidelines for Americans:

- Aim for getting no more than 10% of your total daily calories from saturated fat (found in red meat, butter, cheese, and whole-fat dairy products). For a 2,000 calorie diet, that is a total of 200 calories, or 22 grams a day.
- Keep total fat consumption to no more than 25% to 30% of your daily calories. This includes monounsaturated and polyunsaturated fats.

Eating healthier fats is good for your health. But eating too much fat can lead to weight gain. All fats contain 9 calories per gram of fat. This is more than twice the amount found in carbohydrates and protein.

It is not enough to add foods high in unsaturated fats to a diet filled with unhealthy foods and fats. Instead, replace saturated or trans fats with healthier, unsaturated fats.

Reading Nutrition Labels

All packaged foods have a nutrition label that includes fat content. Reading food labels can help you keep track of how much fat you eat.

- Check the total fat in one serving. Be sure to add up the number of servings you will eat in one sitting.
- Look closely at the amount of saturated fat and trans fat in a serving. The rest is unsaturated fat. Some labels will list the monounsaturated fat content, some will not.
- Make sure most of your daily fats are from monounsaturated and polyunsaturated sources.
- Many fast-food restaurants also provide nutrition information on their menus. If you do not see it posted, ask your server. You also may be able to find it on the restaurant's website.

Making Healthy Food Choices

Most foods have a combination of all types of fats. Some have higher amounts of healthy fats than others. Foods and oils with higher amounts of monounsaturated fats include:

- Nuts
- Avocado
- Canola oil
- Olive oil
- Safflower oil (high oleic)
- Sunflower oil
- Peanut oil and butter
- Sesame oil

To get the health benefits, you need to replace unhealthy fats with healthy fats. Here are some ideas:

- Eat nuts instead of cookies for a snack. Be sure to keep your portion small, as nuts are high in calories.
- Add avocado to salads and sandwiches instead of dressings and mayonnaise.
- Replace butter and solid fats with olive, avocado, or canola oil.

Monounsaturated fatty acid; MUFA; Oleic acid; Cholesterol - monounsaturated fat; Atherosclerosis - monounsaturated fat; Hardening of the arteries - monounsaturated fat; Hyperlipidemia - monounsaturated fat; Hypercholesterolemia - monounsaturated fat; Coronary artery disease - monounsaturated fat; Heart disease - monounsaturated fat; Peripheral artery disease - monounsaturated fat; PAD - monounsaturated fat; Stroke - monounsaturated fat; CAD - monounsaturated fat; Heart healthy diet - monounsaturated fat

Review Date: June 22, 2022.

Reviewed By: Stefania Manetti, RD/N, CDCES, RYT200, My Vita Sana LLC - Nourish and heal through food, San Jose, CA. Review provided by VeriMed Healthcare Network. Also reviewed by David C. Dugdale, MD, Medical Director, Brenda Conaway, Editorial Director, and the A.D.A.M. Editorial team.



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Facts about polyunsaturated fats

Definition

Polyunsaturated fat is a type of dietary fat. It is one of the healthy fats, along with monounsaturated fat.

Polyunsaturated fat is found in plant and animal foods, such as salmon, vegetable oils, and some nuts and seeds. Eating moderate amounts of polyunsaturated (and monounsaturated) fat in place of saturated and trans fats can benefit your health since saturated fat and trans fat can increase your risk for heart disease and other health problems.

Information

HOW POLYUNSATURATED FATS AFFECT YOUR HEALTH

Polyunsaturated fats can help lower your LDL (bad) cholesterol. Cholesterol is a soft, waxy substance that can cause clogged or blocked arteries (blood vessels). Having low LDL cholesterol reduces your risk for heart disease.

Polyunsaturated fats include omega-3 and omega-6 fats. These are essential fatty acids that the body needs for brain function and cell growth. Our bodies do not make essential fatty acids, so you must get them from food.

Omega-3 fatty acids are good for your heart in several ways. They help:

- Reduce triglycerides, a type of fat in your blood
- Reduce the risk of developing an irregular heartbeat (arrhythmia)
- Slow the buildup of plaque, a substance comprising fat, cholesterol, and calcium, which can harden and clog your arteries
- Slightly lower your blood pressure

Omega-6 fatty acids may help:

- Control your blood sugar
- Reduce your risk for diabetes
- Lower your blood pressure

HOW MUCH SHOULD YOU EAT?

Your body needs some fat for energy and other functions. Polyunsaturated fats are a healthy choice. The 2020-2025 Dietary Guidelines for Americans recommends getting no more than 10% of your total daily calories from saturated fat (found in red meat, butter, cheese, and whole-fat dairy products). Keep total fat consumption to no more than 25% to 30% of your daily calories. This includes monounsaturated and polyunsaturated fats.

Eating healthier fats can lead to certain health benefits. But eating too much fat can lead to weight gain. All fats contain 9 calories per gram. This is more than twice the amount of calories found in carbohydrates and protein.

It is not enough to add foods high in unsaturated fats to a diet filled with unhealthy foods and fats. Instead, replace saturated fats with healthier fats. Overall, eliminating saturated fats is twice as effective in lowering blood cholesterol levels as increasing polyunsaturated fats.

