

# BLOOD LINE

The Voluntary Blood Donation Journal | Issue 64 | 2022

## Granulocyte donation – what/when/why - expanding the realms of voluntary granulocyte donor recruitment

Granulocytes are a type of white blood cell which make up a pivotal element of the body's immune system. It is produced by stem cells in the bone marrow. It helps protect the body from infectious disease and foreign invaders.

Neutrophils are a type of granulocytes which play a crucial role in the host defence against bacterial and fungal infections. In patients with hematological malignancies, several factors may cause severe and persistent neutropenia, including intense chemotherapy regimens, underlying malignancy, and stem cell transplantation as treatment. White blood cell (WBC) counts typically reach a nadir 7 to 10 days after chemotherapy administration, increasing the risk of a compromised immune system and susceptibility to opportunistic and life-threatening infections. Severe neutropenia increases the risk for fungal and bacterial infections, with the highest risk for patients with an absolute neutrophil count (ANC) < 500 cells/ $\mu$ L.

### WHO NEEDS GRANULOCYTE TRANSFUSION?

Donating granulocytes to these critically ill patients may help to fight off the infection and improve survival outcomes. Bacterial and Fungal infections are an important cause of mortality in patients with hematological malignancies and in recipients of hematopoietic stem cell transplants.

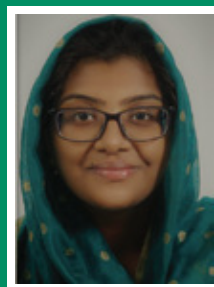
While many donors are familiar with donating whole blood or platelets, white cells donations are a bit different in many ways. First, while a whole blood donor can walk into a donor center and give whenever they have the time, white cell donations only occur when there is a specific patient need. Normal individuals produce approx.  $6 \times 10^{10}$  granulocytes/day, their half life in peripheral blood is only 6-7 hours. White cells have a shelf life of only 24 hours, as they rapidly loses viability and are transfused to the patient on the same day as the donation.

Just as with whole blood and platelets, white cell recipients will require a transfusion that is compatible with their own blood type. However, white cell donations require another layer of typing that determines the donor's CMV status. CMV, or cytomegalovirus, is a common virus that infects people of all ages and stays in the body for life. Typically, it causes no symptoms; a healthy person's immune system can neutralize the threat before it causes illness. In an immunocompromised individual, however, the CMV infection can cause serious health problems. If a recipient is CMV-negative, it is crucial for that person to receive white cells from a similarly CMV-negative donor. In addition to extra testing, white cell donation also requires a bit of extra preparation ahead of time.

### WHO CAN DONATE GRANULOCYTES?

Donor qualifications for granulocyte collections. (D & C act 2020)  
Selected from a pool of pre screened or frequent , long t erm apheresis donors who have undergone recent testing.

- ABO and Rh matched to the recipient
- Age - 18-60 years.
- Weight - 50 kg
- Frequency of donation- permitted no more frequently than once per month; interval is arbitrary
- Tested negative for all blood transfusion-associated infectious disease markers within 30 days of granulocyte donation.
- Prospective donors with hemoglobinopathies or those who are pregnant cannot be utilized, because G-CSF is not approved for use in these populations.
- Good vascular access. Granulocyte collection is performed through apheresis collection, which demands good venous access. The donor should be evaluated by the apheresis collection staff.
- No history of allergies to steroids or starch.
- A history of hypertension, diabetes, gastrointestinal ulcers, glaucoma, tuberculosis, or any fungal infections may be a contraindication to steroid administration.
- Side effects of medications — Side effects seen among G-CSF/-dexamethasone-stimulated donors seem to be generally mild and self-limited. Headache, arthralgia, bone pain, fatigue, and insomnia are the predominant symptoms.



**Dr. Saina Abdul Salam**  
Final Year Resident  
Department of Transfusion Medicine  
Government Medical College, Trivandrum

## HOW THE PROCESS OF GRANULOCYTE DONATION PROCEEDS?

### 1. Mobilization of granulocytes in donors

All granulocyte donors receive medication before donation to increase cell production. You will be given two different medications which work together to boost your granulocyte count.

