

## Blood or Marrow Transplant (BMT): Types and Uses

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### DESCRIPTION

A Blood or Marrow Transplant (BMT) is a type of treatment for persons who have a blood cancer, such as leukaemia or lymphoma, or a blood abnormality, such as sickle cell disease. It is a surgery in which damaged blood-forming cells are replaced with healthy ones. Blood-forming cells are immature cells that develop into red blood cells, white blood cells, and platelets (blood stem cells). They are present in bone marrow, the soft substance inside the bones. They leave the marrow and enter the bloodstream as they reach maturity. Before the transplant, the patient will receive chemotherapy and maybe radiation to kill the sick cells and marrow. The healthy cells are then given to the patient. BMT is not a surgical procedure. The fresh cells are injected into the patients' blood circulation using an Intravenous (IV) catheter or tube. It's the same as receiving blood or medicine through an IV. The cells then make their way into the bone marrow. Recovery from BMT can take months or years.

### Where is the origin of the healthy cells?

Healthy blood-forming cells for transplantation can come from three sources-

- Spongy tissue found within bones.
- Blood-forming cells derived from the circulatory blood.
- Blood obtained when a baby is born from the umbilical cord and placenta.

### Types of Blood or Marrow Transplant (BMT)

There are two kinds of transplants-

- An autologous transplant involves the use of the patients own blood-forming cells.
- An allogeneic transplant makes use of blood-forming cells that were donated by someone else.

**Autologous stem cell transplant:** An autologous stem cell transplant replaces diseased or damaged bone marrow with healthy blood stem cells from their own body. Autologous stem cell transplantation is also known as autologous bone marrow transplantation. Using cells from the own body during a stem

cell transplant has several advantages versus using donor stem cells. If the patient undergoes an autologous stem cell transplant, for example, they won't have to worry about incompatibility between the donor's cells and their own cells. If the body produces enough healthy bone marrow cells, an autologous stem cell transplant may be an option. These cells can be harvested, frozen, and kept for future use.

**Allogeneic stem cell transplant:** An allogeneic stem cell transplant replaces bone marrow that isn't producing enough healthy blood cells with healthy blood stem cells from a donor. Allogeneic stem cell transplantation is also known as allogeneic bone marrow transplantation. A donor could be a family member, a friend, or someone whom we are unknown. Blood stem cells that can be used in an allogeneic stem cell transplant include-

- Derived from the donor's blood.
- Bone marrow was extracted from a donor's hipbone.
- Blood was drawn from a donated umbilical cord.

The patient will get significant doses of chemotherapy or radiation prior to an allogeneic stem cell transplant to eliminate the sick cells and prepare the patient's body to accept the donor cells.

### Use of blood or marrow transplant

A bone marrow transplant can help with-

- Allow the illness to be treated safely with large doses of chemotherapy or radiation by replacing or saving the bone marrow damaged by treatment.
- New stem cells are used to replace diseased or damaged marrow.
- Provide new stem cells, which can directly kill cancer cells.

Bone marrow transplants can help people with both cancerous (malignant) and noncancerous (benign) disorders, such as- Acute leukemia, Adrenoleukodystrophy, Aplastic anemia, Bonemarrow failure syndromes, Chronic leukemia, Hemoglobinopathies, Hodgkin's lymphoma, Immune deficiencies, Inborn errors of metabolism, Multiple myeloma, Myelodysplastic syndromes, Neuroblastoma, Non-Hodgkin's lymphoma, Plasma cell disorders, POEMS syndrome, Primary amyloidosis.

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