

## Complete Blood Count (CBC)

A complete blood count (CBC) provides important information about the kinds and numbers of cells in the blood, especially red blood cells, white blood cells, and platelets. A CBC helps your health professional evaluate symptoms (such as weakness, fatigue, or bruising) and diagnose conditions (such as anemia, infection, and many other disorders).

A CBC test usually includes:

- **White blood cell (WBC, leukocyte) count.** White blood cells protect the body against infection. If an infection develops, white blood cells attack and destroy the bacteria, virus, or other organism causing it. White blood cells are bigger than red blood cells and normally fewer in number. When a person has a bacterial infection, the number of white cells can increase dramatically. The number of white blood cells is sometimes used to identify an infection or monitor the body's response to cancer treatment.
- **White blood cell types (WBC differential).** The major types of white blood cells are neutrophils, lymphocytes, monocytes, eosinophils, and basophils. Immature neutrophils, called band neutrophils, are also included and counted as part of this test. Each type of cell plays a different role in protecting the body. The numbers of each one of these types of white blood cells give important information about the immune system. An increase or decrease in the numbers of the different types of white blood cells can help identify infection, an allergic or toxic reaction to certain medications or chemicals, and many conditions, such as leukemia.
- **Red blood cell (RBC) count.** Red blood cells carry oxygen from the lungs to the rest of the body. They also carry carbon dioxide back to the lungs so it can be exhaled. If the RBC count is low (anemia), the body may not be getting the oxygen it needs. If the count is too high (a condition called polycythemia vera), there is a risk that the red blood cells will clump together and block tiny blood vessels (capillaries).
- **Hematocrit (HCT, packed cell volume, PCV).** This test measures the amount of space (volume) red blood cells occupy in the blood. The value is given as a percentage of red blood cells in a volume of blood. For example, a hematocrit of 38 means that 38% of the blood's volume is composed of red cells.
- **Hemoglobin (Hgb).** Hemoglobin is the major substance in a red blood cells. It carries oxygen and gives the blood cell its red color. The hemoglobin test measures the amount of hemoglobin in blood and is a good indication of the blood's ability to carry oxygen throughout the body.
- **Red blood cell indices.** There are three red blood cell indices: mean corpuscular volume (MCV), mean corpuscular hemoglobin (MCH), and mean corpuscular hemoglobin concentration (MCHC). They are measured by a machine and their values are determined from other measurements noted during a CBC. The MCV shows the size of the red blood cells. The MCH value is the amount of hemoglobin in an average red blood cell. The MCHC measures the concentration of hemoglobin in an average red blood cell. These numbers help in the diagnosis of different types of anemia. Red cell distribution width (RDW) can also be measured which indicates different sizes of red blood cells are present.
- **Platelet (thrombocyte) count.** Platelets (thrombocytes) are the smallest type of blood cell. They play a major role in blood clotting. When bleeding occurs, the platelets swell, clump together, and form a sticky plug that helps stop the bleeding. If there are too few platelets, uncontrolled bleeding may be a problem. If there are too many platelets, there is a risk of a blood clot forming in a blood vessel. Also, platelets may be involved in hardening of the arteries (atherosclerosis).
- **Blood smear.** In this test, a drop of blood is spread (smear) on a slide and stained with a special dye. The slide is then examined under a microscope. The number, size, and shape of red blood cells, white blood cells, and platelets are recorded. Blood cells with unusual shapes or sizes can help diagnose many blood diseases, such as leukemia, malaria, or sickle cell anemia.