- Granulocyte Colony Stimulation Factor (G-CSF) is a blood growth factor that stimulates the body to produce more cells. G-CSF is an injection, given to you by trained personnel.
- Dexamethasone is a steroid which acts together with G-CSF to release cells into the bloodstream. Dexamethasone is given to you in tablet form, to be taken the evening before donation.

A dose of 5-10ug/kg of G-CSF subcutaneously and/or 8mg dexamethasone orally will be used to mobilize the granulocytes. G-CSF is the preferred option as granulocyte collections after G-CSF can be expected to significantly exceed the minimum of  $1.0 \times 10^{10}$  per unit or  $2 \times 10^9$ /kg for pediatric collections.

Administration of G-CSF causes a rapid increase in the granulocyte count that begins within two hours and peaks at approximately 12 hours after administration.

By stimulating donors with a combination of G-CSF and dexamethasone, collection of  $5 - 10 \times 10^{10}$  granulocytes at one sitting became possible. With these larger granulocyte doses, one can achieve significant increments in absolute neutrophil count (ANC) in severely neutropenic and infected patients.

### 2. Apheresis of granulocytes from donors

- Granulocytes are donated using a blood separation process called apheresis, using a sterile kit and blood separator device.. The machine will draw blood from one arm and collect granulocytes before returning the rest of your blood through the needle in your other arm.
- Advantage of this method is minimal red cell loss to the donor. Normally apheresis permits to collect only  $1 \times 10^{10}$  granulocytes (10 percent of normal daily production) from a donor during a 3-4-hour apheresis collection. Before the collection, your total leukocyte count, Antibody screening & vitals will be checked and pre testing will be done before the collection date, including tests to check if you have been exposed to HIV, Hepatitis B, Hepatitis C, HTLV (Human T-Lymphotropic Virus) or syphilis. These tests are routine and essential for everyone donating blood

### 3. Granulocyte storage, release and transportation

- Granulocytes are stored at  $22 \pm 2^\circ\text{C}$  without agitation.
- If granulocytes are agitated in error this does not preclude their transfusions there is limited evidence that agitation affects them functionally. The product has a 24 hour expiry shelf-life.
- Granulocytes MUST be irradiated to prevent transfusion associated graft versus host Disease. Never leukoreduced.

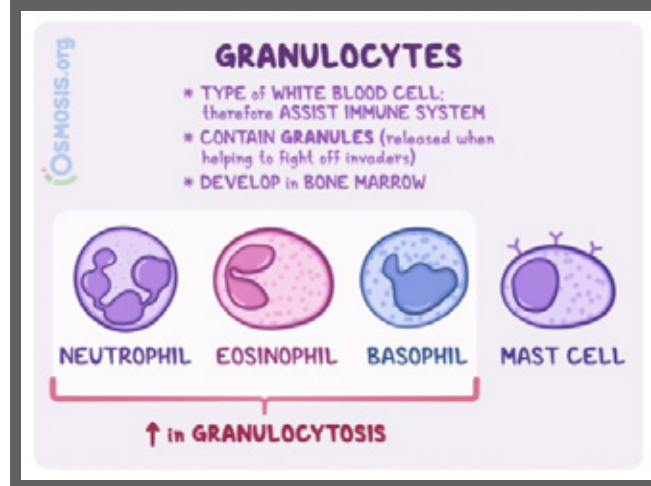
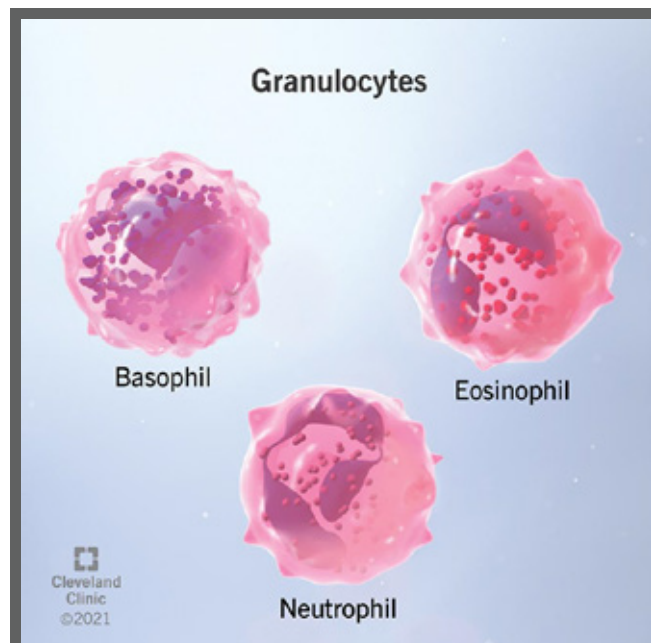
### 4. Dose:

