

What You Need  
to Know About **Anemia**  
**and Chronic**  
**Kidney Disease**



**NKF** National Kidney  
Foundation®  
*Making Lives Better*

Anemia is a serious condition. Millions of Americans suffer from this disorder. Anemia occurs when your red blood cells are in short supply. Red blood cells carry oxygen from your lungs to all your organs and tissues, providing energy for your daily activities.

## What are the symptoms of anemia?

The symptoms of anemia vary. In many cases, anemia is not detected because it is hidden by other chronic conditions. If you have anemia, you may:

- ❖ look pale
- ❖ feel more tired
- ❖ have little energy for your daily activities
- ❖ have a poor appetite
- ❖ have trouble sleeping
- ❖ have trouble thinking clearly
- ❖ feel dizzy or have headaches
- ❖ have a rapid heartbeat
- ❖ feel short of breath
- ❖ feel depressed or “down in the dumps.”



## What causes anemia?

Anemia may be caused by:

- ❖ too little iron in your body
- ❖ loss of blood due to accidents, surgery, stomach ulcers, kidney or bladder tumors, cancer or polyps in the intestines and other causes
- ❖ chronic diseases like kidney disease, liver disease, HIV/AIDS, systemic lupus and cancer
- ❖ too little vitamin B12 or folic acid in your body
- ❖ an infection or inflammation in your body
- ❖ a poor diet
- ❖ diseases that harm or destroy your blood cells, such as sickle cell disease.

If you have anemia, your doctor will check for the exact cause in order to develop the best treatment plan for you.

## Why does chronic kidney disease cause anemia?

Most people with chronic kidney disease develop anemia. This occurs because the diseased kidneys no longer make enough of a hormone called erythropoietin (*ee-rith-row-po-eh-tin*), also called EPO for short. This hormone tells your bone marrow to make more red blood cells. Anemia may occur even with moderate loss of kidney function. If you have chronic kidney disease, you should be checked for anemia. If anemia is found, you should be treated. Studies have shown that chronic kidney disease patients do better overall when anemia is treated.

## How do I know if I have anemia?

If you have symptoms of anemia, you should see your doctor. The doctor will do some tests to check:

- ❖ Your hemoglobin (Hgb) level. Hemoglobin is the part of red blood cells that carries oxygen

throughout your body. Normal hemoglobin levels are from 12.5 to 15 g/dL for women and from 14 to 16 g/dL for men.\* Measuring your hemoglobin is the preferred test to check for anemia as it is considered the most accurate.

- ❖ Your hematocrit (Hct or "crit"), which tells how much of your blood is made up of red blood cells. Normal hematocrits are from 38 to 47 percent for women and from 42 to 50 percent for men.\*

## Speak to Your Doctor

If you think you might have anemia, see your doctor. Here are some tips to help you get the most from your visit:

- ❖ Write down your symptoms, allergies, medications and previous medical procedures. Show this to your doctor.
- ❖ Tell your doctor about any health problems you may have, how your treatments are working and how you are feeling.
- ❖ Ask your doctor what your hemoglobin is and keep a record of it.
- ❖ During your doctor's visit bring up all issues that concern you.
- ❖ Make sure you understand what your doctor has said and the decisions he or she has made about your treatment plan.
- ❖ Take notes to help you remember what your doctor said.

## How is anemia treated?

Your treatment will depend on the exact cause of your anemia. It may include taking supplements of iron, vitamin B12 or folic acid. Blood transfusions may be used to treat some types of anemia such as that caused by sickle cell disease. Patients whose anemia is due to chronic kidney disease are treated with medications to increase red blood cell produc-

\* From the *Merck Manual of Medical Information*



tion, which is measured by an increase in hemoglobin levels. An example is epoetin alfa, which is almost identical to the natural hormone (erythropoietin) made by the kidneys. A newer medication called darbepoetin alfa works in the same way as the natural hormone but lasts longer in the body and may be given less often. These medications may be given by injections under the skin (subcutaneous, or SC) or into a vein (intravenous, or IV). You and your doctor can decide which method is best for you. For chronic kidney disease patients, the goal of anemia treatment is to reach and maintain a hemoglobin level of at least 11 to 12.

## **Will I need to take supplements?**

If you have a deficiency of iron, vitamin B12 or folic acid, you may need to take supplements. Your doctor may do some tests to check your levels of these important vitamins and minerals. A vitamin B12 deficiency can be treated by injections into a muscle. Extra folic acid can be taken in pill form. If you need extra iron, your doctor may order iron pills.

If you have chronic kidney disease and you are receiving a medication to increase your red blood cell production, your doctor will check to make

sure you have enough stores of iron in your body. Without enough iron in your body, the drug will not work effectively. Two tests called TSAT (*tee-sat*) and ferritin (*ferry-tin*) can show if your body has enough iron. Your TSAT should be at least 20 percent and your ferritin should be at least 100. You may need to receive iron by injection to reach these target levels.

## **Will I need to make changes in my diet?**

Foods that are rich in iron, folic acid and vitamin B12 may be helpful in some cases. Ask your doctor whether changes in your diet could help your anemia. A registered dietitian can help you plan your meals to include foods that are good sources of these vitamins and minerals. If you have chronic kidney disease, check with your doctor before making any changes in your diet.

## **What if my anemia is not treated?**

If untreated, anemia can cause serious problems. Anemia can make your other health problems worse. If anemia gets worse, the lower level of red blood cells in your body can make your heart work harder. This can lead to thickening of the left side of the heart, a serious condition called left ventricular hypertrophy or LVH. Unfortunately, many people with chronic kidney disease are not treated for anemia until their kidneys have failed, and they need dialysis. Early detection of chronic kidney disease will help your doctor track your hemoglobin and treat you for anemia if needed.

## Key Points to Remember:

- ✓ Anemia means you have a short supply of red blood cells in your body. Red blood cells carry oxygen to all your organs and tissues.
- ✓ Anemia is diagnosed by checking your hemoglobin (Hgb) or hematocrit (Hct) levels.
- ✓ If you have anemia, your doctor will check for the exact cause in order to plan your treatment better.
- ✓ The symptoms of anemia may vary, but commonly include: fatigue, little energy for daily tasks, poor appetite, trouble sleeping, dizziness, headaches, poor concentration, rapid heartbeat and shortness of breath.
- ✓ Chronic kidney disease may cause anemia because of a low level of the hormone called erythropoietin, or EPO, which stimulates red blood cell production.
- ✓ The treatment for anemia depends on the exact cause, but it may involve: taking iron, vitamin B12 or folic acid supplements, taking drugs that increase red blood cell production and sometimes, transfusions.
- ✓ In chronic kidney disease, iron supplements are often needed along with EPO to treat anemia.
- ✓ If untreated, anemia can lead to serious complications, such as heart problems.

## What if I have more questions?

You should speak to your doctor. You may also want to read the following publications available from the National Kidney Foundation:

- ❖ *About Chronic Kidney Disease: A Guide for Patients and Their Families*
- ❖ *Are You At Increased Risk for Chronic Kidney Disease?*
- ❖ *Your Kidneys: Master Chemists of the Body*
- ❖ *Warning Signs of Kidney and Urinary Tract Disease.*

*More than 20 million Americans—one in nine adults—have chronic kidney disease, and most don't 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.*

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