



NATIONWIDE CHILDREN'S
When your child needs a hospital, everything matters.

Helping Hand™

Health Education for Patients and Families

Complete Blood Count (CBC)

A complete blood count (CBC) test tells what and how many red blood cells, white blood cells and platelets are in the blood. CBC's are done in a lab (laboratory) using an automated machine. A CBC can help evaluate overall health, diagnose a medical condition or know if a treatment is working.

The health care provider often orders a CBC with platelets and differential. This means that the blood will be tested for the total number of all types of cells and for the number of 5 kinds of white blood cells – neutrophils, eosinophils, basophils, lymphocytes, and monocytes.

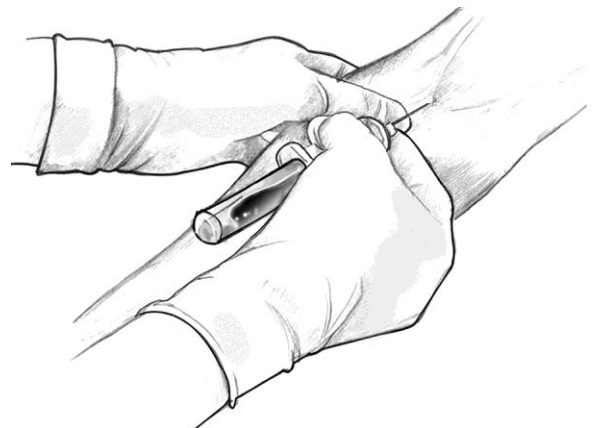
If the CBC and platelet test is abnormal, a drop of blood may be looked at under a microscope.

How a blood count is done

A sample of blood is taken either by needle from a vein in the arm (Picture 1) or from a small stick in the finger. It can also be taken from a central venous line through a catheter in a large vein of the neck, cheek, groin, or arm. In infants, it is taken from the heel of the foot.

The blood is analyzed by a machine in the lab that can count the different cells. Not all the blood will be used in the machine.

If the result is not normal, some of the saved blood can be used to do a blood smear test. With this test, a small drop of blood is spread thinly on a glass slide. The sample is stained with special dyes and then looked at under a microscope. The dye makes it easy to see abnormal changes in the size, shape and number of cells (Picture 2, next page). Your child's health care provider will help you understand the results of the blood test.



Source: National Institute of Diabetes and Digestive and Kidney Diseases, National Institutes of Health

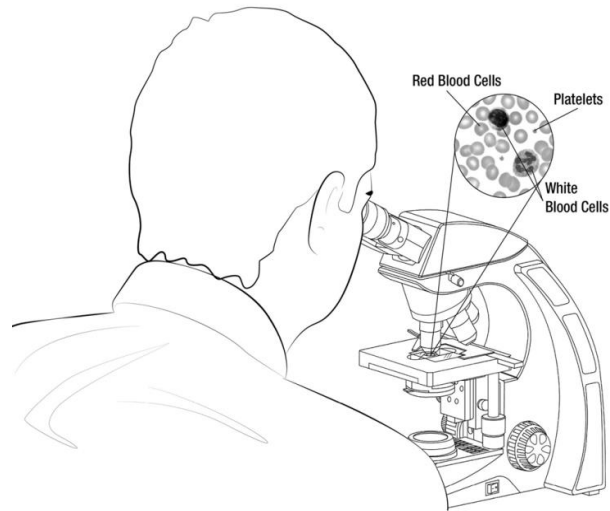
Picture 1 Blood is taken from a vein to do a CBC test.

Types of cells in the blood

Almost half the blood is made up of red and white cells and platelets that all float in pale yellow liquid called plasma (PLAZ-ma). Each type of cell has a role in your health.

Red blood cells

- Red blood cells contain hemoglobin (HE-moe-glow-bin). Hemoglobin carries the oxygen that we breathe to all parts of the body.
- Red blood cells give blood its red color.
- They are made in the bone marrow (the soft, spongy substance inside bones).



Picture 2 How blood looks under a microscope. Special dyes make it easy to see the types of cells and changes in them.

White blood cells

- White blood cells fight infection and increase in number when needed. They are also called leukocytes.
- White blood cells are made in the bone marrow, lymph nodes and spleen.
- A CBC with differential tests 5 types of white blood cells.
 - Neutrophils act first and fast to fight bacteria, fungus and viruses.
 - Eosinophils target larger parasites (worms). They help with allergic reactions.
 - Basophils also play a role in allergic reactions. They protect against bacteria and parasites.
 - Lymphocytes help make antibodies that stay ready to fight an infection that you have had before. Lymphocytes also help fight viruses.
 - Monocytes clean up dead cells in the body. They work to fight off chronic infections.

Platelets

Platelets help to clot blood and stop bleeding. Platelets are made in the bone marrow.

For directions to the nearest Laboratory Service Center, please call Laboratory Services at (800) 934-6575 or visit NationwideChildrens.org/lab.