

Know Your Cholesterol Number

*Kathleen M. Stadler, Assistant Professor; Extension Specialist, Nutrition; Dept. of Human Nutrition, Foods and Exercise
Forrest Thye, Associate Professor; Dept. of Human Nutrition, Foods and Exercise*

Are you “Heart Healthy?” Do you know your cholesterol numbers? Do you know the new cholesterol guidelines? Your first step to heart healthy living is to assess your risk. Complete the heart healthy challenges by checking yes, no, or do not know.

Heart Healthy Challenges

		Do not		
Yes	No	Know		
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		My total cholesterol (TC) is 200 or higher.
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		My low density lipoprotein (LDL) cholesterol is 100 or higher.
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		My high density lipoprotein (HDL) cholesterol is 40 or lower.
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		My triglyceride (TG) number is 150 or higher.
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		My blood pressure (BP) is >140/90 mmHg or I'm on antihypertensive medication.
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		I smoke.
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		I have diabetes (high blood sugar).
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		I have a parent, brothers, sisters, or children who have had a heart attack—males before age 55, females before age 65.
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		I exercise less than three times a week.
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		I am overweight or obese.
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		I am over 45 years, if male or over 55 years, if female.

If you answered “yes” or “do not know” to two or more statements, you need to take steps to reduce your risk of getting heart disease.

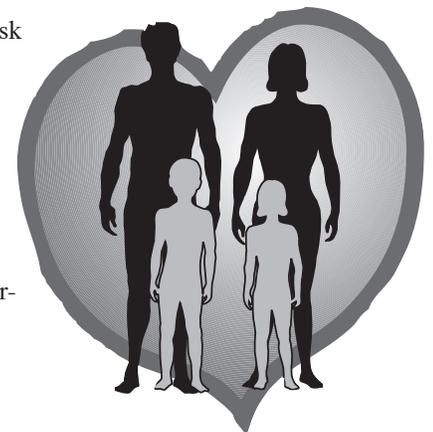
Terms

- CHD Coronary Heart Disease
- CVD Cardiovascular Disease
- TC Total Cholesterol
- LDL Low Density Lipoprotein
- HDL High Density Lipoprotein
- TG Triglyceride
- BP Blood Pressure

New Cholesterol Guidelines

Why are cholesterol numbers and risk factors important to your heart health? The National Cholesterol Education Program (coordinated by the United States National Institutes of Health’s (NIH) National Heart, Lung, and Blood Institute) issued new cholesterol guidelines in 2001. These guidelines emphasize these issues:

- Know all your numbers. Have a complete fasting lipoprotein profile (TC, LDL, HDL, and TG) done as a first test.
- More restricted LDL and HDL numbers
- High triglycerides are a risk factor.
- Know your multiple risk factors.
- Dietary and lifestyle changes are key — nutrition, physical activity, and weight control.
- Strict cholesterol lowering treatments



Cholesterol

Cholesterol is a fat-like substance that is carried by the blood to all parts of your body. Your body uses cholesterol to produce hormones, vitamin D, and bile salts that help digest fat. Though some of the cholesterol comes from food (dietary cholesterol), your body makes the majority of it. If there is too much cholesterol in your blood stream, it may eventually collect on the walls of the blood vessels. In time, cholesterol may clog the blood vessel(s). If that happens, you could have a heart attack or a stroke.

The first step to reduce your risks of a heart attack or stroke is to have a complete fasting lipoprotein profile (TC, LDL, HDL, and TG). You may be asked to “fast” or go without food and drinks (only drink water) for the 12 hours before the test. A significant amount of blood (more than a finger prick) is taken. This initial blood test gives all your numbers, not just a screening for your TC number. Every adult 20 years and older should have a fasting lipoprotein profile every five years. Find your numbers to know your risks and to determine your next step.

2001 Classifications for LDL, Total, and HDL Cholesterol	
LDL Cholesterol (mg/dL)	
Less than 100	Optimal
100-129	Near/Above Optimal
130-159	Borderline High Risk
160-189	High Risk
190 or more	Very High Risk
Total Cholesterol (TC) (mg/dL)	
Less than 200	Optimal
200-239	Borderline High Risk
240 or more	High Risk
HDL Cholesterol (mg/dL)	
Less than 40	High Risk
60 or more	Optimal

Total Cholesterol (TC) Number ♥ Target < 200 mg/dL

Many people attend health fairs and get a quick finger stick cholesterol test. This is a start to finding out about your heart health. Your total cholesterol (TC) number is the number of milligrams of cholesterol in a deciliter of blood (mg/dL). A TC number of 200 or less is good! However, if you have two or more of the risk factors listed, talk to your doctor about having a complete fasting lipoprotein profile (TC, LDL, HDL, and TG).