- Doses of at least  $1 \times 10^{10}$  granulocytes per transfusion appear to be required to treat or prevent infection.
- Granulocytes should be transfused through a standard red cell giving set.
- The whole dose should be infused over 1-2 hours.

### HOW SHOULD I PREPARE FOR THE PROCEDURE?

Eating regularly before donating will help to keep your blood sugar levels stable. This is important so that you don't feel lightheaded or dizzy after your donation. Having a snack before you donate can help maintain these blood sugar levels. Ensuring that your diet contains foods rich in iron - such as meats and green leafy vegetables - will help to keep you feeling well during and after donation.

It's also important to ensure that you are well hydrated in the days leading up to your donation. This will help to compensate for the fluids lost during donation, and will help to bring your blood volume levels back to normal.



Avoid doing any vigorous exercise or heavy weight lifting the day of your donation – both before and after you've donated.

We recommend that you have a full night's sleep of between 7 to 9 hours the night before your donation. This will help you to feel more alert when you donate, which will in turn reduce the risk of feeling unwell.

Once you are connected to the machine you will be unable to visit the toilet so please go immediately before your treatment starts.

### HOW WILL I FEEL AFTER THE PROCEDURE?

Some people feel tired after the procedure, so it is advisable that a friend or relative takes you home afterwards. You should not drive yourself home. You should not do any hard physical exercise for the rest of the day.

Thus Granulocyte donation is safe and lifesaving. Proper awareness and pre screening modalities are essential. The side effects are tolerable and milder than those seen in peripheral blood stem cell donors.

### References:

1. Granulocyte transfusions Up to dates.
2. AABB 20TH edition.

## Public-private partnerships, innovation & awareness: Key to reforming India's blood management , TERUMO PENPOL , Managing Director , Chetan Makam's blog in The Times of India

Since 1975, the World Health Organization (WHO) has adopted resolutions advocating for a sustainable and safe supply of blood and blood products across the globe. Subsequently, in 2004, June 14 was commemorated as World Blood Donor Day to amplify the significance of voluntary non-remunerated blood donation (VNRBD). Further, WHO has also put together a framework to help member nations prepare their national blood policies impinging on VNRBD. However, despite efforts by organizations and national governments across the globe to increase the blood donation rate, many regions continue to face acute shortages. Especially the low and low-middle-income countries (LMICs) receive only 24% of the global donations even though their combined population share is 48%.

Blood forms the bedrock of a broad range of healthcare services. Transfusions mainly account for treating pregnancy-related complications, complex medical procedures, traumas, management of blood disorders, and chronic anemia. By helping save millions of lives and improving the quality of life of many patients, blood forms a crucial facet of public health. Consequently, it is a fundamental aspect of our efforts toward achieving Universal Health Coverage (UHC). It assumes greater importance in a country like India, which globally has the largest number of children suffering from Thalassemia Major and the highest number of deaths due to road accidents. Additionally, 38% of the maternal deaths in the country are attributed to Postpartum Hemorrhage (PPH). However, India faces a shortage of about 1.9 million units of blood which is sufficient to perform around 49,000 organ transplants and 320,000 heart surgeries.

Recognizing the importance of blood in maintaining the country's health infrastructure, the Government of India launched several initiatives. These include setting up the National Blood Transfusion Council to ensure coordination amongst the states, various ministries, and health programs. Many Non-Governmental Organizations (NGOs) and Civil Society Organizations (CSOs) have also been supported by the government to strengthen the blood ecosystem. These initiatives are trying to address the three key issues concerning the country's blood ecosystem-accessibility, affordability, and safety. Transparency in the blood donation program is now being ensured through the e-Blood Service App.



