



Bone Marrow Transplantation - FAQs



What is a Bone Marrow Transplant ?

Stem cell transplant in Haematology is an established therapy. It is not a surgery, like renal transplant. Bone Marrow Transplantation is a procedure in which stem cells are harvested from the peripheral blood or bone marrow or from cord blood & they are transfused to the patient after high-dose myeloablative chemotherapy. These transfused stem cells undergo a process of homing and engraftment into the empty bone marrow, leading to proliferation & restoration of normal blood cell count.

Beginning in 1960s and through the 1970s, stem cell transplantation was pioneered by Thomas E D in the USA, using bone-marrow derived stem cells. The first physician to perform a successful human bone marrow transplant was Robert A Good at the University of Minnesota in 1968.

In India, the Tata Memorial Hospital pioneered Bone Marrow Transplantation over twenty five years ago. Today, Christian Medical College, Vellore is at the forefront in performing bone marrow transplant procedures. Across the country, over twenty institutions / hospitals are offering specific kinds of transplants / procedures.

What is Stem Cell ?

Stem cell or the "Basic Cell" is a simple concept, based on the fact that all human are made from a single cell. This cell gives rise to all body tissue and organs.

What is the source of stem cells in the body ?

Stem cells can be harvested from the **Bone Marrow, Peripheral Blood** and **Umbilical Cord Blood**. In case of a **Bone Marrow**, the stem cells are harvested from the posterior iliac spine. The technique is referred to as Bone Marrow harvest and is performed under general anaesthesia in an OT.

Peripheral Blood stem cells are collected through a process called Apheresis.

Umbilical Cord Blood is obtained when a mother donates her infant's umbilical cord and placenta after birth, from which stem cells are harvested.

What is an Autologous Bone Marrow Transplant ?

An Autologous bone marrow transplant involves the extraction of stem cells from the peripheral blood of the patient when patient is in remission and storage of the harvested cells at low temperature. The patient is then treated with a high-dose chemotherapy with the intention of eradicating the patient's malignant cell population, at the cost of partial or complete bone marrow ablation. The patient's own harvested stem cells are then returned to his / her body as rescue, which engraft, proliferate and resume the patient's normal blood cell production.

What are the common indications of an Autologous transplantatton ?

Haematological malignancies -

- Multiple Myeloma
- Lymphoma
- AML not having HLA - matched donor

What is an Allogeneic Bone Marrow Transplant ?

In these transplants stem cells are collected from a healthy donor.

Allogeneic stem cell donors must have a 100% HLA match with the recipient. Even after a 100% HLA match, the recipient requires

immunosuppressive medications to mitigate the graft-versus-host disease.

Allogeneic transplant donors may be related siblings, identical twins or unrelated.



What are the common indications of an Allogeneic transplant ?

a. Haematological malignancies -

- AML
- ALL
- CML in BC
- Selected high-risk lymphoma

b. Non-malignant haematological disorders

- Thalassaemia
- Aplastic anaemia
- MDS
- Sickle-cell anaemia
- Certain Congenital Immunodeficient & Metabolic disorders

What are the facilities required in a centre that wants to offer Autologous Bone Marrow Transplants ?

A facility that plans to offer autologous bone marrow transplants should have a tertiary care and multi-specialty set-up, so that complications, if any arise, can be handled quickly and effectively.

In treating team along with Haematologist & Oncohaematologist, blood bank with apheresis unit, Microbiologist & Pathologist become an integral part.

Strict aseptic protocols are to be implemented and the facility must also have a specialized area where the patient can be isolated and monitored, during the neutropenic phase.

Dedicated, trained nursing teams that not only provide efficient nursing care but also create a positive environment around the patient help.

The patient's diet management and maintaining sterility of food is another area that needs a lot of attention.



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