

#### Annual Report - April 2017 to March 2018

#### **BACKGROUND AND HISTORY**

Bangalore Medical Services Trust (BMST) was established by the Rotary Club of Bangalore and TTK & Company in 1984.

BMST, initially set up to provide blood-banking services through its division, the Rotary Bangalore-TTK Blood Bank, has evolved over time to become a centre of excellence in the areas of blood banking, transfusion and Immunohematology; transplant Immunology; tissue banking; solid organ and stem cell transplantation; Training; Research; and community based health education and health services.

### Approvals, Authorizations and Recognitions:

- ✓ Registered Trust: BMST was registered as a "Public Charitable Trust" in February 1984, with the Registration Number 784 in 1983-84, dated 16/02/1984.
- ✓ 12AA: Registered under section 12AA of the Income Tax Act, 1961, vide no. Trust / 718 dated 15/03/1984
- ✓ 80G: As a not-for-profit trust, BMST has been granted 'Approval under Section 80G (5)(vi) of the Income Tax act, 1961'. Therefore donations to the organization are tax-deductible.
- ✓ FCRA: BMST has been granted authorization to accept foreign funds as it is registered under Section 6(1) of the Foreign Contribution (Regulation) Act, 1976. This is now called Foreign Exchange Management Act (FEMA). The FCRA registration Number is 094420600.
- DSIR recognition: BMST has received recognition as a Scientific and Industrial Research Organization (SIRO) by the Department of Scientific and Industrial Research, Ministry of Science & Technology, Government of India.
- Drugs Control License: Rotary Bangalore-TTK Blood Bank, BMST has been licensed by the Central Drugs Standard Control Organization (CDSCO), Government of India, License no: KTK / 28C-7 / 95, dated 07.08.95 and renewed from time to time as per the Drugs Control Act & rules.
- ✓ NABH Accreditation:\_Rotary Bangalore-TTK Blood Bank, BMST is accredited by the National Accreditation Board for Hospitals (NABH)





RGUHS Recognition and affiliation with Rajiv Gandhi University of Health Sciences (RGUHS):\_BMST has been designated as a specialized laboratory of RGUHS and a Centre of Excellence in Blood Banking, Immunohematology & Tissue typing; for collaborative research and training.

#### Genesis

In September 1983 Dr Latha Jagannathan initiated a blood donor centre to support hospitals faced with difficulties in accessing good quality blood in Bangalore. She and her friends, Malathi Aiyar and Lalli Srimurthy organized voluntary blood donation camps at colleges, factories and other organizations and motivated people to donate blood to hospitals in Bangalore. Rtn P.D.G P.T Kasturi and Rtn Capt. V.V.K. Mani approached Dr Latha Jagannathan with a proposal to establish a blood bank, and thus the Bangalore Medical Services Trust was formed in February 1984 as a partnership of the Rotary Club of Bangalore and TTK and Co. BMST operated out of the offices of TTK Prestige till 1990, until the building was constructed on a plot of land donated by the Government of Karnataka at Thippasandra.

#### The people and organizations behind BMST:

#### **Rotary Club of Bangalore:**

Rotary Club of Bangalore is the oldest and largest Rotary club in Rotary District 3190. Besides BMST, the club has supported several other education, health and community projects

#### TTK & Co:

The TTK Group, started in 1928, is an Indian business conglomerate with a presence across several segments of industry including consumer durables, cookware, bio-medical devices, foods, pharmaceuticals and supplements, virtual assistant services and health care services.

#### **BMST Trustees:**

BMST has 12 trustees, 6 nominees of TTK & Co. and 6 of Rotary Club of Bangalore who change every year. The Chairman is a nominee of RCB & the Managing Trustee a nominee of TTK & Co.





Rotary Club of Bangalore and TTK & Co, the founding partners as well as other Rotary clubs, Rotary International, and many other corporate & individual donors have mobilized the funding support for BMST over the years.

