

ANEMIA

What is anemia?

Anemia is having less than the normal number of red blood cells or less hemoglobin than normal in the blood.

How is anemia detected?

Anemia is usually detected or at least confirmed by a complete blood cell (CBC) count.

What is a complete blood cell (CBC) count?

In a CBC test, the different types of cells in the blood are counted and examined. Today, much of this work is often automated and done by machine. Six tests make up a CBC:

- Red blood cell (RBC) count
- Hematocrit
- Hemoglobin
- White blood cell (WBC) count
- Differential blood count (the "diff")
- Platelet count

Only the first three of these tests: the red blood cell (RBC) count, the hematocrit, and the hemoglobin, are relevant to the diagnosis of anemia.

What is the red blood cell (RBC) count?

The red blood cells (RBCs) are the most common type of cells in the blood. Everyone has millions and millions of these little disc-shaped cells. The RBC count is done to determine if the number of red blood cells is low (anemia) or high (polycythemia).

In an RBC count, the number and size of the RBCs are determined. The shape of the red blood cells is also evaluated under a microscope. All of this information, the number, size and shape of the RBCs, is useful in the diagnosis of anemia and, if there is anemia, in the decision about the exact type of anemia.

What is the hematocrit?

The hematocrit is a very convenient way to determine whether the red blood cell count is too high, too low, or normal. The hematocrit is specifically a measure of how much of the blood is made of red cells.

How is an hematocrit done?

The hematocrit is often done by pricking the finger and drawing a drop of blood up into a thin glass tube. Another way is to draw a tube of blood from the arm.

The RBCs in the sample of blood are packed down by spinning the tube in a centrifuge under prescribed conditions. The proportion of the tube that consists of RBCs is then measured. Let's say that it is 45%. The hematocrit is 45.

What is hemoglobin?

Hemoglobin is a red pigment; it imparts the familiar red color to red blood cells and to blood. Functionally, hemoglobin is the key chemical compound that combines with oxygen from the lungs and carries the oxygen from the lungs to cells throughout the body. Oxygen is essential for cells to produce energy. The blood also transports carbon dioxide, which is the waste product of this energy production process, back to the lungs from which it is exhaled into the air.

What does a low hemoglobin level mean?

People with a low hemoglobin level have anemia. When there is a low hemoglobin level, there is often a low red blood cell count and a low hematocrit, too.

What is the consequence of anemia?

Oxygen transport through the body is subnormal. The person with anemia is underoxygenated.

What are the symptoms of anemia?

People with anemia can feel tired, fatigue easily, appear pale, develop [palpitations](#), and become short of breath.

What is the cause of anemia?

There is no one cause of anemia.

Can not enough iron be the problem?

Women are more likely than men to have anemia because of the loss of blood each month through menstruation. Iron deficiency anemia is common.

In adults, iron deficiency anemia is most often due to chronic blood loss. This can be from menstruation or from small amounts of repeated bleeding (which can be very subtle) due, for instance, to colon [cancer](#).

Anemia can also be due to gastrointestinal bleeding caused by medications including such very common drugs as aspirin and [ibuprofen](#) (ADVIL, MOTRIN).

In infants and young children, iron deficiency anemia is most often due to a diet lacking iron.

How about acute (sudden) blood loss as a cause of anemia?

Acute blood loss from internal bleeding (as from a bleeding ulcer) or external bleeding (as from trauma) can produce anemia in an amazingly short span of time.

Can anemia be in your genes?

The answer is clearly and emphatically "yes!" Hereditary disorders can shorten the lifespan of the RBC and lead to anemia, as in [sickle cell anemia](#). Hereditary disorders can also cause anemia by impairing the production of hemoglobin, as in the alpha thalassemia and [beta thalassemia](#).

What are the other causes of anemia?

Vitamin B12 is involved in [pernicious anemia](#).

Folate deficiency can be the culprit and be the basis of anemia.

There can be rupture of red blood cells (hemolytic anemia) due to antibodies clinging to the surface of the red cells, as in hemolytic disease of the newborn and in many other conditions.

A wide assortment of bone marrow diseases can cause anemia. For example, cancers that spread (metastasize) to the bone marrow, or cancers of the bone marrow (such as [leukemia](#) or [multiple myeloma](#)) can cause the bone marrow to inadequately produce red blood cells, resulting in anemia. Certain [chemotherapy](#) for cancers can also cause damage to the bone marrow and decrease red blood cell production, resulting in anemia. Finally, patients with [kidney failure](#) may lack the hormone necessary to stimulate normal red blood cell production by the bone marrow.

The list of causes of anemia, if not endless, is very long, too long to detail here.

How is anemia treated?

The treatment of the anemia varies greatly. Firstly, the underlying cause of the anemia should be corrected. For example, anemia as a result of blood loss from a stomach ulcer should begin with medications to heal the ulcer. Likewise, surgery is often necessary to remove a [colon cancer](#) that is causing chronic blood loss and anemia. Sometimes iron supplements will also be needed to correct iron deficiency. Sometimes blood transfusions are necessary. Vitamin B12 injections will be necessary for patients suffering from pernicious anemia or other causes of B12 deficiency.

In certain patients with bone marrow disease (or bone marrow damage from chemotherapy) or patients with kidney failure, [epoetin alfa](#) ([Procrit](#), Epogen) may be used to stimulate bone marrow red blood cell production.

What is the outlook prognosis with anemia?

The prognosis with anemia also varies greatly. Sometimes it can be easily cured. Sometimes not. Again, it all depends upon the exact cause of the anemia.