

Stem Cell Transplantation (BMT) Services at GCRI

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Introduction

The Bone Marrow transplant (BMT) services is aptly called stem cell transplant services as there are various sources of hematopoietic stem cells- peripheral blood, bone marrow and umbilical cord. This specialized unit is an integral part of the Department of Medical and Pediatric Oncology. We perform both autologous and allogenic transplants in both adult and pediatric patients. All forms of allogenic transplants, such as matched related, matched unrelated, haplo-identical (half-matched) and cord blood transplants have been performed. India's first successful umbilical cord transplant was performed in 2007 at our centre. We cater to potential transplant candidates from many states such as Gujarat, Rajasthan, Uttar Pradesh, Bihar, Maharashtra and Madhya Pradesh. The success rate and mortality are comparable to any good transplant centre in the country.

Foundation/ Formation

The BMT unit was established in August 1999 under the guidance of Dr. Pankaj Shah, Director and HOD of Medical Department at that time, Dr. Kirti M. Patel and Dr. Shilin N. Shukla. It is a 4-bedded unit which is equipped with HEPA (High-efficiency particulate air) filters. There are two recovery rooms for stepping down of patients. Till date we have performed nearly 400 stem cell transplants. Haplo-identical stem cell transplants were started in the year 2015 for both benign and malignant conditions.

Our Team

We have a dedicated team of transplant physicians and nurses who are well-trained in the field of stem cell transplantation. Our unit Incharge is Dr. Sandip A Shah and in addition, we have Dr. Akanksha Garg. Our BMT officers are Dr. Kamlesh Shah and Dr. Kinnari A Patel who have been associated with the unit for more than a decade. BMT services is associated with the Medical & Paediatric Oncology Department and has full support from the faculty: Dr. Asha Anand, Dr. Harsha Panchal, Dr. Apurva Patel, Dr. Sonia Parikh, Dr. Nahush Tahiliani, Dr. Nitin Joshi and Dr. Chinmay Doctor. We have constant support of our DM Medical Oncology residents who are posted in the BMT unit. We have 14 specialized BMT nurses

and committed class 4 workers who take immense care of all our transplant patients within the unit.

Clinical Services

1) Stem Cell Transplant Services

- Allogenic stem cell transplants are performed for leukemias (Acute lymphoblastic and acute myeloid leukemia), bone marrow failure syndromes (Aplastic anemia, Fanconi anemia), immunodeficiency disorders (Leucocyte adhesion defect, thalassemia, and myelodysplastic syndrome).
- Autologous stem cell transplants have been performed for multiple myeloma, lymphoma (both non Hodgkin and Hodgkin), acute promyelocytic leukemia and neuroblastoma.

Type of Transplant	Number
Autologous	195
Matched Related	156
Haplo-Identical	17
Cord Blood	17
Matched Unrelated	7
Total	392

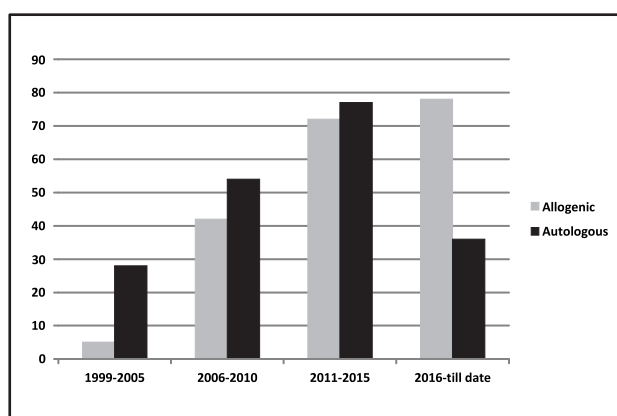


Figure 1: Number of stem cell transplants done over the years

- Matched related transplants- 6/6 HLA –matched donors are selected.
 - Matched unrelated transplants- fully matched unrelated voluntary donors from transplant registries are selected.
 - Haplo-identical transplants (half-matched) - have been performed for both benign and malignant disorders.
 - Cord blood transplants have been performed for thalassemia and leukemia.
- 2) **Transplant Follow up OPD Services:** for post transplant patients runs from Monday to Saturday in the BMT unit.
- 3) **Hematology OPD:** Runs under the BMT team on Wednesday and Saturday where new and follow up cases are seen. We receive nearly 40-50 patients/OPD day of benign hematology, including referrals from civil hospital for expert opinion. In addition we also see few cases of hematological malignancies. Patients requiring admission are managed as well.

Success of our transplant program is not possible without the constant support of other departments.

- Stem cell harvesting and cryopreservation is being done at the Department of Transfusion Medicine under the guidance of Dr. Rima Kusumgar and Dr. Dhara Patel. They also help us with timely transfusion support services for the patients including single donor platelet apheresis.
- CD34 counting is done by Dr. Hemangini Vora, Head of the Immunohistochemistry and Flow Cytometry Lab.
- HLA typing which is essential for any transplant is being done in-house at subsidized cost by Dr. Nandita Ghosh, Head of Tumor Biology Lab. They perform 6-antigen HLA (low resolution) typing.
- Surveillance cultures of the BMT rooms and viral screening such as CMV-RT PCR are regularly performed by the Microbiology department under Dr. Parijat Goswami.

- Central venous access is required for our patients. Peripherally inserted central catheters, hickmann catheters and dialysis catheters (for stem cell harvesting) are placed by the help of Department of anaesthesia.
- Consultations with other departments such as pediatric surgery, pathology, radiology, dental OPD etc, help us manage the patients better.

Research Activities

- Many research articles have been published in esteemed Pubmed indexed journals. Data presentation at various imminent transplant conferences is done regularly which helps gain exposure and recognition.

Training Programs and Academic Activities

- DM Medical Oncology residents are posted in BMT unit on rotation where they gain transplant experience. Classes for DM students are held on important topics of stem cell transplantation every 15 days.
- The nursing staff is also actively involved in attending BMT programs for nurses held annually at centers like TMH, Mumbai, CMC Vellore, etc.
- Faculty is active in attending national and international conferences to improve clinical protocols and practices.

Future Prospects and Scope

- The new BMT unit being constructed will be a 6-bedded HEPA filter equipped unit with 5 additional recovery (step down) rooms.
- Good scope for post MD/DNB medicine / pediatricians / post DM Medical oncology / Pediatric oncology / Hematology doctors wanting to pursue training in BMT as a wide variety of transplants is being done.
- Plan to organize a national conference in hematology and BMT training program for nurses.