What is cholesterol and what does it do?
Cholesterol is a waxy substance found in your body tissue and bloodstream, and you need some cholesterol for healthy cell function. But if you could look inside your arteries, you might be surprised to see streaks of cholesterol on the walls, narrowing the opening and blocking the flow of blood. The danger is that if your arteries are narrowed, they can reduce the blood flow to your heart or brain, leading to a heart attack or stroke.

There are two main types of cholesterol:
- **LDL (the bad cholesterol)** clings to the walls of your arteries. If you have too much LDL, fatty plaques form that slowly narrow the passages through your arteries, contributing to hardening of the arteries (atherosclerosis) or an inflammation of the arteries, which also can lead to atherosclerosis.
- **HDL (the good cholesterol)** sweeps LDL from artery walls and takes it back to the liver to be eliminated from the body.

Too much LDL (the bad cholesterol) and too little HDL (the good cholesterol) promote atherosclerosis, which contributes to cardiovascular disease. And, if you have other risk factors for heart disease (e.g., inactivity, smoking, obesity, family history), unhealthy cholesterol levels pose a greater threat.

Are you concerned about your cholesterol levels and your risk of cardiovascular disease? You can take charge of your cholesterol levels and lower your risks by:
- Understanding your overall risks.
- Having your cholesterol measured.
- Setting a goal for your optimum cholesterol levels, with your health care provider’s help.
- Learning basic approaches for managing your cholesterol.
- Taking an active role in managing your cholesterol every day.
Measuring Your Cholesterol

The Numbers Game

How is cholesterol measured?
Cholesterol is measured with a blood test. A blood sample is taken from a finger stick or drawn from a vein. The blood is analyzed (lipoprotein profile) for total cholesterol, including LDL and HDL, and triglycerides, which is another blood component associated with elevated cholesterol and a higher risk of heart disease and stroke. Your total cholesterol count helps your health care provider evaluate your level of risk.

What do the numbers mean?
Your risk of heart disease is greater if you have high LDL and low HDL cholesterol levels. Although these numbers can be significant in themselves, it also is important to consider them along with other risk factors you may have. The chart to the right shows the goals for cholesterol control. According to recent guidelines, the emphasis is shifting away from total cholesterol levels alone, and focusing more on reducing LDL levels.

How aggressively your health care provider will want you to control your cholesterol levels will depend, in part, on your other risks for heart disease and presence of other chronic conditions. For example, your health care provider may

Risk Factors for High Cholesterol

Certain factors affect your risk for having unhealthy cholesterol levels. There are risk factors you can control with changes in your lifestyle:

- **Eating habits.** Your cholesterol levels probably will go down if you reduce saturated fat and cholesterol in the food you eat, especially fats from animals – meat, poultry, shellfish, and whole-milk dairy products.
- **Weight.** Being overweight is an independent risk factor for heart disease, and also tends to raise your LDL and lower your HDL levels.
- **Physical activity.** Being physically active can lower LDL, raise HDL, and help you maintain your ideal body weight and overall health.
- **Stress.** Stress itself does not cause cholesterol levels to rise, but good habits, such as not smoking, eating healthfully, and exercising regularly tend to fall by the wayside more easily when you are stressed.

Unfortunately, there are risk factors for having unhealthy cholesterol levels that you can’t control, including:

- **Cholesterol produced naturally.** The liver produces about 80 percent of the cholesterol in your body.
- **Age.** Cholesterol levels tend to rise as you get older.
- **Gender.** Men generally have higher total levels than women. However, after menopause, women’s LDL levels tend to rise.
- **Family history.** High cholesterol can run in families.

<table>
<thead>
<tr>
<th>Total Cholesterol</th>
<th>Category</th>
</tr>
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<tbody>
<tr>
<td>Less than 200 mg/dL</td>
<td>Desirable</td>
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<tr>
<td>200-239</td>
<td>Borderline high</td>
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<tr>
<td>240 mg/dL or higher</td>
<td>High</td>
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<table>
<thead>
<tr>
<th>LDL Cholesterol</th>
<th>Category</th>
</tr>
</thead>
<tbody>
<tr>
<td>Less than100 mg/dL</td>
<td>Optimal</td>
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<tr>
<td>100-129 mg/dL</td>
<td>Near/above optimal</td>
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<tr>
<td>130-159 mg/dL</td>
<td>Borderline high</td>
</tr>
<tr>
<td>160-189 mg/dL</td>
<td>High</td>
</tr>
<tr>
<td>190 mg/dL or higher</td>
<td>Very high</td>
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</table>

<table>
<thead>
<tr>
<th>HDL Cholesterol</th>
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</thead>
<tbody>
<tr>
<td>60 mg/dL or higher</td>
<td>High-desirable</td>
</tr>
<tr>
<td>Less than 40 mg/dL</td>
<td>Low</td>
</tr>
</tbody>
</table>

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Lowering Your Cholesterol

What if your cholesterol is too high? The National Cholesterol Education Program emphasizes lowering LDL and raising HDL cholesterol. Here are some basic steps you can take to help bring your cholesterol level into normal ranges and reduce your risks as well.

• **Adopt Therapeutic Lifestyle Changes (TLC),** as recommended by the National Heart, Lung & Blood Institute.

• **Watch your numbers.** Have a fasting lipoprotein profile every 5 years, starting at age 20.

• **Check your family history.** If a close family member had a heart attack before age 50 – or you have other risk factors such as diabetes, high blood pressure, obesity, smoking, and an inactive lifestyle – your health care provider may recommend more frequent cholesterol screenings.

