



Education

Complete Blood Count Test (CBC)

What is the complete blood count test (CBC)?

Many blood tests measure the amount of a particular chemical or protein in your blood, but a complete blood count checks the blood cells themselves. It measures the numbers of different types of blood cells, their sizes, and their appearance. It is a very common and useful blood test.

In general, the test measures 3 main components of blood:

- **Red blood cells** (also called erythrocytes or RBCs). The test measures the number, size, shape, and appearance of the RBCs, and also the amount of hemoglobin in them. Hemoglobin carries oxygen from the lungs to the rest of the body. The part of the test called a hematocrit measures the percentage of your blood that is red blood cells.
- **White blood cells** (also called leukocytes or WBCs). The total count of white cells is measured. White blood cells help the body's immune system fight infection. When the amounts of each of the different types of white blood cells are also measured, the test is called a differential. The most common types are neutrophils (also called polymorphonuclear cells, PMNs, polys, or granulocytes) and lymphocytes.
- **Platelets** (also called thrombocytes). Platelets are not actually blood cells. They are fragments of large blood-forming cells. These fragments are essential for normal blood clotting.

Why is this test done?

This test is usually done to see if:

- You have anemia (too few red blood cells).
- You have a high level of white blood cells (also called leukocytosis). A high white-blood-cell count is often a sign of infection.

This test may be done for other reasons as well, such as to:

- Look for the cause of anemia.
- Check for certain diseases.
- Check the number of platelets.

How do I prepare for this test?

- You may need to avoid taking certain medicines before the test because they might affect the test result. Make sure your health care provider knows about any medicines, herbs, or supplements that you are taking. Don't stop any of your regular medicines without first consulting with your health care provider.
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How is the test done?

A small amount of blood is taken from your arm with a needle. The blood is collected in tubes and sent to a lab. A machine in the lab measures the amounts of the different components in the sample of blood. The blood sample may also be viewed with a microscope to double check the different kinds of white blood cells.

Having this test will take just a few minutes of your time. There is no risk of getting AIDS, hepatitis, or any other blood-borne disease from this test.

How will I get the test result?

Ask your health care provider when and how you will get the result of your test.

What do the test results mean?

The normal ranges in most labs are:

- red blood cells (RBC): 4 to 6 million cells per microliter
- white blood cells (WBC): 5,000 to 10,000 cells per microliter
- hematocrit: for women, 36% to 45%; for men 41% to 47%
- hemoglobin: for women, 12 to 15 grams per deciliter; for men, 14 to 16 grams per deciliter
- platelets: 150,000 to 450,000 per microliter.

These ranges may vary from lab to lab. Normal ranges are usually shown next to your results in the lab report.

Some of the reasons your **red blood cell** count may be **higher than normal** are:

- You haven't had enough fluids.
- You are a smoker.
- You have polycythemia vera, a disease that causes your blood to be too thick because you're making too many red blood cells.
- You have smoker's lung disease.

A red blood cell count or hemoglobin level **lower than normal** is called anemia. The size of the red blood cells gives an important clue to possible causes of anemia:

- Anemia with small red blood cells (called microcytic anemia) may be caused by:
 - a lack of iron
 - bleeding, such as from a stomach ulcer.
- Anemia with large red blood cells (called macrocytic anemia) may be caused by a lack of the vitamins:
 - B-12
 - folate.

Some of the reasons your **white blood cell** count may be **higher than normal** are:

- You have an infection.
- You have inflammation.
- You are taking certain medicines, such as prednisone.
- You have a type of cancer called leukemia.

Your white blood cell count may be **lower than normal** if you have a viral infection, including the common cold.

Your **platelet count** may be **higher than normal** if you have an autoimmune disease, such as rheumatoid arthritis or Crohn's disease.

Some of the reasons your platelet count may be **lower than normal** are:

- You are taking certain medicines, such as sulfa drugs, quinine, or heparin.
- You have sepsis (blood infection) or another serious illness.
- You have an autoimmune disease, such as lupus.

What if my test result is not normal?

Test results are only one part of a larger picture that takes into account your medical history and current health. Sometimes a test needs to be repeated to check the first result. Talk to your health care provider about your result and ask questions.

If your test results are not normal, ask your health care provider:

- if you need additional tests
- what you can do to work toward a normal value
- when you need to be tested again.

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