Anemia of Chronic Kidney Disease

This guide can help you learn more about anemia caused by chronic kidney disease and how it is treated.

What is anemia of chronic kidney disease?

Anemia happens when the body does not have enough healthy red blood cells. Red blood cells carry oxygen to tissues in the body. Anemia of chronic kidney disease is a blood disorder. It is the result of a long-term (chronic) medical condition that decreases the number of red blood cells.

How do I know if I have anemia?

You may notice some of these signs and symptoms of anemia.

- Pale skin
- Decreased hunger
- Feeling tired
- Trouble sleeping
- Trouble concentrating
- Shortness of breath or chest pain

Why do I have anemia and some transplant patients don’t?

- You may have had anemia before your transplant.
- In some patients, chronic kidney disease can develop in the transplant kidney over time.

Why do I have chronic kidney disease?

This is a list of some of the risk factors for kidney disease:

- Other health problems like diabetes and high blood pressure.
- Taking medicines to prevent rejection.
- If you had a kidney transplant and have had rejection in the past.

Why do people with kidney disease have anemia?

People with kidney disease may not produce enough erythropoietin. This is a hormone made in your kidneys that tells your bone marrow to make red blood cells.

- When your kidneys show signs of disease, they produce less erythropoietin.
- With less erythropoietin, your body makes fewer red blood cells.
- With fewer red blood cells, you may become anemic and feel tired.
What is the treatment for anemia?

Your anemia is treated with medicines. These are known as erythropoiesis stimulating agents (ESAs). They tell the bone marrow to make more blood cells. The Food and Drug Administration has approved two ESAs to treat anemia caused by chronic kidney disease:

- Darbepoetin (Aranesp®)
- Epoetin (Procrit® or Epogen®)

ESAs are given as an injection under the skin. Your dose and injection schedule may change based on your lab results. You will need to come to clinic for injections.

Are there side effects with ESAs?

Most people do not have side effects with ESAs. Side effects that may happen are high blood pressure, headache, and diarrhea. Some people feel a sting during the injection. It goes away soon after the injection is given.

To make sure you are getting the right dose, your lab tests will be closely watched and your blood pressure will be checked at each visit. If your blood pressure is too high, you will not get an injection until your blood pressure is normal. If ESAs are given at too high of a dose, you have an increased risk of blood clots, stroke, or heart problems.

What laboratory tests will I need?

Each month:
You will have a blood test done to check your anemia. This blood test measures your hemoglobin (Hgb) level. For people with kidney disease, the hemoglobin level should be between 9.5 and 11 g/dL (grams/deciliter).

Every three months:
Iron is essential for making red blood cells. If you do not have enough iron in your body, the ESA injections will not help. Two tests help check iron levels:
- A ferritin test will check how much iron is stored in your body. The ferritin should be 100 ng/mL (nanograms/milliliter) or more.
- A transferrin saturation (TSAT) test will show how well your body is using the iron you have. The TSAT should be 20 percent or more.

Why is iron important in treating anemia?

Your body needs iron to make red blood cells. Once you start getting ESAs, your body will make more red blood cells. Iron stored in your body will be used up faster. Therefore, you will probably need to take an iron supplement with your ESA injections.
What do I need to know about taking iron?

Iron pills work best when taken on an empty stomach. To lessen the chance of stomach upset, iron may be taken with food or right after meals.

These foods should not be taken at the same time as iron.
- Cheese
- Milk
- Eggs
- Yogurt
- Whole grain breads

Many people are able to get enough iron by taking iron in a pill form. There are different types of iron pills. You may need to try several pills to find out which one works best for you.

<table>
<thead>
<tr>
<th>Iron Products</th>
<th>Brand Name (amount of elemental iron)</th>
<th>Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ferrous Sulfate</td>
<td>Generic 325mg (65 mg)</td>
<td>+</td>
</tr>
<tr>
<td>Ferrous Gluconate</td>
<td>Fergon 240 mg (27 mg)</td>
<td>++</td>
</tr>
<tr>
<td>Ferrous Fumerate</td>
<td>Generic 200 mg (66 mg)</td>
<td>++</td>
</tr>
<tr>
<td>Iron polysaccharide complex</td>
<td>Niferex (50 mg)</td>
<td>+++</td>
</tr>
<tr>
<td>Sustained release iron</td>
<td>Feosol 200 mg (65 mg)</td>
<td>+++</td>
</tr>
<tr>
<td>Sustained release iron</td>
<td>Slow FE 160 mg (50 mg)</td>
<td>+++</td>
</tr>
</tbody>
</table>

Side effects that can occur with oral iron pills are
- Stomach upset
- Cramping
- Constipation
- Nausea
- Diarrhea and bloating

Stools may become dark green or black when iron pills are taken by mouth. If you have side effects with iron, it may help to try a different type of iron pill. You may need a stool softener if iron pills cause constipation.

Some people may need intravenous (IV) iron. IV iron can be given at the UW Hospital Infusion Center or the Transplant Clinic. It is given as two separate doses. Each dose takes about three hours to give.

Iron can interact with two of your anti-rejection medicines: tacrolimus (Prograf®, Hecoria®) and mycophenolate (Myfortic®, Cellcept®). You should not take iron at the same time of day as you take tacrolimus or mycophenolate. Taking these medicines at the same time of day can decrease the amount of tacrolimus or mycophenolate that you absorb. Your pharmacist can give you more information about when to take your iron.
What if I don’t reach my anemia treatment goal?

If you don’t reach your target hemoglobin range your doctor, coordinator, or pharmacist will check to see if you:

- Have enough iron.
- Have an infection or inflammation in your body.
- Are losing blood.
- Have high levels of parathyroid hormone, or PTH, in your blood.
- Have another health problem that affects your body’s ability to make red blood cells.

How can I get more information about anemia of chronic kidney disease?

- Ask your health care team.
- The National Kidney Foundation (NKF) is a great resource for information about kidney disease. The website is www.kidney.org.
- www.anemia.com
- www.kidneyschool.org

Your health care team may have given you this information as part of your care. If so, please use it and call if you have any questions. If this information was not given to you as part of your care, please check with your doctor. This is not medical advice. This is not to be used for diagnosis or treatment of any medical condition. Because each person’s health needs are different, you should talk with your doctor or others on your health care team when using this information. If you have an emergency, please call 911. Copyright © 2/2014. University of Wisconsin Hospitals and Clinics Authority. All rights reserved. Produced by the Department of Nursing. HF#7143