MANAGING ANEMIA

When You Have Kidney Disease or Kidney Failure

National
Kidney
Foundation™

www.kidney.org

About the Information in this Booklet

Did you know that the National Kidney Foundation (NKF) offers guidelines and commentaries that help your healthcare provider make decisions about your medical treatment? The information in this booklet is based on those recommended guidelines.

Stages of Kidney Disease

There are five stages of kidney disease. They are shown in the table below. Your healthcare provider 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 kidney function. Your treatment is based on your stage of kidney disease. Speak to your healthcare provider 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 healthcare provider how much kidney function you have. As chronic kidney disease progresses, your GFR number decreases.

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What is anemia?

Anemia happens when your body doesn't have enough healthy red blood cells. Red blood cells are important. They carry oxygen from your lungs to all parts of your body, giving you the energy you need for your daily activities.

Anemia can cause you to:

- Feel 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"
- Look pale

Do you know these words?

Some words used in this booklet may be new to you. To help you get to know them, there's a list of "Words to Know" at the end of this booklet (p. 20).

What are some causes of anemia?

Anemia can be caused by:

- Diseases like kidney disease, liver disease, HIV/AIDS, systemic lupus erythematosus, or cancer
- Diseases that harm or destroy your blood cells, such as sickle cell disease
- Blood loss from accidents, surgery, stomach ulcers, kidney or bladder tumors, cancer or polyps in the intestines, or other causes
- An infection or inflammation in your body
- Too little iron, vitamin B12, or folic acid in your body

  Iron is a mineral that you get from eating foods like liver and leafy green vegetables. Both vitamin B12 and folic acid are important vitamins that you get from eating foods like eggs, fish, and liver. Your body needs these important

minerals and vitamins to help make red blood cells. But if you have kidney disease or kidney failure, you will need to follow a special diet that restricts foods like liver or leafy green vegetables, so getting enough iron from foods will be difficult.

Before starting treatment for anemia, your healthcare provider will order tests to find the exact cause.

Why do people with kidney disease or kidney failure get anemia?

Your kidneys make an important hormone called erythropoietin (EPO). Hormones are "chemical messengers" that your body makes to help your body work and keep you healthy. EPO tells your body to make red blood cells. When you have kidney disease or kidney failure, your kidneys cannot make enough EPO. This causes your red blood cell count to drop and anemia to develop.

Tip

Not having enough EPO (a hormone made by your kidneys) is the most common cause of anemia in patients with kidney disease and kidney failure. EPO tells your body to make red blood cells. When your kidneys no longer make enough EPO, treatment with drugs called erythropoiesis-stimulating agents (ESAs) can help.

What are kidney disease and kidney failure?

Healthy kidneys do many important jobs. Among other things, they remove waste products and extra water from your body. They also help make red blood cells.

If you have kidney disease, it means your kidneys are damaged. They cannot do these important jobs well. Kidneys can become damaged from a physical injury or a disease like diabetes, high blood pressure, or other disorders. Treatment can help keep kidney disease from getting worse. But if kidney disease does get worse, it can lead to kidney failure.

If you have kidney failure, it means your kidneys do not work well enough to keep you alive. You must have dialysis treatment for the rest of your life, or a kidney transplant. There are two types of dialysis — hemodialysis and peritoneal dialysis.

To learn more about a kidney transplant or dialysis, ask your healthcare provider or call the NKF Cares Patient Help Line toll-free at **855. NKF.CARES** (855.653.2273) or email **nkfcares@kidney.org**.

Is everyone with kidney disease or kidney failure at risk for anemia?

Most people with kidney disease or kidney failure will get anemia. Anemia can happen early in the course of kidney disease and grow worse as kidneys lose their ability to work well and make EPO. Anemia is especially common if you:

- Have diabetes
- Are Black
- Have moderate or severe loss of kidney function (stage 3 or 4)
- Have kidney failure (stage 5)
- Are female

Tip

If you are Black or have diabetes along with kidney disease, you are more likely to get anemia and at an earlier stage.

How do I know if I have anemia?

Not everyone with anemia has symptoms. If you have kidney disease or kidney failure, you should have a simple blood test to measure your hemoglobin. Hemoglobin is the part of red blood cells that carries oxygen through your body. If your hemoglobin is lower than the normal range (which is 12.0 for women and 13.5 for men), it is likely you have anemia. In that case, your healthcare provider will check to find out what caused your anemia and develop a treatment.