A TC number between 200 and 239 may indicate a problem, especially if you have two or more of the risk factors. If your TC number is 240 or above, you should see your doctor for a complete fasting lipoprotein profile even if you do not have any of the other risk factors.

The doctor or lab report may give you a TC/HDL ratio number. The ratio number is calculated by dividing the TC number by the HDL-cholesterol number. In general, numbers less than 5 are associated with a decreased risk of heart disease. Make sure to ask your doctor to clarify the ratio number and how it was calculated.

Good Cholesterol (HDL) ♥ Target > 40 mg/dL

Cholesterol has to team up with protein to get through the blood vessels. HDL, a high density lipoprotein, is made up of lipids (another word for fat) and protein. HDL has more protein than fat and appears to carry the cholesterol it contains to the liver for excretion. HDL-cholesterol is known as the “good” cholesterol. The new guidelines are more strict by raising the low HDL number from <35 to <40 mg/dL. An average HDL number is in the mid-forties range for a man and in the fifties range for a woman. A HDL number of less than 40 is considered a major risk factor for CVD. A HDL number of 60 or more is very good. Therefore, you want a high or large HDL number because that indicates a high level of this good cholesterol in your blood and less risk of heart disease.

Bad Cholesterol (LDL) ♥ Target < 100 mg/dL

The new cholesterol guidelines focus on lowering LDL-cholesterol as the primary focus for heart disease prevention and therapy. The new guidelines added a category called optimal and lowered the desirable LDL-cholesterol number from <130 to <100 mg/dL. LDL-cholesterol is a low density lipoprotein (more fat, less protein). The cholesterol in LDL is carried to the tissues and may be deposited in the blood vessels. LDL-cholesterol is known as the “bad” cholesterol. Thus, a smaller LDL number or a LDL number less than 100 is more beneficial than a higher one.

A LDL number of 160 or higher is a high risk factor. A number between 130 to 159 is considered a borderline risk factor. You can lower high LDL-cholesterol and raise low HDL-cholesterol numbers by making dietary and lifestyle changes.

- Reduce intakes of saturated fat and cholesterol.
- Increase physical activity.
- Maintain optimal weight to lower cholesterol and reduce risk factors.

Your doctor will retest your blood with another fasting lipoprotein profile (TC, LDL, HDL, and TG) about one to eight weeks after the initial test. The doctor will decide on the best dietary, lifestyle, and medical treatment primarily based on your LDL number. Persons with a history of heart disease may be put on a very restricted diet with medications and therapeutic lifestyle changes.

Triglycerides (TG) Number

♥ Target < 150 mg/dL

The new guidelines include a high triglyceride (TG) number, which is another risk factor for heart disease. Triglycerides in the blood are made from fats eaten in foods, or are made in the body from other energy sources, such as carbohydrates or sugars. Excess or high levels of triglycerides (hypertriglycerides) are a heart disease risk factor. The doctor may give persons with a triglyceride level ≥ 200 mg/dL additional medical treatment beyond cholesterol lowering treatments.

Less than 150	Normal
150-199	Borderline-High Risk
200-499	High Risk
500 or more	Very High Risk

Multiple CHD Risk Factors

The new cholesterol guidelines focus on identifying persons with multiple risk factors. Persons with multiple (2 or more) risk factors have an increased risk for CHD and, therefore, need more intensive prevention measures. For example, diabetes increases risk for CHD complications. People with diabetes (insulin or non-insulin dependent) have a higher risk of new CHD within 10 years of a diabetes diagnosis.

Some CHD risk factors are inherited, but other factors can be changed or modified. Check the following risk factors you can change or modify.

