

National Kidney
Foundation®

Iron and Chronic Kidney Disease:

What You Need to Know



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 anemia.

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.

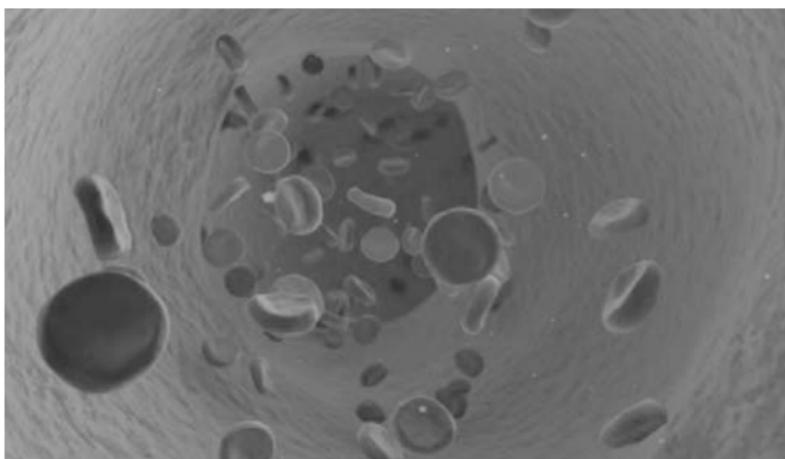
If you have chronic kidney disease (CKD), your body may be lacking an important mineral called iron. The purpose of this booklet is to answer some common questions about iron, and how important it is for people with CKD to have healthy iron levels.

What is iron?

Iron is a mineral needed for healthy blood cells and for overall good health. Iron is found in a wide variety of foods. You can also get iron from supplements taken by mouth and from iron medicines prescribed by your doctor.

What does iron do?

Iron helps your body in many ways. One way is to help make red blood cells. Red blood cells carry oxygen from your lungs to all parts of your body, giving you the energy you need for your daily activities (see picture below). The kidneys signal the body to make enough red blood cells, and iron helps in making them healthy red blood cells.



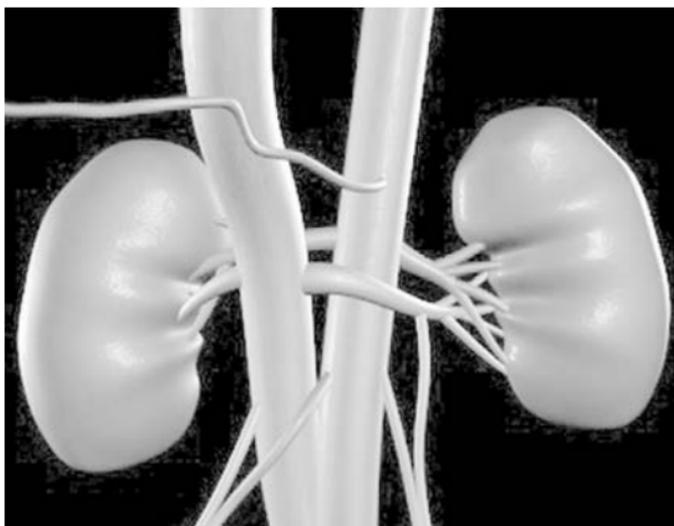
Red blood cells carry oxygen to all parts of your body.

What is CKD?

Chronic kidney disease (CKD) includes conditions that damage your kidneys and decrease their ability to keep you healthy. In the early stages of CKD, symptoms are usually silent—you may not be aware that your kidney function is reduced. If CKD gets worse and your kidneys can no longer properly filter blood, waste products build to high levels, making you feel sick. This may happen slowly over a long period of time. People with CKD may develop complications such as high blood pressure, anemia, weak bones and poor nutrition. Also, CKD increases your risk of having heart and blood vessel diseases. If CKD gets worse, it may eventually lead to kidney failure, which requires dialysis or a kidney transplant to keep you alive. CKD may be caused by diabetes, high blood pressure or other disorders.

FACT

Your kidneys make an important hormone called erythropoietin (EPO). EPO signals your body to make red blood cells. When you have kidney disease, you may not be able to make enough EPO, a problem that causes your red blood cell count to drop and anemia to develop. Some people with CKD need a medicine called an erythropoiesis-stimulating agent (ESA) to do the work of EPO (see picture on page 5).



The kidneys signal the body to make red blood cells.

Early detection of CKD and timely treatment can often keep it from progressing. See page 2 for a table showing the stages of CKD.

Why is iron important in CKD?

Many people with CKD develop anemia because their red blood cell count is too low. Iron is important in making healthy red blood cells. Therefore, ensuring enough iron is in the body helps to correct anemia. If your kidney doctor prescribes an ESA for you, you will need extra iron for the medicine to work at its best. This is because your iron supply is used up faster if you are taking an ESA medicine.

How much iron do I need?

