

# BLOOD LINE

The Voluntary Blood Donation Journal | Issue 67 | 2023

## 'STEM CELL DONOR' one in a million Gem. Can I ?

Blood cancer accounts for eight per cent of all new cases of cancers diagnosed in India. Every year, in India over one lakh people are diagnosed with blood cancer. Even though chemotherapy and radiation therapy are the two different well known treatment modalities, a blood stem cell transplant is the only hope of cure for thousands of patients with severe blood disorders.

Blood cancers like Leukemia, Lymphomas, Multiple-myelomas, Myelodysplastic syndromes and non-cancerous conditions like bone marrow failure- Aplastic anemia, genetic disorders like Thalassemia, Sickle cell anemia, immune deficiency conditions like Severe combined immune deficiency syndrome (SCID) can be cured by transfusing blood stem cells

### • What are stem cells?

Stem cells are those cells that have the capability of self-renewal and differentiation. These cells were identified first in the hematopoietic system and are likely to be present in many other tissues also. These healthy cells replace the diseased or depleted blood stem cells in a patient and thereby give the patient a second chance at life.

### • Source of stem cells :

Bone marrow, PBSC (Peripheral blood stem cell) and Umbilical cord are the source of stem cells. PBSC is the most used source of stem cells due to ease and safety of collection along with faster marrow recovery in patients.

### • Type of HSCT transplants (Hematopoietic stem cell transplant)

1, Autologous transplant: Stem cells are collected from patients and then reinfused later. Mostly done in multiple myelomas and lymphomas.

2, Allogenic transplant: Stem cells are harvested from an HLA (Human Leukocyte Antigen) matched healthy donor and given to patient indicated in intermediate to high-risk group leukemias and myeloid malignancies.

In case of allogenic transplants, for a blood stem cell transplant to succeed, it is important that the HLA of the donor and patient are as close to identical as possible in order to avoid rejection reactions between graft and patient. Blood group match is not essential. Chances of finding HLA matched sibling donor from family is 30%, leaving 70% of patients not getting a match from family; these patients have other options like matched unrelated donor (MUD) for which they must register in stem cell donor registries like DATRI, DKMS. The probability of finding an unrelated matched donor is 1 in 10,000 to 1 in over a million. Donor evaluation must be carried out as soon as patient is considered a possible candidate for HSCT. Once the donor signs up with registries, a small blood sample or buccal swab is taken after signing the consent form for HLA typing. Blood stem cell registries facilitate the search of the donors, counsel and recruit healthy committed donors, also get their HLA typing done and later facilitate the blood stem cell collection and transplant.

### • Donor selection criteria for stem cell donation?

A detailed history and physical examination are required to select a suitable donor. The donor has to be evaluated based on blood tests and other investigations to assess the fitness for PBSC donation. Donor should be in general good health. Donor age group is 18-50 years for registration. Younger donors are preferable to older one. A male donor is preferred for a male recipient. Nulliparous females are preferred over multiparous. Blood is tested for CMV, EBV, HIV, HBV, HCV, Syphilis and Malarial infections. The donor is evaluated to rule out cardiac, renal, pulmonary and hepatic dysfunction. Avoid the donor if taken Growth hormone, Bovine Insulin, Hepatitis B Immune Globulin, Unlicensed vaccine.



**Dr. Linda John**  
Assistant Professor,  
Dept of Transfusion  
Medicine, Amrita Institute  
of Medical Sciences &  
Research Institute.

Donors with the following conditions can be accepted: Thalassemia Trait, Mild psoriasis, Ulcerative colitis, Crohn's disease, Vitiligo, Hashimoto's thyroiditis, Osteoarthritis, Kidney donated, Hepatitis A recovered, TB successfully treated, Hypertension well-controlled and bipolar disorder.

