

Keeping Your Heart Healthy

What You
Should Know
About Lipids

When You Have Chronic Kidney Disease
(Stages 1-4)



The National Kidney Foundation’s Kidney Disease Outcomes Quality Initiative (NKF-K/DOQI) is developing clinical practice guidelines to improve patient outcomes. The information in this booklet is based on the recommendations of these guidelines. The guidelines are not intended to define a standard of care but to provide information and assist your doctor or health care team in making decisions about your treatment. The guidelines are available to your doctor or clinic. If you have any questions about these guidelines, you should speak to your doctor.

Stages of Chronic Kidney Disease (CKD)

In February 2002, the National Kidney Foundation published clinical care guidelines for chronic kidney disease. These help your doctor determine your stage of kidney disease based on the presence of kidney damage and glomerular filtration rate (GFR), which is a measure of your level of kidney function. Your treatment is based on your stage of kidney disease. (See chart below.) Speak to your doctor if you have any questions about your stage of kidney disease or your treatment.

Stage	Description	Glomerular Filtration Rate (GFR)*	Action
At increased risk	Risk factors (e.g., diabetes, high blood pressure, family history, older age, ethnic group)	90 or above	Evaluation for CKD Reducing risk for CKD
1	Kidney damage (e.g., protein in the urine) with normal GFR	90 or above	Diagnosis and treatment of other health problems Slowing progression of CKD Reducing risk for heart and blood vessel disease
2	Kidney damage with mild decrease in GFR	60 to 89	Estimating progression of CKD
3	Moderate decrease in GFR	30 to 59	Evaluating and treating complications
4	Severe reduction in GFR	15 to 29	Preparing for treatment of kidney failure
5	Kidney failure	Less than 15	Dialysis or kidney transplant needed
* Your GFR number tells your doctor how much kidney function you have. As chronic kidney disease progresses, your GFR number decreases.			

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Keeping Your Heart Healthy When You Have Chronic Kidney Disease (Stages 1-4):What You Should Know About Lipids

Heart disease is very common in people with chronic kidney disease. This means you may be more likely to have a heart attack, stroke or angina (chest pain). It is important to follow your doctor's advice about how to lower your risk for heart disease. One of the things that may make you more likely to develop heart problems is having unhealthy levels of lipids (fatty substances like cholesterol) in your blood. This booklet explains how these blood lipids may affect your health and what treatments you may need to get your blood lipids back to a heart-healthy level.

This booklet is written for adults who have chronic kidney disease in stages 1 to 4. If you are not sure about your stage of kidney disease, speak to your doctor and see the chart on the inside front cover of this booklet. You may also request a copy of the booklet

About Chronic Kidney Disease: A Guide for Patients and Their Families by calling 1-800-622-9010. If you do not have chronic kidney disease in stages 1-4, you can find other booklets about lipids listed in "Other Resources" on page 15.

About Blood Lipids

What are blood lipids?

Blood lipids are fatty substances (like cholesterol) found in your blood and body tissues. Your body needs lipids like cholesterol to work normally. Cholesterol is present in nerve tissue, muscles, skin, the liver, the intestines and the heart. Your body uses cholesterol to make hormones, vitamin D and bile acid to help digest fat. However, it only takes a small amount of cholesterol in your blood to meet these needs. Too much cholesterol in your blood can cause plaque (a fatty deposit in the walls of blood vessels) to form in your arteries, including the arteries of your heart.

Are there different types of blood lipids?

Yes. There are three main types of blood lipids:

- ❖ **Low-density lipoprotein (LDL) cholesterol**—A "bad" type of cholesterol that causes damaging plaque to build up and block your arteries. If your LDL cholesterol is too high, lowering this lipid may help to prevent heart disease.
- ❖ **High-density lipoprotein (HDL) cholesterol**—A "good" type of cholesterol that helps to keep cholesterol from building up in your arteries. Having more HDL cholesterol is known to be heart-healthy.
- ❖ **Triglycerides**—The most common form of stored fat in your body. Normally, only a small portion is found in your blood. Triglycerides may not cause fat deposits in your arteries, but they often go along with low HDL or a tendency toward diabetes. Both of these conditions raise your risk for heart disease.

