



UNDERSTANDING LEUKOCYTOSIS

A brief guide for patients with a high white blood cell count

Leukocytosis means your **white blood cell count** is higher than normal. This common finding usually reflects your immune system responding to something **temporary**, like a recent infection, stress, inflammation, pregnancy, smoking, or certain medications. Most people feel well when this is discovered, and the count often returns toward normal as the underlying cause improves.

What are white blood cells?

White blood cells help your body **fight infections** and support **healing** and **inflammation**. The total white blood cell count includes several types: **neutrophils**, **lymphocytes**, **monocytes**, **eosinophils**, and **basophils**.

An increase in the total count can result from a rise in any one of these types. Knowing **which type is elevated** (the white cell breakdown, also called the **differential**) helps your clinician understand the most likely cause.

What is leukocytosis?

Leukocytosis means the total white blood cell count is above the laboratory's reference range, often **above about $11 \times 10^9/L$** (11,000/ μ L). Many clinicians think of leukocytosis in broad groups:

- **mild:** about $11\text{--}15 \times 10^9/L$, very common and often reactive
- **moderate:** about $15\text{--}25 \times 10^9/L$, still often reactive but may need closer follow-up
- **marked:** **above about $25 \times 10^9/L$** , less common and often prompts further evaluation

Leukocytosis is a **finding**, not a diagnosis, and must be interpreted in context.

Common causes

- recent infections, including viral or bacterial
- inflammation or autoimmune conditions
- physical or emotional stress, surgery, injury, or vigorous exercise
- **smoking**
- medications, especially **steroids**, lithium, or growth factors (such as G-CSF)
- pregnancy, particularly later pregnancy and around delivery
- recovery from illness

Less common causes: severe infection or inflammation with a very large response (sometimes called a leukemoid reaction), or **blood disorders** (uncommon, and usually associated with other abnormal blood counts or symptoms).

Pattern recognition: Which subtype is high often gives the best clue:

Neutrophils often rise with infection, inflammation, stress, or steroids, **lymphocytes** often rise with viral infections, **monocytes** often rise during recovery or inflammation, and **eosinophils** often rise with allergies or certain infections.

Does it cause symptoms?

Leukocytosis by itself usually **does not cause symptoms**. Any symptoms you notice are usually from the underlying reason the count is high, for example fever from an infection or joint pain from inflammation.

Rare exception: Extremely high white counts can occasionally thicken the blood and reduce flow in small vessels (leukostasis), causing symptoms like severe shortness of breath, chest pain, confusion, or vision changes. This is uncommon in routine outpatient settings and typically occurs in specific blood cancers. These symptoms always warrant urgent evaluation.

Is it dangerous?

Most cases are **not dangerous** and improve with time. The situation becomes more concerning when:

- the white blood cell count is **very high** or rising quickly
- it remains elevated for **several months**
- red blood cells or platelets are also abnormal (such as anemia or low platelets)
- the blood smear shows **immature** or abnormal cells
- symptoms occur, such as **fevers, night sweats, weight loss, swollen lymph nodes**, or repeated infections

Your clinician weighs the number, the **differential**, your symptoms, and the trend over time.

How your doctor evaluates it

- review which white blood cell type is elevated (the **differential**)
 - ask about recent infection, inflammation, stress, surgery, injury, or exercise
 - review medications (especially **steroids**, lithium, or growth factors)
 - assess smoking history
 - review symptoms (fevers, night sweats, weight loss, swollen nodes)
 - repeat blood counts to look for **trends over time**
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Do I need a bone marrow biopsy?

Most people with leukocytosis **do not** need a bone marrow biopsy. This test is usually considered only when the white count is **very high** or **persistent**, when other blood counts are abnormal, when the smear is concerning, or when significant symptoms are present. Isolated mild leukocytosis in someone who feels well rarely requires bone marrow evaluation.

What is the treatment?

There is no direct treatment for leukocytosis itself. Management focuses on the **underlying cause**, for example treating an infection or addressing inflammation. Adjusting medications may help when drugs are responsible.

If **smoking** contributes, reducing or quitting often helps white counts drift down over time and improves overall health.

No special diet or activity restriction is required only because a white count is mildly elevated.

When should I contact my doctor?

Contact your clinician if you develop:

- **fevers**, chills, or **night sweats**
- unexplained **weight loss**
- **swollen lymph nodes**
- worsening fatigue that is unusual for you
- repeated infections or infections that are hard to clear
- new or persistent abnormalities on repeat blood tests

Seek urgent care if you feel suddenly very unwell, or if you develop severe shortness of breath, chest pain, confusion, new neurologic symptoms, or severe headache.

What is the usual plan going forward?

Most people follow a simple plan of repeat testing and observation. Typically:

- repeat CBC in about **4–8 weeks** if the elevation is mild and you feel well
- if still elevated but stable, another check after **2–3 months** to clarify the trend
- additional testing or referral if the count rises, persists, symptoms develop, or other blood counts become abnormal

Many mild elevations improve over weeks to months without specific treatment.

Key points to remember

- **a finding, not a diagnosis** — leukocytosis must be interpreted in context
- **subtype matters** — which white blood cell type is high helps identify the cause
- **usually mild and temporary** — commonly related to infection, stress, pregnancy, smoking, or medications
- **patterns over time matter** — persistent or rising counts deserve closer attention
- **symptoms come from the cause** — not from the number itself in most cases
- **follow-up is straightforward** — often repeat blood counts over time, and act only if concerning patterns appear