READING NUTRITION LABELS

All packaged foods have nutrition labels on them that include fat content. Reading food labels can help you keep track of how much fat you eat a day.

- Check the total fat in one serving. Be sure to add up the number of servings you eat in one sitting.
- Look at the amount of saturated fat and trans fat in a serving -- the rest is healthy, unsaturated fat. Some labels will note the monounsaturated and polyunsaturated fat contents. Some will not.
- Make sure most of your daily fats are from monounsaturated and polyunsaturated sources.
- Many fast-food restaurants also provide nutrition information on their menus. If you do not see it posted, ask your server. You also may be able to find it on the restaurant's website.

MAKING HEALTHY FOOD CHOICES

Most foods have a combination of all types of fats. Some have higher amounts of healthy fats than others. Foods and oils with higher amounts of polyunsaturated fats include:

- Walnuts
- Sunflower seeds
- Flax seeds or flax oil
- Fish, such as salmon, mackerel, herring, albacore tuna, and trout
- Corn oil
- Soybean oil
- Safflower oil

To get the health benefits, you need to replace unhealthy fats with healthy fats. Here are some ideas:

- Eat walnuts instead of cookies for a snack. Be sure to keep your portion small, as nuts are high in calories.
- Replace some meats with fish. Try eating at least 2 meals with fish per week.

- Sprinkle ground flax seed on your meal.
- Add walnuts or sunflower seeds to salads.
- Cook with corn or safflower oil instead of butter and solid fats.

Polyunsaturated fatty acid; PUFA; Cholesterol - polyunsaturated fat; Atherosclerosis - polyunsaturated fat; Hardening of the arteries - polyunsaturated fat; Hyperlipidemia - polyunsaturated fat; Hypercholesterolemia - polyunsaturated fat; Coronary artery disease - polyunsaturated fat; Heart disease - polyunsaturated fat; Peripheral artery disease - polyunsaturated fat; PAD - polyunsaturated fat; Stroke - polyunsaturated fat; CAD - polyunsaturated fat; Heart healthy diet - polyunsaturated fat

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Facts about saturated fats

Definition

Saturated fat is a type of dietary fat. It is one of the unhealthy fats, along with trans fat. These fats are most often solid at room temperature. Foods like butter, palm and coconut oils, cheese, and red meat have high amounts of saturated fat.

Too much saturated fat in your diet can lead to heart disease and other health problems.

How Saturated Fats Affect Your Health

Saturated fats are bad for your health in several ways:

Heart disease risk. Your body needs healthy fats for energy and other functions. But too much saturated fat can cause cholesterol to build up in your arteries (blood vessels). Saturated fats raise your LDL (bad) cholesterol. High LDL cholesterol increases your risk for heart disease and stroke.

Weight gain. Many high-fat foods such as pizza, baked goods, and fried foods have a lot of saturated fat. Eating too much fat can add extra calories to your diet and cause you to gain weight. All fats contain 9 calories per gram of fat. This is more than twice the amount found in carbohydrates and protein.

Cutting out high-fat foods can help keep your weight in check and your heart healthy. Staying at a healthy weight can reduce your risk of developing diabetes, heart disease, and other health problems.

How Much you can Eat

Saturated fats

Saturated fats are found in animal products such as butter, cheese, whole milk, ice cream, cream, and fatty meats, and oils such as coconut, palm, and palm kernel oil



Most foods have a combination of different fats. You are better off choosing foods higher in healthier fats, such as monounsaturated and polyunsaturated fats. These fats tend to be liquid at room temperature.

How much should you get every day? Here are recommendations from the 2020-2025 Dietary Guidelines for Americans:

- You should get no more than 25% to 30% of your daily calories from fats.
- You should limit saturated fat to less than 10% of your daily calories.
- For a 2,000-calorie diet, that is 200 calories or 22 grams (g) of saturated fats a day. As an example, just 1 tablespoon (15 mL) of butter contains 7 g of saturated fat (almost a third of your daily allowance).
- If you have heart disease or high cholesterol, your health care provider may ask you to limit saturated fat even more.

Reading Nutrition Labels

All packaged foods have a nutrition label that includes fat content. Reading food labels can help you keep track of how much saturated fat you eat.

Check the total fat in one serving. Also, check the amount of saturated fat in a serving. Then add up how many servings you eat.

As a guide, when comparing or reading labels:

- 5% of daily value from fats is low
- 20% of daily value from fats is high

Choose foods with low amounts of saturated fat.

Many fast-food restaurants also provide nutrition information on their menus. If you do not see it posted, ask your server. You also may be able to find it on the restaurant's website.

Making Healthy Food Choices

Saturated fats are found in all animal foods and some plant sources.