Why should I be concerned about my blood lipid levels?

Having too much LDL cholesterol or too little HDL cholesterol can cause plaque to build up and block your arteries. This can slow down or block the flow of blood to your heart and other organs. Your blood carries oxygen to your heart. If your heart does not get enough blood and oxygen, you may suffer chest pain. If the blood supply to a portion of the heart is reduced or completely cut off by a blockage, the result is a heart attack. If the blood supply to a portion of your brain is reduced or completely cut off by a blockage, a stroke may result.

What causes my blood lipid levels to be unhealthy?

Some things that may cause unhealthy blood lipid levels include:

- ❖ Too much saturated fat and cholesterol in your diet. (See "What type of diet should I follow?" on page 8)
- ❖ Being overweight or obese
- ❖ Lack of regular exercise
- ❖ Drinking too much alcohol (beer, wine and liquor)
- ❖ Having a family history of unhealthy blood lipid levels
- ❖ Having certain conditions like diabetes or an underactive thyroid gland
- ❖ Certain medications.

Your age and gender may also be factors. Before menopause, women usually have healthier cholesterol levels than men of the same age. After menopause, women have cholesterol levels more like those found in men of the same age.

How are my blood lipids measured?

You should have a blood test called a complete lipid profile. Since this test is affected by food, you may be asked not to eat for 9 to 12 hours before the test. A complete lipid profile includes:

- ❖ Total cholesterol
- ❖ HDL (good) cholesterol
- ❖ LDL (bad) cholesterol
- ❖ Triglycerides.

Another measure that tells your doctor about your risk for heart disease is called non-HDL cholesterol. This includes LDL cholesterol plus other parts of total cholesterol that are not heart-healthy. Non-HDL

cholesterol is found by subtracting your HDL cholesterol from your total cholesterol. A high non-HDL cholesterol may mean you have an increased risk for heart disease.



How often should my blood lipids be checked?

- ❖ At least once a year
- ❖ Two or three months after any changes in your treatment.

What are healthy blood lipid levels?

Adults with chronic kidney disease can reduce their risk of heart disease if their:

- ❖ Total cholesterol is less than 200
- ❖ HDL cholesterol is 40 or higher
- ❖ LDL cholesterol is less than 100
- ❖ Triglycerides are less than 150.

Treating Unhealthy Blood Lipid Levels

What type of treatment will I need if my blood lipids are not at a healthy level?

If your blood lipids are not at a healthy level, your doctor may:

- ❖ Recommend that you make some changes to a healthier lifestyle
- ❖ Prescribe medication to help lower your blood lipid levels.

What kinds of lifestyle changes will I need to make?

You may need to:

- ❖ Follow a diet low in saturated fats and cholesterol (See the Diet Suggestions table on page 18. Speak to a registered dietitian if you need help.)
- ❖ Follow a program of regular physical activity approved by your doctor
- ❖ Stop smoking if you are a smoker
- ❖ Lose excess weight
- ❖ Limit alcohol to one drink a day.

Diet and Exercise

What type of diet should I follow?

To improve your blood lipid levels, your diet should be low in saturated fats and cholesterol. Your daily diet should have:

- ❖ Less than seven percent of total calories from saturated fat
- ❖ Less than 200 milligrams of cholesterol.



Your doctor can explain this diet in more detail. A registered dietitian can work with you to create a diet plan that meets your needs. The dietitian can also teach you how to read Nutrition Facts labels on all foods. These labels tell you how much saturated fat and cholesterol are in the foods you are eating.

What foods are high in saturated fats and cholesterol?

Large amounts of saturated fats are found in:

- ❖ Foods from animal sources such as fatty meats, luncheon meat, sausage, hot dogs, bacon, ribs and skin or fat on meat or poultry
- ❖ Dairy products such as cream, whole milk, cheeses, cream cheese, sour cream and ice cream
- ❖ Certain oils like palm kernel oil
- ❖ Certain solid fats such as butter, lard or hard shortenings sold in cans
- ❖ Certain nuts like Brazil nuts and macadamia nuts
- ❖ Chocolate and coconut
- ❖ Anything made from these foods, especially desserts, pastries, cakes, cookies, candy bars, creamed soups, sauces, gravies, cheese sauces and pizza.