Several Rotarians of RCB have supported BMST. Notable among them were Rtn P.D.G P.T Kasturi, founder Chairman and the visionary who initiated this project, Rtn Capt. V.V.K. Mani & Rtn. Arun Kumar, who contributed enormously in terms of time and effort to at first get a Civic Amenity (CA) site of the Government of Karnataka and then construct the building.

Dr. Latha Jagannathan, Medical Director and Managing Trustee and Mrs. Lakshmi Ravichandran, Trustee, BMST and Head, Donor Recruitment, have contributed, totally free, their time, effort and expertise to establish and grow BMST to what it is today.

In addition, several volunteers, have contributed to BMST, of note among them is Mr. Pratap, who has developed and supported the software program "Hemotrace" pro bono for BMST.

# Vision:

# Life de India To inspire a billion people to save lives!

#### Mission:

As a not-for-profit charitable trust to provide "lifesaving services" through access to safe blood, cellular products and, facilitation of stem cell, solid organ and tissue transplantation for all patients in need. To work with the community to provide advocacy, education and specific interventions for health and related areas

#### Objectives:

- To promote and sustain voluntary blood, stem cell and tissue donations
- To spread awareness about organ and body donation
- To meet the defined needs of the community for safe blood components, cellular & tissue products





- To follow high standards of operations as per national /international guidelines in order to develop & promote the culture of quality and ethics in all our services and facilities
- To help the poor and needy with blood, tissues, laboratory and other services at subsidized or at no cost at all
- To initiate and advocate for newer and improved testing protocols with clinicians in the field of blood and transplant
- To do capacity building through training and technology transfer
- To do Research & Development in blood, tissue and cellular therapies

# **BMST VERTICALS**

### **BLOOD BANKING AND TRANSFUSION:**

Since its beginning in 1984, Rotary Bangalore-TTK blood bank, BMST, has grown tenfold in size, and has acquired a reputation for high quality and safe blood products and is one of the largest regional blood transfusion centre and blood component facility in Karnataka.

BMST blood bank has prioritized three guiding principles for all its programmes and services. These are **quantity**, **quality**, **and accessibility** 

#### **Quantity**

BMST blood bank's blood collection has grown steadily over the years and currently is around 40,000 units of voluntary donor blood p.a. It has a voluntary donor base of over 5 lakh donors and reaches services to more than 90,000 patients every year.

Over 600 IT industries, colleges and other organizations support us with blood donation camps (BDC). We are their preferred partners for BDCs because of our emphasis on quality, professionalism of our blood collection team, support to donor organizations for their blood needs and strict donor confidentiality policy







#### One unit of blood collected serves several patients

All the blood collected is separated into components to optimize use so that each unit takes care of the blood needs of several patients. The excess plasma is sent for Fractionation to produce Factor VIII, Factor X, Albumen and Immune Globulins. In addition we also collect Single Donor Platelets by Apheresis







<b>Blood Components</b>	Used in
Red Cells (4° C for 42 days)	Haemorrhage, Accidents, Anaemia, Surgery
Platelets (22° C for 5days)	Dengue, Cancer, Surgery
Plasma (-30° C for 1 year)	Blood clotting disorders like Haemophilia, Liver Disorders, Disseminated Intravascular Coagulation (DIC), Haemorrhage





#### Single Donor Apheresis components:

The Aphaeresis procedure is used to collect a particular blood component using the specialized Apheresis machine. Blood is circulated in the machine within a disposable tube set, the selected component is collected in a bag and the rest of the blood is returned back to the donor. This procedure usually takes one to two hours. It is a safe procedure, at any point of time, less than 200mL of the donor's blood circulates outside the body, being processed by the machine.

The acceptance criteria for Apheresis donation is the same as for regular, Whole Blood donation except that the donor has to weigh at least 55Kg. Apheresis donors can donate more frequently since only a portion of their blood is collected. Apheresis (Single Donor) Platelets for instance can be donated twice in one week

#### <u>Quality</u>

BMST blood bank has instituted a total Quality Management System and is accredited by the National Accreditation Board for Hospitals (NABH).

