

**National Kidney
Foundation™**

**A Guide to Heart Health
for Dialysis Patients**





Cardiovascular disease (heart and blood vessel disease) is very common in people with chronic kidney disease (CKD). It is the leading cause of early death for these patients. This booklet has been written to help dialysis patients learn how to maintain heart health. If you already have heart and blood vessel disease, the information explains how to keep it from getting worse. This booklet helps you learn about:

- Controlling health problems (like diabetes and high blood pressure) that make heart and blood vessel disease more likely
- Making lifestyle changes (like eating healthy and exercising more) to help you keep your heart healthy
- Tests you should have to check for heart and blood vessel problems
- Treatments you may need if you develop heart and blood vessel disease

What is cardiovascular disease?

Cardiovascular disease means diseases of the heart and blood vessels (arteries and veins) within your entire body, including the brain, heart, legs and lungs. Cardiovascular disease does not happen quickly. Over time, the arteries that bring blood to the heart and brain can become blocked from a buildup of cells, fat and cholesterol (plaque). Reduced oxygen to the heart muscle from blockages in the arteries causes heart attacks. Lack of oxygen to the brain due to a blood clot or bleeding in the brain from a broken blood vessel causes a stroke.

Why are people with CKD more likely to get cardiovascular disease?

Certain conditions associated with CKD increase the likelihood of developing heart and blood vessel disease. These include:

- Diabetes
- High blood pressure
- Anemia (a low red blood cell count that makes you feel tired)
- High levels of fats like cholesterol in the blood
- Poor balance of minerals like calcium and phosphorus leading to bone disease and heart problems

Other things that increase your chance of developing heart and blood vessel disease include:



- A family history of heart problems
- A family history of CKD
- Older age

Can dialysis patients do anything to maintain heart health?

Yes. Your health care team should develop a care plan based on your special needs as a dialysis patient. You are also an important member of your health care team. Follow the 10 “Heart Tips” in this booklet for a healthier heart.



TIP 1

Control Blood Sugar if You Have Diabetes

- Check your blood sugar level as often as your doctor prescribes.
- Follow your treatment plan of medications, diet and exercise.
- Ask your doctor about which diabetes medications are best for you. Some medicines may be better than others when you are on dialysis.



TIP 2

Control High Blood Pressure

- Take your blood pressure medicines as prescribed. Some medicines called angiotensin-converting enzyme inhibitors and angiotensin receptor blockers help to protect your kidneys and heart. Ask your doctor about these if you do not take them now.
- Know your blood pressure reading before and after dialysis. It should be less than 140/90 before your treatment and less than 130/80 after it.
- Follow your fluid and sodium (salt) limits to prevent fluid buildup.
- Your diet should not include more than 2 grams of sodium or 5 grams of salt a day.
- Speak to your dietitian once a month.
- Ask your dialysis care team if the following steps could help prevent fluid buildup:
 - Increasing ultrafiltration (fluid removal) during dialysis
 - Longer or more frequent dialysis treatments



What tests should I have to find out if I have cardiovascular disease?

You should be checked for heart and blood vessel disease when you first start on dialysis. The tests should include:

- An electrocardiogram (ECG) – A graphic record of the heart’s electrical activity that tells your doctor whether your heart rate and heart beats are normal or if heart damage has occurred. The ECG should be repeated once a year.
- An echocardiogram – Sends sound waves into the chest to show the shape and movement of the heart valves as well as the size of the heart chambers and how well they are working.

In some cases, you may also need:

- Stress echocardiography – To help check for blockage in the arteries leading to the heart. This test involves taking an echocardiogram before and during or right after physical stress, usually exercise on a treadmill. Sometimes a type of test called nuclear imaging may be used instead.
- An angiogram (x-ray of the arteries or heart) – To pinpoint an area of blockage and help decide on the best treatment for you. A small tube called a catheter is inserted into a blood vessel in your groin or arm. The tip of the tube is positioned either in the heart or at the beginning of the arteries supplying the heart. A special fluid called contrast dye is injected. The dye is visible by x-ray, and the pictures obtained are called angiograms. Your



TIP 3

Reduce High Cholesterol Levels

- Make sure you have an annual blood test for the following:
 - Total cholesterol (should be less than 200)
 - Low-density lipoprotein (LDL) “bad” cholesterol (should be less than 100)
 - High-density lipoprotein (HDL) “good” cholesterol (should be above 40)
 - Triglycerides (should be below 150)
- If your levels are not in the healthy range, you should:
 - Follow a low-fat diet.
 - Increase physical activity.
 - Ask about a medicine to help lower cholesterol, if necessary.

doctor may decide to use a special type of contrast dye that is safe for most people with CKD.