Cholesterol is found in any products that come from animals.

Cholesterol-rich foods include:

- ❖ Egg yolks (egg whites have no fat or cholesterol)
- ❖ Any dairy products containing fat
- ❖ Fat from meats and poultry
- ❖ Organ meats (liver, kidneys, sweetbreads and brain).

What about fiber?

Eating high-fiber foods such as fresh fruits and vegetables and whole grains in breads and cereals may help improve your lipid levels. If you have chronic kidney disease and you are following a lower-protein diet, your doctor may recommend limiting some high-fiber foods.

Is there anything else I need to watch in my diet?

Yes. Your diet will vary depending on your stage of chronic kidney disease. If your kidney disease gets worse, you may need to limit some things in your diet such as protein, dairy products and certain fruits and vegetables. Your doctor will tell you if you need to make these changes. A registered dietitian can help you plan your meals to get the right foods in the right amounts. (See the National Kidney Foundation booklet *Nutrition and Chronic Kidney Disease* for more information.)

How does exercise help?

Regular physical activity can help reduce your risk for heart disease by:

- ❖ Lowering your LDL (bad) cholesterol
- ❖ Raising your HDL (good) cholesterol
- ❖ Lowering your triglyceride level
- ❖ Reducing excess weight
- ❖ Improving the fitness of your heart and lungs
- ❖ Helping to control your blood glucose if you have diabetes
- ❖ Helping to control high blood pressure.

How much exercise do I need?

Speak to your doctor before starting an exercise program. If you have not exercised regularly, start slowly with activities like:

- ❖ Walking
- ❖ Using the stairs instead of the elevator
- ❖ Gardening
- ❖ Housework
- ❖ Dancing
- ❖ Exercising at home.

Begin with a few minutes three or four days a week. Increase gradually to at least 20 to 30 minutes a day. Always include a five-minute warm-up and cool-down. If you feel comfortable with this level of activity, you can also begin to include regular aerobic activities such as:

- ❖ Brisk walking
- ❖ Jogging
- ❖ Swimming
- ❖ Biking
- ❖ Playing tennis.

If you have chest pain or feel faint or light-headed or become extremely out of breath while exercising, stop at once and tell your doctor as soon as possible.



Lipid-Lowering Medications

Will I need to take medications to improve my blood lipid levels?

You may. Lifestyle changes alone may not always be enough to control your blood lipid levels. Some of the medications used to lower your lipid levels may interact with your other medications. It is important to tell your doctor about all medications you take, including over-the-counter drugs, vitamins and herbal supplements. Your doctor will consider the following:

- ❖ Your complete lipid profile
- ❖ All medications and supplements you are taking
- ❖ Other health problems you may have.

If your doctor orders a medication to help lower lipids, you should continue following your diet and exercise program. Combining all these steps may reduce the amount of medication you need or make the medication work better.

Do these medications have side effects?

Like most medications, the lipid-lowering drugs may have some side effects. These depend on which medications your doctor prescribes for you. The most common side effects include:

- ❖ Upset stomach
- ❖ Constipation
- ❖ Indigestion
- ❖ Cramps
- ❖ Muscle soreness
- ❖ Diarrhea
- ❖ Rarely, liver problems.

Your doctor will check on how you are doing with your medications. You should report any side effects to your doctor as soon as possible.

Treatment Goals

What are the goals of treating unhealthy blood lipid levels?

The goal of your treatment is to get your blood lipids to heart-healthy levels:

- ❖ If your LDL (bad) cholesterol is 100 or higher, the goal is to reduce LDL to below 100.
- ❖ In general, triglyceride levels should be below 150. If your triglyceride level is very high (500 or above), this could cause an inflammation of your pancreas, the gland that helps to regulate your blood sugar level. Because this is a serious medical problem, it is important to prevent it by reducing triglycerides to below 500.

