

[Print this page](#)[Close this window](#)

Medical Encyclopedia: WBC count

URL of this page: <http://www.nlm.nih.gov/medlineplus/ency/article/003643.htm>

Alternative names

Leukocyte count; White blood cell count

Definition

This is a blood test to measure the number of white blood cells (WBCs). It is almost always part of the CBC (complete blood count). See also blood differential.

How the test is performed

Blood is drawn from a vein, usually from the inside of the elbow or the back of the hand. The puncture site is cleaned with antiseptic, and an elastic band is placed around the upper arm to apply pressure and restrict blood flow through the vein. This causes veins below the band to fill with blood.

A needle is inserted into the vein, and the blood is collected in an air-tight vial or a syringe. During the procedure, the band is removed to restore circulation. Once the blood has been collected, the needle is removed, and the puncture site is covered to stop any bleeding.

For an infant or young child:

The area is cleansed with antiseptic and punctured with a sharp needle or a lancet. The blood may be collected in a pipette (small glass tube), on a slide, onto a test strip, or into a small container. Cotton or a bandage may be applied to the puncture site if there is any continued bleeding.

How to prepare for the test

No special preparation is necessary for adults.

For infants and children:

The preparation you can provide for this test depends on your child's age, previous experiences, and level of trust. For specific information regarding how you can prepare your child, see the following topics:

- infant test or procedure preparation (birth to 1 year)
- toddler test or procedure preparation (1 to 3 years)
- preschooler test or procedure preparation (3 to 6 years)
- schoolage test or procedure preparation (6 to 12 years)
- adolescent test or procedure preparation (12 to 18 years)

How the test will feel

When the needle is inserted to draw blood, some people feel moderate pain, while others feel only a prick or stinging sensation. Afterward, there may be some throbbing.

Why the test is performed

To measure the number of white blood cells in the blood. White blood cells are the major infection-fighting cells in the body. They are also involved in reactions to allergies, tumors, and stress in general.

Normal Values

4,500-10,000 white blood cells/mcl (cells per microliter)

What abnormal results mean

Low numbers of WBCs (leukopenia) may indicate:

- bone marrow failure (for example, due to infection, tumor, fibrosis)
- presence of cytotoxic substance
- collagen-vascular diseases (such as lupus erythematosus)
- disease of the liver or spleen
- radiation

High numbers of WBCs (leukocytosis) may indicate:

- infectious diseases
- inflammatory disease (such as rheumatoid arthritis or allergy)
- leukemia
- severe emotional or physical stress
- tissue damage (for example, burns)
- anemia

This test may be performed under many conditions and in many disease states.

What the risks are

Risks associated with having blood drawn are slight:

- excessive bleeding
- fainting or feeling light-headed
- hematoma (blood accumulating under the skin)
- infection (a slight risk any time the skin is broken)
- multiple punctures to locate veins

Special considerations

There are several types of white blood cells (WBCs) that normally appear in the blood: neutrophils (polymorphonuclear leukocytes; PMNs), band cells (slightly immature neutrophils), T-type lymphocytes (T cells), B-type lymphocytes (B cells), monocytes, eosinophils, and basophils.

Any infection or sudden stress will result in an increased production of WBCs. This usually means increased numbers of cells and an increase in the percentage of immature cells (mainly band cells) in the blood. This change is called a "shift to the left."

Interfering factors:

- Acute emotional or physical stress can increase WBC counts.
- People who have had their spleen removed (splenectomy) will have a persistent mild elevation of WBCs.
- Drugs that may increase WBC counts include epinephrine, allopurinol, aspirin, chloroform, heparin, quinine, corticosteroids, and triamterene.
- Drugs that may decrease WBC counts include antibiotics, anticonvulsants, antihistamine, antithyroid drugs, arsenicals, barbiturates, chemotherapeutic agents, diuretics, and sulfonamides.
- Veins and arteries vary in size from one patient to another and from one side of the body to the other. Obtaining a blood sample from some people may be more difficult than from others.

Update Date: 2/3/2005

Updated by: Rita Nanda, M.D., Department of Hematology/Oncology, University of Chicago Medical Center, Chicago, IL. Review provided by VeriMed Healthcare Network.



A.D.A.M., Inc. is accredited by URAC, also known as the American Accreditation HealthCare Commission (www.urac.org). URAC's [accreditation program](#) is the first of its kind, requiring compliance with 53 standards of quality and accountability, verified by independent audit. A.D.A.M. is among the first to achieve this important distinction for online health information and services. Learn more about A.D.A.M.'s [editorial process](#). A.D.A.M. is also a founding member of Hi-Ethics (www.hiethics.com) and subscribes to the principles of the Health on the Net Foundation (www.hon.ch).

The information provided should not be used during any medical emergency or for the diagnosis or treatment of any medical condition. A licensed physician should be consulted for diagnosis and treatment of any and all medical conditions. Call 911 for all medical emergencies. Adam makes no representation or warranty regarding the accuracy, reliability, completeness, currentness, or timeliness of the content, text or graphics. Links to other sites are provided for information only -- they do not constitute endorsements of those other sites. Copyright 2005, A.D.A.M., Inc. Any duplication or distribution of the information contained herein is strictly prohibited.