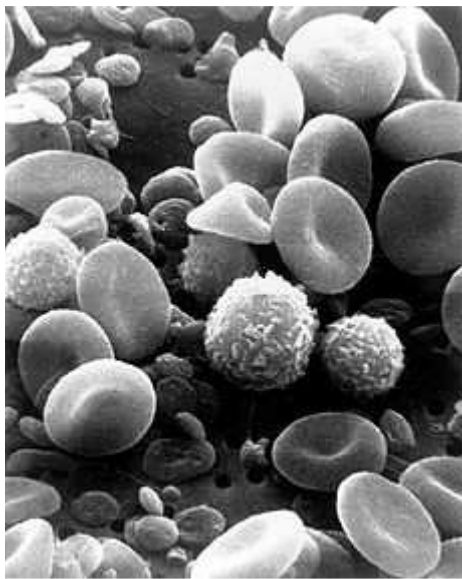


A **complete blood count (CBC)**, also known as **full blood count (FBC)** or **full blood exam (FBE)** or **blood panel**, is a test requested by a **doctor** or other **medical professional** that gives information about the cells in a patient's blood. The **cells** that circulate in the **bloodstream** are generally divided into three types: white blood cells (**leukocytes**), red blood cells (**erythrocytes**), and **platelets** or thrombocytes. Abnormally high or low counts may indicate the presence of many forms of disease, and hence blood counts are amongst the most commonly performed **blood tests** in medicine, as they can provide an overview of a patient's general health status. A CBC is routinely performed during annual physical examinations in some jurisdictions.

## Results



A scanning electron microscope (SEM) image of normal circulating human blood. One can see red blood cells, several knobby white blood cells including lymphocytes, a monocyte, a neutrophil, and many small disc-shaped platelets.

A complete blood count will normally include:

### Red cells

- Total **red blood cells** - The number of red cells is given as an absolute number per litre.
- **Hemoglobin** - The amount of hemoglobin in the blood, expressed in grams per decilitre. (Low hemoglobin is called **anemia**.)
- **Hematocrit** or packed cell volume (PCV) - This is the fraction of whole blood volume that consists of red blood cells.
- **Red blood cell indices**
  - **Mean corpuscular volume (MCV)** - the average volume of the red cells, measured in **femtolitres**. **Anemia** is classified as **microcytic** or **macrocytic** based on whether this value is above or below the expected normal range.
  - **Mean corpuscular hemoglobin (MCH)** - the average amount of hemoglobin per red blood cell, in **picograms**.

- **Mean corpuscular hemoglobin concentration (MCHC)** - the average concentration of hemoglobin in the cells.
- **Red blood cell distribution width (RDW)** - a measure of the variation of the RBC population

### White cells

- Total **white blood cells** - All the white cell types are given as a percentage and as an absolute number per litre.

A complete blood count with differential will also include:

- **Neutrophil granulocytes** - May indicate **bacterial** infection. May also be raised in acute viral infections. Because of the segmented appearance of the nucleus, neutrophils are sometimes referred to as "segs." The nucleus of less mature neutrophils is not segmented, but has a band or rod-like shape. Less mature neutrophils - those that have recently been released from the bone marrow into the bloodstream - are known as "bands" or "stabs". Stab is a German term for rod.[1]
- **Lymphocytes** - Higher with some **viral** infections such as **glandular fever** and. Also raised in lymphocytic leukaemia **CLL**. Can be decreased by HIV infection. In adults, lymphocytes are the second most common WBC type after neutrophils. In young children under age 8, lymphocytes are more common than neutrophils.[2].
- **Monocytes** - May be raised in bacterial infection, tuberculosis, malaria, Rocky Mountain spotted fever, monocytic leukemia, chronic ulcerative colitis and regional enteritis [3]
- **Eosinophil granulocytes** - Increased in **parasitic** infections, asthma, or allergic reaction.
- **Basophil granulocytes**- May be increased in bone marrow related conditions such as leukemia or lymphoma. [4]

### Platelets

- **Platelet** numbers are given, as well as information about their size and the range of sizes in the blood.

### Interpretation

Certain **disease** states are defined by an absolute increase or decrease in the number of a particular type of cell in the bloodstream. For example: