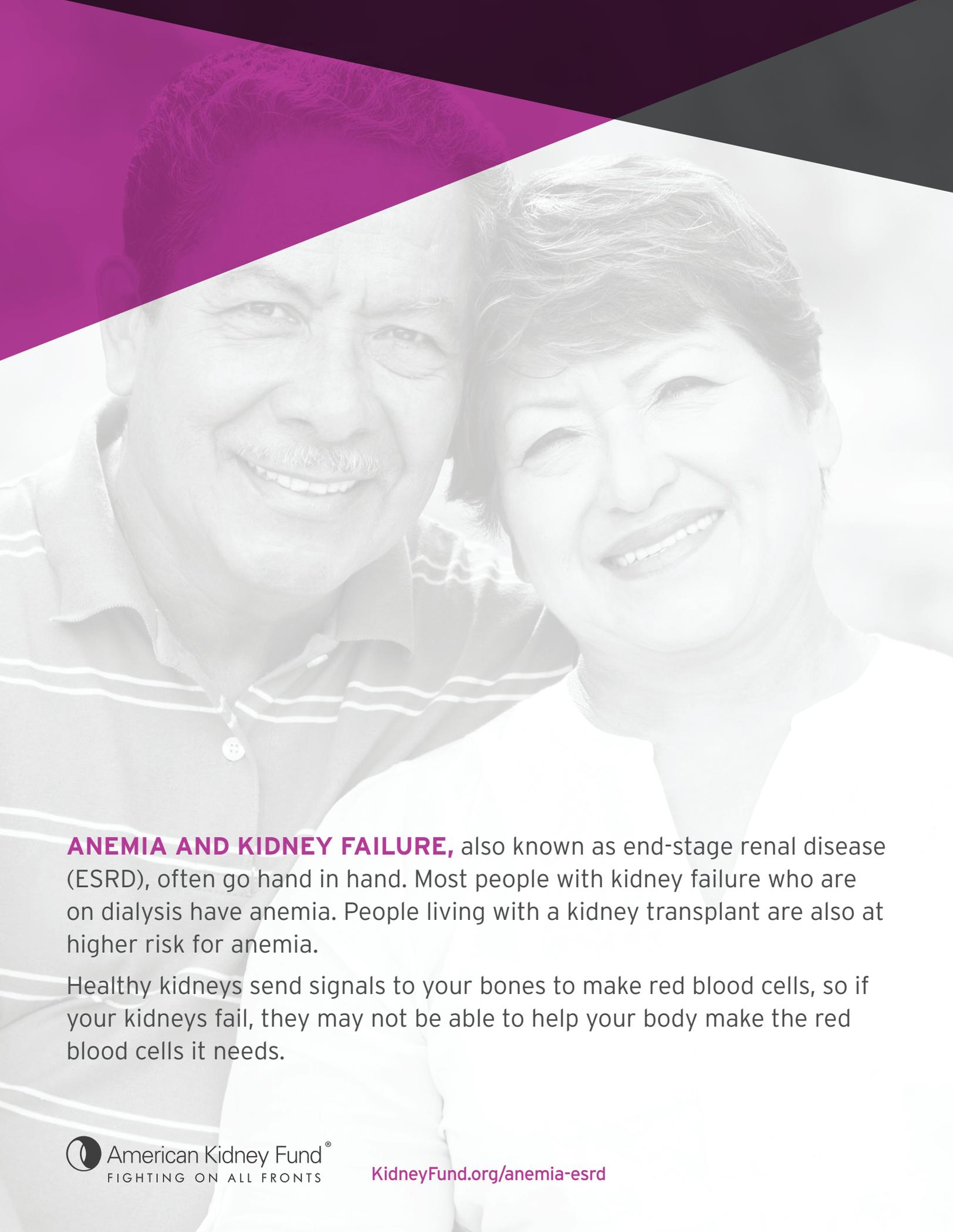




# Anemia in KIDNEY FAILURE

**AWARENESS / COMMUNICATION / TREATMENT**





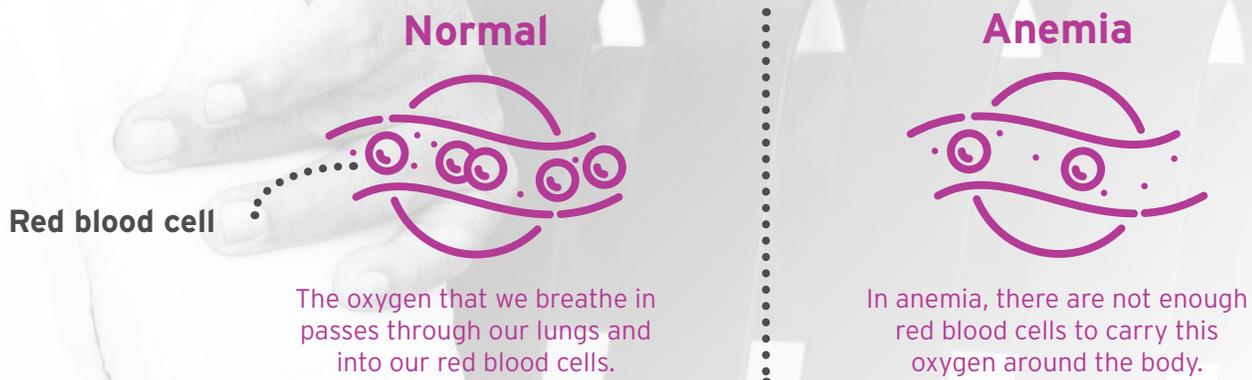
**ANEMIA AND KIDNEY FAILURE**, also known as end-stage renal disease (ESRD), often go hand in hand. Most people with kidney failure who are on dialysis have anemia. People living with a kidney transplant are also at higher risk for anemia.

Healthy kidneys send signals to your bones to make red blood cells, so if your kidneys fail, they may not be able to help your body make the red blood cells it needs.

## What is anemia?

**Anemia** is when there are **not enough red blood cells** in your body.

**Red blood cells** carry **oxygen** through your blood, giving you energy and helping your muscles, bones and organs work well.



**Anemia** can make you feel **weak** and **tired** because you are **not getting the oxygen** you need.



## Who can get anemia?

Anyone can develop anemia, but it is very common in people with kidney disease. Anemia is even more common in those with kidney failure. People may start to have anemia in the early stages of kidney disease. Anemia usually gets worse as kidney disease gets worse. Most people on dialysis have anemia, and the risk of anemia is also higher in people with kidney transplants.

Anemia in kidney failure is more common if you:



Have diabetes



Have heart disease



Have high blood pressure



Are African-American



Are older than 75 years

If you have kidney failure, **talk to your doctor** about getting tested for anemia. There are things you can do to manage the symptoms of anemia that can help you **feel better**.

# What are the symptoms of anemia?

It can be hard to tell whether you have anemia, because it can happen with or without symptoms. Many of the symptoms of anemia can also be caused by other problems. For example, a common symptom of anemia is fatigue (feeling very tired), which can also be caused by dialysis.

The only way to know for sure if you have anemia is to get tested. If you are having symptoms, it is important that you talk to your doctor.



## Dizziness, loss of concentration

Feeling dizzy or having difficulty concentrating may be a sign that your brain is not getting enough oxygen.



## Pale skin

Pale skin may be caused by reduced blood flow or a lower number of red blood cells.



## Chest pain

Anemia in kidney failure can increase your risk of heart problems. This is because the heart has to work harder to provide blood to your body. If you have an unusually fast heart rate or are worried about your heart health, please speak to your doctor.



## Shortness of breath

Your blood may not have enough red blood cells to get oxygen to your muscles. By increasing your breathing rate, your body is trying to bring more oxygen into your body.