Some important policies, processes and procedures followed to ensure Quality in the blood bank are:

#### **Quality in Donor Selection:**

As a key contributor to blood safety, blood is collected from voluntary blood donors only. Donor selection is based on the detailed medical history and risk factor questionnaire, counseling and medical examination. This emphasis on voluntary donation is based on WHO and other blood safety studies that show a higher prevalence of HIV, Hepatitis and so on among replacement donors. This is attributable to the likelihood of replacement donors not admitting to history of risk behavior.

Blood is collected at voluntary Blood Donation Camps organized at industries, colleges and other institutions. We have a voluntary donor base of over 5 Lakhs; with around 40% repeat regular donors More than 90% of our donors are young, between 18 to 35 years of age; from IT industries and therefore well-educated and well-informed.

**Quality in Testing for Transfusion Transmissible Infections:** 





As per the Drug Control mandate, every unit of blood is screened for the five five infections – HIV, Hepatitis B, Hepatitis C, Malaria and Syphilis.

## Overcoming the problem of "Window Period"-

The screening for Viral Infections HIV, Hepatitis B, and Hepatitis C has an inherent problem. The routine tests used by blood banks are based on the detection of the Viral markers, i.e. Antibodies and Antigens of the Virus. These markers may not appear in the initial few weeks to 1-2 months after an infection. This leaves a "window period" (WP) during which the screening test is false negative, while the risk of transfusion-transmissible infection remains. The WP can never be eliminated fully, but it can be reduced considerably.

At BMST, every unit of blood undergoes two tests to reduce the WP to the extent possible using present day technology.

- 1. The detection of. Antibodies and Antigens of the Virus is done by the highly sensitive, automated, Chemiluminesence technique.
- The detection of the viral RNA or DNA directly using the Neucleic Acid Amplification Technology (NAT), by the state of the art facility at Bowring & Lady Curzon hospital, Government of Karnataka.



Confidential counseling and referral is provided to donors reactive for any transfusion transmissible infection.

Page 8 of 37





#### Quality in blood grouping and compatibility testing:

### BMST is a recognized Immunohematology Reference Laboratory for South India:

Most blood banks only test for the major blood groups- A, B, O and AB and Rh D (positive or negative) routinely. While the Minor Blood groups are not always relevant for routine and one time transfusions, they become important especially in multi transfused patients, pregnant women, newborns; transplant, certain medical and hematological conditions and so on.

At BMST, blood grouping for Major as well as Minor blood group systems such as other Rh groups; Kell, M,N,S and Duffy, antibody screening and other pre transfusion testing is carried out by advanced, automated & very sensitive techniques.

Hospitals refer difficult and problem cases to BMST where the tests for both Major and Minor blood group systems are carried out and the antibodies are identified and compatible blood is identified and issued to the patient / hospital.

Examples of problem cases resolved by BMST *Immunohematology Reference Laboratory*:

Case 1:

A 28 year old pregnant female was admitted for delivery at a maternity hospital with profuse bleeding. The Blood group was B Positive. Several units of blood cross matched were found to be incompatible and the patient's blood sample was sent to BMST. Antibody screen & identification was done and Fya & Jka antibodies were detected.

A suitable blood unit negative for both the antigens was required to prevent hemolytic transfusion reaction in the patients. Nearly 60 units were tested and finally by mid night blood units negative for Fya & Jka Antigens were identified and issued to the patient for transfusion. The bleeding was controlled, blood units transfused and the patient delivered a healthy baby by LSCS.





#### Case 2:

A male baby around 2 years old, involved in a Road Traffic accident was admitted at a super specialty hospital. No personal or medical history was available. The patient was bleeding & required transfusion urgently

The Blood group was A Positive but several units of blood cross matched were found to be incompatible. The blood sample was sent to BMST. The Antibody screen & identification was done & detected anti-M antibody. After testing more than 23 units of blood, suitable M negative units were issued for transfusion.