• **Use cholesterol-lowering medications,** as prescribed by your health care provider. Depending on your risk factors, your health care provider may advise you to take medication in addition to adopting TLC approaches.

**Therapeutic Lifestyle Changes (TLC)**

The National Heart, Lung and Blood Institute recommends the following Therapeutic Lifestyle Changes (TLC) to lower cholesterol:

• **Increase physical activity.** Physical activity increases the level of HDL in the blood. Aim for 30 minutes of moderate physical activity on most days of the week. Always talk to your health care provider before beginning any exercise program, especially if you are older than 40, have been inactive, or have a chronic condition (e.g., asthma, diabetes, arthritis, heart disease).

• **Follow the TLC eating plan.**
  - **Reduce saturated fats** by limiting full-fat dairy products, fatty meats, and tropical oil such as palm and coconut oil.
  - **Replace saturated fats** with heart-healthy mono- and polyunsaturated fats found in canola and olive oils, fatty fish, and nuts.
  - **Avoid trans fatty acids** found in solid margarine, processed snack foods, crackers, and baked goods. Good alternatives include Melba toast, graham crackers, or matzo.
  - **Eat more soluble fiber** such as oat bran, dried beans, whole grains, and fresh and frozen fruit and vegetables.
  - **Manage your weight.** Generally, your cholesterol level will improve if you achieve your ideal body weight. Most weight gain comes from a combination of eating too many calories and not getting enough physical activity.
  - **Increase your daily activity.** Exercise burns calories and fat, and increases your lean body mass.
  - **Reduce calories.** Select vegetables, fruit, and lean meats, poultry, or fish. Limit snacks, or opt for natural, healthful choices such as nuts or fruit.
  - **Eat smaller portions,** more often. Your body will use the calories differently this way. Take smaller portions and skip second helpings.
  - **Manage stress.** Smoking, overeating, gaining weight, or physical inactivity during times of stress can affect your cholesterol levels.
  - **Walk.** A 20- to 30-minute walk will help reduce tension and stress.
  - **Take a humor break.** Some experts call a good laugh “inner jogging.”
  - **Meditate.** pray, or practice deep muscle relaxation to calm your mind and body.

• **Take cholesterol-lowering medications.** If TLC approaches don’t reduce your cholesterol enough to reduce your risk of heart disease, your health care provider may recommend taking medication. Research has shown that cholesterol-lowering drugs called “statins” are effective and safe if you follow the recommended schedule and dosage requirements.
Good Fat, Bad Fat

Although fat in your food is necessary – it supplies energy, transports nutrients, and is part of many body cells – saturated fat can contribute to elevated LDL ("bad") cholesterol levels and your risk of heart disease.

It’s important to avoid saturated fat, cholesterol, and trans fats found in:

**Fried food.**

**Full-fat dairy products**, such as cheese, whole milk and butter.

**Fatty meat.**

**Coconut, palm, or hydrogenated vegetable oils** in processed snack food and baked goods.

Not all fats are bad for you. Eating the right fats can help improve your cholesterol profile. Include in your eating plan:

- **Polyunsaturated fat**, such as corn oil and soybean oil.
- **Monounsaturated**, such as olive oil, most nuts, peanut butter, and canola oil.
- **Omega -3 and -6** fatty acids, such as in fish – tuna, sardines, and salmon.

Remember: all fats are high in calories, so don’t overdo it.

Exercise: How Much is Enough?

The Surgeon General's Report on Physical Activity and Health recommends that people of all ages engage in at least a total of 30 minutes of physical activity of moderate intensity on most, if not all, days of the week.

Recommended activities include brisk walking, jogging, cycling, dancing, swimming, and lifestyle activities such as gardening, raking leaves, and doing household chores. Walking may be one of the best exercises for most people. It can be done almost anywhere, at any age. It is inexpensive and requires no more equipment than an appropriate pair of shoes. And, walking has low risk of injury.

**Walking Tips**

- Vary your walking routes, distance, and pace to keep it interesting.
- Walk erect, but keep your upper body relaxed. Foot contact with the ground should be heel to toe.
- Wear proper footwear.
- Wear reflective clothing at night.
- Drink plenty of water.
- Walk with a family member, friend, or co-worker.
- Have fun! Walk through city parks, start a company break-time walk program, or participate in a charity “walk-a-thon.”

What’s the Payoff?

- **Managing your cholesterol** takes effort and commitment for the long haul. But, if you have unhealthy levels of cholesterol, it’s important to consider the many good reasons it makes sense to take charge and reach your goals.
- **Lowering your cholesterol** improves your chances of living a long and healthy life.
- **With lifestyle changes**, such as improving your diet, quitting smoking, losing excess weight, and managing stress you can:
  - Lower your LDL and raise your HDL cholesterol.
  - Reduce your risk of heart disease, diabetes, stroke, high blood pressure, and certain cancers.
  - Reduce your overall health risks.
- **By adding medication, you can:**
  - Further lower LDL and raise HDL cholesterol.
  - Further reduce you risk of heart disease.
  - Further lower your risk of heart attack if you have been diagnosed with coronary heart disease or you’ve had a heart attack.

Resources

| National Heart, Lung & Blood Institute | www.nhlbi.nih.gov |
| President’s Council on Physical Fitness and Sports | 1-202-690-9000 www.fitness.gov |
| American Dietetic Association | 1-800-877-1600 www.eatright.org |

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