The following foods are usually high in saturated fats. Many of them are also low in nutrients and have extra calories from sugar:

- Baked goods (cake, doughnuts, Danish)
- Fried foods (fried chicken, fried seafood, French fries)
- Fatty or processed meats (bacon, sausage, chicken with skin, cheeseburger, steak)
- Whole-fat dairy products (butter, ice cream, pudding, cheese, whole milk)
- Solid fats such as coconut oil, palm, and palm kernel oils (found in packaged foods)

Here are some examples of popular food items with the saturated fat content in a typical serving:

- 8oz New York steak -- 14 g
- Cheeseburger -- 10 g
- Vanilla shake -- 10 g
- 1 tbsp (15 mL) butter -- 7 g

It is fine to treat yourself to these types of foods once in a while. But, it is best to limit how often you eat them and limit portion sizes when you do.

You can cut down on saturated fat by substituting healthier foods for less healthy options. Replace foods high in saturated fats with foods that have polyunsaturated and monounsaturated fats. Here is how to get started:

- Replace red meats with skinless chicken or fish a few days a week.
- Use canola or olive oil instead of butter and other solid fats.
- Replace whole-fat dairy with low-fat or nonfat milk, yogurt, and cheese.
- Eat more fruits, vegetables, whole grains, and other foods with low or no saturated fat.

Cholesterol - saturated fat; Atherosclerosis - saturated fat; Hardening of the arteries - saturated fat; Hyperlipidemia - saturated fat; Hypercholesterolemia - saturated fat; Coronary artery disease - saturated fat; Heart disease - saturated fat; Peripheral artery disease - saturated fat; PAD - saturated fat; Stroke - saturated fat; CAD - saturated fat; Heart healthy diet - saturated fat

Review Date: June 22, 2022.

Reviewed By: Stefania Manetti, RD/N, CDCES, RYT200, My Vita Sana LLC - Nourish and heal through food, San Jose, CA. Review provided by VeriMed Healthcare Network. Also reviewed by David C. Dugdale, MD, Medical Director, Brenda Conaway, Editorial Director, and the A.D.A.M. Editorial team.



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This SmartCare article is prepared exclusively for:

Institute Of Endocrinology Diabetes Health And Hormones

Facts about trans fats

Definition

Trans fat is a type of dietary fat. Of all the fats, trans fat is the worst for your health. Too much trans fat in your diet increases your risk for heart disease and other health problems.

Trans fats are made when liquid oils are turned into solid fats, like shortening or margarine. These are called partially-hydrogenated oils (PHOs).

Because of the health risks from these fats, the United States Food and Drug Administration (FDA) has banned food manufacturers from adding PHOs to foods.

Although the food industry has greatly reduced the use of trans fat in recent years, this type of fat may still be found in many fried, packaged, or processed foods, including:

- Anything fried and battered
- Shortening and stick margarine
- Commercially baked cakes, pies, and cookies
- Refrigerated dough

Animal foods, such as red meats and dairy, have small amounts of trans fats, which is not cause for concern in its natural form. Most trans fats are artificially made and come from processed foods.

How Trans Fats Affect Your Health

Your body does not need or benefit from trans fats. Eating these fats increases your risk for health problems.

Cardiovascular disease risk:

- Trans fats raise your LDL (bad) cholesterol.

Trans-fatty acids are found in fried foods, commercial baked goods, processed foods and margarine



- They lower your HDL (good) cholesterol.
- High LDL along with low HDL levels can cause cholesterol to build up in your arteries (blood vessels). This increases your risk for heart disease and stroke.

Weight gain and diabetes risk:

- Many high-fat foods such as baked goods and fried foods have a lot of trans fat.
- Like all fats, trans fat contains 9 calories per gram. Consuming a lot of fat can lead to unwanted weight gain. Excess weight increases the risk for diabetes, heart disease, and other health problems.

How Much you can eat

Your body does not need trans fat. You should avoid it or eat as little as possible.

Here are recommendations from the 2020-2025 Dietary Guidelines for Americans:

- You should get no more than 25% to 30% of your daily calories from fats.
- You should limit saturated fat to less than 10% of your daily calories.
- You should use nutrition facts labels to select foods with no trans fat whenever possible.

Reading Nutrition Labels

All packaged foods have a nutrition label that includes fat content. Food makers are required to label trans fats on nutrition and some supplement labels. Reading food labels can help you keep track of how much trans fat you eat.

- Check the total fat in one serving.
- Look closely at the amount of trans fat in a serving.
- Look for the words "partially hydrogenated" in the ingredient list. It means oils have been turned to solids and trans fats. Manufacturers can show 0 grams of trans fat if there are less than 5 grams per serving; often a small serving size shows 0 grams of trans fat, but it still might be in there. If there are multiple servings in a package, then the whole package may contain several grams of trans fat.
- When tracking trans fat, make sure you count the number of servings you eat in one sitting.
- Many fast-food restaurants use solid oils with trans fat for frying. Often they provide nutrition information on their menus. If you do not see it posted, ask your server. You also may be able to find it on the restaurant's website.

Making Healthy Food Choices

Trans fats are found in many processed and packaged foods. Note that these foods are often low in nutrients and have extra calories from both fat and sugar:

- Cookies, pies, cakes, biscuits, sweet rolls, and donuts
- Breads and crackers
- Frozen foods, such as frozen dinners, pizza, ice cream, frozen yogurt, milkshakes, and pudding
- Snack foods
- Fast food
- Solid fats, such as shortening and margarine
- Nondairy creamer

Not all packaged foods have trans fats. It depends on the ingredients that were used. That is why it is important to read labels.