Tip

Speak to your healthcare provider if you think you have anemia. Make a list of questions. Write down your symptoms, allergies, medications, and previous health problems. Show the list to your healthcare provider. Discuss how you are feeling and ask questions.

How often should I be checked for anemia?

How often you are checked for anemia depends on many things, including your stage of kidney disease. In general, you should be checked for anemia at least once per year. Some people may need to be checked more often.

How is anemia treated?

Your treatment will depend on what caused your anemia. If your anemia is due to kidney disease or kidney failure, you may be treated with:

- **Drugs called erythropoiesis-stimulating agents (ESAs)**

  ESAs help your body make red blood cells. ESAs are usually given to you as an injection under the skin in your healthcare provider's office. This is called a "subcutaneous injection" or" SC."

- **Extra iron**

  Your body needs iron to make red blood cells, especially when you are receiving ESAs. Without enough iron, your ESA treatment will not work as well. Iron can be given to you as a pill, or administered directly into a vein

in your healthcare provider's office (called "intravenous iron" or "IV iron"). For most people, IV iron works best. You and your healthcare provider will decide which method is best for you.

Tip

If you are on hemodialysis, your ESA and extra iron can be given to you as an injection into the blood tubes during your dialysis treatment. You and your healthcare team will decide which method is best for you.

What is the goal of anemia treatment?

The goal is to increase your hemoglobin level to a range that works best for you. This range is different for everyone. Your healthcare provider will decide what is best and safest. As you get closer to your range, you should have more energy and feel less tired.

Another goal is to keep you from needing blood transfusions. They could interfere with having a successful kidney transplant in the future.

How much ESA will I need?

You will be given enough ESA to increase your hemoglobin gradually. How much ESA you need and how often you receive it depends on:

- Your current hemoglobin level
- How well you respond to treatment with ESA
- How you receive your ESA—as an injection under the skin or through the blood tubes during dialysis
- The type of ESA you receive

  There are different types of ESAs available—short-acting ESAs or long-lasting ESAs. You and your healthcare provider will decide which type is best for you.

How will my healthcare provider know if I am responding to ESA?

Your healthcare provider will check your hemoglobin level regularly. This shows how well you are doing. Your dose of ESA may need to be changed, depending on how well you respond to your treatment.

Will I need extra iron?

Your body needs iron to make red blood cells. Once you start taking an ESA, your body will make more red blood cells, and your body's iron supply will be used up faster. Without extra iron, your ESA treatment will not work as well.

Tip

Not everyone with kidney disease will need treatment with ESAs. For some people with early kidney disease, taking extra iron may be enough to boost your body's ability to make red blood cells.

How much iron will I need?

Your healthcare provider will decide how much iron you need and how often you get it, based on your hemoglobin level, ESA dose, and the results of your iron tests. The goal of taking extra iron is to reach a hemoglobin range that is best and safest for you.

How is my iron level tested?

Two important tests can tell if you have enough iron. They are called transferrin saturation (TSAT) and ferritin. You may need extra iron if these test results show that your TSAT or ferritin result is low.

How often will my iron level be tested?

If you are being treated for anemia with an ESA, your iron should be tested every 3 months until your anemia is under control.

Can diet help my anemia?

Eating foods that are high in iron, vitamin B12, and folic acid may be difficult due to your kidney diet. A dietitian can help you plan meals and suggest a renal vitamin if needed. Check with your healthcare provider before making any changes to your diet.

Fact

Iron is important in treating anemia. Without enough iron, ESA is wasted and you will not reach your target hemoglobin.

What if my anemia isn't treated?

Anemia can cause serious health problems. Your heart must work harder if you do not have enough red blood cells. This can lead to heart disease. Unfortunately, many people with kidney disease develop heart disease long before they reach kidney failure. Some will even die from it. Early treatment of anemia is important. It can help keep heart disease and other problems from happening. If you already have heart disease, treatment can help keep it from getting worse.

What if I have a kidney transplant?

Unfortunately, even a new kidney may not be able to make all the EPO you need to make enough red blood cells. You will need to take special drugs to keep your body from rejecting the new kidney. These drugs can affect EPO production. So, treatment for anemia is often needed even after a successful transplant.

