TEST

WBC count

A WBC count measures the number of infection-fighting white blood cells in your blood.

WHAT IT MEASURES
Number of white blood cells in a blood sample

SAMPLE
Blood

FASTING NEEDED?
No, unless other tests require it

HOW LONG IT TAKES
About 5 to 10 minutes

RESULTS IN
Same day to several days, varying by laboratory

USED FOR
Screening, diagnosis, and monitoring

MAIN LIMITATION
An abnormal count cannot identify the cause

Overview

A white blood cell count, usually shortened to WBC count, measures how many white blood cells are present in your blood. White blood cells are part of your immune system. They help your body respond to infections, inflammation, injury, and other health problems.

The test is usually included in a complete blood count, or CBC. A CBC also measures red blood cells, which carry oxygen, and platelets, which help blood clot.

A total WBC count does not show which types of white blood cells are present. A WBC differential separates them into neutrophils, lymphocytes, monocytes, eosinophils, and basophils. These cell types have different roles, so the differential can add useful information.

A WBC count can show that the number is higher or lower than expected. It cannot, by itself, explain why.

Why the test is ordered

A WBC count may be ordered as part of a general health assessment or when symptoms

suggest an infection, inflammation, immune system condition, or blood disorder.

It may help investigate symptoms such as:

The test is also used to monitor conditions that affect the immune system or bone marrow. Bone marrow is the soft tissue inside bones where blood cells are made.

Some treatments can change white blood cell production. These include chemotherapy, radiation therapy, immune-suppressing medicines, and certain other medicines. Repeated WBC counts can help track these effects.

- Fever or repeated infections
- Unexplained tiredness or weakness
- Swollen lymph nodes
- Ongoing inflammation
- Unusual bruising or bleeding

Who should have the test

You may have a WBC count if it is included in a requested CBC, if you have symptoms that need investigation, or if you are being monitored during treatment.

There is no single schedule that applies to everyone. How often the test is useful depends on your health, medicines, symptoms, and previous results.

People receiving treatments that can lower white blood cells may need regular testing. A clinician may pay particular attention to the absolute neutrophil count , or ANC. Neutrophils are white blood cells that provide important protection against bacterial and fungal infections.

How to prepare

A WBC count alone does not require fasting. You can usually eat and drink normally, including water.

You may still need to fast if other blood tests are being collected at the same time. Follow the instructions given for the full set of tests.

Tell the person ordering the test about prescription medicines, over-the-counter products, and supplements. Do not stop a medicine unless you have been specifically advised to do so.

Hard exercise, acute stress, smoking, pregnancy, and recent illness can affect the count. If the test is intended to establish your usual level, mention these factors before the sample is taken.

What happens during the test

A healthcare professional usually takes blood from a vein in your arm. They clean the skin, insert a small needle, and collect blood into a tube. You may feel a brief scratch or sting.

The blood draw usually takes a few minutes. The sample is then sent to a laboratory, where an automated instrument counts the cells.

If the instrument detects unusual cells or a result that needs checking, laboratory staff may examine a blood smear. This involves spreading a thin layer of blood on a glass slide and looking at the cells under a microscope.

Understanding your results

Your report will show your WBC count and the laboratory's reference range. The count may be reported as cells per microlitre or as billions of cells per litre.

Do not compare your number with a universal "normal" range found online. Ranges and interpretation vary by laboratory, age, sex, pregnancy status, medicines, and clinical context. Newborns and children can have different expected counts from adults, and counts often rise during pregnancy and labour.

A count above the laboratory range is called leukocytosis . Common explanations include infection, inflammation, physical stress, smoking, pregnancy, and medicines such as corticosteroids like prednisone or hydrocortisone . Less commonly, it may reflect a bone marrow or blood disorder.

A count below the range is called leukopenia . It can occur with some viral infections, autoimmune conditions, bone marrow problems, nutritional deficiencies, or medicines that reduce blood cell production.

The total count is only one part of the result. A differential and ANC can show whether a particular cell type is responsible for the change. Your current symptoms, previous counts, other CBC results, and medical history are also important.