The WHO suggests at least 1% of a region's population should be donating blood for a sustainable blood ecosystem. In India, widespread disparities continue to exist across different regions. While some states like Punjab, Maharashtra, and Kerala meet the WHO norm, others such as Bihar, Meghalaya, and Nagaland require concerted efforts to enable a self-sufficient blood ecosystem. Such disparities can be attributed to geographical constraints, low resource set-up, lack of awareness, and inadequate infrastructure. A 2014 report by the National AIDS Control Organization (NACO) also highlighted that many Tier-II cities lack basic infrastructural facilities such as Blood Component Separation Units and Regional Blood Transfusion Councils essential in maintaining the blood ecosystem of states. Consequently, these states face severe shortages.

## THE TIMES OF INDIA

City India World Entertainment Sports Spirituality

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It is thus of paramount importance that efforts are made to address the shortages and ensure adequate infrastructural facilities. The Covid-19 pandemic showcased the efficacy of Public-Private Partnerships (PPP) in addressing the concerns of the healthcare sector. Similar partnerships can be initiated by the states where the expertise of the private sector and the administrative support of the government can be used to help elevate the blood management ecosystems. Additionally, the deployment of innovative models like the hub and spoke model of blood collection, as advocated by the National Blood Policy, can be useful in overcoming geographical and resource constraint barriers.

While the Public-Private Partnerships (PPP) and innovative approaches can improve the accessibility of blood, it is also important for the government to adopt a targeted approach to raise awareness about blood donation and dispel the myths associated with it to change people's perceptions. The Swachh Bharat Campaign achieved great success by making students the brand ambassadors. Similarly, students can be messengers to initiate grassroots movements. Lessons can also be incorporated from the door-to-door Polio campaign of the government, which successfully eradicated Polio in two decades. The state and the central government can leverage ASHA (Accredited Social Health Activist) workers to raise awareness via such a door-to-door campaign. Additionally, resource mobilization is essential to place a blood transfusion system connecting blood banks across the country to mitigate discrepancies in demand and supply.

Post-independence, the country has made tremendous progress on various socio-economic indicators such as the gross domestic product (GDP), maternal mortality rate (MMR), infant mortality rate (IMR), sex ratio, and per capita income. However, with several instances of people traveling long distances searching for blood being reported, an efficient blood management ecosystem remains a facet that the country is yet to conquer. The national and the state governments, health authorities, and policymakers must align to put in place integrated blood management and transfusion ecosystem. However, these efforts would only be fruitful if citizens take up individual responsibility. I would thus like to encourage citizens to come forward to donate blood voluntarily. Collectively, we should seek to achieve the target of zero deaths due to lack of access to blood.



## TERUMO PENPOL celebrated World Blood Donor Day in association with Kerala Technological University and All Kerala Blood Donors Society

Terumo Penpol Private Limited in association with the Kerala Technological University and All Kerala Blood Donors Society celebrated World Blood Donor Day on June 14 at LBS Institute of Technology for Women as a gala event. V K Prashanth, MLA inaugurated the event. Adv I Saju, APJKTU syndicate member presided over the function and Krishna Bhamidipati, General Manager (Finance) delivered the keynote address.

### Following were the activities organized:

- Blood Donation Camps all over India by TERUMO PENPOL Commercial Team organized 245 Camps and arranged 11595 Donors
- Recognized the Best blood donors, repeat regular donors, Motivators, and Institutions
- Blood donation camps were organized at LBS Institute of Technology for Women and at Lullu Mall in association with Women and Children Hospital, Thycaud, Kims Hospital and Sree Ramakrishna Charitable Hospital
- The event at the LBS Institute of Technology for Women saw the culmination of 100 blood donation camps organized with the NSS cell of APJ Abdul Kalam Kerala Technological University. A total of 4350 students donated at these camps.
- The motivators and best blood donors who has donated four times and three times in 2021 were recognized.
- 12 colleges from Kerala Technological University will be recognized for promoting voluntary blood donation
- Those who had donated blood more than 75 times were conferred with Baiju Nellimood Award
- Those who had promoted blood donation were conferred with U Suresh Memorial Award
- Training Program on Apheresis Blood Donation, Safe Blood Transfusion & Anemia Eradication for Donor Motivators, Camp Organizers
- Associates of Terumo Penpol Private Limited also donated blood at various places



## Thank you, blood donor, greeting card design contest

Terumo Penpol Limited organized a 'Thank You Blood Donor Greeting Card Design Contest' for Students to thank those who voluntarily donate their blood, particularly those who give blood on a regular basis, two, three or more times a year, without any reward, except the knowledge that they have helped save lives. It also helped to raise awareness about the importance of donating blood with a critical age group – students.