## Fatigue or weakness

You may feel very tired and weak easily because your muscles are not getting enough oxygen.



## Being sensitive to cold

Sensitivity to the cold may mean your blood is not getting enough oxygen to your body.

# Causes of anemia in kidney failure

## On dialysis:

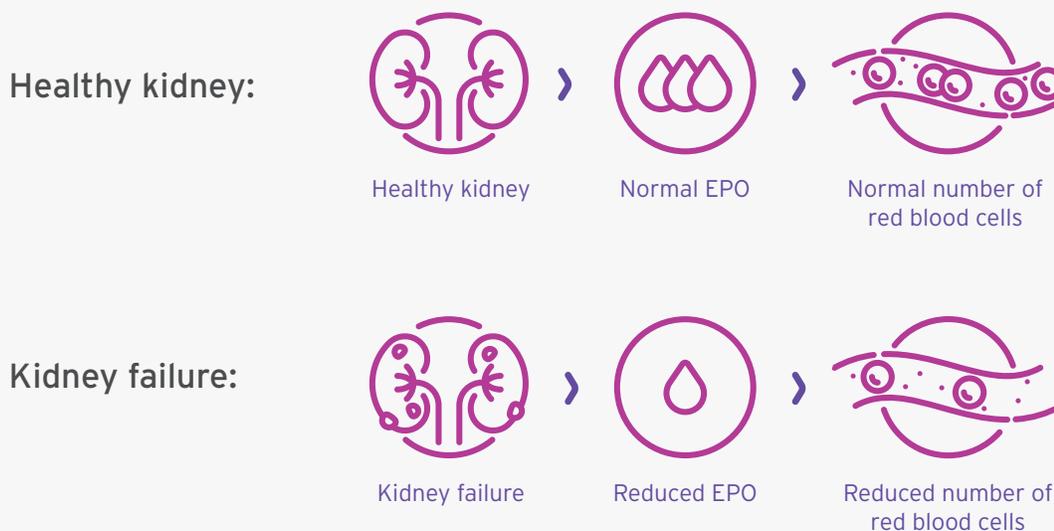
Most people on dialysis have anemia. Anemia in dialysis is caused by having:

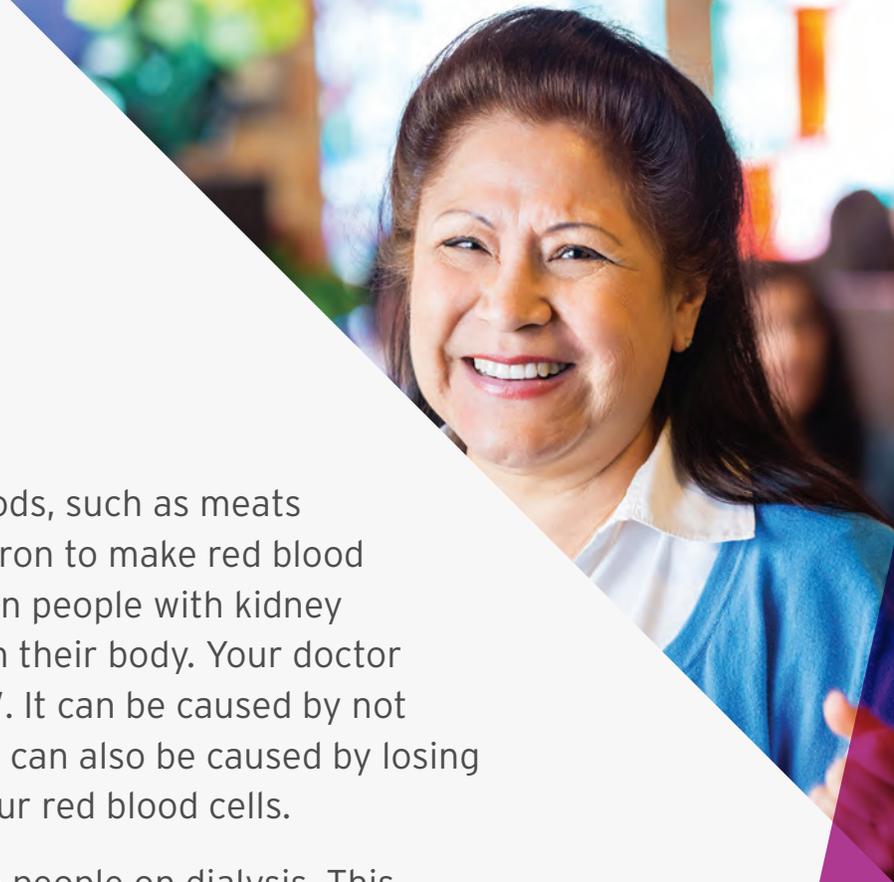
### Less erythropoietin (EPO) than normal