# Ensuring Traceability and quality "Vein-to Vein"

It is very important for a blood bank to be able to maintain documentation and trace the history of every unit of blood collected including the donor data, tests done, processing, storage, issue to patients and finally post transfusion adverse reactions if any; details of staff involved, quality of consumables used and quality of final products and so on.

At BMST we do it as follows:



#### Barcode system:

All blood units, blood samples, donor forms & other related documentation are labeled and identified using the ISBT 128 barcode standards



#### Blood bank software:

"Hemotrace" version-3 a blood bank software program developed by Mr. Pratap & his team from Centaur Information Systems Pvt. Ltd. along with BMST

#### Features of Hemotrace version -3

- It is interfaced with the automated testing equipment and barcodes and integrates all functions
- Provides Intelligent Labeling Quarantine to finished components category (Donor information, grouping and testing results, composite label, issue label, bio-hazardous labeling)
- Expiry of blood component is automatically computed on basis of shelf-life, so that expired units do not appear in the blood stock list.
- Units reactive for Transfusion Transmissible Infectious markers do not appear in the blood stock list.





# **Accessibility**

The blood bank offers 24/7 services, besides offering doorstep delivery to far off hospitals. Bulk transfer of blood components is also enabled to other blood banks and blood storage centres in 30 hospitals and supports over 500 hospitals that do not have blood storage or blood bank facilities.

# Outreach services

In its efforts to ensure accessibility to safe blood to rural population, BMST with NRHM support, initiated the **RakthaVahini** programme and between 2009 and 2011 delivered blood components to government district hospitals in Bagalkot, Bidar, Bijapur, Gulbarga, Koppal and Raichur. Blood components were transported to these far-off places in refrigerated containers.

*To ensure assured availability of rare blood groups, a* Special donor club was formed in 2010. This is essentially a data-base of donors of Rh Negative as well as other minor blood groups. They are contacted to donate blood for patients who have difficulty in finding compatible blood especially those who have had multiple transfusions such as Thalassemia and Cancer.

Blood collection & blood components utilization & issue 2016-17		
1	Number of Blood Donation camps held	466
2	Total Whole Blood Collection	40865
3	Total Blood Components issued	84371 of which 30% issued to Govt. Hosp)
4	Single donor Aphaeresis Platelet collected	2156
5	Free Blood Transfusions for Thalassemia & Hemophilia patients	1884
6	Blood Issued to Government hospitals	12332 of which85%wereissued free





#### Recovery of cost for blood:

Blood components are issued free but expenses towards the collection, testing, processing and storage are recovered by blood banks as per Government guidelines. Even these are waived for poor patients, Government Hospitals and Thalassemia patients

#### **BMST** best practices

Best practices and unique distinctions:

- 1. Emphasis on 100% voluntary blood donation, and stringent donor selection
- 2. 100% blood separated into components
- 3. Screening all units by NAT
- 4. Ensuring vein-to- vein traceability
  - a) All blood units and other samples Bar coded for identification
  - b) Automated tests whose results are fed directly to the blood bank Software (Hemotrace)
  - c) Every component barcode is scanned and the results of TTI, blood group, pretransfusion testing etc obtained and all labels are printed from software to eliminate errors due to manual entries
  - d) All relevant records also printed directly from software to eliminate manual entries
- 5. Functioning as the Immunohematology reference laboratory for South India.
- Actively promoting the concept of storage centres and bulk transfer of blood to improve accessibility to safe blood components (as on February 2017, we supply blood to 22 storage centres in Bangalore and 1 in Mysore)

Note :Our policy of taking back unused blood components from storage centres is perceived as a plus point with these hospitals. These components are issued to other hospitals / patients thus ensuring there is no wastage.