Your body needs enough iron to reach a healthy *hemoglobin* level. Iron and oxygen make up hemoglobin, which is the part of the red blood cells that carries oxygen



through your body. Therefore, measuring the amount of hemoglobin in your blood is one way to know if your body has enough iron. The normal hemoglobin level is 12.0 for women and 13.5 for men.

How else is my iron level tested?

Two important blood tests can tell your doctor if you have enough iron. They are called *transferrin saturation (TSAT)* and *ferritin*.

- Your TSAT level should be at least 20 percent.
- Your ferritin level should be at least 100 ng/mL.

Your iron testing should be done every month until your hemoglobin target is reached. After that, testing every three months is recommended.

FACT

Iron is important in treating anemia. Without enough iron you will not reach and maintain your target hemoglobin level.

How will I feel if my iron level is low?

If your iron level is low, you may have low hemoglobin, which can cause you to:

- feel more tired than usual
- feel weaker
- look pale
- feel “down” or depressed
- feel short of breath with activity
- have chest pain
- feel dizzy or light-headed
- feel numbness or coldness in your hands and feet
- have a faster heartbeat

TIP

See your health care provider as soon as you can if you are experiencing these symptoms. Write down how you feel, your allergies, medications, previous medical procedures and other health problems. Discuss how you are feeling. You may want to ask:

- “Do I have enough iron?”
- “What can I do to feel better?”



What is the treatment for low iron?

If you have low iron and low hemoglobin, your doctor will develop a treatment plan that is right for you. One or more of the following may be suggested:

- Increasing the iron in your diet by eating foods rich in iron such as red meat, leafy green vegetables and eggs. A dietitian can help you plan meals to include foods that are good sources of iron and other minerals, and are suitable choices when you have CKD.
- Iron supplements by mouth as a tablet or liquid.
- A multivitamin and mineral supplement that contains iron, vitamin B₁₂ and folic acid. Ask your doctor, dietitian or pharmacist

TIP

Iron supplements taken by mouth can affect other medicines you may be taking. Talk to your doctor, dietitian or pharmacist before taking iron tablets.

how to choose a supplement suitable for people with kidney disease.

- Iron medicine given by injection into a vein at your doctor's office or clinic.

TIP

Research is always being done to look for new medicines that can improve iron deficiency in people with CKD. Ideally, new treatments can make sure you have enough iron, and can have long-lasting benefits and few side effects. Talk to your doctor about the availability of new iron treatments.

Where can I get more information?

The more you know about iron and CKD, the greater the likelihood you will have healthy iron and hemoglobin levels.



Seek advice from a pharmacist, your family doctor, your kidney doctor or a dietitian. Ask these people for sources of information on learning about iron.

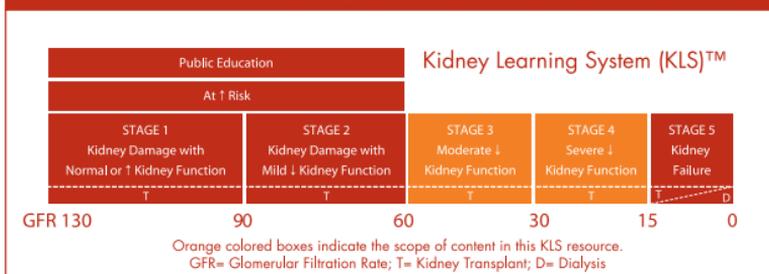
Contact the National Kidney Foundation at 800.622.9010 to receive a free copy of these booklets or information about other NKF resources. Make sure you indicate the booklet number where shown. Some booklets can be downloaded from the NKF Web site www.kidney.org

- *Are You at Increased Risk for Chronic Kidney Disease?* (English: 11-10-1814; Spanish: 11-10-1816)
- *Anemia and Chronic Kidney Disease, Stages 1–4* (English: 11-10-0283; Spanish: 11-10-0287)
- *Diabetes and Chronic Kidney Disease, Stages 1–4* (English: 11-10-0209; Spanish: 11-10-0240)
www.kidney.org/atoz/atozcopy.cfm?pdfink=diabetes.pdf
- *Nutrition and Early Kidney Disease: Are You Getting What You Need? (Stages 1–4)* (English: 11-50-0114)
- *Your Kidneys: Master Chemists of the Body* (11-10-0103)
www.kidney.org/atoz/atozcopy.cfm?pdfink=masterchemists.pdf

You can also contact your local NKF office for information about CKD and for upcoming community CKD events, including free kidney health screenings. Visit www.kidney.org to locate your nearest NKF office.

More than 26 million American adults and thousands of American children have chronic kidney disease. Most do not know they have this condition. Further, millions of people with diabetes, hypertension and other diseases do not realize they are at risk for developing 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 Affiliates and Divisions nationwide, the Foundation conducts programs in research, professional education, patient advocacy and community services, public education and organ donation.

A Curriculum for CKD Risk Reduction and Care



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

www.kidney.org



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