While it is fine to treat yourself to high-fat foods occasionally, it is best to avoid food with trans fats completely.

You can cut trans fat by substituting healthier foods for less nutritious options. Replace foods high in trans and saturated fats with foods that have polyunsaturated and monounsaturated fats. Here is how to get started:

- Use safflower or olive oil instead of butter, shortening, and other solid fats.
- Switch from solid margarine to soft margarine.
- Ask what type of fats foods are cooked in when you eat out at restaurants.
- Avoid fried, packaged, and processed foods.
- Replace meats with skinless chicken or fish a few days a week.
- Replace whole-fat dairy with low-fat or nonfat milk, yogurt, and cheese.

Trans fatty acids; Partially hydrogenated oils (PHOs); Cholesterol - trans fats; Hyperlipidemia - trans fats; Atherosclerosis - trans fat; Hardening of the arteries - trans fat; Hypercholesterolemia - trans fat; Coronary artery disease - trans fat; Heart disease - trans fat; Peripheral artery disease - trans fat; PAD - trans fat; Stroke - trans fat; CAD - trans fat; Heart healthy diet - trans fat

Review Date: June 22, 2022.

Reviewed By: Stefania Manetti, RD/N, CDCES, RYT200, My Vita Sana LLC - Nourish and heal through food, San Jose, CA. Review provided by VeriMed Healthcare Network. Also reviewed by David C. Dugdale, MD, Medical Director, Brenda Conaway, Editorial Director, and the A.D.A.M. Editorial team.



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This SmartCare article is prepared exclusively for:

Institute Of Endocrinology Diabetes Health And Hormones

How to take statins

Definition

Statins are medicines that help lower the amount of cholesterol and other fats in your blood. Statins work by:

- Lowering LDL (bad) cholesterol
- Raising HDL (good) cholesterol in your blood
- Lowering triglycerides, another type of fat in your blood

Statins block how your liver makes cholesterol. Cholesterol can stick to the walls of your arteries and narrow or block them.

How do Statins Help?

Improving your cholesterol levels can help protect you from heart disease, heart attack, and stroke.

Your health care provider will work with you to lower your cholesterol by improving your diet. If this is not successful, medicines to lower cholesterol may be the next step.

Statins are often the first drug treatment for high cholesterol. Both adults and teenagers can take statins when needed.

What Statins are Right for you?

There are different brands of statin drugs, including less expensive, generic forms. For most people, any of the statin drugs will work to lower cholesterol levels. However, some people may need the more powerful types.

A statin may be prescribed along with other medicines. Combination tablets are also available. They include a statin plus medicine to manage another condition, such as high blood pressure.

How are Statins Taken?

Take your medicine as directed. The medicine comes in tablet or capsule form. Do not open capsules, or break or chew tablets, before taking the medicine.

Most people who take statins do so once a day. Some should be taken at night, but others can be taken anytime. They come in different doses, depending on how much you need to lower your cholesterol. Do not stop taking your medicine without talking with your provider first.

Read the label on the bottle carefully. Some brands should be taken with food. Others may be taken with, or without food.

Store all of your medicines in a cool, dry place. Keep them where children cannot get to them.

You should follow a healthy diet while taking statins. This includes eating less fat in your diet. Other ways you can help your heart include:

- Getting regular exercise
- Managing stress
- Quitting smoking

What are the Risks?

Before you start taking statins, tell your provider if:

- You are pregnant, plan to become pregnant, or are breastfeeding. Pregnant and nursing mothers should not take statins.
- You have allergies to statins.
- You are taking other medicines.
- You have diabetes.
- You have liver disease. You should not take statins if you have certain acute or long-term (chronic) liver diseases.

Tell your provider about all of your medicines, supplements, vitamins, and herbs. Certain medicines may interact with statins. Be sure to tell your provider before taking any new medicines.

Overall, there is no need to avoid moderate amounts of grapefruit in the diet. An 8 ounce (240 mL) glass or one grapefruit can be safely consumed.

Regular blood tests will help you and your provider:

- See how well the medicine is working
- Monitor for side effects, such as liver problems

Possible Side Effects

Mild side effects may include:

- Muscle/joint aches
- Diarrhea

- Nausea
- Constipation
- Dizziness
- Headache
- Upset stomach
- Gas

Though rare, more serious side effects are possible. Your provider will monitor you for signs. Talk with your provider about the possible risks for:

- Liver damage
- Severe muscle problems
- Kidney damage
- High blood sugar or type 2 diabetes
- Memory loss
- Confusion

When to Call the Doctor

Tell your provider right away if you have:

- Muscle or joint pain or tenderness
- Weakness
- Fever
- Dark urine
- Other new symptoms

Antilipemic Agent; HMG-CoA reductase inhibitors; Atorvastatin (Lipitor); Simvastatin (Zocor); Lovastatin (Mevacor, Altoprev); Pitavastatin (Livalo; Zypitamag); Pravastatin (Pravachol); Rosuvastatin (Crestor); Fluvastatin (Lescol); Hyperlipidemia - statins; Hardening of the arteries statins; Cholesterol - statins; Hypercholesterolemia - statins; Dyslipidemia -statins; Statin

Review Date: January 18, 2022.