### • How to obtain Peripheral blood stem cell (PBSC)?

Adult stem cells can be obtained by PBSC donation with the help of an apheresis machine. For mobilization of stem cells from bone marrow to peripheral blood, donor will be given stem cell mobilizers like Granulocyte colony stimulating factor (Gcsf) as subcutaneous injection for 5 continuous days prior to stem cell collection. The donor is evaluated before donation for good venous access and if peripheral venous access is difficult, femoral line will be inserted. Blood from one arm is drawn in to a disposable sterile apheresis kit, the blood stem cells are separated and remaining blood components are infused back into the donor. Complete blood count and absolute CD34 count is performed before starting the procedure from the peripheral blood sample to evaluate the adequate mobilization of stem cells into circulation. The CD34 count of the stem cell product is also done after completing the procedure. The donor is given oral calcium tablets or i/v calcium prophylactically to avoid hypocalcemic events during the procedure. Collection lasts for around 4 to 5 hours. The procedure is done by nurse and technician under the supervision of a doctor. It can be done as a day care procedure and does not require anesthesia. You can resume routine activities after donation. Also the donated stem cells are renewed in the body within 1 to 4 weeks. The risks of this donation are minimal. The injection that increases the number of stem cells can cause side effects such as bone pain, muscle aches, headache, fatigue, nausea sometimes.

### • How often am I allowed to donate stem cells?

If the donation is for the same patient, minimum interval period is of 6 weeks and for another second patient the interval period is 1 year. Blood donation after stem cell donation is possible after 6 months of stem cell collection.

### • Storage of PBSC?

Stem cells are kept in refrigerators at 2 to 6°C for up to 72 hours beyond which the viability of cells will be affected. If transplant is not done within 72 hours due to patient or donor factors a procedure known as cryopreservation is carried out where cells can be preserved for a longer duration. In cryopreservation, cryoprotectants and stem cells are mixed in equal proportions under sterile aseptic conditions and is stored in either Liquid nitrogen at -196°C or in mechanical freezer at -80°C.

**"Stem cell donation is just like blood donation, with no adverse side effects. Clearing misconceptions will lead to an increase in the voluntary stem cell donation".**



Antoinette Gawin, President and CEO of TERUMO Blood and Cell Technologies donating blood

## Antoinette Gawin, President and CEO of TERUMO Blood and Cell Technologies - A Role Model

Antoinette Gawin, President and CEO of TERUMO Blood and Cell Technologies donated blood as a role model to others. We thank her for her continued, unwavering commitment to saving lives, giving something anonymously for the benefit of others.

She continues to promote voluntary blood donation and introduced "From the Heart" Global blood donation campaign to promote blood donation in all regions of TERUMO Blood and Cell Technologies.

In 2023 From the Heart Global Blood Donation Campaign team are going to encourage and inspire those around us, more than ever before, to donate! We have preserved our 30,000-donation goal from 2022 and are looking to meet this now for 2023! We will continue our focus to promote blood donation. Most of all, we will equip each other to lead, sponsor, and organize blood drives in all regions and factories of TERUMO Blood and Cell Technologies.

Looking forward to your continued support

## Help Solve Blood Shortages Externally and Internally

Contributing to a safe, accessible and sustainable blood supply is everyone's responsibility. Fortunately, it is easy for everyone to play a part. Even if you can't donate or are not comfortable doing so, you can still make a positive impact. From the Heart is a global blood donation awareness program designed to provide you — the heart of Terumo Blood and Cell Technologies — with the tools you need to get involved, whether you donate, volunteer or simply help spread the word to colleagues, friends and family.

### Toolkit to promote Blood Donation:-

#### What is From the Heart ?

The mission of the Terumo From the Heart program is to inspire people globally to donate blood. We will do this by promoting donation opportunities and by expanding awareness and education around the necessity of blood transfusions in saving lives.

#### From the Heart Program Objectives:-

- # Partner with local blood services around the globe to...
- # Increase the size of the global blood donor base
- # Increase the frequency of global blood donations
- # Engage Terumo associates and local communities

#### How can you promote blood donation?

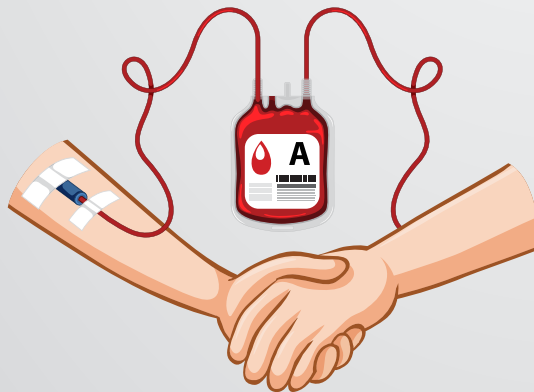
- # Corporate Communication Strategy
- # Recognition/rewards
- # Personal Involvement
- # Knowledge/Education
- # Set a Local Goal



