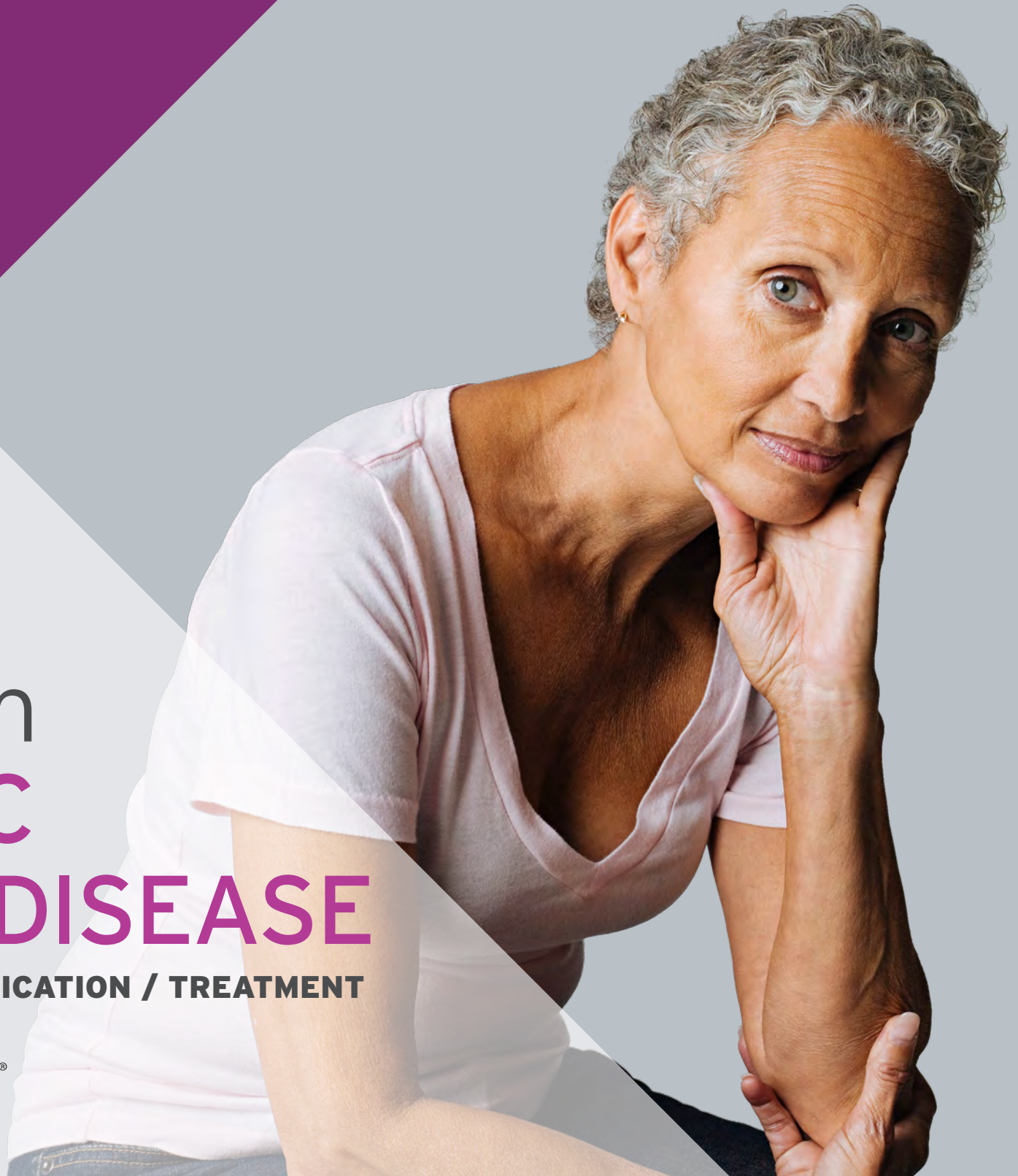


**ACT** on  
**ANEMIA**

# Anemia in **CHRONIC KIDNEY DISEASE**

**AWARENESS / COMMUNICATION / TREATMENT**

 American Kidney Fund®  
FIGHTING ON ALL FRONTS



# What is anemia?

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

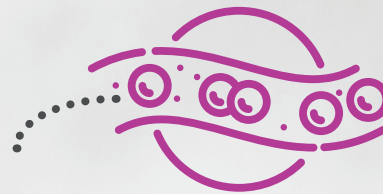




**Red blood cells** carry **oxygen** through your blood, giving you energy and helping your muscles, bones, and organs work properly.