World Blood Donor Day is an annual event, usually on the same date each year, to thank voluntary blood donors, acknowledge them, and encourage blood donation and new donors, especially by representing how blood donations have saved and changed lives. This year's slogan is Donating blood is an act of solidarity. Join the effort and save lives, referring to the caring and cohesion that giving blood and caring for others involves, especially in enhancing solidarity within communities.

One of the aims of the day is to encourage younger people, who might be a bit nervous or unsure about giving blood, to feel encouraged to sign up

and start donating, so that the donor population doesn't decline but stays strong. It is also to highlight the need for donations to be regular to keep stocks and quality of blood donations high.

Blood donation saves millions of lives annually and helps with the recovery and health of patients who have illnesses or injuries, complex operations, or childbirth problems. Blood stocks are also essential in natural and man-made disasters. Some blood types are rare, so promoting the need for rare donor types is also part of this event.

With the goal of ensuring access to safe blood and blood products, the World Health Organization (WHO) has been at the forefront to improve blood safety and availability and recommends an integrated strategy for blood safety and availability. Despite WHO efforts, we still have a shortage of donors, and thus World Blood Donor Day is vital to raise awareness about blood donation and help increase supply to save as many lives as possible.

**Aleena A P**  
**1st Prize**



**Ardra B S**  
**2nd Prize**



**Neehara A R**  
**3rd Prize**





## World Blood Donor Day celebrations-Recognizing the Heroes



### Lifetime Achievement Award

K P Rajagopalan



Life time -Donors- Shri Gopakumar V



Life time -Donors-Shri Vasudevan Nair

**U Suresh Memorial Award**  
For Motivating Voluntary Blood Donation



Timothy Leoraj



Brijesh P I



Neethi S Pillai



Sanjoy Roy Chowdhury

**Baiju Nellimood Best Donor Award**  
who has donated blood 75 times and more



G Jayakumaran Nair



Ratheesh Sahadevan



P S Ramesan Thampi



Hathim Harif



Aneesh Lal



Girish Kumar G

**Blood donation camps were organized at LBS Institute of Technology for Women in association with Women and Children Hospital, Thycaud and Sree Ramakrishna Charitable Hospital**







## Best Donor Awards



Ajay Sreedhar



Sherin SR



Ramesh Kumar K G



Rajesh S



Dr Sreejith M S



Visakh V S



Midhun M Nair



Binu N



Binu V



Vibin Wilson W C



Ajikumar BR



Praveen Chandran



**Terumo Penpol Heroes**



**A Gopakumar**



**Anoop A.K**



**Anoop Muraleedharan**



**Hareesh Babu**



**Kumar A**



**P.Anil Kumar**



**Pratheesh Kumar**



**Shajudeen J S**

**Recognizing colleges for promoting voluntary blood donation**



**NSS College of Engineering Palakkad**



**Government Engineering College Thrissur**



**College of Engineering Trivandrum**



**Govt.Engineering college Barton Hill Trivandrum**



**Adi Shankara Institute of Engineering and Technology**



**KMEA Engineering College**



**AL-AZHAR College of Engineering and polytechnic**



**College of Engineering Chengannur**



**UKF College of Engineering and Technology**





**Sree Buddha  
College of Engineering**



**MGM College of Engineering**



**MEA Engineering College**

## **Mark Miller, Sr. Manager, Global Platform Leader, TERUMO Blood And Cell Technologies Brings His Passion for Blood Donation Around the World**



Mark Miller knew when he saw the sign for blood donation during his freshman year of college in Washington, D.C., that it was worth a try. He probably could not have predicted how his donation experience would turn into a lifelong passion for blood donation, one that would be a part of his life no matter where he went in the world.