Reviewed By: David C. Dugdale, III, MD, Professor of Medicine, Division of General Medicine, Department of Medicine, University of Washington School of Medicine. Also reviewed by David Zieve, MD, MHA, Medical Director, Brenda Conaway, Editorial Director, and the A.D.A.M. Editorial team.

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This SmartCare article is prepared exclusively for:

Institute Of Endocrinology Diabetes Health And Hormones

Simple, heart-smart substitutions

Description

A heart-healthy diet is low in saturated fat. Saturated fat can increase your bad cholesterol and clog your arteries. A heart-healthy diet also limits foods with added salt, which can increase your blood pressure, and added sugar, which can lead to weight gain.

Making heart-healthy food choices does not mean you have to sacrifice flavor. The key is to include more fresh produce, whole grains, beans, lean meats, fish, and low-fat dairy.

1. Replace Saturated Fats

Reduce the amount of fat in your dairy. Whole-fat dairy products are high in saturated fat. But there are healthier options.

- Instead of butter, cook with olive, canola, corn, or safflower oils.
- Replace heavy cream with evaporated skim milk.
- Replace whole-milk cheese, yogurt, and milk with low-fat versions.

Experiment. If a recipe calls for whole milk, you can usually replace most or all of the volume with skim or low-fat milk with no reduction in final quality.

Choose lean meats. They have less fat and are better for your heart. When selecting and cooking lean meats:

- Remove the skin from chicken and turkey before cooking.
- Choose lean cuts of pork, such as tenderloin or loin chops.
- Look for beef cuts labeled "choice" or "select."
- Avoid marbled cuts of beef, or cuts marked "prime."
- Cut off visible fat before cooking.
- Instead of frying, bake, roast, broil, or stir fry meat.
- If excess fat pools in the pan, pour it off before serving the meat.

Prepare meat as just a part of the meal, rather than the main attraction. For example, stir fry pork with broccoli and serve over brown rice. Along with the meat, you get a serving of vegetable and whole grain.

You can also try meat substitutes with your meals.

- Beans are great in soups, salads, and over rice.
- Nuts live up salads, stir-fried meals, and vegetables.
- Eggs make great dinners, as omelets and frittatas.
- Mushrooms add a meaty texture to sauces, casseroles, and stroganoffs.
- Tofu goes well with curries and stir-fried dishes.
- Eat more fish, especially fish that are high in omega-3 fatty acids. This includes herring, sardines, salmon, tuna, trout, and mackerel.

2. Prepare Foods with Little or no Salt

To cut back on salt, stock your kitchen with low- or no-salt prepared sauces, soups, canned foods, or mixes. Instead of salt, season your food with:

- Orange, lemon, or lime juice
- Spices and herbs
- Vinegar
- Salt-free herb blends

3. Cook with Whole Grains

White flour, white rice, and other refined grains have been stripped of some of their nutrients. You often find them in foods that are high in sugar, sodium, and fat.

Whole grains are loaded with fiber and nutrition. They can help lower cholesterol in your blood and make you feel full longer. As you shop for food, read labels for fat and sugar content. Be on the look-out for:

- Whole grain breads, cereals, and crackers that list whole wheat as the first ingredient on their labels
- Whole wheat flour instead of white flour
- Brown or wild rice instead of white rice
- Whole grain barley
- Oatmeal
- Other grains such as quinoa, amaranth, buckwheat, and millet

Note that products described as “multi-grain” may or may not contain whole grains.

4. Cut Back on Sugar

Too much sugar in your diet typically means many calories without many nutrients. To keep your weight in check and your heart healthy, limit the sugar you eat.

- Cut sugar in recipes by one third or more. You often will not notice a difference.
- In recipes, use unsweetened applesauce in equal amounts in place of sugar.

- Use ginger, allspice, or cinnamon in oatmeal.
- Limit consumption of sugary beverages such as sweet teas, sports drinks, and sodas.

Recipes

Baked Salmon Dijon

- 1 cup (240 milliliters, mL) fat free sour cream
- 2 teaspoons (tsp), or 10 mL, dried dill
- 3 tablespoons (tbsp), or 45 mL, scallions, finely chopped
- 2 tbsp (30 mL) Dijon mustard
- 2 tbsp (30 mL) lemon juice
- 1 ½ lbs (680 g) salmon fillet with skin cut in center
- ½ tsp (2.5 mL) garlic powder
- ½ tsp (2.5 mL) black pepper
- As needed, fat-free cooking spray

1. Whisk sour cream, dill, onion, mustard, and lemon juice in small bowl to blend.
2. Place salmon, skin side down, on prepared sheet. Sprinkle with garlic powder and pepper. Spread with the sauce.
3. Bake salmon until just opaque in center, about 20 minutes.

Source: National Heart, Lung, and Blood Institute.