Healthy kidneys make a hormone called erythropoietin (EPO).

All the cells in your body live for a certain amount of time and then die. Your body is always making new cells to replace the ones that have died. Red blood cells live for about 115 days. Your kidneys help your body make new red blood cells.

EPO sends a signal to your body to make more red blood cells. If your kidneys are not working as well as they should or have stopped working, they cannot make enough EPO. Without enough EPO, your body does not make enough red blood cells. This means fewer red blood cells are available for carrying oxygen through your body.





## Less iron than normal

Iron is a mineral found in many foods, such as meats and leafy greens. Your body uses iron to make red blood cells. A common cause of anemia in people with kidney failure is not having enough iron in their body. Your doctor may also call this “iron deficiency”. It can be caused by not getting enough iron in your diet. It can also be caused by losing blood, because iron is stored in your red blood cells.

Iron deficiency is more common in people on dialysis. This happens from:



### Not eating enough iron-rich food

You may need to limit certain iron-rich foods like red meats when eating foods that are healthy for kidney disease. If you do not eat enough iron, you may not have as much iron as you need.



### Blood loss during dialysis

After a hemodialysis session, a small amount of blood is often left in the dialyzer (dialysis machine). Over time, this lost blood can add up and could lead to not having enough iron.



### Frequent blood draws

With kidney failure, you may need to have blood tests more often than a healthy person, which can increase your risk of not having enough iron.



### Blood loss from the GI track

## **Kidney transplant:**

People who have had a kidney transplant are at higher risk for having anemia. Anemia after kidney transplant is caused by having:

