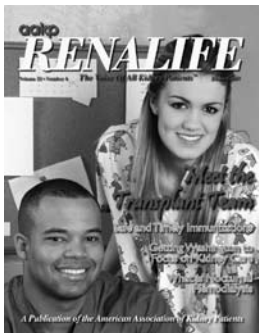


UNDERSTANDING ANEMIA IN KIDNEY DISEASE





aakpRENALIFE – This patient magazine is produced six times a year. It contains information for those who are experiencing kidney failure. Topics featured include dialysis, transplantation, medical questions and dietary concerns.

AAKP Patient Plan™ –

This educational series provides comprehensive information on kidney disease and is available in four phases. It features detailed discussions on the treatment of kidney disease, medications, social concerns and much more. Phase 1 in the series contains a book and Phases 2, 3 and 4 each contain a book and a newsletter.

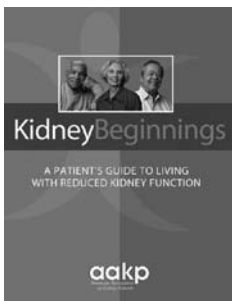


www.aakp.org –

This is the official Web site of the American Association of Kidney Patients. It features numerous educational materials from AAKP, a list of programs, the latest AAKP news, and links to several other educational Web sites.



AAKP My Health™ – This is a unique section of the AAKP Web site, www.aakp.org, dedicated to helping you take charge of your healthcare. **AAKP My Health** allows you to monitor your lab values, record valuable health contact information, store information about your medications and learn more about kidney disease and its impact on you anywhere Internet access is available.



Kidney Beginnings: A Patient's Guide to Living With Reduced Kidney Function –

This educational piece addresses the concerns of those at risk for kidney disease. The book features

information on the kidneys, how the kidneys work, diabetes, hypertension, medical tests, emotional issues, common medications and much more. It provides patients and family members with answers to questions about the health of their kidneys, diet and overall lifestyle.

Dietary Booklet – AAKP provides this pocketsize brochure as a guide to eating healthy with kidney disease. It contains the amounts of sodium, potassium, phosphorus, calories and protein in standard sizes of everyday foods. This brochure is also available in Spanish.

Educational Brochures – AAKP also produces specialized packets for those at various stages of kidney disease, from those who have recently been diagnosed to the long-term patient. These free educational packets provide specific information to help patients and their families deal with the physical, emotional and social impact of kidney disease.

Overview

WHAT IS ANEMIA?

Your blood is composed of three types of cells.

They are:

1. Red blood cells
2. White blood cells
3. Platelets



Anemia is a condition in which the body does not have enough red blood cells. Red blood cells (which contain hemoglobin) carry oxygen throughout your body. Oxygen acts like fuel for the body. It provides energy for muscles and organs to work. Low oxygen levels cause weakness or fatigue. If your red blood cell levels are low, your heart will have to work extra hard to deliver oxygen where it is needed. The fatigue will get worse if it is not treated.

This brochure will help you:

- *Understand what anemia is.*
- *Know the symptoms of anemia.*
- *Manage your anemia.*
- *Give you extra resources for treating your anemia.*

Anemia is common in people with kidney disease. Healthy kidneys produce a hormone called erythropoietin, or EPO. EPO acts on the bone marrow to produce the proper number of red blood cells. These red blood cells carry oxygen to your organs. People with kidney disease usually don't make enough EPO. As a result, the bone marrow makes fewer red blood cells and causes anemia.

WHAT ARE THE SYMPTOMS OF ANEMIA?

- Fatigue
- Weakness
- Shortness of breath
- Rapid heart beat
- Difficulty sleeping
- Dizziness
- Headaches
- Loss of sex drive
- Sadness or depression
- Decreased appetite

The symptoms you may develop as a result of anemia will vary. They depend on the severity of the anemia, the severity of your kidney disease and the presence or absence of other illnesses. It is very important to be evaluated by a doctor if you have any of the symptoms described above.

HOW IS ANEMIA DIAGNOSED?

A medical history, physical exam and blood tests, including a complete blood count (CBC) give your doctor a picture of how healthy your red blood cells are. A CBC is commonly performed to measure the levels of the different types of cells in your blood. A CBC also tells the number, type, size, shape and some of the physical characteristics of the cells. From this information, a physician can determine if you are anemic.

The red blood cell tests are:

- **Hemoglobin** – This is the part of the red blood cell which contains the iron that carries oxygen.