Non-modifiable Risk Factors

Age: Male 45 years or older; Female 55 years or older
 Family history of premature CHD in parent or sibling before 55

Modifiable Risk Factors

- High Total Cholesterol
- High LDL-Cholesterol
- Low HDL-Cholesterol
- Cigarette smoking
- High blood pressure
- Diabetes
- Obesity/overweight
- Physical inactivity

Metabolic Syndrome

The new cholesterol guidelines highlight new risk factors. Many people have a variety of major risk factors, life-style risk factors, and a group of emerging risk factors that together cause a condition called “metabolic syndrome.” Abdominal obesity, raised blood pressure, and insulin resistance characterize metabolic syndrome. Lifestyle habits include obesity, lack of physical activity, and diet.

Dietary and Lifestyle Changes

How can you keep your blood cholesterol at a low level? Consider making these lifestyle changes. Check with your doctor to see what kind of exercise is best for you. Walking, swimming, dancing, gardening, bicycling, and aerobic exercise classes are all possibilities.

- Get plenty of exercise.
- Stop smoking.
- Keep your weight down.
- Lose those excess pounds, if you are overweight.
- Learn to deal with stress.

Also, make some dietary changes. Are you eating a variety of foods according to the Food Guide Pyramid? It is important for persons with borderline or high LDL levels to lower the amount and type of fat as well as the amount of cholesterol in their diets. Fewer than 30% of your total calories should come from fat. More of the fat should be monounsaturated (15%) than polyunsaturated (about 7-9%) or saturated (less than 7%).

Healthy Eating Check-Up

How are your eating habits? Complete the check-up to find out. Check yes or no to each question.

- | Yes | No | |
|--------------------------|--------------------------|---|
| <input type="checkbox"/> | <input type="checkbox"/> | I eat foods high in total fat and high in saturated fat every day. |
| <input type="checkbox"/> | <input type="checkbox"/> | I eat less than 3 vegetables a day. |
| <input type="checkbox"/> | <input type="checkbox"/> | I eat less than 2 fruits a day. |
| <input type="checkbox"/> | <input type="checkbox"/> | I eat less than 6 servings of bread, cereals, rice, crackers, pasta, or other foods made from grains a day. (1 serving is equal to 1 slice of bread or 1/2 cup cooked cereal, rice, etc.) |
| <input type="checkbox"/> | <input type="checkbox"/> | I seldom eat dried beans, peas, and legumes. |
| <input type="checkbox"/> | <input type="checkbox"/> | I eat more than 2 servings of fatty meats, such as highly marbled meats, bacon, luncheon meats, sausages, hot dogs, etc. |
| <input type="checkbox"/> | <input type="checkbox"/> | I eat a lot of fatty foods, such as cheese, sour cream, sauces, ice cream, high fat meats, etc. |

If you answered “yes” to two or more statements, you need to take steps to improve your eating habits.

Choose foods low in saturated (animal) fats.

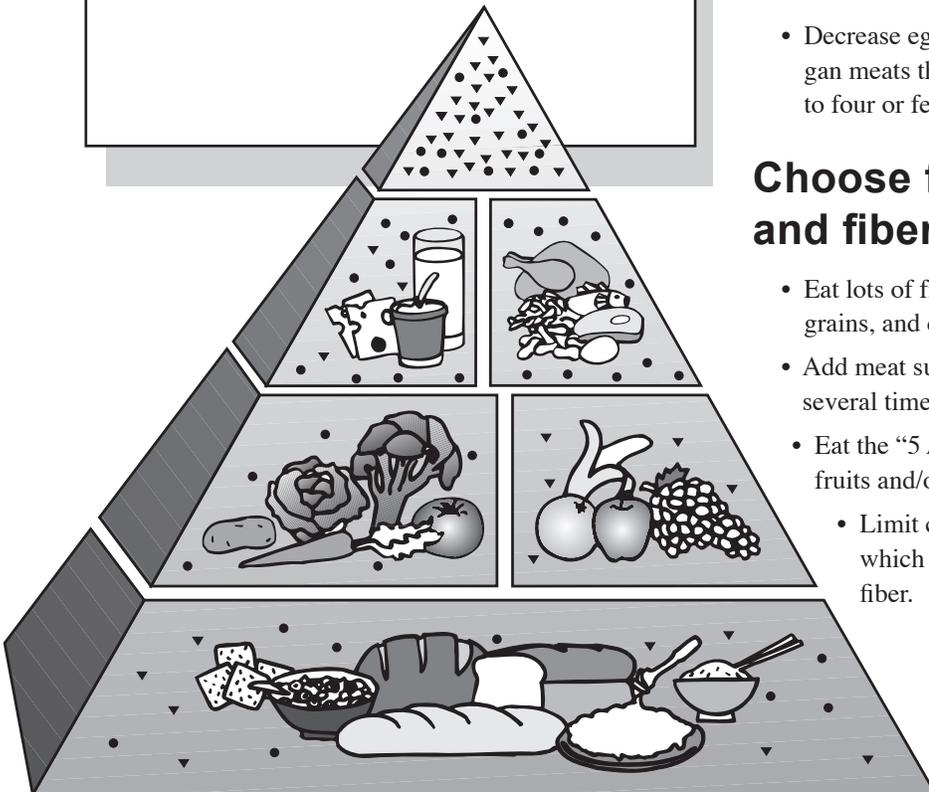
- Choose lean meats, poultry, and fish— 5 to 6 ounces per day.
- Remove as much of the visible fat in meats as possible.
- Bake, grill, broil, or stew meats.
- Drink skim or low-fat milk.
- Cook with less fat.
- Limit deep fat fried foods.
- Choose foods low in total fat.
- Select soft or liquid margarines or spreads that list liquid oil as the first ingredient.
- Limit butter, margarine, salad dressing, sauces, and gravy.
- Use yogurt to replace sour cream as yogurt has less fat and fewer calories. Frozen yogurt may have less fat than ice cream but not fewer calories.
- Use oil, or soft or liquid margarine instead of solid shortening.