It was not long after Mark graduated that he joined COBE, right on our Lakewood campus. While he was not a part of BCT initially, he was closely connected to patients who had a profound need of blood as he visited ORs and watched open heart surgeries. Over 18 years and thousands of surgeries, he saw how patients' lives were impacted by an infusion of platelets or plasma or red blood cells, bringing health and vitality back after these intense operations. Those who came into the hospital with difficulty breathing or walking, or to have their hearts repaired, came out with quality of life again. In his words, "It made you want to throw off your scrubs and go donate."

He continued to donate in Europe once he moved to Brussels with COBE as their European Marketing Manager to launch some of their cardiovascular products. He returned to Denver and then moved again to Boston, always scheduling approximately four or five visits to a blood drive every year. He knew when the opportunity arose to join what was then BCT, an organization that connected so closely to the collection and processing of blood, it felt like he was coming full circle.

Mark now works as the Sr. Manager, Global Platform Leader for Reveos, joking that the device feels "like a third son."

He estimates that he's given over 200 donations or about 25 gallons of whole blood in his life. And he continues to donate through Vitalant, alternating between whole blood, plasma and platelets, sometimes donating up to two units of platelets and two units of plasma at one time. He's proud of the fact that he has been a part of internal blood donation programs at three of the organizations he's joined where he can translate his passion and care for giving into tangible action. He suggests any associate who would like to join the cause should connect with our From the Heart campaign to get involved.

Mark shares a message of encouragement to those who might consider signing up for a blood drive, but have some hesitation. He says there's no reason for fear the tiny needle stick which feels like a pinch. The actual donation should take just five to eight minutes or, in the case of apheresis, one to two hours. The length of time depends on many factors.

"The need for blood is always going to be there. That's what I tell people. Also, no matter how much blood is given today, we need more tomorrow. And the next day and the next day. For me it's like paying forward. Because, at some point, you or a loved one are going to need it."



## Recognition for Terumo Penpol - Regional Cancer Center

In continuation to the World Blood Donor Day (June 14) observance, The Regional Cancer Center(RCC) organized a felicitation function to honor the institutions, motivators and donors from various walks of life for the enormous contributions in the field of Voluntary Blood Donation. The function was inaugurated by Dr. Vijayalakshmi K, Additional Professor, Blood Bank, Regional Cancer Center.

Terumo Penpol Private Limited was honored at the event for its contribution towards Voluntary Blood Donation, especially for the 100-day blood donation campaign envisaged as part of the 100 year celebrations, where around 300 associates donated blood at RCC over a period of 100 days.

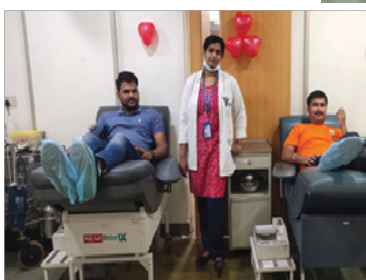
Abraham Mathew, VP, Manufacturing received the award on behalf of the organization from Dr. Sajeed, Additional Director RCC in the presence of Dr. Vijayalakshmi and Dr. Lakshmi Sudev, Asst. Professor Blood Bank, RCC.

Dr Lakshmi Sudev, Asst. Professor Blood Bank, Dr. Sajeed, Additional Director, RCC and Abraham Mathew, Vice President Blood Bag Factory felicitated the event. Apart from our organization five other institutions and 10 donors and two motivators were felicitated at the event.

Representing our organization B Harikrishnan, GM, Engineering, VR Sreekumar, GM, Production, Wilson Joseph, GM PAD, Govind R, Executive PR and CSR, Shajudeen JS and Sandeep from factory attended the event.



## TERUMO PENPOL Commercial Organization Team Organized 245 camps and arranged 11595 Donors





# WORLD BLOOD DONOR DAY CELEBRATIONS



Mumbai



Kerala & Tamil Nadu



West Bengal



Chattisgarh & Nagpur





Delhi



Haryana



Uttar Pradesh



Max Super Speciality Hospital



Bihar, Jharkhand, Orissa





## Jammu & Kashmir



## Gujarat



## Punjab



## Uttarakhand



## Guwahathy



## World Blood Donor Day Celebrations at Nazareth Hospital Blood center, Shillong

World Blood Donor Day 2022 was observed with a difference compared to the past years keeping in mind this year slogan " Donating blood is an act of solidarity. Join the efforts and save lives". We conducted the following programmes: -

