



X-Plain™
Managing Cholesterol
Reference Summary

Cholesterol is one of the most familiar medical words today. Cholesterol is a waxy substance that is very important for our body but could also be very dangerous if there are high levels of it in our blood. This reference summary will help you understand what cholesterol is and how to control the level of cholesterol in your body.

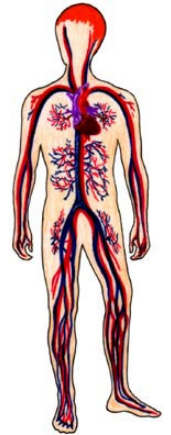


What Is Cholesterol?

The fat we eat gets absorbed in the intestines and then goes to the liver. From the liver, the fat needs to be delivered to the rest of the body to be used and stored in fat cells. The liver changes fat into one of two kinds of fat; cholesterol and triglycerides. Because cholesterol is made in the liver it is only found in animal products, NOT in vegetables.

The cholesterol and triglycerides are packaged into lipoproteins to be delivered to the fat cells through the blood stream. The three types of lipoproteins are:

- 1) Very Low Density Lipoproteins or VLDL
- 2) Low Density Lipoprotein or LDL
- 3) High Density Lipoprotein or HDL.



The problem with cholesterol happens when special cells catch LDL and deposit the cholesterol out of it in the walls of the blood vessels. This is called atherosclerosis. The cholesterol deposited by the LDL leads to narrowing of the blood vessels, which can lead to heart attacks and strokes. That is why LDL is known as “bad cholesterol.” HDL usually collects the bad cholesterol and takes it back to the liver. That is why HDL is known as “good cholesterol.” An easy way to remember that HDL is good is H=help, since HDL helps collect bad cholesterol and, therefore, helps prevent heart attacks. Since there is good cholesterol and bad cholesterol, it is not only necessary to know your cholesterol level, it is also important to know the levels of LDL and HDL.

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Diagnosis

The level of cholesterol can be measured with a blood test. The results come as three main numbers:

- 1) Total Cholesterol
- 2) LDL
- 3) HDL

New studies and guidelines indicate that the level of LDL should be less than 100 mg/dL. It is considered to be 'Near or above optimal' between 100 and 129, 'borderline high' between 130 and 159, 'high' between 160 and 189 and very high above 190.

	High Risk	Borderline	Desirable
Total Cholesterol	above 239	200-239	below 200
LDL	above 190	130-159	below 100
HDL	less than 35	35-60	above 60

Total cholesterol level should be less than 200. For people with heart disease or a high risk of heart disease, the level should be less than 160.

In addition to high cholesterol levels, serious risk factors for heart disease include:

- 1) Smoking
- 2) High blood pressure
- 3) Obesity
- 4) Diabetes
- 5) HDL level lower than 35
- 6) Age: 45 or older for men, 55 or older for women
- 7) Women with early menopause and no hormone replacement therapy
- 8) Family history of heart problems

The following table shows the recommended level of Total Cholesterol. A person who has 2 or more risk factors should try to keep their cholesterol lower than the borderline level. For instance, an LDL level above 135 is considered high for patients with heart disease.

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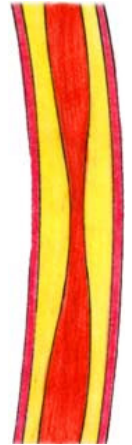
Causes

High cholesterol tends to run in families. The main reason for high cholesterol levels is eating too much food with fat and cholesterol. Some people, however, have medical diseases that can increase the levels of cholesterol. Such diseases include diabetes, obesity, genetic diseases, or a thyroid gland that does not work correctly. Stress can also increase the levels of cholesterol, either by itself or because it can lead to eating more fatty foods and snacks.

The fat we eat is not all the same. Fats that are usually solid at room temperature, like the white fat found in animal meat or butter, are 'saturated fats.'

Animal fat is Saturated fat = Solid at room temperature.

Fats that are liquid at room temperature, such as olive oil or vegetable oil, are known as 'unsaturated fats.' It has been shown that the more cholesterol from animal products that a person eats, the higher their cholesterol level becomes. Studies have shown that eating saturated fat increases LDL and makes cholesterol problems worse. Eating unsaturated fat does the opposite.



Treatment Options

Cholesterol levels should be checked every 1 to 2 years for average adults. If the levels seem to be too high then the doctor will recommend a treatment option. After treatment, cholesterol tests are given more often to make sure the treatment is working. The best thing a person can do to keep cholesterol levels down is to eat less foods that have a lot of fat and cholesterol in them. Losing weight, controlling diabetes, and correcting thyroid problems are also important steps to take in order to lower cholesterol levels. If these treatment options do not help, medication may be needed.

Diets

Cholesterol levels can be controlled by following four dietary guidelines.

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First, no more than 30% of total daily calories should be from fat. This is about 66 grams of fat for an adult. To get an idea, one hamburger with one-quarter pound of beef has 21 grams of fat.

Second, no more than 8 to 10% of total daily calories should be from saturated fat. This is about 18 grams of fat for an adult.

Third, no more than 300 mg of cholesterol should be eaten in a day. For instance, since an egg has 300 mg of cholesterol that means that no more than 1 egg can be eaten per day, if no other cholesterol is eaten.

Fourth, no more than 2400 mg of sodium should be eaten in a day. Diets work better if the person dieting also exercises regularly, especially if the person is overweight. If you are overweight and plan on making major dietary changes, it is helpful to talk with a dietitian about it.

Medications

The most common and effective medications slow down the rate at which LDL is made and speed up the rate at which the liver destroys LDL. These medications are called statins and include drugs such as Pravachol® and Lipitor®. The side effects of statins are usually very well tolerated. They include upset stomach, constipation, and cramping. Rarely, blood tests show that the liver is working a little bit abnormally when statins are being taken. This is not usually an important matter and tends to get better if the medication is stopped. Another extremely rare side effect of statins is damage to the nerves or muscles. Patients who notice new numbness or weakness or brownish discoloration of their urine should report these symptoms to their doctor. A different kind of medication can help lower cholesterol levels by reducing how much fat and cholesterol gets absorbed by our intestines. These medications are known as resins. They include drugs such as Questran® and Colestid®. Resin drugs are usually well tolerated but could cause constipation and a feeling of bloating. They could also interfere with the absorption of other nutrients and medications.

Nicotinic acid, also known as niacin or Vitamin B, can decrease the levels of LDL and raise the levels of HDL. It has to be taken in very high doses under the supervision of a doctor.

Postmenopausal women may benefit from hormone replacement to lower their LDL. However recent studies have shown that hormone replacement can increase the risk of heart disease and other diseases. This is why it is important to discuss these issues with your doctor prior to starting any medications.

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Summary

High cholesterol can narrow the blood vessels and cause a heart attack. Regular cholesterol tests are recommended to find out if your cholesterol level is within normal range. If your cholesterol level is high, it can be successfully treated through diet, exercise, weight loss, and medications. These life style changes require determination on the part of the patient to live a healthier life.

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