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For patients

Anemia

Anemia is a condition where you have low levels of red blood cells or hemoglobin. Hemoglobin carries oxygen inside red blood cells, which distribute oxygen throughout the body. Because it is rich in iron, hemoglobin also gives blood its red color. Many different things can cause anemia. Because an underlying condition is frequently the cause, it's important to get prompt diagnosis and treatment.

Your doctor will use blood tests to diagnose your anemia and to identify its cause. Occasionally, your doctor may also use imaging tests. There are many different causes of anemia, and treatments vary widely. These treatments may include observation, iron supplementation, medications, surgery, or even cancer treatment.

What is anemia?

Anemia is a condition where your blood does not have enough red blood cells (http://www.radiologyinfo.org) or hemoglobin (http://www.radiologyinfo.org) . There are many forms of anemia, including:

- Iron deficiency anemia from low levels of iron in your blood. Often, the cause is blood loss (most commonly via heavy menstruation or bleeding in the gastrointestinal tract).
- Vitamin deficiency anemia due to low levels of vitamins C, B-12, or folate.
- Aplastic anemia, which occurs when the bone marrow (http://www.radiologyinfo.org) fails to produce enough red blood cells.
- Hemolytic anemia, a condition where the body destroys red blood cells prematurely.
- Sickle cell anemia, an inherited disorder characterized by abnormal, crescent-shaped red blood cells.
- Thalassemia, an inherited disorder where an abnormal form of hemoglobin destroys red blood cells prematurely.

Anemia varies in severity and duration. Because anemia has an underlying cause, prompt diagnosis and treatment are very important.

How is anemia diagnosed and evaluated?

Common symptoms of anemia include fatigue, irritability, headaches and difficulty concentrating. Your doctor may detect a heart murmur or a sudden drop in blood pressure when you stand.

A blood test will provide counts of your white blood cells (http://www.radiologyinfo.org) , red blood cells and platelets (http://www.radiologyinfo.org) . If you have anemia, more tests may determine its type and whether it has a serious cause. These tests may include:

- A reticulocyte count to see if your bone marrow is making red blood cells at an accelerated rate (this is a sign of prior blood loss)
- Serum iron and ferritin tests to check the amount of iron in your blood and body
- A peripheral blood smear to see if your red blood cells are an abnormal shape

- Hemoglobin electrophoresis to evaluate for abnormal hemoglobin, which is present in thalassemia and sickle cell disease
- An osmotic fragility test to see if your red blood cells are more fragile than usual

Your doctor may use more tests to search for the cause of your anemia. If blood loss is a concern, your doctor may use endoscopy (http://www.radiologyinfo.org) to examine your upper digestive system for signs of bleeding. You also may undergo colonoscopy (http://www.radiologyinfo.org) to look for bleeding tumors (http://www.radiologyinfo.org) , and other problems in the large intestine. Cell and bone marrow samples can supply clues to abnormal or lower red blood cell production.

You may undergo imaging exams to further evaluate certain causes of anemia. These may include:

- Chest x-ray (https://www.radiologyinfo.org/en/info/chestrad) : Chest x-rays may rule out infection in anemia patients *See the Radiation Dose in X-Ray and CT Exams Safety page (https://www.radiologyinfo.org/en/info/safety-xray) for more information about x-rays.*
- General ultrasound (https://www.radiologyinfo.org/en/info/genus) : Ultrasound can find anemia-related problems without using radiation. These problems may include an enlarged spleen or uterine fibroids. Doppler ultrasound (http://www.radiologyinfo.org) can also detect circulatory problems that suggest anemia in unborn babies.
- Computed tomography (CT) - Abdomen and Pelvis (https://www.radiologyinfo.org/en/info/abdominct) : CT uses x-rays to image bones, internal organs, and lymph nodes (http://www.radiologyinfo.org) . It can show an enlarged spleen or certain types of lymph node anemia-related problems. It also finds causes of bleeding, such as gastrointestinal malignancies. *See the Radiation Dose in X-Ray and CT Exams Safety page (https://www.radiologyinfo.org/en/info/safety-xray) for more information about CT.*
- Body magnetic resonance imaging (MRI) (https://www.radiologyinfo.org/en/info/bodymr) : MRI finds bone and bone marrow disorders. It also can help assess iron concentration in the heart, liver, and other organs. This is particularly useful in patients with multiple blood transfusions and concern for iron overload. *See the Magnetic Resonance Imaging (MRI) Safety page (https://www.radiologyinfo.org/en/info/safety-mr) for more information about MRI.*

How is anemia treated?

Anemia is a broad medical topic. Treatment depends on your specific diagnosis and the severity of your condition. Your doctor will tailor these treatments to your diagnosis. Different diagnoses and their treatments may include:

- Iron deficiency anemia – iron supplements, medications, blood transfusions, surgery, or even cancer treatment
- Vitamin deficiency anemia – vitamin B-12 injections and folic acid supplements
- Anemia related to chronic disease – treatment of the underlying disease, blood transfusions, or synthetic hormone injections to boost red blood cell production
- Aplastic anemia – medications and blood transfusions to boost red blood cell levels
- Anemia related to autoimmune disorders – drugs to suppress the immune system
- Anemia related to bone marrow disease – medication, chemotherapy (http://www.radiologyinfo.org) or bone marrow transplant
- Hemolytic anemia – spleen (http://www.radiologyinfo.org) removal, drugs to suppress the immune system, blood transfusions, or blood filtering
- Sickle cell anemia – medications, oxygen, blood transfusions, folic acid supplements, antibiotics, bone marrow transplant
- Thalassemia – blood transfusions, folic acid supplements, spleen removal, or bone marrow transplant

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