Vegetarian Spaghetti Sauce

- 2 tbsp (30 mL) olive oil
- 2 small onions, chopped
- 3 cloves garlic, chopped
- 1 ¼ cups (300 mL) zucchini, sliced
- 1 tbsp (15 mL) oregano, dried
- 1 tbsp (15 mL) basil, dried
- 8 oz (227 g) can of low-sodium tomato sauce
- 6 oz (170 g) can of low-sodium tomato paste
- 2 medium tomatoes, chopped
- 1 cup (240 mL) water

1. In a medium skillet, heat oil. Sauté onions, garlic, and zucchini in oil for 5 minutes on medium heat.
2. Add remaining ingredients and simmer covered for 45 minutes. Serve over whole grain pasta, cooked without salt.

Source: *Your Guide to Lowering Your Blood Pressure with DASH, U.S. Health and Human Services.*

Coronary artery disease - heart smart substitutions; Atherosclerosis - heart smart substitutions; Cholesterol - heart smart substitutions; Coronary heart disease - heart smart substitutions; Healthy diet - heart smart substitutions; Wellness - heart smart substitutions

Review Date: June 22, 2022.

Reviewed By: Stefania Manetti, RD/N, CDCES, RYT200, My Vita Sana LLC - Nourish and heal through food, San Jose, CA. Review provided by VeriMed Healthcare Network. Also reviewed by David C. Dugdale, MD, Medical Director, Brenda Conaway, Editorial Director, and the A.D.A.M. Editorial team.



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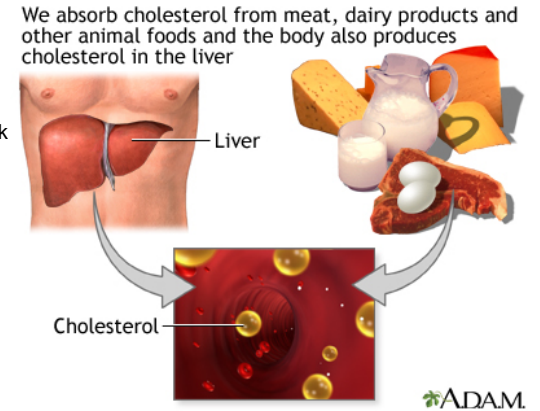
Institute Of Endocrinology Diabetes Health And Hormones

High blood cholesterol levels

Definition

Cholesterol is a fat (also called a lipid) that your body needs to work properly. Too much bad cholesterol in your blood can increase your chance of getting heart disease, stroke, and other problems.

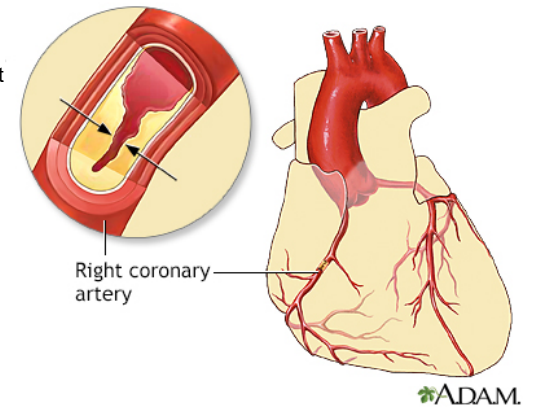
Common medical terms for high blood cholesterol are lipid disorder, hyperlipidemia, or hypercholesterolemia, with the last being the most precise.



Causes

There are many types of cholesterol. The ones talked about most are:

- Total cholesterol -- all the cholesterol combined
- High density lipoprotein (HDL) cholesterol -- often called "good" cholesterol
- Low density lipoprotein (LDL) cholesterol -- often called "bad" cholesterol



For many people, abnormal cholesterol levels are partly due to an unhealthy lifestyle. This often includes eating a diet that is high in fat. Other lifestyle factors are:

- Being overweight
- Lack of exercise

Some health conditions can also lead to abnormal cholesterol, including:

- Diabetes
- Kidney disease
- Polycystic ovary syndrome
- Pregnancy and other conditions that increase levels of female hormones
- Underactive thyroid gland

Medicines such as certain birth control pills, diuretics (water pills), beta-blockers, and some medicines used to treat depression may also raise cholesterol levels. Several disorders that are passed down through families lead to abnormal cholesterol and triglyceride levels. They include:

- Familial combined hyperlipidemia
- Familial dysbetalipoproteinemia
- Familial hypercholesterolemia
- Familial hypertriglyceridemia

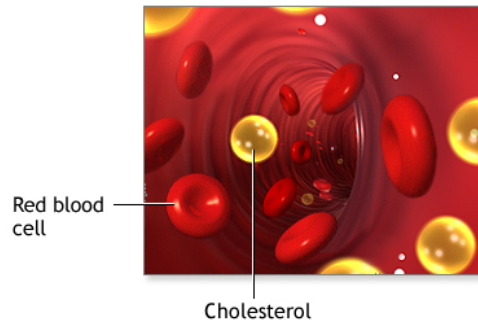
Smoking does not cause higher cholesterol levels, but it can reduce your HDL (good) cholesterol.