- 7. Quality has always been emphasized but NABH accreditation has made us more conscious of continual improvement
- Recognition as a Scientific and Industrial Research Organization (SIRO) by the Department of Scientific and Industrial Research, Ministry of Science & Composition, Government of India
- Designated as a specialized laboratory of RGUHS (Rajiv Gandhi University of Health Sciences) and a Centre of Excellence in Blood Banking, Immunohematology & amp; Tissue typing for collaborative research and training







# **Blood bank Impact-**

# Year 2017 - 18

Collection and issues	Free blood
<ul> <li>41507 whole blood units collected</li> <li>85659 blood components issued</li> </ul>	<ul> <li>11408 units given to government hospitals</li> <li>2240 units issued &amp; free transfusion services to Thalassemia patients</li> </ul>
Partnership with hospitals	Unique distinction
<ul> <li>26 Blood Storage Centers</li> <li>9 hospitals with blood banks</li> <li>Support more than 500 hospitals without blood banks or storage centre</li> </ul>	<ul> <li>More than 5 lakh voluntary blood donor base</li> <li>More than 50k patients served per year</li> </ul>



## Transplant Immunology - HLA Laboratory

Human Leukocyte Antigen (HLA) is a protein found on White blood cells. They play a vital role in defending the body against viral or bacterial infections and determine the body's response to drugs, vaccinations, autoimmune disorders and cancers.

HLA types also form the basis for acceptance/ rejection of a transplanted organ/ bone marrow.

BMST's NABH Accredited, HLA laboratory is one of the foremost testing facilities in India which carries out pre and post- transplant tests for both Bone Marrow Transplant as well as solid organ-Kidney, heart, liver- transplants.







At the HLA laboratory, the following tests are done:

- CDC Cross Match Donor & Patient
- DSA Cross Match
- HLA Typing
- Panel Reactive Antibody Testing
- Single Antigen Test

The details of the tests are as below:

# 1. CDC Cross Match:

### Method: Serology

<u>Clinical use:</u> The CDC Cross Match is done to detect presence of pre-formed anti-donor HLA antibodies in the serum of potential recipients. The AHG CDC cross match detects these antibodies with greater sensitivity than the routine

Specimen required: Patient serum & donor's ACD blood sample 20-30 ml

# 2. Luminex DSA Cross Match

Method: Luminex based cross match using donor lysate

<u>Clinical use:</u> To detect the presence of antibodies directed against the HLA antigens of the donor & specific HLA IgG antibodies against Class I and/or Class II antigens. It is ideal for preand post-transplant testing.

<u>Specimen required</u>: Patient serum (from 5 mL blood sample) & donor ACD blood sample, 20-30 ml

# 3. HLA typing AB DR

Method: SSO/SSP PCR, Intermediate resolution HLA typing

<u>Clinical use:</u> To identify the Human Leukocyte antigens/ HLA alleles present on the WBCs of the donor / patient for Bone Marrow as well as solid organ transplant <u>Specimen required:</u> EDTA blood sample 5 ml





# 4. PRA / Panel reactive Antibody testing

Method: Luminex bead based Immunoassay

<u>Clinical use:</u> Class I and II ID panels provide antibody identification and panel-reactive antibody (PRA) information

Specimen required: Patient serum, 5 ml

### 5. Single Antigen test

Method: Luminex bead based Immunoassay

<u>Clinical use:</u> Immunoassays used to qualitatively detect the specificity of HLA, Class I & II IgG antibodies for optimized selection of donor for allosensitized patients especially patients waiting for deceased donor transplant

Specimen required: Patient serum (5 ml)

# Number of tests conducted in the year 2016 - 17

					Single	Panel
ABDR	Cadaver			Leukocytes	Antigen Test	Reactive
Typing	DSA	DSA	CDC	separation	(LSA)	Antibody
506	53	1250	549	352	38	11





### Impact:-

With our expertise and more than 20 years of experience in the field of Transplant Immunology, we offer clinical correlation & advice for transplant cases



# Key Features of BMST HLA Laboratory:

- NABH Accredited
- Luminex based testing i.e. automated, higher support for clinical efficacy
- Quick reporting: Results between 24 and 72 hours, as against the usual benchmark of 1 week
- Minimal service charges being a not-for-profit entity
- **Review by experts** in Transplant Immunology. Each test is reviewed by the Expert Panel on Transplant Immunology to ensure 100% coverage and quality





#### Interesting cases:

#### Case 1: Heart Transplant

A deceased Heart donor was available at a tertiary Hospital. The hospital had two potential recipients & basic tests found both of them suitable for the transplant. Antibody screening and Single antigen bead assay was done & found one patient to be unsuitable. Based on the test results the hospital selected the suitable patient and the transplant outcome was successful.

