

Understanding Blood Cell Counts

Your blood cells are made in **bone marrow**, a soft spongy material that fills the inside of your bones. Most of your body's bone marrow is found in larger bones such as your breast bone, ribs, skull, pelvis and spine.

The different blood cells made in your bone marrow are white blood cells, red blood cells and platelets. These cells can only last in your blood from days to months. Your bone marrow is always working to make new blood cells to replace damaged or old cells.

Cancer and some of its treatments can make it hard for your bone marrow to do its job making new blood cells. Cancer treatments work to damage and stop fast growing cancer cells, but they also damage your normal healthy cells. This change in the balance of blood cells can cause low blood counts for a period time.

Your doctor may order a blood test to check the different cells in your blood. A small sample of your blood is taken and sent to the lab.

Note: Some health problems may require ongoing monitoring or repeat testing. It is important to know that normal range values can vary from laboratory to laboratory. Talk with your doctor if you have questions about your test results.

Complete Blood Count (CBC)

A **CBC** shows the number of white and red blood cells, hematocrit, hemoglobin and platelets in your blood.

This handout is for informational purposes only. Talk with your doctor or health care team if you have any questions about your care.

CBC with Differential

The “**differential count**”, sometimes known as the “**diff**”, shows the amount (percentage) of each type of white blood cell in your blood. Each type has a different job to help your body fight infection.

White Blood Cells (WBC)

A normal range (Total WBC): 4.5 – 11.0 K/uL.

WBCs fight infection and destroy bacteria and germs that enter your body. They are also called the **leukocytes**. There are 5 different types of WBCs:

- Neutrophils
- Basophils
- Eosinophils
- Lymphocytes
- Monocytes

The **Neutrophils** make up over half of the total white blood cell count. Neutrophils are the most important white blood cells that fight infection. Your risk of infection goes up if your WBCs and neutrophils fall below normal.

If you are getting cancer treatment, you may hear about a test called the **Absolute Neutrophil Count (ANC)**. The ANC is done to measure the number of neutrophils in your blood. This test may be done during cancer treatment to check your body’s ability to fight infections while getting treatment.

A normal ANC is between 2,500 to 6,000. If the ANC drops below 1000, your risk for an infection increases and you may hear your doctor or nurse say that you are “**neutropenic**”. **Neutropenia** is the medical term for a low level of neutrophils and puts you at a very high risk for infection. Sometimes cancer treatments may be delayed if counts are low.

Red Blood Cells (RBC)

RBCs transport oxygen to your body's cells.

Normal ranges are different for men and women

- ▶ Normal range: 4.7 – 6.1 M/uL for men
- ▶ Normal range: 4.2 – 5.4 M/uL for women

The **Hemoglobin** and **Hematocrit** are 2 factors that are often measured with RBCs.

- **Hemoglobin (Hgb)** Hemoglobin is a protein found in your RBCs that gives blood its red color. Hemoglobin is the part of RBCs that picks up oxygen in your lungs and carries it to your body's cells. Hemoglobin also carries away carbon dioxide waste.

Normal ranges are different for men and women

- ▶ Normal range: 13.2 – 17.3 g/dL for men
- ▶ Normal range: 11.7 – 15.5 g/dL for women

Anemia is the medical term for a low red blood cell count. Anemia happens when the Hemoglobin falls below the normal range.

- **Hematocrit (Hct)** The hematocrit shows how much of your blood is made up of red blood cells. Test results are given as a percentage. The hematocrit value goes up and down as your hemoglobin goes up and down.

Normal ranges are different for men and women

- ▶ Normal range: 39% – 49% for men
- ▶ Normal range: 35% – 45% for women

Platelets

Normal range: 150 – 400 K/uL

Platelets form blood clots to help stop bleeding. The term **thrombocytopenia** means low platelets. If your platelets are very low, you are at risk to bruise or bleed. Sometimes cancer treatments may be delayed if your platelet counts are low.

Other Patient Education Handouts

- [Low White Blood Cell Count Precautions](#)
- [Cancer Therapy: Managing Side Effects - Fatigue](#)
- [Using Exercise to Fight Cancer-Related Fatigue](#)
- [Preventing Bleeding When You Have a Low Platelet Count](#)

For more information on a Complete Blood Cell Count (CBC), we encourage you to visit our video library at <http://cancer.osu.edu/patientedvideos>.