

### What are the conditions for which BMT is done?

#### Cancerous conditions:

- Acute Lymphoblastic Leukemia, Acute Myeloid Leukemia.
- Hodgkin's and Non Hodgkin's Lymphoma
- Myelodysplastic syndrome

#### Non-cancerous conditions:

- Haemoglobinopathies like Thalassemia Major, Sickle cell anaemia
- Congenital Immune deficiencies
- Severe Aplastic Anaemia
- Inherited aplastic anaemias Fanconi Anaemia
- Inherited Metabolic disorders

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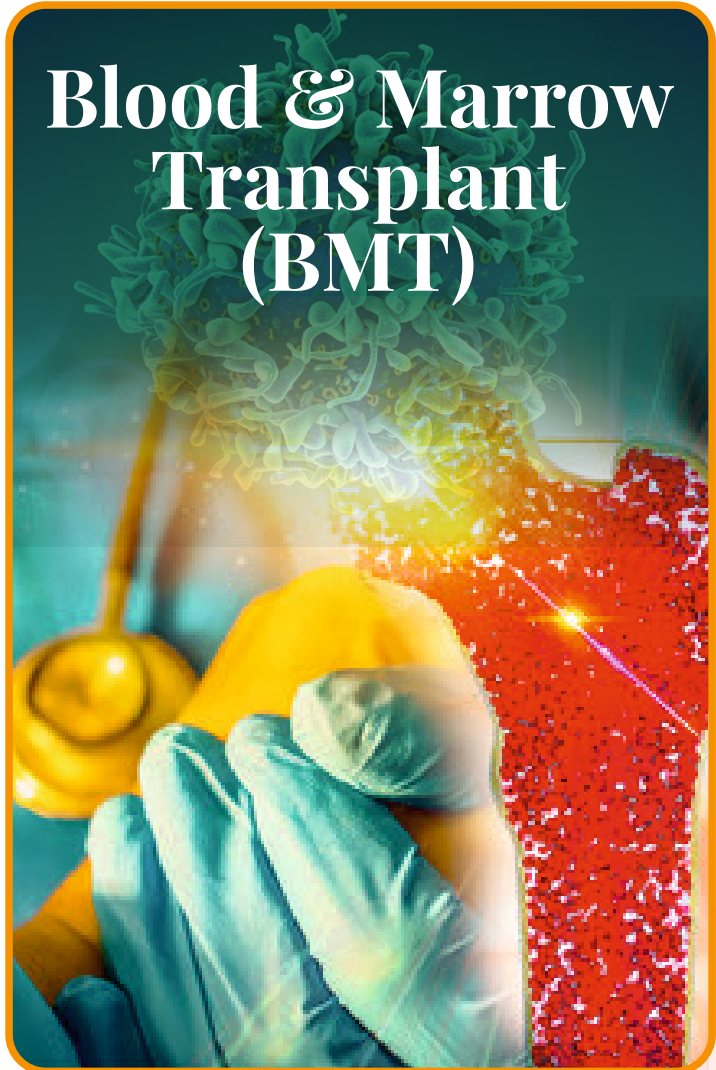
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# Blood & Marrow Transplant (BMT)



Department Of  
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Blood & Marrow Transplantation

## What is Blood Marrow and what are stem cells?

Blood marrow is the soft sponge-like material in the centre of bones where blood cells are produced. Bone marrow contains stem cells, which develop into the mature cells in our blood: red blood cells (carry oxygen), white blood cells (fight infection) and platelets (to prevent bleeding). It is these stem cells that are used for transplantation. To make blood cells constantly you need healthy bone marrow and stem cells.

## What is a Blood Marrow/Stem cell transplant ?

Blood Marrow Transplant (BMT) is the process of replacement of the recipient's or patient's bone marrow with healthy bone marrow from the donor. BMT has emerged as the standard of care for many genetic disorders and high-risk malignancies which were considered incurable in the recent past.

## What are the stages of BMT ?

Undergoing a BMT involves:

**Physical examination** – to assess recipient and donor's health status including HLA typing.

**Harvesting** – process of obtaining stem cells. Stem cells can be collected from peripheral veins or bone marrow, or from umbilical cord blood collected soon after birth. The choice of collecting either peripheral blood or bone marrow from the donor depends on the clinical diagnosis of the patient. Peripheral blood stem cell collection is routinely performed when compared to the blood marrow harvest method since this procedure is less invasive and easy to perform. Donors are injected with Granulocyte Colony Stimulating Factor (G-CSF) for a duration of 5 days to stimulate stem cell proliferation. Following this, the stem cells are collected by a process of apheresis.

**Conditioning** – preparing the body for transplant. It involves high dose chemotherapy and/or radiation to destroy the existing bone marrow cells to make room for the transplanted stem cells.

**Transplanting the stem cells** – The harvested stem cells are administered via a central venous catheter into the blood stream from where they find their way to the marrow.

**Recovery period** – it takes 2-3 weeks for the stem cells to start functioning. Patient is also monitored for complications like Graft versus Host Disease (GvHD) and infections.

## Follow-up:

After discharge, patient will be kept under follow-up for 2 to 3 months and undergo frequent blood tests.

## What are the types of BMT ?

There are different types of blood & marrow transplants:

- Autologous Transplant – the patient donates his or her own stem cells prior to treatment and receives them back, later following high dose chemotherapy / radiotherapy.
- Allogenic Transplant – stem cells are donated from a genetically (HLA) matched donor

## Who can be a donor for allogenic transplant?

- Matched Family Donor: Here, stem cells are donated by fully HLA-matched family member (usually sibling). However, there is only 25-30% chance for the patient to be HLA-matched with his/her sibling.
- Matched Unrelated donor: In cases where, no matched family donor is available, a HLA-matched donor from any of the worldwide donor registries can be used as a donor.
- Alternate donor transplant – In situations where no matched family donor or matched unrelated donor is available, unrelated cord blood or haploidentical donor (half-matched parent) can be used for donating stem cells.

## What are the advantages of haploidentical transplantation?

This procedure uses HLA half-matched donors such as parents or half-matched siblings for allogeneic transplantation. It is of special relevance to patients who do not have HLA-matched sibling or unrelated donor options. Advantages are quick availability of donor and the fact that almost everyone has at least one haploidentical donor in family.

## What is unique at Dr Rela Institute?

We have a state-of-the-art BMT unit facility, managed by a dedicated team of paediatric haematologists with more than 10 years of expertise in BMT, paediatric BMT trained intensivists, providing 24x7 PICU care, infectious disease specialists, and dedicated nurses, supported by comprehensive lab services round-the-clock Blood Bank. The entire transplant unit is equipped with HEPA (high-efficiency particulate air) filters to protect against infections and strict aseptic measures are followed throughout the entire hospital stay.