Anemia and chronic kidney disease
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What is anemia?

Anemia is a condition in which the red cells in the blood are at a low level. The red cells carry oxygen from the lungs to the body’s tissues where it is used. The hemoglobin value is a measure of the total red cell content of blood. Normal hemoglobin levels have a range in men and women. Levels below 120 g/L in women and below 130 g/L in men are considered abnormal, and represent anemia.

Note: All laboratories do not use exactly the same blood value ranges when measuring substances like hemoglobin.
How do you know if you have anemia?

When anemia is mild, there may be no bad effects on the body. However, as anemia becomes more severe, it may lead to low energy, tiredness, shortness of breath and sometimes increased sensitivity to cold. The only real way to know if you have anemia is to have a blood test to check your red blood cells and, specifically, your hemoglobin.

What is the link between anemia and chronic kidney disease?

Most people with moderate-to-severe kidney disease develop anemia. This is because the kidneys normally make the chemical messenger (hormone) that tells the bone marrow to make more red blood cells. This chemical messenger or hormone is called erythropoietin (also called EPO for short). When the kidneys are not working well, they don’t produce enough EPO so the bone marrow does not get the message to make red blood cells. The result is fewer blood cells are produced, and over time people become anemic.
What treatments are available for anemia?

If you think you might have anemia, see your doctor. Your treatment will depend on the exact cause of your anemia. Treatment options include:

1. **Dietary changes**
   A diet too low in essential vitamins and minerals may contribute to anemia. Each person has different nutritional needs based on their age, medical history and kidney function. A registered dietitian will work with you to design an individual daily eating plan that's right for you.

2. **Diet supplements**
   Your doctor may recommend diet supplements. The most common diet supplement is iron. An iron deficiency (shortage) can be treated with pills or by an injection into a vein (intravenous, or IV). A vitamin \( B_12 \) deficiency can be treated with pills or by an injection into a muscle (intramuscular, or IM). Extra folic acid can be taken in pill form.

3. **Prescription medications**
   Your doctor may prescribe medications to increase the number of red blood cells your body produces. These medications are synthetic hormones that work just like natural erythropoietin to increase red blood cell production.
The medications may be given by injection under the skin (subcutaneous, or SC) or into a vein (IV). You and your doctor can decide which method is best for you.

4. Blood transfusions
Sometimes, when anemia is very severe or must be treated rapidly, blood transfusions are used. With a blood transfusion, red blood cells from a volunteer donor are given through an intravenous line to increase the hemoglobin in your blood.

Acknowledgement: Patients and doctors are deeply grateful to the thousands of Canadian volunteers who donate blood and blood products each year.

Why is it important to treat anemia?
If left untreated, anemia can cause serious problems. A low level of red blood cells in your body can make your heart work harder. This can lead to a thickening of the left side of the heart, a serious condition called left ventricular hypertrophy or LVH.

Treating anemia can increase your energy and help you feel better. It may improve your thinking ability, as well as your physical, social, and sexual functioning.
OUR VISION
Kidney health, and improved lives for all people affected by kidney disease.

OUR MISSION
The Kidney Foundation of Canada is the national volunteer organization committed to reducing the burden of kidney disease through:

■ funding and stimulating innovative research;
■ providing education and support;
■ promoting access to high quality healthcare; and
■ increasing public awareness and commitment to advancing kidney health and organ donation.

Since 1964, our fundraising campaigns have allowed us to contribute millions of dollars to research, and to provide services to individuals living with chronic kidney disease and related conditions.

For further information, or if you wish to help us in our efforts, please contact The Kidney Foundation of Canada office in your area. You can also visit our Web site at www.kidney.ca.

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