#### Case 2: Renal transplant

- One 26 Yrs/ Female ; Renal Transplant ; Ethnicity: African
- H/o sensitization: Preg & Tx
- Potential Donor: sister, no other donor available
- Many antibodies in the patient & was difficult to transplant (A\*26 was against donor kidney)
- High end test (SAB with MFI) was done to detect level of antibody
- Treatment to reduce level of antibody
- Tests were repeated & there was continuous monitoring
- Transplant done at one stage & was successful
- Follow up: satisfactory

#### Molecular Biology Laboratory

The Molecular Biology Lab carried out screening for Sexually Transmitted Infections (STI) by Nucleic Acid Testing (NAT) methods for the India-Canada Collaborative HIV/AIDS Project (ICHAP) of University of Manitoba, Canada & Karnataka State AIDS Prevention Society (KSAPS), now renamed Karnataka Health Promotion Trust (KHPT) with Gates Foundation funding, and for Family Health International (FHI).





#### THALASSEMIA SERVICES

#### Thalassemia Management, Control and Prevention programme:

#### What is Thalassemia?



#### Free Blood Transfusions:

At BMST's day care transfusion centre, blood components are given free for patients with Thalassemia, Hemophilia and other hematological disorders who need regular, repeat transfusions.







Free Blood transfusions in 2016 -17: 1884





## Thalassemia Control and Prevention programme:

Awareness & education for maternal & paternal blood relatives of known Thalassemia patients

Pre test counseling

Blood sample collection from first and second degree relatives

Testing - Variant Hemogram and Molecular Analysis to detect Thalassemia carriers

Pre-natal diagnosis for pregnant Thalassemia carriers

Post-test, preventive, genetic counselling for Thalassemia patients, carriers and their relatives

BMST's Thalassemia control program was started in 2010 is a free service initially funded by NRHM, and continuing with funding from TTK Prestige Ltd.

Thalassemia prevalence in India is 1%-3% and higher amongst certain ethnic communities. The prohibitive costs per patient, vulnerability to transfusion-related complications and the loss of quality of life, makes it imperative to implement an effective Thalassemia prevention program urgently.

Close relatives of Thalassemia patients are counseled and given information on Thalassemia and its prevention. Their blood samples are collected and tested for Thalassemia carrier status by Hemoglobin variant analysis and Mutational analysis as needed.





Carriers of Thalassemia gene are given preventive genetic counseling including pre-marital testing of spouse-to-be and pre-natal diagnosis.

This programme is aimed at reducing the incidence of Thalassemia in Karnataka using the "Cascade Screening and Testing" model and preventive genetic counseling at 4 locations – Bangalore Urban, Bangalore Rural, Hubli, Mysore.

# Impact - April 2010 – March 2017

- 1. Registry of 427 families, around 150 families counseled
- 2. 1,144 relatives tested
- 3. Carrier rate among relatives of Thalassemia patients-34%
- 4. 37 Thalassemia carrier pregnant women- fetus tested for Thalassemia gene





# TISSUE BANK

The Tissue bank was set up in 2010 with funding from TTK Prestige Ltd.

The Tissue bank serves as a procurement and distribution centre of human allograft tissues. These will be provided as non-viable allografts, preserved by freezing or freeze drying and sterilized by gamma irradiation.

BMST Tissue bank procures bone fragments after knee & hip replacement surgeries, which are otherwise discarded as waste with prior informed consent. Screening for Infectious diseases like Hepatitis, HIV & Syphilis are carried out on the donor blood sample.

The tissues undergo stringent testing & processing which involves wet processing, freeze drying & sterilization by gamma irradiation. The bone pieces and bone powder are used as surgical implants and also in dental practice as filling.

