

## **Neutropenia** [1]

**This section has been reviewed and approved by the [Cancer.Net Editorial Board](#) [2], 04/2012**

Neutropenia is an abnormally low level of neutrophils, a type of white blood cell. All white blood cells help the body fight [infection](#) [3]. Neutrophils fight infection by destroying harmful bacteria and fungi (such as yeast) that invade the body. People who have neutropenia are at increased risk for developing serious infections because they do not have enough neutrophils to destroy harmful microorganisms that cause disease. Some degree of neutropenia occurs in about half of people with cancer who are receiving chemotherapy, and it is a common side effect in people with leukemia. People with neutropenia may lower the likelihood of developing an infection by paying close attention to personal hygiene, such as washing their hands.

Relieving side effects, also called symptom management, [palliative care](#) [4], or supportive care, is an important part of cancer care and treatment. Talk with your health care team about any symptoms you may experience, including any new symptoms or a change in symptoms.

### **Signs and symptoms**

Neutropenia itself does not cause any symptoms. Patients usually find out they have neutropenia from a blood test or when an infection develops. Because neutropenia is a common side effect of some types of chemotherapy, your doctor will schedule regular blood tests, usually a complete blood count (CBC), to look for neutropenia and other blood-related side effects of chemotherapy.

For patients with neutropenia, even a minor infection can quickly become serious. Talk with your doctor right away if you experience any of the following signs of infection:

- A fever (temperature of 100.5°F or higher)
- Chills or sweating
- Sore throat, [sores in the mouth](#) [5], or a toothache
- Abdominal pain
- Pain in the perirectal (anal) area
- Pain or burning when urinating, or frequent urination
- [Diarrhea](#) [6] or sores around the anus
- A cough or [shortness of breath](#) [7]
- Any redness, swelling, or pain, particularly around a cut, wound, or the site of intravenous catheter insertion
- Unusual vaginal discharge or itching

## **Causes**

Neutrophils and other types of white blood cells are made in the bone marrow (a spongy tissue found inside larger bones such as the pelvis, vertebrae, and ribs) and then circulate in the bloodstream. Cancer and cancer treatment can cause neutropenia in several ways:

- Some types of chemotherapy can cause the bone marrow to not work properly, lowering the production of neutrophils.
- Cancers that affect the bone marrow directly, including leukemia, lymphoma, and myeloma, or metastatic cancer (cancer that has spread) can crowd normal bone marrow cells.
- Radiation therapy can also affect the bone marrow, especially when given to several areas of the body or to bones in the pelvis, legs, chest, or abdomen.

People with cancer who are age 70 or older or people with a weakened immune system (due to factors such as HIV infection or kidney transplantation) are at higher risk for neutropenia. People with severe or long-lasting neutropenia are more likely to develop an infection.

## **Management and treatment**

Depending on the type or dose of chemotherapy, your neutrophil counts generally start to drop about a week after each round of chemotherapy begins and usually reach a low point (called the nadir) about seven to 14 days after treatment. At this point, you are most likely to develop an infection. Your neutrophil count then starts to rise again as your bone marrow resumes normal production of neutrophils. However, it may take three to four weeks to reach a normal level again.

When your neutrophil level returns to normal, your body is ready for the next round of chemotherapy. If you develop neutropenia or your neutrophil level does not return to normal quickly enough, your doctor may delay the next round of chemotherapy or recommend a lower dose of chemotherapy. Your doctor may recommend antibiotics during periods of prolonged neutropenia to try to prevent infections from occurring.

If chemotherapy causes neutropenia with a fever, your doctor may prescribe medications called colony-stimulating factors or white blood cell growth factors for your remaining cycles of chemotherapy. These drugs include filgrastim (Neupogen), pegfilgrastim (Neulasta), and sargramostim (Leukine or Prokine). These drugs help the body make more neutrophils or other types of white blood cells. Read more about [ASCO's guideline on white blood cell growth factors](#) [8].

## **More Information**

[ASCO Answers Fact Sheet: Neutropenia \(PDF\)](#) [9]

[Side Effects of Radiation Therapy](#) [10]

[Side Effects of Chemotherapy](#) [11]

[Managing Side Effects](#) [12]

## White Blood Cell Growth Factors for Preventing Infection [13]

### **Additional Resources**

#### Mayo Clinic: Neutropenia [14]

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#### **Links:**

- [1] <http://www.cancer.net/navigating-cancer-care/side-effects/neutropenia>
- [2] <http://www.cancer.net/about-us>
- [3] <http://www.cancer.net/patient/All+About+Cancer/Treating+Cancer/Managing+Side+Effects/Infection>
- [4] <http://www.cancer.net/patient/All+About+Cancer/Treating+Cancer/Palliative+Care>
- [5] <http://www.cancer.net/node/25051>
- [6] <http://www.cancer.net/node/25247>
- [7] <http://www.cancer.net/node/25055>
- [8] <http://www.cancer.net/node/29816>
- [9] [http://www.cancer.net/sites/cancer.net/files/asco\\_answers\\_neutropenia.pdf](http://www.cancer.net/sites/cancer.net/files/asco_answers_neutropenia.pdf)
- [10] <http://www.cancer.net/node/24677>
- [11] <http://www.cancer.net/node/24676>
- [12] <http://www.cancer.net/node/25238>
- [13] <http://www.cancer.net/node/26121>
- [14] <http://www.mayoclinic.com/health/neutropenia/MY00110>