## How can you promote blood donation?

What ?	How ?
Corporate Communications	<ul style="list-style-type: none"> <li>• Posts to internal company platforms</li> <li>• Corporate email communications</li> <li>• Blood Drive calendar invites</li> </ul>
Recognition/rewards	<ul style="list-style-type: none"> <li>• Annual Thank You Campaign</li> <li>• Promote corporate benefits rewards points programs</li> <li>• Small, non_monetary gifts and "swag"</li> </ul>
Personal Involvement	<ul style="list-style-type: none"> <li>• Engage volunteers at your location to help promote and manage blood drives</li> </ul>
Knowledge/Education	<ul style="list-style-type: none"> <li>• Host blood donation educational "lunch 'n learns"</li> <li>• Distribute educational materials on the "why" behind blood donation</li> </ul>
Set a Local Goal	<ul style="list-style-type: none"> <li>• Establish an annual donation goal and track it in a creative, visible way at your location</li> </ul>

**DONATE  
BLOOD**



**SAVE  
LIFE**

Take advantage of key dates during the year to consider blood drives, special communications and/or blood donation promotions.

World Cancer Day	Feb 04
International Women's Day	Mar 08
World Health day	Apr 07
World Blood Donor Day	Jun 14
World Apheresis Awareness Day	Sep 19
National blood donation Day	Oct 01
World Aids Day	Dec 01



**Be a  
HERO**



## Blood Drives Event Checklist

Agree on suitable location (i.e. large conference room or similar) and arrange date(s) with your local blood center/-services organization

Reserve location and organize any logistics with blood center/service (i.e. tables and chairs needed, etc)  
 Company-wide calendar invite (include link to register)  
 Ask co-workers to volunteer to help support the blood drive. Ask at least 1 week before the event. Volunteers can help with: setup/teardown, putting up posters, handing out "thank you" swag and/or educational materials, encourage QR code self-reporting, etc.

## Blood Donation FAQ's basics

<b>What are the minimum requirements?</b>	Must be between 18 years old depending on blood product being donated. For example, for whole blood donation, you must be at least 18 years old in most states, a minimum of 110 pounds (45 Kg), and in basic good health. Must also meet all donor qualification criteria (usually a questionnaire) immediately prior to donation. Donor eligibility rules help to protect the health and safety of the donor as well as the person who will receive a blood transfusion
<b>Will it hurt?</b>	You might feel a slight sting in the beginning lasting a few seconds but shouldn't feel any discomfort during the donation.
<b>Are sterile supplies used?</b>	All needles, tubing sets, collection bags, and other donation supplies are sterile, used once, and discarded for proper medical waste management to protect the donor, the transfusion recipient, and the blood center staff.
<b>How much blood is taken?</b>	For a whole blood donation, approximately 450-500ml is collected. For apheresis donations of individual blood products, the amount collected depends on your height and weight (and hemoglobin level for red cells).
<b>How often can I donate?</b>	Frequency of donation depends on the blood product that you are donating. For example, you must wait <b>90 days</b> between whole blood donations. Platelet and plasma (apheresis) donors may donate more frequently.
<b>What should I do before I donate?</b>	Be sure to eat well at your regular mealtimes and drink plenty of fluids before and after donation.

## TERUMO PENPOL Celebrated International Women's Day in Association with Sree Chitra Engineering College by organizing Blood Donation camps

Terumo Penpol observed International Women's Day in collaboration with Sree Chithira Thirunal Engg College on 8th of March at the college campus.

Many activities were planned as part of the event such as Blood Donation Camp and Breast Cancer Awareness session. The day started with lighting the lamp by the dignitaries followed by the inauguration, keynote address, felicitation - leading to the flurry of activities planned as part of the observance.

Ms. Jayanthi P B, Joint Gm (Air Traffic Controller) inaugurated the event and highlighted about her profession, and the nitty-gritties that comes with it. This gave the audience an insight into how the air traffic control works and the importance of that job. She encouraged more women to take up high risk jobs.

Dr. Sheeja M K, Principal of SCTCE presided over the function. Conveying the keynote address at the event, Dinesh Menon, General Manager (HR), TERUMO PENPOL spoke at the occasion and discussed on the numer-

ous ways TERUMO Penpol invests in the upbringing of women and the opportunities that are opening for women and young people there. He also proposed a chance for the college to collaborate with Penpol in the future. He also emphasized on the importance Penpol gives to women in the organization.