Bone allografts collected & issued in 2016-17		
Bone Collected	453	
Bone Allografts Issued for clinical use	467	









#### STEM CELL REGISTRY INDIA

The Stem Cell Registry India (SCRI) was initiated by BMST in 2008and re-launched with the cooperation of the international NGO, DKMS Germany (the single largest network of stem cell donor centres in the world), in 2014. The aim of the SCRI project is to improve the chances of recovery and the health outcomes of patients suffering from Leukemia, Thalassemia and other blood disorders for whom a stem cell (bone marrow) transplant offers a second chance at life. To do this the SCRI educates, recruits and registers voluntary potential blood stem cell donors. The project aims to recruit over 10,00,000 potential stem cell donors by 2020.





#### **COMMUNITY OUTREACH SERVICES**

Under its community services arm, BMST enables awareness, referrals and preventive health services for gender and gender based violence issues, substance abuse, sexual and reproductive health, Hepatitis B and C, STIs and HIV/AIDS for adolescents and young adults.

For school and college students, BMST developed the "Life Is Precious" adolescent health education series on Gender, Reproductive Health and HIV/AIDS substance abuse, sex and sexuality, child sexual abuse, reproductive health, STDs and HIV/AIDS, All programme content is based on a "Values and Life Skills" approach. These programmes are supported by interactive teaching-learning aids using computer-based games and CDs.

For young adults in various industries, particularly in the garment sector, BMST developed the participatory *"Namagaagi Naave"* (NN) workplace program. Street theatre and folk art are extensively used to spread awareness about sensitive areas such as child sexual abuse, gender-based violence, sexual and reproductive health etc. These programs were funded by HIVOS and World Bank and effectively built the capacity of 500 Core Team members at 11 garment industries. BMST

#### Feedback from HR at a garment unit

"This is a well-organized program. Earlier also we did so many programs with the workers but "Namagaagi Naave" program is totally different. Earlier we were getting cases but did not have much capacity to provide services to which we could refer them. Through this program we are 100% able to refer and solve their problems".

partnered with several organizations for the NN program for service delivery, expertise and training for "Namagaagi Naave" such as Breakthrough (Gender and Violence), Family Planning Association of India (Sexual and Reproductive Health), TTK hospital and Research Institute (Alcohol and Drug Addiction), KNP+ (People living with HIV AIDS), Alcoholics Anonymous, Mahiti Infotech (innovative IVRS method for data collection) and RTI (Research Triangle International) for the research component.

#### TRAINING & CAPACITY BUILDING



BMST provides education, training, capacity building, technical know-how, expertise and support in the areas of Blood Banking and Transfusion Services.

These programmes have been done on behalf of and supported by several International organizations including WHO and UNESCO; as well as Department, Health and Family Welfare and Drugs Control Department, Government of India. We have also conducted several CMEs, conferences etc.

Some of the more important training and skills development programmes carried out by BMST are:

- WHO, Total Quality Management for Blood Banks from South East Asia Region Organizations
- Advanced, hands on, training for laboratory diagnosis of Immunohematology problems supported by the India Immunohematology Initiative, USA conducted annually
- Fellowship programs for members of South Asian Association of Transfusion Medicine
- BMST was adjudged the best training centre in India by National Blood Transfusion Council,(NBTC) GOI, and is one among NBTC's 23 Regional Training Centres for basics in blood banking, and one among 10 centres for the advanced training on Quality Management Systems and Accreditation

# Training programmes and Conferences held in 2016-17 by BMST:

**AABB – AATM Joint Conference**: BMST with the support of other members of AATM (Asian Association of Transfusion Medicine) in Bangalore organized the Joint Congress of American Association of Blood Banks (AABB) & AATM in Taj Vivanta, Yeswanthpur on 10-11<sup>th</sup>December 2016 which was attended by 513 delegates.

Seven International and 34 National Speakers delivered talks on the theme of '*Moving from Transfusion to Cell Therapy: The Way Ahead*'. The conference was widely appreciated for the excellent scientific content and the professional manner in which it was conducted.