Fact

Treating anemia is important because:

- Your chances of having serious, life-threatening heart problems will be lowered
- You will have more energy to do your daily tasks
- Your quality of life gets better
- Your ability to exercise improves
- You may avoid blood transfusions

Key Points to Remember

- Anemia happens when your body does not have enough healthy red blood cells.
- Most people with kidney disease or kidney failure will develop anemia.
- Anemia can be treated.
- Drugs called ESAs and extra iron are used to treat anemia. They help your body make red blood cells.
- Treatment of anemia is important. It can help keep heart disease and other problems from happening. If you already have heart disease, it can help keep it from getting worse.
- Your healthcare provider can check you for anemia with a simple blood test.

Where can I get more information?

If you have questions, speak to your healthcare provider. You can also call the NKF Cares Patient Help Line toll-free at **855.NKF.CARES** (855.653.2273) or email **nkfcares@kidney.org**. A trained professional will listen to your concerns and help answer your questions.

If you want to read more about kidney disease or kidney failure, the National Kidney Foundation has a lot of information on many topics, such as:

- Iron therapy
- GFR (glomerular filtration rate)
- Nutrition
- High blood pressure
- Diabetes
- Coping with kidney disease and kidney failure
- Treatments for kidney failure, including hemodialysis, peritoneal dialysis, and kidney transplant

Learn more at **www.kidney.org**

Words to Know

Anemia: A decrease in the number of your red blood cells, which can make you feel very tired and have other bad effects.

Dialysis: A process that filters waste products and extra fluid from your blood when your kidneys are no longer doing their job. It is one of the basic forms of treatment for kidney failure. There are two types of dialysis — hemodialysis and peritoneal dialysis.

Dietitian: A professional with special training to help you plan what to eat and drink to help you feel your best.

EPO (erythropoietin): EPO is a hormone made by your kidneys. EPO tells your body to make red blood cells. If your kidneys cannot make enough EPO, you will get anemia.

ESAs (erythropoiesis-stimulating agents): ESAs are a special type of medicine that can help your body make red blood cells.

Ferritin: A protein that stores iron in your body. A simple blood test for ferritin helps your healthcare provider know if you need extra iron.

Folic acid: Folic acid is a vitamin that you get from food. Your body needs folic acid to make red blood cells.

Hemodialysis: A form of dialysis treatment. In hemodialysis, your blood is cleaned of waste products and extra water through a dialysis machine.

Hemoglobin: Hemoglobin is the part of red blood cells that carries oxygen throughout your body.

HIV (human immunodeficiency virus): A virus that infects and damages the immune system. The immune system is the part of your body that fights off viruses, bacteria, and germs ("foreign invaders" like the flu).

Hormones: Chemical messengers produced by many different glands in your body — including the kidneys — to trigger certain responses in your body.

Intravenous injection (IV): An injection that is given to you directly in your vein.

Iron: Iron is a mineral needed for healthy blood cells. You get iron from a variety of foods, including red meat and leafy green vegetables.

Kidney disease: The loss of some or all of your kidney function. Kidney disease can result from conditions such as high blood pressure, diabetes, or an injury to the kidneys.

Kidney failure: The stage of kidney disease at which dialysis or a transplant is needed to stay alive.

Kidney transplant: An operation that places a healthy kidney in your body. It is one of the basic forms of treatment for kidney failure.

Lupus: A disease that affects the immune system, which is the part of your body that fights off viruses, bacteria, and germs ("foreign invaders" like the flu).

Minerals: Minerals are nutrients that you get from food. Your body needs them to work properly.

Nutrients: Chemicals that you get from food that are necessary to live and grow. They are used to build and repair tissues, regulate body processes, and for energy. Vitamins and minerals are nutrients.

Peritoneal dialysis: A form of dialysis treatment that filters waste products and extra fluid from your blood. It is one of the basic forms of treatment for kidney failure.

Polyp: A small growth in the body. If you have a polyp in your digestive tract (your colon) and it begins to bleed, it can cause low iron.

Renal vitamin: A special vitamin with the right amounts of B vitamins and vitamin C for patients with kidney disease.

Subcutaneous injection (SC): An injection that is given to you under your skin.

TSAT (Transferrin): A protein that carries iron in the blood. A simple blood test for transferrin helps your healthcare provider know if you need extra iron.

Vitamins: Vitamins are nutrients that your body needs to work properly.

The **National Kidney Foundation** is the leading organization in the U.S. dedicated to the awareness, prevention, and treatment of kidney disease for hundreds of thousands of healthcare professionals, millions of patients and their families, and tens of millions of Americans at risk.

Help fight kidney disease.
Learn more at **www.kidney.org**

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Awareness. Prevention. Treatment.