Exams and Tests

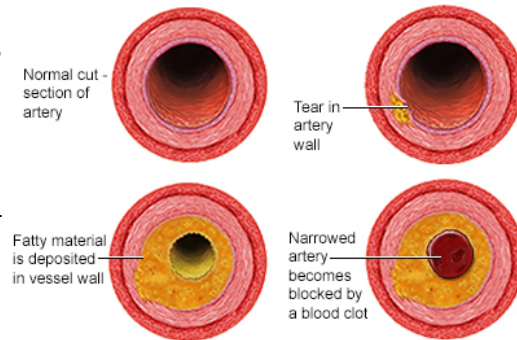
A cholesterol test is done to diagnose a lipid disorder. Different experts recommend different starting ages for adults.

- Recommended starting ages are between 20 to 35 for men and 20 to 45 for women.

Normal interior view of artery



ADAM.



ADAM.

- Adults with normal cholesterol levels should have the test repeated every 5 years.
- Repeat testing sooner if changes occur in lifestyle (including weight gain and diet).
- Adults with a history of elevated cholesterol, diabetes, kidney problems, heart disease, and other conditions require more frequent testing.

It is important to work with your health care provider to set your cholesterol goals. Newer guidelines steer health care providers away from targeting specific levels of cholesterol. Instead, they recommend different treatments or medicines and doses depending on a person's history and risk factor profile. These guidelines change from time to time as more information from research studies becomes available.

General targets are:

- LDL: 70 to 130 mg/dL (1.81 to 3.37 mmol/L) - lower numbers are better
- HDL: More than 60 mg/dL (1.55 mmol/L) or higher - higher numbers are better
- Total cholesterol: Less than 200 mg/dL (5.18 mmol/L) - lower numbers are better
- Triglycerides: 10 to 150 mg/dL (0.11 to 1.69 mmol/L) - lower numbers are better

If your cholesterol results are abnormal, you may also have other tests such as:

- Blood sugar (glucose) test to look for diabetes
- Kidney function tests
- Thyroid function tests to look for an underactive thyroid gland

Treatment

Steps you can take to improve your cholesterol levels and to help prevent heart disease and a heart attack include:

- Quit smoking. This is the single biggest change you can make to reduce your risk of heart attack and stroke.
- Eat foods that are naturally low in fat. These include whole grains, fruits, and vegetables.
- Use low-fat toppings, sauces, and dressings.
- Avoid foods that are high in saturated fat.
- Exercise regularly.
- Lose weight if you are overweight.

Your provider may want you to take medicine for your cholesterol if lifestyle changes do not work. This will depend on:

- Your age
- Whether or not you have heart disease, diabetes, or other blood flow problems

- Whether you smoke or are overweight
- Whether you have high blood pressure or diabetes

You are more likely to need medicine to lower your cholesterol:

- If you have heart disease or diabetes
- If you are at high risk for heart disease (even if you do not yet have any heart problems)
- If your LDL cholesterol is 190 mg/dL (4.92 mmol/L) or higher

Almost everyone else may get health benefits from LDL cholesterol that is lower than 160 to 190 mg/dL (4.14 mmol/L to 4.92 mmol/L).

There are several types of drugs to help lower blood cholesterol levels. The drugs work in different ways. Statins are one kind of drug that lowers cholesterol and has been proven to reduce the chance of heart disease. Other drugs are available if your risk is high and statins do not lower your cholesterol levels enough. These include ezetimibe and PCSK9 inhibitors.

Outlook (Prognosis)

High cholesterol levels can lead to hardening of the arteries, also called atherosclerosis. This occurs when fat, cholesterol, and other substances build up in the walls of arteries and form hard structures called plaques.

Over time, these plaques can block the arteries and cause heart disease, stroke, and other symptoms or problems throughout the body.

Disorders that are passed down through families often lead to higher cholesterol levels that are harder to control.

Cholesterol - high; Lipid disorders; Hyperlipoproteinemia; Hyperlipidemia; Dyslipidemia; Hypercholesterolemia

Review Date: January 01, 2023.

Reviewed By: Michael A. Chen, MD, PhD, Associate Professor of Medicine, Division of Cardiology, Harborview Medical Center, University of Washington Medical School, Seattle, WA. Also reviewed by David C. Dugdale, MD, Medical Director, Brenda Conaway, Editorial Director, and the A.D.A.M. Editorial team. Editorial update 11/02/2023.



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06/01/2025

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ADAM

This SmartCare article is prepared exclusively for:

Institute Of Endocrinology Diabetes Health And Hormones

Triglyceride level

Definition

The triglyceride level is a blood test to measure the amount of triglycerides in your blood. Triglycerides are a type of fat.

Your body makes some triglycerides. Triglycerides also come from the food you eat. Extra calories are turned into triglycerides and stored in fat cells for later use.

A test for high blood cholesterol levels is a related measurement and usually done at the same time.

Tourniquet is applied and area is disinfected



Needle is introduced into vein, blood is drawn into vial and analyzed



ADAM.

How the Test is Performed

A blood sample is needed. Most of the time, blood is drawn from a vein located on the inside of the elbow or the back of the hand.