What affects the results

A WBC count can change quickly. An unusual result does not always mean that a new illness is present.

Factors that may affect the number include:

Sample-related problems are uncommon but possible. White blood cells may clump or deteriorate if a sample is delayed or reacts unusually with the tube's anticoagulant like warfarin or apixaban . The analyser may flag the result so that the laboratory can repeat the count or inspect a blood smear.

A recent transfusion usually has less effect on a WBC count than on red blood cell measurements, because most transfused red-cell products contain very few white blood cells. However, transfusion reactions, the condition requiring transfusion, or other treatments given at the same time may affect interpretation.

- Recent infection: Counts may rise or fall during an infection and can remain changed during recovery
- Exercise: Strenuous activity can temporarily increase circulating white blood cells
- Physical or emotional stress: Pain, anxiety, seizures, surgery, burns, and injury may increase the count
- Time of day: White blood cell numbers can shift over the day
- Pregnancy and labour: Counts are often higher, particularly later in pregnancy and around delivery
- Age: Expected values differ between newborns, children, and adults
- Smoking: Regular smoking can be associated with a higher count
- Medicines: Corticosteroids, lithium, and some inhaled or injected medicines can raise counts; chemotherapy, immune-suppressing medicines, clozapine, and some antithyroid medicines can lower them
- Hydration: Changes in the liquid part of blood can make the measured concentration appear higher or lower

Accuracy and limitations

Automated blood analysers count white blood cells accurately in most routine samples. Repeating the analysis and checking a blood smear can resolve many instrument flags or unexpected findings.

The test has important limits. A high count does not prove that you have an infection, and a normal count does not rule one out. Some significant infections occur with a normal or low count. Temporary stress or medicine effects can produce an abnormal result when there is no new disease.

A total WBC count can also miss an important change in one cell type if the overall number

remains within range. This is why a differential and ANC may be more useful in some situations.

There is no single rate for how often the test misses a condition or gives an abnormal result when no disease is present. That depends on the condition being investigated, the reference range, medicines, timing, and whether a differential or blood smear is included.

When the cause remains unclear, a repeat CBC, differential, blood smear, infection testing, inflammation tests, or other investigations may be more informative. Bone marrow testing is reserved for selected situations and is not a routine next step after one unusual WBC result.

Risks and complications

A blood draw may cause a small bruise, brief soreness, or light-headedness. More significant complications are uncommon.

What happens next

A result within the laboratory range may need no further action, especially if the test was routine and the rest of the CBC is reassuring.

A mildly abnormal result is often compared with previous tests or repeated after a temporary illness has passed. Routine follow-up may include reviewing your medicines, symptoms, differential count, and other blood cell measurements.

Contact your healthcare team promptly if you have a low white cell or neutrophil count and develop a fever, particularly if you are receiving chemotherapy or immune-suppressing treatment. Follow any emergency plan your treatment team has provided.

Seek urgent or emergency care for severe symptoms such as trouble breathing, confusion, fainting, uncontrolled bleeding, or a rapidly worsening illness. These symptoms matter regardless of the WBC result.

Common questions

Can I drink coffee before a WBC count?

Usually, yes. A WBC count does not require fasting, but coffee may not be allowed if other tests collected at the same time require fasting. Check the instructions for the whole blood test appointment.

Does the time of day matter?

White blood cell counts can change over the day, but timing is not usually critical for a single routine test. For repeated monitoring, collecting samples at a similar time can make comparison easier.

Can I exercise before the test?

Strenuous exercise can temporarily raise the count. If the aim is to measure your usual level, avoid an unusually hard workout beforehand or tell the healthcare professional about it.

Can stress raise my WBC count?

Yes. Physical or emotional stress can temporarily move white blood cells from body tissues into the bloodstream, increasing the measured count.

Can a cold affect the result?

Yes. Colds and other infections can change the total count or the balance of white blood cell types. Tell the person interpreting the result about recent symptoms.

What is a WBC differential?

It measures the amount or percentage of each major white blood cell type. It can provide more useful information than the total count alone, but it still needs to be interpreted with your symptoms and other results.

Sources

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