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Neutropenia (Low White Blood Cell Counts)

People with a low white blood cell count have a condition called **neutropenia**. Other names for having a low white blood cell count may include leukopenia, low WBC, low leukocyte count, and being immunocompromised.

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What causes neutropenia?

Neutropenia can be caused by cancer, cancer treatments, or something not related to cancer. Some common causes are:

- **Cancers affecting the bone marrow** (leukemias, lymphomas, multiple myeloma)
 - **Cancer treatments** such as chemo, targeted drug therapy, and bone marrow or stem cell transplant
 - **Disorders that affect the bone marrow** such as [myelodysplastic syndromes¹](#) (MDS)
- Many types of infections**

- **Immune conditions** such as rheumatoid arthritis (RA) or systemic lupus erythematosus (lupus)
- **Nutrition problems** including low vitamin B12, copper, or folate
- **Chronic idiopathic neutropenia** (CIN) is long-term neutropenia without a clear cause

If chemotherapy, medicine, or other treatment is causing neutropenia, the dose might be lowered, the treatment switched, or the treatment held off until your body recovers.

What do white blood cells do?

White blood cells (WBCs) are part of our immune system. The immune system protects the body from infection and other immune problems.

Each type of white blood cell has a certain job in your immune system. So, levels of certain types of white blood cells might be higher or lower depending on what's going on in your body.

- **Neutrophils** make up over half of our WBCs. They destroy bacteria.
- **Lymphocytes** use and create antibodies to attack bacteria and viruses.
- **Eosinophils** help with inflammation, parasites, and allergic reactions.
- **Basophils** help with asthma and allergic reactions.

When you're sick, more neutrophils are released, causing other WBC levels to go down. When you have bad allergies, your eosinophils or basophils might increase.

How is neutropenia diagnosed?

Neutropenia itself doesn't usually cause any signs or symptoms.

If you are getting medicine or other treatments that often cause neutropenia, your cancer care team might check your white blood cell counts with blood tests.

- [Blood tests](#)² such as complete blood count with differential (CBC with diff), complete metabolic panel (CMP), and blood cultures to check your organs and levels of vitamins and minerals
- [Tests on body fluids](#)³ (such as stool, urine, sputum, or spinal fluids)
- [Imaging scans](#)⁴ (such as an x-ray, MRI, or CAT scan)

Signs and symptoms of infection in people with cancer

The signs and symptoms of infection depend on the cause. Some of the most common ones are:

- Fever
- Chills and sweats
- Fast heartbeat
- Breathing problems or cough
- Dizziness or lightheadedness
- Rash, redness, swelling, or sores on the skin (especially near the genitals, rectum, or around a catheter, tube, or drain)

- Dizziness, lightheadedness, or have been falling down
- Chest pain
- Trouble breathing even at rest

Learn more about [neutropenic fevers, infection, and sepsis](#)⁵ in people with cancer.

Hyperlinks

1. www.cancer.org/cancer/types/myelodysplastic-syndrome.html
2. www.cancer.org/cancer/diagnosis-staging/tests/understanding-your-lab-test-results.html
3. www.cancer.org/cancer/diagnosis-staging/tests/understanding-your-lab-test-results.html
4. www.cancer.org/cancer/diagnosis-staging/tests/imaging-tests.html
5. www.cancer.org/cancer/managing-cancer/side-effects/infections.html

References

Berlinger N. Approach to the adult with unexplained neutropenia. *UpToDate*. UpToDate Inc; 2023. Updated June 2022. Accessed November 21, 2023.

<https://www.uptodate.com/contents/approach-to-the-adult-with-unexplained-neutropenia?>

Coates TD. Drug-induced neutropenia and agranulocytosis. *UpToDate*. UpToDate Inc; 2023. Updated September 2022. Accessed November 21, 2023.

<https://www.uptodate.com/contents/drug-induced-neutropenia-and-agranulocytosis?>

George T. Automated complete blood cell count (CBC). *UpToDate*. UpToDate Inc; 2023. Updated September 2023. Accessed November 21, 2023.

<https://www.uptodate.com/contents/automated-complete-blood-count-cbc?>

National Comprehensive Cancer Network (NCCN). Anemia and neutropenia: Low red and white blood cell counts. NCCN Guidelines for Patients. Updated 2021. Accessed November 21, 2023. <https://www.nccn.org/patients/guidelines/content/PDF/anemia-patient-guideline.pdf>

National Comprehensive Cancer Network (NCCN). Hematopoietic growth factors. Version 1.2024. NCCN Clinical Practice Guidelines in Oncology (NCCN Guidelines).