How to Prepare for the Test

You should not eat for 8 to 12 hours before the test.

Alcohol and some medicines can interfere with blood test results.

- Make sure your health care provider knows what medicines you take, including over-the-counter drugs and supplements.
- Your provider will tell you if you need to stop taking any medicines before you have this test.
- Do not stop or change your medicines without talking to your provider first.

How the Test will Feel

You may feel slight pain or a sting when the needle is inserted. You may also feel some throbbing at the site after the blood is drawn.

Why the Test is Performed

Triglycerides are usually measured together with other blood fats. Often it is done to help determine your risk of developing heart disease. A high triglyceride level may lead to atherosclerosis, which increases your risk for heart attack and stroke.

A very high triglyceride level may also cause inflammation of your pancreas (called pancreatitis).

Normal Results

Results may indicate:

- Normal: Less than 150 mg/dL (1.69 mmol/L)
- Borderline high: 150 to 199 mg/dL (1.69 to 2.25 mmol/L)
- High: 200 to 499 mg/dL (2.26 to 5.64 mmol/L)
- Very high: 500 mg/dL or above (5.65 mmol/L)

Normal value ranges may vary slightly among different laboratories. Talk to your provider about the meaning of your specific test results.

The examples above show the common measurements for results for these tests. Some laboratories use different measurements or may test different specimens.

What Abnormal Results Mean

High triglyceride levels may be due to:

- Cirrhosis or liver damage
- Diet low in protein and high in carbohydrates
- Underactive thyroid
- Nephrotic syndrome (a kidney disorder)
- Other medicines, such as female hormones
- Poorly controlled diabetes
- Disorder passed down through families in which there are high amounts of cholesterol and triglycerides in the blood

Overall, the treatment of elevated triglyceride levels focuses on increased exercise and changes in the diet. Drugs to lower triglyceride levels may be used to prevent pancreatitis for levels above 500 mg/dL.

Low triglyceride levels may be due to:

- Low fat diet
- Hyperthyroidism (overactive thyroid)
- Malabsorption syndrome (conditions in which the small intestine does not absorb fats well)
- Malnutrition

Considerations

Pregnancy can affect test results.

Triacylglycerol test

Review Date: October 05, 2022.

Reviewed By: Thomas S. Metkus, MD, Assistant Professor of Medicine and Surgery, Johns Hopkins University School of Medicine, Baltimore, MD. Also reviewed by David C. Dugdale, MD, Medical Director, Brenda Conaway, Editorial Director, and the A.D.A.M. Editorial team. Editorial update 11/02/2023.



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VLDL test

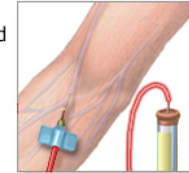
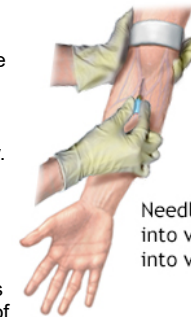
Definition

VLDL stands for very low density lipoprotein. Lipoproteins are made up of cholesterol, triglycerides, and proteins. They move cholesterol, triglycerides, and other lipids (fats) around the body.

VLDL is one of the three main types of lipoproteins. VLDL contains the highest amount of triglycerides. VLDL is a type of "bad cholesterol" because it helps cholesterol build up on the walls of arteries.

A lab test is used to measure the amount of VLDL in your blood.

Tourniquet is applied and area is disinfected



Needle is introduced into vein, blood is drawn into vial and analyzed



How the Test is Performed

A blood sample is needed. Most of the time blood is drawn from a vein located on the inside of the elbow or the back of the hand.

How the Test will Feel

You may feel slight pain or a sting when the needle is inserted. You may also feel some throbbing at the site after the blood is drawn.

Why the Test is Performed

You may have this test to help assess your risk for heart disease. Increased levels of VLDL are linked to atherosclerosis. This condition can lead to coronary heart disease.

This test may be included in a coronary risk profile.

Normal Results

Normal VLDL cholesterol level is 2 to 30 mg/dL.

Normal value ranges may vary slightly among different laboratories. Talk to your doctor about the meaning of your specific test results.

The examples above show the common measurements for results for these tests. Some laboratories use different measurements or may test different specimens.

What Abnormal Results Mean

A high VLDL cholesterol level may be associated with a higher risk for heart disease and stroke. However, VLDL cholesterol level is rarely targeted when treatment for high cholesterol is done. Instead, LDL cholesterol level is more often the main target of therapy.

Risks

Veins and arteries vary in size from one person to another and from one side of the body to the other. Obtaining a blood sample from some people may be more difficult than from others.

The risks associated with having blood drawn are slight, but may include:

- Excessive bleeding
- Fainting or feeling lightheaded
- Hematoma (blood accumulating under the skin)
- Infection (a slight risk any time the skin is broken)

Considerations

There is no direct way of measuring VLDL. Most labs estimate your VLDL based on your triglycerides level. It is about one fifth of your triglycerides level. This estimate is not accurate if your triglycerides level is above 400 mg/dL.

Very low density lipoprotein test

Review Date: August 20, 2023.

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