Choose foods low in cholesterol.

- Decrease egg yolks, liver, heart, brains, and other organ meats that contain a lot of cholesterol. Limit eggs to four or fewer per week or use egg whites.

Choose foods high in starch and fiber.

- Eat lots of fruits, vegetables, and whole-grain breads, grains, and cereals.
- Add meat substitutes (dried beans, peas, and legumes) several times a week.
- Eat the “5 A Day” way. Choose a variety of colorful fruits and/or vegetables that add up to five a day.
 - Limit cakes, cookies, pies, candy, and soft drinks, which are high in fat and/or sugar and low in fiber.



Read Food Labels

“Nutrition Facts”

The “Nutrition Facts” on the side or back of a food package tells you how much fat, saturated fat, and cholesterol is in a serving of food.

Serving Size

Serving size, is shown in the top portion of the “Nutrition Facts.” Serving sizes for foods have been standardized, so it is easy for you to compare the amount of fat, saturated fat, and cholesterol in a serving of similar foods, such as whole milk and skim milk, or butter and margarine. If you eat more, or less, than the recommended serving size, the amount of fats must be adjusted accordingly.

Calories and Calories from Fat

Calories and calories from fat are listed in “Nutrition Facts.” The value for calories is the total energy supplied by carbohydrates, protein, and fat in a serving of the food. “Calories from fat” is the number of calories that are supplied only by fat. This number is included in the total calories. It is obtained by multiplying the grams of fat in a serving by 9, which is the number of calories per gram of fat. Numbers that appear on the label may be rounded.

Nutrition experts recommend that you get no more than 30% of your calories each day from fat. This applies to your total daily diet and not to one meal or one food item. It is important that you include some fat in your diet because it is a source of energy, supplies essential fatty acids, and helps your body absorb the fat-soluble vitamins: A, D, E, and K.

Total Fat

The amount of total fat in a serving of food is shown in two ways: (1) by weight (g), and (2) as a percentage of the Daily Value (% Daily Value). The % Daily Values for total fat as well as saturated fat are based on a 2,000-calorie reference diet, which is about right for most moderately active women, teenage girls, and sedentary men. Active women, teenage boys, and many men may need more.

The % Daily Value for total fat can be used to determine how a food fits into your total daily diet. A high value means that a serving of a food contributes a lot of total fat to your diet, and a low value means that it contributes a little. For example, the label shown here indicates that a serving of the food supplies only 5% of your daily needs for total fat.