### **Less erythropoietin (EPO) than normal**

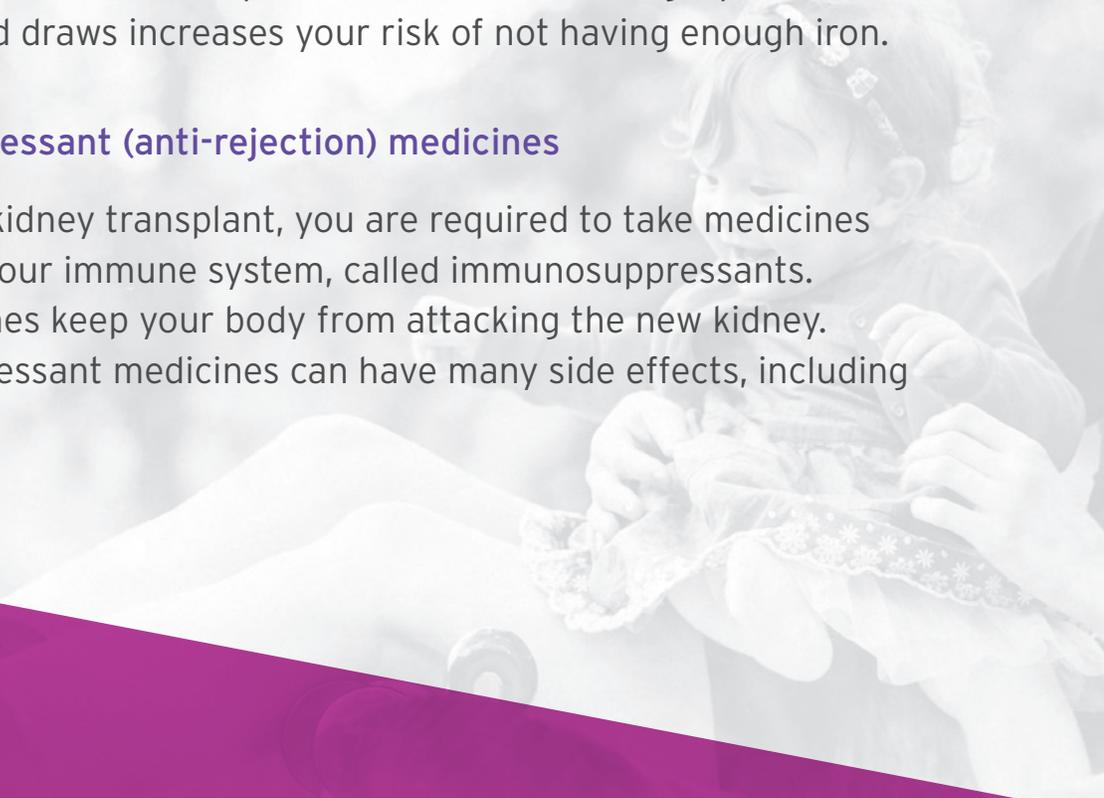
Sometimes after transplant, the new kidney does not work as well as a kidney in a healthy person. If your new kidney is not working as well as it should, it may not make enough of the EPO hormone, which leads to anemia.

### **Less iron than normal**

When you have a kidney transplant, you lose blood during the kidney transplant surgery. You will also have blood tests often to check on the health of your new kidney. Blood loss from the surgery and from frequent blood draws increases your risk of not having enough iron.

### **Immunosuppressant (anti-rejection) medicines**

If you have a kidney transplant, you are required to take medicines that weaken your immune system, called immunosuppressants. These medicines keep your body from attacking the new kidney. Immunosuppressant medicines can have many side effects, including anemia.



**Doctors and researchers are working to find new treatments for anemia. New treatments are tested in clinical trials. If you are interested in joining a clinical trial to try a possible new treatment for anemia, visit [ClinicalTrials.gov](https://ClinicalTrials.gov) to learn more.**

## Kidney transplant surgery

The risk of anemia after kidney transplant is higher right after the transplant surgery. Anemia may happen post-transplant because your new kidney will need some time before it starts making enough EPO, and because your iron levels may be low from losing blood. If your new kidney stays healthy over time, your risk of anemia will decrease.

## Other kinds of anemia

There are several kinds of anemia. Anemia caused by having too little EPO or too little iron in your body are the most common in people with kidney failure. Talk to your doctor to learn more.

# How will I know if I have anemia?

It can be hard to know whether you have anemia, because it can happen with or without symptoms. Also, many symptoms of anemia are not obvious, because they can be caused by other health problems. If you are having symptoms of anemia, such as changes in skin color or feeling unusually tired, you should talk to your doctor right away.

Even if you are not having symptoms, you should talk to your doctor about anemia if you have kidney failure. Anemia is very common for people on dialysis. Anemia also happens in people who have had a kidney transplant.

The only way to know if you have anemia is to have a blood test, which checks for how much hemoglobin is in your blood. Hemoglobin is a part of your red blood cells. Figuring out the amount of hemoglobin in your blood can tell your doctor how many red blood cells you have, and whether you have anemia.

It can be **hard to know** whether you have anemia, because it can happen **with or without symptoms**.

# What is the connection between kidney disease, anemia and heart disease?

Kidney disease and anemia put stress on your heart, and over time both can increase the risk of heart disease. Heart disease is a leading cause of death for people with kidney disease and people on dialysis. This is because about 70% of people on dialysis have heart disease.

