

## Current Trend of using Granulocyte-Colony Stimulating Factor (g-csf) for Cancer Treatment

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### DESCRIPTION

A blood growth factor (special protein generated by the body) called Granulocyte Colony-Stimulating Factor (G-CSF) encourages the bone marrow to make more neutrophils, which are white blood cells that fight infections. A person's risk of infection rises if their white blood cell count is low. Granulocyte colony-stimulating factor induces maturation and activation of bone marrow-derived cells. The bloodstream then receives these cells. Along with neutrophils, other types of white blood cells are also affected by growth factors known as granulocyte-macrophage colony-stimulating factors. Granulocyte colony-stimulating factor can be administered intravenously to individuals with low white blood cell counts who are at risk of infection. It is also produced naturally by the body. In addition to destroying cancer cells, chemotherapy (drugs intended to kill cancer cells) can harm rapidly dividing healthy cells, like the hair follicle cells that make hair and the bone marrow cells that produce white blood cells. Low white blood cell numbers are a result of this.

Patients are more susceptible to infection when their white blood cell numbers are low. Neutropenia refers to a low neutrophil count. Chemotherapy patients' blood levels are constantly monitored by doctors, who also keep an eye out for infection symptoms like fevers. To boost neutrophil counts and lower the risk of infection, they might prescribe G-CSF. Granulocyte colony-stimulating factor is also used to treat some blood cell malignancies and patients undergoing bone marrow transplants. Every chemotherapy does not need this treatment. Typically, therapy starts 1 to 3 days after chemotherapy complete. The fatty area of the skin receives an injection of granulocyte colony-stimulating factor, typically in the upper arm, thigh, or abdomen. You should disinfect the injection site and wash your hands both before and after the injection to prevent infection. Only one usage and proper disposal should be made of each needle. Although it should be injected at room temperature,

granulocyte colony-stimulating factor is kept in the refrigerator. Colony-Stimulating Factor 3 (CSF 3), also known as Granulocyte Colony-Stimulating Factor (G-CSF or GCSF), is a glycoprotein that encourages the bone marrow to create and release stem cells and granulocytes. Before the donor's blood is extracted by leukapheresis for use in hematopoietic stem cell transplantation, G-CSF is also utilized to improve the amount of hematopoietic stem cells in the donor's blood. G-CSF appears to be safe for this purpose during implantation as well as the second and third trimesters of pregnancy. To allow for the removal of CSF from the milk, breastfeeding should be stopped three days following CSF injection. Colony-stimulating factor recipients do not have a higher risk of developing leukaemia than non-recipients. Filgrastim is the brand name for Recombinant Human G-CSF (rhG-CSF), which is produced in an *E. coli* expression system. Filgrastim's structure is slightly different from the natural glycoprotein's structure.

### CONCLUSION

The majority of research published used filgrastim. Early administration of G-CSF during radiation exposure may increase white blood cell counts. G-CSF can be produced as a medication in addition to being produced naturally by the body. The bone marrow is stimulated by G-CSF to produce more blood cells. Inside the bones is a spongy substance called bone marrow. Blood cells are created there. Side effects includes of g-csf can includes many problems such as bone or muscle pain, headaches, tiredness and weakness (fatigue), bruising, bleeding gums or nosebleeds, diarrhoea, high temperature (fever), breathlessness and looking pale, hair thinning, Sore mouth, throat, gut and back passage. Following chemotherapy, G-CSF is a crucial supportive medication in neutropenia that lowers the risks of neutropenia sequelae and enhances patient survival and quality of life.

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