Target Hemoglobin Level for Kidney Patients

11-12 g/dL

- **Hematocrit** – This is the measure that tells how many red blood cells are in a specific amount of blood.

Target Hemoglobin Range

33-36 percent

Anemia occurs when the hemoglobin or hematocrit count falls below the normal ranges. “Normal” varies from person to person. But if your levels are below the stated normal levels, you may be feeling some of the effects of anemia. It is important to talk to your doctor about what value is considered normal for you once you have chronic kidney disease (CKD).

WHAT CAUSES ANEMIA?

- Kidney Disease
- Blood Loss
- Medication Side Effect
- Vitamin or Iron Deficiencies
- Poor Diet

HOW IS ANEMIA TREATED?

The most common cause of anemia in patients with kidney disease other than EPO deficiency is iron deficiency. Red meat provides a major source of dietary iron. Many people with kidney disease must reduce red meat intake and therefore may develop an iron deficiency.

Other possible causes of iron deficiency include: blood loss through menstrual periods, surgery or gastrointestinal disease. Your doctor may check your iron levels with two laboratory tests. They are called transferrin (trans-fair-in) saturation (TSAT) and ferritin (fair-it-in). If either of the tests results is low, then your anemia may be treated with iron supplements. There are both oral and intravenous (IV) iron supplements. One of the most common oral iron supplements is ferrous (fair-us) sulfate. Ferrous sulfate is given three times daily in order to provide an adequate dose to overcome iron deficiency.

It is more likely your anemia will be treated with an erythropoiesis stimulating agent (ESA) to help your body make more red blood cells. Like insulin, ESAs are a protein hormone and cannot be taken by mouth. They are given by an injection under the skin (subcutaneous) or through an IV. People can learn to give their own shots at home. ESAs can be injected into your blood line during dialysis. You’ll likely need to take an ESA for as long as you have kidney disease or are on dialysis.

How much and how often you need ESA injections depend on how much you weigh and how well you respond to treatment. Your dosage can vary for a lot of reasons. You may receive your medication anywhere from a few times a week to once a month. Your doctor will monitor your response to treatment by checking your hemoglobin and hematocrit every one or two weeks.

ESAs and iron work together to help your body create the necessary red blood cells to keep you healthy.

Most cases of anemia can be treated. ESAs and iron work together to help your body create the necessary red blood cells to keep you healthy. ESAs allow your body to make more red blood cells and your body's iron stores are used up faster.

If you are a hemodialysis patient, a small amount of blood may be left in your dialyzer after each treatment. This can lead to a low red blood cell count, anemia and a decrease in the amount of iron in your body.

Please note, some medications and antibiotics can reduce the effect of ESAs.

They can cause your red blood cells to die early. Usually, red blood cells last 120 days. This side effect has caused the hematocrit level in some patients to fall. Blood thinners may also cause more bleeding and anemia. The bleeding can be internal or due to longer bleeding times when your dialysis needle has been removed.

You should never diagnose yourself with anemia. The symptoms of fatigue and weakness can be the result of many other diseases. If you suspect you have anemia, talk to your doctor.

MANAGING YOUR ANEMIA

Weakness and fatigue are caused by anemia. Anemia may make it hard for you to find the energy to enjoy hobbies or other leisure activities. It may even make it hard for you to complete basic tasks at home or at work. Along with taking your medications, there are things you can do that may help you feel less tired.



1. Regular exercise can increase your energy level. It does not have to be rigorous exercise. Just walking for 10-20 minutes can make a difference. Before beginning any exercise program, discuss it with your doctor.
2. Take your medicine as prescribed. Not taking your medication as prescribed can lead to a host of medical problems, including anemia.
3. Follow the diet recommended by your healthcare team. Eating properly can help you feel better and give you more energy.
4. Don't be afraid to ask for help with daily activities. You'll want to save your energy for the things you enjoy doing.
5. Get enough sleep.

Remember to discuss these suggestions with your doctor before you make any changes.

FOOD & DIET

A diet rich in iron is one way to help treat anemia. Some food sources with a lot of iron can be dangerous to kidney patients. It is recommended that you speak with your healthcare team to decide what foods are best for you. Together, you can work on a meal plan. The plan will include kidney-friendly foods. Foods rich in iron and other supplements will keep you healthy and full of energy.

GLOSSARY

ANEMIA – The condition of having too few red blood cells. If the blood is low on red blood cells, the body does not get enough oxygen.

COMPLETE BLOOD COUNT (CBC) – A blood test that includes red blood cell count, white blood cell count, hemoglobin level and platelet count.