If you have had a transplant, it is important to know that heart disease can also cause kidney disease. When the heart is not pumping blood the right way, it may become too full of blood. This causes pressure to build up which damages the kidneys.

There are medicines you can take to lower your blood pressure and to protect your heart.

# How is anemia treated?

Getting your anemia treated may help you feel better. Depending on the cause of your anemia, your doctor may recommend one or more of these treatments:

**Erythropoiesis-stimulating agents (ESAs)** – ESAs are medicines that work by sending a signal to your body to make more red blood cells. This replaces the function of the EPO hormone that healthy kidneys normally make.

- ESAs are given by injection (as a shot) or through the fluid used in your dialysis treatment.

**Iron supplements** – Iron supplements will raise the level of iron in your blood when your iron levels are too low. Depending on how you are treating your kidney failure, you can take your iron supplement in different ways:

- Iron supplements can be taken orally (as a pill) or given by injection (as a shot). If you are on hemodialysis, you can get the extra iron through the fluid used in your dialysis treatment.

*Many people need to take both ESAs and iron supplements to have a healthy red blood cell count. For ESAs to work, your body first needs a good level of iron. Iron helps create oxygen found in red blood cells. Without the right amount of iron, ESAs might not work.*

**Red blood cell transfusion** – A red blood cell transfusion is a procedure that takes red blood cells by an IV from one person's body to another person to increase their number of red blood cells. A red blood cell transfusion can improve your anemia symptoms.

# Why should I treat anemia?

Anemia puts people who have kidney failure at more risk for heart disease. Symptoms of anemia may not seem serious, but it is important to treat anemia if you have it. After you are treated for anemia, you may start to feel better. For example, you may:



Have more energy



Be able to concentrate better



Not feel weak or dizzy anymore



Feel you can exercise

**If you had a kidney transplant, anemia can harm your new kidney if it is not treated.**

**ACT** on  
**ANEMIA**

# What are the pros and cons of anemia treatments?

	Pros	Cons
<b>ESAs</b>	<ul style="list-style-type: none"><li>• Can improve quality and length of life</li><li>• Help your body make more blood cells to reduce anemia</li></ul>	<ul style="list-style-type: none"><li>• Common side effects include high blood pressure, joint, muscle, or bone pain, nausea, vomiting, and headache</li><li>• High doses of ESAs, especially without balanced iron levels, can be harmful</li></ul>
<b>Iron pills</b>	<ul style="list-style-type: none"><li>• More iron stored in your body</li><li>• Helps ESAs work better to lower anemia</li></ul>	<ul style="list-style-type: none"><li>• Common side effects of oral iron can include digestive problems (constipation, stomach pain, nausea, and vomiting)</li></ul>
<b>Iron injection (Shot)</b>	<ul style="list-style-type: none"><li>• More iron stored in your body</li><li>• Fewer doses needed compared to oral pills and IV iron</li><li>• Lower doses of ESAs needed</li><li>• Helps ESAs work better to lower anemia</li><li>• Considered the safest iron treatment</li></ul>	<ul style="list-style-type: none"><li>• Rare side effect can include the stopping of red blood cell production</li></ul>
<b>IV (intravenous) iron</b>	<ul style="list-style-type: none"><li>• More iron stored in your body</li><li>• Helps ESAs work better to lower anemia</li><li>• Can be better than oral supplements, especially for people on dialysis</li><li>• Can be given during hemodialysis</li><li>• May improve or preserve heart health</li></ul>	<ul style="list-style-type: none"><li>• Rare side effect can include anaphylaxis—a severe allergic reaction</li></ul>

# Which treatment is right for me?

Your healthcare team will work with you to choose the best treatment. Some things they will consider are:



Results of your iron test



How many pills you have to take for other conditions



Other health problems you may have



Your reactions or allergies to other medicines you have taken in the past



[KidneyFund.org/anemia-esrd](https://KidneyFund.org/anemia-esrd)

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