What treatment will I need if I have cardiovascular disease?

The type of medical attention you receive depends on the exact type of heart disease you have. Your care will be similar to what is used to treat heart and blood vessel disease in people with CKD. Your treatment may include:



- Medications
- Angioplasty to clear a clogged artery
- Coronary bypass, which uses a piece of vein from your leg to bypass a clogged or narrow area of a coronary artery (an artery that supplies oxygenated blood to the heart muscle)

Some of your treatments may need to be adjusted to your special needs as a dialysis patient. For example, the doses of some of your medications may be adjusted.



TIP 4

Follow a Heart-Healthy Diet

- Eat foods low in saturated fats and cholesterol (see the NKF's booklet *Heart Health on Dialysis* for more information).
- Limit high-phosphorus foods like dairy, nuts, seeds, dried beans and peas (see Heart Tip #7).
- Speak to your dietitian about how to get the right amount of protein and calories to stay at a healthy weight.
- Increase foods that are high in heart-healthy omega-3 fatty acids, such as salmon, flaxseeds, soybeans, walnuts and canola oil.



TIP 5

Increase Physical Activity

- Ask your doctor if you need physical therapy first to improve your strength and endurance before increasing physical activity.
- Start exercising slowly and build gradually to about 30 minutes most days of the week.
- Exercise regularly to help:
 - Improve unhealthy cholesterol levels.
 - Reduce excess weight.
 - Control blood sugar and blood pressure.
 - Improve heart and lung fitness.



TIP 6

Treat Anemia

- People with CKD often get anemia (a low red blood cell count) because they do not have enough of the hormone erythropoietin (EPO) to stimulate red blood cell production.
- If you have anemia, you should receive an erythropoietin-stimulating agent (ESA) and iron supplements.
- Your treatment goal is to reach a hemoglobin level of 11 or greater.
- Correcting anemia helps prevent thickening of the muscle on the left side of the heart, which makes it harder for the heart to pump blood.



TIP 7

Keep Calcium and Phosphorus in Balance

- People with CKD develop calcium and phosphorus imbalance, which can lead to bone and heart disease.
- Keep these two important minerals in balance by:
 - Following a low-phosphorus diet (see the NKF's fact sheet *Phosphorus and Your CKD Diet* for tips)
 - Taking medicines called phosphate binders with your meals and snacks
 - Taking an active form of vitamin D if prescribed by your doctor



TIP 8

Stop Smoking

- Smoking increases your risk for heart and blood vessel disease.
- If you smoke, ask your doctor to refer you to a program to help you quit.



TIP 9

Talk to Your Doctor About Taking Aspirin to Prevent Heart Attacks

- Your doctor may recommend a low-dose aspirin to help prevent heart attacks.
- Your doctor will need to make sure aspirin does not cause you to have bleeding problems.



TIP 10

Reduce Stress

- Stressful feelings like sadness, anger and worry may contribute to heart disease.
- Your social worker can help you learn how to cope with stressful feelings and should speak with you when you start dialysis and at regular intervals after that.
- Psychological counseling and medications may also be recommended.

Key points to remember:

- Cardiovascular disease is a condition that affects your heart and blood vessels so they do not work as well to pump blood to your organs and tissues.
- You can follow some steps to keep your heart and blood vessels healthy and to keep heart disease from getting worse if you already have it. This includes controlling other health problems that make you more likely to have heart problems, following a heart-healthy diet, increasing physical activity, stopping smoking and reducing stress.



- Speak to your doctor and other members of your health care team about developing a care plan that is specific to your needs as a dialysis patient.
- As a dialysis patient, you should have these tests:
 - An ECG each year to check for heart damage
 - An echocardiogram when you first start dialysis
- If needed, other tests may include stress echocardiography or nuclear imaging and angiography.
- If you develop heart and blood vessel disease, you will need special medical attention. You will receive the same type of treatments as people who do not have CKD; however, some adjustments may be necessary because of your special needs as a dialysis patient. Specific treatment will depend on your exact type of heart and blood vessel disease. Your doctor will speak with you about your treatment plan.

Where can I get more information?