Amount Per Serving		% Daily Value*	
Calories 260 Calories from Fat 120			
Total Fat 13g			20%
Saturated Fat 5g			25%
Cholesterol 30mg			10%
Sodium 660mg			28%
Total Carbohydrate 31g			10%
Dietary Fiber 0g			0%
Sugars 5g			
Protein 5g			
Vitamin A 4%	•	Vitamin C 2%	
Calcium 15%	•	Iron 4%	
* Percent Daily Values are based on a 2,000 calorie diet. Your daily values may be higher or lower depending on your calorie needs:			
	Calories:	2,000	2,500
Total Fat	Less than	65g	80g
Sat Fat	Less than	20g	25g
Cholesterol	Less than	300mg	300mg
Sodium	Less than	2,400mg	2,400mg
Total Carbohydrate		300g	375g

Saturated Fat

The amount of saturated fat in a serving of food is listed in grams (g) and as a % Daily Value. Nutrition experts recommend that you get no more than 7% of your calories each day from saturated fat because it tends to increase blood cholesterol levels. This type of fat is found mostly in animal foods, such as whole milk, cream cheese, butter, and meat. Some vegetable oils, such as coconut oil and palm kernel oil, used in processed foods also contain saturated fat.

Cholesterol

The amount of cholesterol in a serving of food is listed in milligrams (mg) and in % Daily Value. It is recommended that you limit your intake of cholesterol to 300 mg per day, regardless of the amount of calories you eat. Cholesterol is found only in animal products, such as meat, poultry, eggs, fish, milk products, and lard.

Daily Energy Needs

If your daily energy needs exceed 2,000 calories, labels on larger food packages have footnotes, like the one shown here, to help you. The amount of fat, saturated fat, and cholesterol needed for a 2,500-calorie diet is listed in grams. These amounts can be compared with those listed (in grams) in the nutrient list for a serving of the food. This will help you to determine what a food contributes to your diet.

In the footnote are the number of calories per gram of fat, carbohydrate, and protein. As you can see, a gram of fat has more than twice the calories of a gram of either carbohydrate or protein, so a diet low in fat can help you maintain a healthy weight.

Ingredient List

All foods made from more than one ingredient have an ingredient list. For example, bread, peanut butter, margarine, mayonnaise, and salad dressing are foods that have ingredient lists. Ingredients are listed in descending order by weight. Those present in the greatest amount are listed first, and those present in the least amount are listed last.

The list tells you the amount and type of fat in the food. If ingredients such as coconut oil, butter, cream, or palm oil are at the beginning of the list, the food contains a large amount of fat, especially saturated fat. If ingredients such as soybean oil, corn oil, or canola oil are at the beginning of the list, the product is high in fat, but the fat is unsaturated.

Food Preparation

In most cases, the amount of total fat, saturated fat, and cholesterol listed on the label refers to the amount present in a serving of food as it is packaged, or before you prepare it. If fats such as margarine, bacon, gravy, or cream sauce are used as seasonings, the amount of fat and cholesterol in a serving of the food increases. Therefore, it is important to limit fats used as seasonings. Alternatives are lemon juice, herbs, spices, and yogurt.

RETESTING: If your LDL-cholesterol was 130 or above, the doctor will probably want to check it again in about two months to see if it is coming down as a result of the changes that you have made in what you eat and do.

MEDICINES: Medicines are usually not prescribed until the doctor is sure that diet modification won't work.

FOR MORE INFORMATION: Contact a dietitian at your local hospital or in a private practice, a nutritionist with the health department, or a Family and Consumer Sciences agent who specializes in Nutrition and Wellness with the Virginia Cooperative Extension. For more information on heart healthy eating VCE publications refer to:

VCE 348-898, *Heart Healthy Eating-Cholesterol, Fat, Fiber, & Sodium*

VCE 348-050, *The Bottom Line: Eating Up to 6-11 Servings*

VCE 348-022, *Eating 5 Fruits & Vegetables A Day*

VCE 348-710, *The Food Guide Pyramid and Dietary Guidelines*

Reviewed by Debra S. Jones, Extension specialist, Virginia State University

Reference

National Institutes of Health. (2001). *Detecting, Evaluation, and Treatment of High Blood Cholesterol in Adults (Adult Treatment Panel III) Executive Summary*. NIH Publication No. 01-3670. Washington, DC.

What Are Your Cholesterol Numbers?

It is time to keep a record of your cholesterol and triglycerides numbers. Start monitoring your heart healthy improvements!

1. From your last doctor's visit, write down your numbers in the space below.

	Date	Number	Date	Number
Total Cholesterol	_____	_____	_____	_____
LDL-Cholesterol	_____	_____	_____	_____
HDL-Cholesterol	_____	_____	_____	_____
Triglyceride	_____	_____	_____	_____

2. How did you do? Were your numbers in the normal or optimal ranges? Check your numbers against the recommendations for cholesterol and triglycerides that are provided in this publication.