- ❖ If your non-HDL cholesterol is 130 or higher, the goal is to reduce it to below that level.

Other Risk Factors for Heart Disease

What other things may increase the chance of developing heart disease?

In addition to unhealthy lipid levels, other factors that may increase the risk for heart disease include:

- ❖ Being over age 45 in men and over 55 in women
- ❖ High blood pressure
- ❖ Diabetes
- ❖ Smoking
- ❖ A family history of heart disease
- ❖ A family history of chronic kidney disease
- ❖ Being overweight or obese
- ❖ Lack of regular exercise.

The more risk factors you have, the greater your chance of developing heart disease. Fortunately, there are steps to help reduce your risk for heart disease:

- ❖ Stop smoking
- ❖ Improve unhealthy blood lipid levels
- ❖ Control high blood pressure and diabetes
- ❖ Treat chronic kidney disease
- ❖ Lose excess weight
- ❖ Increase physical activity.



Key Points to Remember

- ❑ People with chronic kidney disease have an increased risk of developing heart disease.
- ❑ Since unhealthy levels of blood lipids like cholesterol may contribute to heart problems, you should have your blood lipid levels measured.
- ❑ A complete lipid profile should be done. This includes measuring total cholesterol, LDL cholesterol, HDL cholesterol and triglycerides.
- ❑ If blood lipids are not at a heart-healthy level, treatment will include lifestyle changes, which may be combined with medications.
- ❑ Lifestyle changes that help to improve blood lipid levels include: following a diet low in saturated fats and cholesterol, increasing physical activity, losing excess weight, stopping smoking and limiting alcohol to one drink a day.
- ❑ Other factors that may increase your risk for heart disease include being over 45 in men and over 55 in women, high blood pressure, diabetes, smoking, a family history of heart problems and a family history of chronic kidney disease.

Other Resources

If you need more information, speak to your doctor and other members of your health care team. You may also want to check the following resources from the National Kidney Foundation:

NKF Publications

- ❖ *About Chronic Kidney Disease: A Guide for Patients and Their Families*
- ❖ *Choosing a Treatment for Kidney Failure*
- ❖ *Diabetes and Chronic Kidney Disease* (available in English and Spanish)
- ❖ *Diabetes and Chronic Kidney Disease: A Guide for American Indians and Alaska Natives*
- ❖ *Health Facts for Teens With Chronic Kidney Disease: What You Should Know About Lipids and Your Heart*
- ❖ *High Blood Pressure and Your Kidneys* (available in English and Spanish)
- ❖ *Keeping Your Heart Healthy on Dialysis: What You Should Know About Lipids*
- ❖ *Keeping Your Heart Healthy When You Have a Kidney Transplant: What You Should Know About Lipids*
- ❖ *Lab Log* (for keeping track of important lab results)
- ❖ *Nutrition and Chronic Kidney Disease*
- ❖ *NKF Family Focus* (a quarterly newspaper for people with chronic kidney disease and their families)
- ❖ *Staying Fit With Chronic Kidney Disease*
- ❖ *What You Need to Know When You Have Chronic Kidney Disease*
- ❖ *Winning the Fight Against Silent Killers: A Guide for African Americans*

NKF Web Site

- ❖ If you have Internet access, you can find more information by visiting our Web site at www.kidney.org

NKF Patient and Family Council

You may also be interested in becoming a member of the National Kidney Foundation's Patient and Family Council, the largest patient organization dedicated to issues affecting patients with chronic kidney disease and their families. Membership in the council is free. For more information and to receive a membership application, call the National Kidney Foundation at 1-800-622-9010.



