

# Granulocyte Colony-Stimulating Factor

**G**ranulocyte colony-stimulating factor (G-CSF) is a blood growth factor (special proteins produced by the body) that stimulates the bone marrow to produce more infection-fighting white blood cells called **neutrophils**. Granulocyte colony-stimulating factor causes cells from the bone marrow to become mature and activated. These cells then circulate into the bloodstream. Other types of growth factors called **granulocyte-macrophage colony-stimulating factors** affect the growth of other types of white blood cells along with neutrophils.

Granulocyte colony-stimulating factor is produced naturally by the body and is also available as an injection for patients with low white blood cell counts at risk of infection. The March 1, 2006, issue of *JAMA* includes an article about the experimental use of G-CSF in patients who have had a **myocardial infarction** (heart attack).

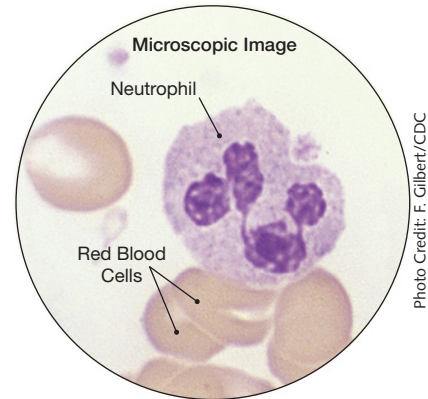


Photo Credit: F. Gilbert/CDC

## USES OF G-CSF

**Chemotherapy** (drugs used to kill cancer cells) can damage rapidly dividing normal cells, such as the hair follicle cells that grow hair and the bone marrow cells that produce white blood cells, in addition to killing cancer cells. This causes low white blood cell counts. When patients have low white blood cell counts, they are at risk of infection. A low neutrophil count is called **neutropenia**. Doctors carefully monitor the blood counts of patients receiving chemotherapy and also watch for signs of infection, including fevers. They may prescribe G-CSF to increase the number of neutrophils and reduce the risk of infection. Granulocyte colony-stimulating factor is also used for patients who are receiving a bone marrow transplant and for some blood cell cancers. Not all chemotherapy requires G-CSF treatment.

## HOW G-CSF IS GIVEN

Therapy usually begins 1 to 3 days after chemotherapy ends. Granulocyte colony-stimulating factor is injected into the fatty portion of the skin, usually in the upper arm, thigh, or abdomen. To avoid infection, you should wash your hands before and after the injection and clean the injection site. Each needle should be used only once and disposed of properly. Granulocyte colony-stimulating factor is stored in the refrigerator but should be injected when at room temperature.

## WHAT TO WATCH FOR WHEN RECEIVING G-CSF

Generally G-CSF is well tolerated although some patients experience bone pain or slight redness at the injection site. These side effects are usually mild and go away once the injections are stopped. A patient receiving G-CSF injections should seek medical attention if any serious adverse effects occur, especially any signs of an allergic reaction such as swelling, difficulty breathing, chest tightness, or rash. Patients should have regular follow-up with their doctors as well as monitoring of blood counts.

## FOR MORE INFORMATION

- American Cancer Society  
[www.cancer.org](http://www.cancer.org)
- National Comprehensive Cancer Network  
[www.nccn.org](http://www.nccn.org)

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Sources: American Cancer Society, National Comprehensive Cancer Network

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