1. Awareness programme on the need of Voluntary blood donation for the National Service Scheme Volunteers.
2. 200 Voluntary blood donor registration.
3. Pledge by NSS Volunteers on Voluntary blood donation.
4. Blood Donation camp on the 17th of June 2022 at Community Hall NEHU campus, Shillong, organized by NSS Unit NEHU in collaboration with Nazareth Hospital Blood Centre, State Blood transfusion Council (SBTC), NHM (National Health Mission) and Meghalaya State AIDS Control Society (MACS). 42 Voluntary blood donors donated (25 Males and 17 Females, 17 First time blood donors and 25 repeat blood donors).
5. Acknowledgement for regular voluntary blood donors and organization by citation.
6. Certificates of Appreciation from the State Blood Transfusion Council and Mementos as well as Donor Cards were distributed to all Voluntary blood donors.
7. Experience and thoughts sharing by the regular and first time blood donors to encourage and motivate their peers in the field of voluntary blood donation through social media platform (Face book/Instagram/Whatapps/You tube).
8. Programmes/Activities are being conducted for the whole month of June.



**It was encouraging to see the response and contribution made by the males and females youngsters in the field of Voluntary blood Donation. Terumo Penpol supported the Blood Centre by providing them with Coffee Mugs as Mementos for the Voluntary blood donors.**

*"Heart of a voluntary blood donor  
Deep within my heart,  
A helpless voice I heard,  
Telling me, "I have lost hope to live,  
Since the blood I needed, there is no one to give"  
Answering to the calling,  
I woke up and start thinking,  
How to save a life, that is worth living?  
With a thoughtful and courageous heart,  
I decided to make a start,  
Donating my own precious blood now and regularly,  
For others to live happily.  
Here I am, for all to see,  
Always healthy, happy, and ever ready.  
To donate blood regularly and voluntarily"*

**Written By Dr. Hughbert Dkhar.  
Pathologist and In charge  
Nazareth Hospital Blood centre, Shillong.**

**Letters To the Editor**

Dear Baby san,

Thank you for your sending this Bloodline Journal. It is great Pleasure for me to see it. Whenever I read it, I automatically remember the days I worked with TPL colleagues and can feel energized by. I also appreciate your continuous effort to make this excellent journal and publicize TPL activities ,which shape Terumo group mission: Contributing to Society through Healthcare.

Best regards,

**Ayanori Nakadera**

International HR, Human Resources, Terumo Corporation, Japan

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Good afternoon, sir

My name is DR. ANKITA DAS, I am the Blood Bank Officer of AKASH HOSPITAL DEVANAHALLI, RURAL BANGALORE. We also have been using your company Terumo Penpol blood bags for several years in our blood bank.

I came across your bloodline journal published by Terumo Penpol and saw the various voluntary blood donation camps that your company has helped to organize in various states all over India. If you kindly help our blood bank too in organizing any blood donation camps in and around Devanahalli, Karnataka. Thanking you and oblige

**Dr. Ankita Das**

BB officer ,Akash hospital ,Devanahalli.

\*\*\*\*\*

Dear Madam,

Thanks a lot for the copy of Bloodline. It is a pleasure getting updates on the initiatives for promoting voluntary in different parts of the country, from your side. Keep going ... Thanks, and regards,

**Baby Prabhakaran**

CEO, The BluePoint Org, Thiruvananthapuram



Baby madam,

Received the copy of BLOOD LINE and glimpsed through it.Thanks for sending it regularly without fail. Please continue. Regards

**Jayant Umalkar.**

Saral Enterprises

\*\*\*\*\*

Dear Baby

Thanks for giving space at prestigious side of Bloodline

Regards

**Ravinder Dudeja**

Founder Gen. Sect. Foundation Against Thalassaemia Regd. House No. 137 First Floor Sector 7A Faridabad 121006

\*\*\*\*\*

Greetings from Nazareth Hospital Blood Center, Shillong, Meghalaya.

Thank you for regularly sending to us the Blood line journal. It is always a pleasure reading through the articles and had been a source of inspiration for us too. I would like to share with you few of our activities during the World Blood Donor Day 2022.

**Dr. Hughbert Dkhar**

Pathologist and In Charge Blood center, Nazareth Hospital Shillong, Meghalaya.

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