Table. Diet Suggestions

FOOD	CHOOSE	DECREASE
Eggs	Limit to 2 egg yolks a week, or use 2 egg whites in place of one egg, or use cholesterol-free egg substitutes regularly	Egg yolks and whole eggs (often hidden ingredients in cookies, cakes, desserts)
Meat, poultry	Lean cuts of meat with fat trimmed off; chicken and turkey without skin Low-fat tofu, tempeh, soy-protein products	High-fat meats (sausage, bacon, organ meats such as liver, kidneys, sweetbreads, brain) Sandwich-style meats such as ham, cold cuts, processed meats Meats that have fat you can see. Cut off before eating or drain off while cooking. Chili, homemade soups or stews (cook, chill, remove fat and reheat)
Fish and shellfish	Fish or shell fish, baked or broiled without additional fat	Do not fry
Dairy products	Skim milk, 1% fat milk, low-fat buttermilk, evaporated skim milk, fat-free yogurt, low-fat cottage cheese, cheeses with no more than 3 grams of fat per ounce	Whole milk, cream, half-and-half, imitation milk products, whipped cream, whole-milk or custard-style yogurt, whole-milk ricotta, hard cheeses (like Swiss, American, cheddar, muenster), cream cheese, sour cream

Diet Suggestions (cont'd)

FOOD	CHOOSE	DECREASE
Fats and oils	<p>Mono- and polyunsaturated oils—safflower, sunflower, corn, soybean, cottonseed, canola, olive, peanut</p> <p>Margarine made from any of the oils above, especially soft and liquid forms; cholesterol-lowering margarines made from plant sterols and plant stanols</p> <p>Salad dressings made from any of the oils above</p>	<p>Hydrogenated and partially hydrogenated fats Coconut, palm kernel, palm oil; coconut and coconut milk products</p> <p>Butter, lard, hard shortening, bacon fat, stick margarine</p> <p>Dressing made with egg yolk, cheese, sour cream or milk</p> <p>Certain nuts like Brazil nuts and macadamia nuts</p>
Breads and grains	<p>Breads without toppings or cheese ingredients</p> <p>Cereals—oat, wheat, corn, rice, multigrain</p> <p>Crackers—low-fat animal crackers, unsalted soda crackers and bread sticks, melba toast</p> <p>Homemade breads made with recommended fats and oils</p>	<p>Breads of high-fat content such as croissants, flaky dinner rolls</p> <p>Granolas with coconut or hydrogenated fats</p> <p>High-fat crackers (more than 3 grams of fat per serving on label)</p> <p>Commercially baked pastries and biscuits</p>
Fruits and vegetables	<p>Fresh and frozen fruits and vegetables; dried fruits, low-sodium canned fruits and vegetables</p>	<p>Canned fruits in heavy syrup; coconut, vegetables prepared in butter or cream sauce; avocado</p>

Diet Suggestions (cont'd)

FOOD	CHOOSE	DECREASE
Snacks and sweets (may be restricted with diabetes)	Frozen desserts—low-fat and non-fat sherbet, sorbet, fruit ice	Ice cream and regular frozen desserts
	Cookies and pies made with egg whites or egg substitutes or recommended fats; angel food cake; low-fat puddings; homemade puddings made with skim or low-fat milk	Commercially baked cookies, cakes, cream and regular pies, frosted and pound cakes; commercially fried pastries such as doughnuts; commercially made puddings; whipped cream
	Jelly beans and hard candy; plain popcorn	Chocolate, potato chips, nachos, buttered popcorn
	Fruit juices, tea, coffee, diet soda	Milkshakes, floats, eggnog

Answers to Quiz

- | | |
|------|-------|
| 1. F | 6. F |
| 2. T | 7. T |
| 3. T | 8. F |
| 4. T | 9. F |
| 5. F | 10. T |

Questions for My Doctor

Questions for My Doctor

More than 20 million Americans—one in nine adults—have chronic kidney disease, and most don't even know it. More than 20 million others are at increased risk for kidney disease. The National Kidney Foundation, a major voluntary health organization, seeks to prevent kidney and urinary tract diseases, improve the health and well-being of individuals and families affected by these diseases, and increase the availability of all organs for transplantation. Through its 51 affiliates nationwide, the foundation conducts programs in research, professional education, patient and community services, public education and organ donation. The work of the National Kidney Foundation is funded by public donations.

The Foundation gratefully acknowledges Amgen, Founding and Principal Sponsor of K/DOQI™

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