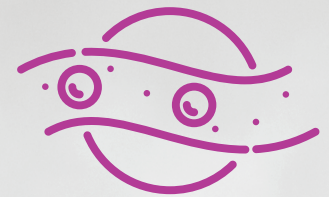
### Normal

Red blood cell



The oxygen that we breathe in passes through our lungs and into our red blood cells.

### Anemia



In anemia, there are not enough red blood cells to carry this oxygen around the body.

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

## Who can get anemia?

Anybody can develop anemia, but it is very common in people with kidney disease, also called chronic kidney disease (CKD). People with kidney disease may start to have anemia in the early stages of kidney disease. Anemia usually gets worse as kidney disease gets worse. If your kidneys are not working as well as they should, you are more likely to get anemia.

Anemia in kidney disease is more common if you:



Have diabetes



Have heart disease



Have high blood pressure



Are African-American



More than 75 years old





**ACT** on  
**ANEMIA**

If you think you might be at risk,  
**talk to your doctor** about getting  
tested. Managing anemia and its  
symptoms may help you feel better.

# What are the symptoms of anemia?

Anemia can happen with or without symptoms. Many of the symptoms of anemia can also be caused by other problems. The only way to be 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.



**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 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.



**Chest pain**  
Anemia 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.



# There are two main causes of anemia in kidney disease:

## Less erythropoietin than normal

All of 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.

Healthy kidneys make a hormone called erythropoietin (EPO). EPO sends a signal to the body to make more red blood cells. If your

kidneys are not working as well as they should, they do not make enough EPO. Without enough EPO, your body doesn't know that it needs to make more red blood cells. This means fewer red blood cells are available for carrying oxygen through your body.



Healthy kidney

Normal EPO

Normal number of red blood cells



Chronic kidney disease

Reduced EPO

Reduced number of red blood cells

## 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 disease 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.

## 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 disease. Talk to your doctor to learn more.

## Causes of iron deficiency



Not eating enough foods that are rich in iron



Iron from your food is not being absorbed properly into your blood



Frequent blood donation or blood draws



Blood loss from the GI track

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

Kidney disease puts stress on your heart. Over time, kidney disease can sometimes lead to heart failure. Heart disease is a leading cause of death in people with kidney disease and is the top cause of death for those on dialysis.

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 will I know if I have anemia?

Talk to your doctor if you think you may have anemia. The only way to know if you have anemia is to have a blood test. When you have kidney disease, your doctor will want you to have blood tests often. These tests are used to check not only your kidney function, but also for signs of any other problems, like anemia.

The test for anemia is a simple blood test to check for how much hemoglobin is in your blood. Hemoglobin is a part of your red blood cells. Figuring out the amount of hemoglobin you have in your blood can tell your doctor how many red blood cells you have.

Your doctor may also ask you if you have noticed any symptoms, such as changes in skin color or feeling unusually tired.



# 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).
- **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 to increase the number of red blood cells in your body by giving you red blood cells from someone else's body through an IV. This can temporarily improve your anemia symptoms.

If you have kidney disease, getting early treatment for your anemia can help slow the progress of your kidney disease. If you think you might have anemia, talk to your doctor about getting tested.

# Which treatment is right for me?

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

- Your stage of kidney disease
- 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

# Why should I treat anemia?

If you have kidney disease, anemia can make your kidney disease worse if it is not treated. Anemia also 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

# 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 ESA 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 includes 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>



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** to learn more.