ERYTHROPOIETIN (EPO) – A hormone made by the kidneys to help form red blood cells. Lack of this hormone may lead to anemia.

ERYTHROPOIESIS STIMULATING AGENT (ESA) – A man made medication that stimulates the bone marrow to make more red blood cells, replacing the missing erythropoietin often caused by kidney disease.

FERRITIN – A protein that stores iron in the body. The serum ferritin level - the amount of ferritin in your blood - is directly proportional to the amount of iron stored in your body, but can also be increased in the presence of inflammation.

HEMATOCRIT – A way of measuring the red cell content of the blood. It's measured as a percentage of the total blood volume.

HEMOGLOBIN – The part of the red blood cells that carries oxygen to all parts of the body.

INTRAVENOUS (IV) – The process of receiving medication through a catheter inserted in a vein.

PLATELETS – Platelets are a type of blood cell. They play a key role in normal blood clotting. During the clotting process, platelets clump together to plug small holes in damaged blood vessels. The purpose of clotting is to stop bleeding.

SUBCUTANEOUS – Is the layer of tissue directly underlying the two outer layers of the skin. It is mainly composed of fat tissue. Its physiological function includes insulation and storage of nutrients.

TRANSFERRIN – A protein in the blood that carries iron.

ANEMIA QUIZ

This quiz will not tell you if you have anemia, but it can help your healthcare provider determine if you have symptoms of anemia. Answer each question to the best of your ability and take it with you to your next doctor visit. This is a great way you can start being your number one healthcare advocate.

Circle the answer that best describes your condition.

| | | |
|--|-----|----|
| 1. Do you get unusually tired? | Yes | No |
| 2. Do you feel like you've lost all your strength? | Yes | No |
| 3. Do you get short of breath easily? | Yes | No |
| 4. Do you feel like you're in a daze or easily distracted? | Yes | No |
| 5. Have you fainted or felt faint? | Yes | No |
| 6. Have you noticed any difference in your skin color, palms, darker lips and gums? | Yes | No |
| 7. Have you had heart palpitations or noticed your heart skipping beats? | Yes | No |
| 8. Do you get cold easily, even when the weather is warm? | Yes | No |
| 9. Have you been feeling sad or depressed? | Yes | No |
| 10. Do you get tired taking your dog out for a walk? | Yes | No |
| 11. The target range hemoglobin level for a chronic kidney disease (CKD) patient is 11-12 g/dL. Is your hemoglobin level between 11-12 g/dL? | Yes | No |

AAKP Membership

AAKP IS THE ONLY NATIONAL ORGANIZATION DIRECTED BY KIDNEY PATIENTS FOR KIDNEY PATIENTS.

Benefits of Membership:

- A membership packet filled with some of our most popular publications and your very own member ID card.
- Subscriptions to AAKP's magazines: *aakpRENALIFE* and *Kidney Beginnings: The Magazine*.
- Opportunity to subscribe to AAKP's five FREE electronic newsletters.
- Access to **AAKP My Health™** (an online resource for patients who want to be more proactive in managing their healthcare).
- Automatic membership in the AAKP local chapter nearest you (where applicable).
- Advanced updates of upcoming programs and events.
- Access to relevant and updated public policy information.
- Affiliation with an organization that shares your commitment to making a difference.
- Assurance that your voice is heard and your interests are represented in Washington, DC.

3 Easy Ways to Become a Member...

1. Web site: Visit the Membership section of our Web site, www.aakp.org, to join instantly.
2. Mail: Complete the membership application below and mail it to us at the address on the bottom of the application.
3. Phone: Give us a call at (800)749-AAKP.

Please allow 4 to 6 weeks to receive your membership packet.



Membership Application

- I am not interested in membership at this time, but please send me a complimentary package of information.
- I am already a member of AAKP but I would like to make a donation of \$_____.

Member Information

Name: _____

Address: _____

City: _____ State: _____

ZIP: _____ Phone: () _____

Email: _____

Choose a Membership Category:

- Patient/Family Member.....\$25/annually
- Professional Member.....\$45/annually
- Physician Member.....\$100/annually
- Institutional Member..... \$200/annually
- Life Member..... \$1,000*

*or four payments of \$250 every six months for two years

Payment Method

- Check (enclosed and payable to AAKP)
- Visa American Express
- MasterCard Discover

Account number: _____

Name on Card: _____

3 or 4-Digit Security Code: _____

Expiration Date: _____

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