Dr. Sulochana P V, Former HOD, Dept of Transfusion Medicine, SCTIMST delivered a session on Breast Cancer.

Sarada Jayakrishnan, GM of Quality, focused her remarks on the demography and the reasons Kerala has a better gender balance. She underlined that women are the agents of change. She focused on setting an example for the future generation by leading from the front. Dr. Rohini Samadarshi, the NSS Program Officer welcomed the gathering. Govind R, Executive PR and CSR proposed the vote of thanks.

A Blood donation camp was organized in association with KIMS Hospital, 38 students donated blood at the camp.



Glimpse of IWD Celebration 2023

## International Women's Day- Blood Donation Camps Supported by TERUMO PENPOL

As part of International Women's TERUMO PENPOL organized Blood Donation Camps at Mahindra Institute of Learning Excellence, Bangalore, College of Engineering Trivandrum, Sree Chitra College of Engineering, Mohandas College of Engineering, LBS College of Engineering, KNM College, Kanjiamkulam, B.Ed. College, Kariavattom and VSSC.

In all, 214 units of blood were collected during the camps and almost three fourth of the female donors were deferred because of, low weight and hemoglobin issues.

Statistics reveal that less than one per cent of women form a part of eligible blood donors. Hemoglobin (Hb) count plays an imperative role in blood donation, which should be above 12.6 gm per Deci liter cent for men and women, but women do not have the required count and are not allowed to donate blood.

Most of the women were clinically anemic due to various reasons like improper diet, iron deficiency, diet restrictions, menstruation, post pregnancy complications, lactation, socio-economic and physiological factors.

We at TERUMO PENPOL always insist that women can always donate blood. On International Women's Day what could be more fitting

tribute to our womenfolk than to organize blood donation camps especially for them. International Women's Day should be celebrated in its truest sense and blood donation being such a noble cause that too, for the first time an all-women blood donation camp would give meaning to the occasion.

There is a myth that women can't donate blood when they are menstruating because donating blood would make them weak. Of course, there are certain parameters for blood donation which must be kept in mind but overall, we think everyone especially, women should donate blood every four months. blood donation is healthy, and the blood loss can be regained within a day.

Those who donate blood, it regenerates among them. Donors need to eat an iron-rich diet. They should also eat fruits, meat and vegetables. A male can donate four pints while a female can donate three pints in a year. In India, 65 is the upper age limit.

However, we do insist that the donor must be physically fit and does not have low hemoglobin levels.

We plan to conduct more such camps in future and take it to the national level by encouraging more and more female donors about the benefits of blood donation.



## LETTERS TO THE EDITOR

*We are very happy & proud that your organization has published the activities of our organization in an International standard Journal BLOOD LINE.(65th Issue Page 9) Best Wishes & congratulations to all. Regards*

**Rajesh Palit**  
*Hony.General Secretary  
 Durgapur Steel plant*

*Dear Baby san,*

*Thank you for sending this journal. It is always interesting and enjoyable to read.*

*Best regards,*

**Ayanori Nakadera**  
*Director, Human Resources  
 TERUMO CORP  
 Japan*



*Thanks for the mail, madam. The Bloodline Journal came out very well*

**Dr.Vinu**  
*Blood Transfusion Officer  
 Sree Chitra Thirunal Institute For Medical Sciences And  
 Technology*

## A Handbook for the Improvisation of a Blood Bank in a Low-Cost and Resource-Intensive Setting

NITI Aayog has published the report titled, "A Handbook for the Improvisation of a Blood Bank in a Low-Cost and Resource-Intensive Setting," on which TERUMO Blood and Cell Technologies had been working.

The report highlights the importance of safe, sustainable, and equitable access to blood transfusion services and the timely availability of safe blood and blood components. As you know, it involved a pilot assessment of the existing blood transfusion infrastructure in Robertsganj and Sonbhadra, both in the state of Uttar Pradesh. To address the gaps that were highlighted in the assessment carried out by the external experts, an action plan for interventions was prepared. The plan was implemented by the Uttar Pradesh National Health Mission officials and the officials from the Robertsganj blood bank. The plan was focused on making changes in the capacities of human resources, improving the infrastructure of the blood bank, and ensuring adherence to processes.