You can speak to your doctor or other members of the health care team, or you can call the National Kidney Foundation for information. To learn more about kidney disease, you may also want to read these free publications from the National Kidney Foundation:

- *Heart Health on Dialysis: What You Need to Know About Lipids* (11-50-2107/in Spanish 11-50-2191)
- *Take Steps to Keep Your Bones Healthy and Strong: For People With Chronic Kidney Disease (Stage 5)* (11-10-0228/in Spanish 11-10-0224)
- *Nutrition and Hemodialysis* (11-50-0136)
- *Nutrition and Peritoneal Dialysis* (11-50-0140)
- *Dining Out With Confidence: A Guide For Kidney Patients* (11-10-0405)
- *Get the Facts on High Blood Pressure and Your Kidneys* (11-10-0211)
- *Staying Fit With Chronic Kidney Disease* (11-10-0502)
- *High Blood Pressure and Chronic Kidney Disease (Stages 1–4)* (11-10-0212/in Spanish 11-10-0214)
- *Diabetes and Chronic Kidney Disease* (11-10-0209/in Spanish 11-10-0242)
- *Managing Anemia When You Are On Dialysis (Stage 5)* (11-50-0217/in Spanish 11-50-0223)

- *Hemodialysis: What You Need to Know (11-50-0214)*

Fact Sheets (available on the NKF Web site at www.kidney.org):

- *Phosphorus and Your CKD Diet*
- *Sodium and Your CKD Diet: How to Spice Up Your Cooking*
- *Cholesterol and Chronic Kidney Disease*
- *Carbohydrate Counting With Chronic Kidney Disease*

Quarterly Newspaper:

Family Focus is published four times a year for dialysis patients and their families and friends. Ask for a copy at your dialysis center or call the NKF at 800.622.9010.

Internet:

If you have Internet access, you can get more information by visiting the National Kidney Foundation Kidney Learning System (KLS) Web site at www.kidney.org/KLS

Membership Organization:

You may also be interested in becoming a member of the NKF's Patient and Family Council, the largest patient organization dedicated to issues affecting patients with CKD and their families. Membership in the council is free. For more information and to receive a membership application, call the NKF at 800.622.9010 or go to www.kidney.org/patients/pfc

National Kidney Foundation's Kidney Disease Outcomes Quality Initiative

Did you know that the National Kidney Foundation's Kidney Disease Outcomes Quality Initiative (NKF-KDOQI™) develops guidelines that help your doctor and health care team make important decisions about your medical treatment? The information in this booklet is based on the NKF-KDOQI™ recommended guidelines for dialysis, and it's very important for you to know.

Stages of Chronic Kidney Disease

There are five stages of chronic kidney disease. They are shown in the table below. Your doctor determines your stage of kidney disease based on the presence of kidney damage and your glomerular filtration rate (GFR), which is a measure of your level of kidney function. Your treatment is based on your stage of kidney disease. Speak to your doctor if you have any questions about your stage of kidney disease or your treatment.

Stages of Kidney Disease

Stage	Description	Glomerular Filtration Rate (GFR)*
1	Kidney damage (e.g., protein in the urine) with normal GFR	90 or above
2	Kidney damage with mild decrease in GFR	60 to 89
3	Moderate decrease in GFR	30 to 59
4	Severe reduction in GFR	15 to 29
5	Kidney failure	Less than 15

*Your GFR number tells your doctor how much kidney function you have. As chronic kidney disease progresses, your GFR number decreases.

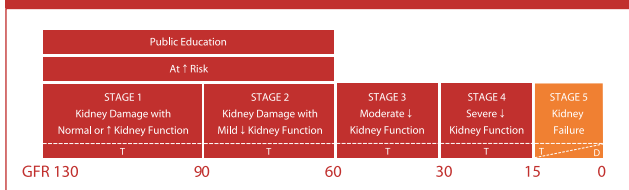
More than 20 million Americans—one in nine adults—have chronic kidney disease, and most don't even know it. More than 20 million others are at increased risk. The National Kidney Foundation, a major voluntary health organization, seeks to prevent kidney and urinary tract diseases, improve the health and well-being of individuals and families affected by these diseases, and increase the availability of all organs for transplantation. Through its 47 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.

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Kidney Learning System (KLS)TM

A Curriculum for CKD Risk Reduction and Care



Light-shaded boxes indicate the scope of content in this KLS resource.
 GFR = Glomerular Filtration Rate; T = Kidney Transplant; D = Dialysis



National Kidney Foundation
 30 East 33rd Street
 New York, NY 10016
 800.622.9010

www.kidney.org

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