### Executive Summary

Safe, sustainable, and equitable access to blood transfusion services forms the bedrock of modern healthcare systems. The timely availability of safe blood and blood components is vital to ensure the smooth functioning of modern healthcare facilities. World Health Organization (WHO) proposes blood donation by 1% of the population as the minimum accepted norm<sup>1</sup> for self-sufficiency of blood in a nation. Despite steady improvements over the years, in 2018, the shortage in blood units collected was about 4% vis-à-vis the WHO norm. Further, the gap between clinical demand and supply exacerbates due to the low volume of voluntary blood donation, lack of awareness, wastage, and poor supply chain management.

Besides the quantity of blood collected, it is also essential to ensure the availability of blood at the point of demand. In 2016, the Government of India permitted bulk transfer of blood and its components between blood banks for smoother transportation and timely availability of blood and its products. Several other initiatives have also been undertaken to revamp India's public health system and including the mission to address the SDG 2030 goals through the Transformation of Aspirational Districts initiative.

Improving the overall situation of safe blood transfusion in obstetrics and gynecology care in aspirational districts will contribute to addressing issues related to maternal mortality and improved access to Emergency obstetrics services and care. In April 2018, Terumo Blood and Cell Technologies (TBCT) approached NITI Aayog to discuss the concerns of blood <http://naco.gov.in/sites/default/files/Final%20Estimation%20Report%20of%20Blood%20Requirement%20in%20India%20%281%29.pdf> wastage and access to safe blood transfusion.

TBCT is a global leader in blood components and cellular technologies, offering products and services for blood collection, blood component separation, whole blood processing, and pathogen reduction. TBCT volunteered to help improve Blood Bank service delivery in a few of the identified districts. Subsequently, a tripartite statement of Intent (SOI) was signed between NITI Aayog, Uttar Pradesh National Health Mission (UP-NHM), and TBCT. After discussion, it was agreed to conduct a pilot assessment of the existing blood transfusion infrastructure in Roberts Ganj, Sonbhadra district UP, which is one of the aspirational districts. The proposed plan of action was to first assess the existing blood transfusion services through external experts, make an action plan for improvement and follow-up monitoring through physical visits, and subsequently take the learnings to other districts for further improvement. The learnings are summarized in this handbook as detailed below. It is worth mentioning that a major part of the work happened before the COVID19 Pandemic. This handbook provides an overview of the interventions to transform the functioning of the blood bank in Sonbhadra and the steps required for replicating this intervention in another district. The handbook is structured as follows:

- Section A: Assessment and Gap Analysis: This section details the methodology and the findings by a team of external experts. The



- Section A: Assessment and Gap Analysis: This section details the methodology and the findings by a team of external experts. The blood bank was lagging on hygiene, standard protocols were not followed during blood collection and processing, and there was a lack of appropriate storage and transportation facilities, amongst other shortcomings.

- Section B: Action Plan and Implementation: This section details the implementation of the interventions undertaken and how these interventions have improved the functioning of the blood bank. Post-intervention, significant improvement was witnessed in the everyday functioning of the blood bank due to improved infrastructural facilities, observance of Standard Operating Procedures (SOPs), maintenance of records, and technical orientation of the staff.

- Section C: Evaluation and Results: This section highlights the results of the intervention based on an evaluation through three indicators: Human Resources, Infrastructure, and Processes. While the most significant improvement was observed in Processes, the overall functioning of the blood bank improved by 37%.

- Section D: Learnings and Way Forward: This section encapsulates how small-scale interventions via Public-Private Partnerships (PPP) can deliver substantial improvements in low-resource settings like Sonbhadra. Such interventions hold the potential to transform the health ecosystem of the districts. At the end of this section, a process map has been incorporated that can serve as a step-by-step guide to replicate this intervention

Just an FYI.

**NITI Aayog** serves as the apex public policy think tank of the Government of India, and the nodal agency tasked with catalyzing economic development and fostering cooperative federalism through the involvement of State Governments of India in the economic policy-making process using a bottom-up approach.

**National Health Mission (NHM)** was designed with the aim of providing accessible, affordable, effective, and reliable healthcare facilities in the rural and urban areas of the country, especially to the poor and vulnerable sections of the population. In the State of Uttar Pradesh, National Health Mission has made special efforts for reaching out to the community at the grassroots level. NHM focuses on affordable, accessible, accountable, effective, and quality services to the masses, especially to the vulnerable groups of the community.

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