# NBTC- CMAI – CDC training program:

National Blood Transfusion Council (NBTC) and Christian Medical Association of India (CMAI) project is funded by CDC (Centers for Disease Control and Prevention, Atlanta) for blood safety



Page 26 of 37



in India. One of the elements was to train the blood bank personnel and as the best training centre we have trained doctors, nurses and technicians from Andhra Pradesh & Karnataka.

#### Immuno Hematology Workshop: Jim Perkins

International Society of Blood Transfusion (ISBT) and North Shore University, Chicago sponsored Immuno **Hematology** workshops were conducted under the guidance of Dr. Jim Perkins. This high intensive hands-on workshop of 5 days covered the doctors and technicians from the blood banks in Delhi, Jaipur, Pondicherry, Chennai, Andhra Pradesh and Kerala

#### CME for BMST staff:

In addition to the routine, regular, training and evaluation that is in place at BMST, the staff attend additional training programmes, CME, conferences etc. Some of the programmes attended by BMST in 2016-17 are:

#### Dr. Latha Jagannathan

• Delivered a talk " BTS in India- Ten steps towards achieving International Quality Standards", at the AABB-AATM conference in Bangalore in December 2016

#### Dr. Ankit Mathur:

- Presented a paper on Transfusion Transmitted Infection at the Annual Conference of Asian Association of Transfusion Medicine at Antalya, Turkey in April 2016
- Delivered a talk on Platelet Additive Solution at the 5th Annual conference of Indian Society of Transfusion Medicine in November 2016
- Delivered a talk on "Centralized NAT testing program- the Karnataka model" at the AABB-AATM conference in Bangalore in December 2016





#### RESEARCH

BMST is a recognized research centre both by the Rajiv Gandhi University of Medical Sciences, Karnataka as well as the Department of Scientific and Industrial Research, Ministry of Science & Technology, Government of India.

BMST does studies in all its areas of operation and has published several papers in International as well as Indian journals. Some important studies / papers are:

Latha Jagannathan, Mrinalini Chaturvedi, Sanjana Mudalia, Theodore Kamaladoss, Megan Rice, Edward L. Murphy, Risk factors for chronic hepatitis B virus infection among blood donors in Bangalore, India. *Transfus Med. 2010 December ; 20(6): 414–420. doi:10.1111/j.1365-3148.2010.01032.x.* 

Sanjana Dontula,, Ankit Mathur, Theodore Kamaladoss, Siddappa Adimurthy, Latha Jagannathan, Donor disclosure – a donor's right and blood bank's responsibility, *Transfusion Alternatives in Transfusion Medicine* © 2012 Medical Education Global Solutions, doi: 10.1111/j.1778-428X.2012.01157.x

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## Significant achievements of BMST

BMST is the only NGO, standalone centre in India which has a blood bank, tissue bank, HLA Lab & Stem Cell Registry and therefore provides the wide spectrum of services in the field of blood, organ and cellular therapies.

- Blood Donor base of 5 lakh with 40% repeat donors
- Effective services provided, 24/7 to more than 90,000 patients per year
- Blood Storage Centres (BSCs) in 30 hospitals
- More than 30% of blood collected is issued to government hospitals free of cost
- HLA lab one of the top 5 labs in India offering the latest tests for pre and posttransplant monitoring.
- Close to 2500 allografts supplied pan-India in the last six years through a network of 70 hospitals
- Free transfusion services to around 100 Thalassemia patients every month.
- Thalassemia registry of 427 families, 1144 blood samples from the patients' relatives tested by Hemoglobin Variant, of which approximately 34% detected as Thalassemia carriers and counseled; 37 pregnant Thalassemia carriers facilitated for Chorio-Villus-Sample (CVS) testing of the fetus for Thalassemia status





### **Recognition& Awards**

- Recognised as a Scientific and Industrial Research Organization (SIRO) by the Department of Scientific and Industrial Research, Ministry of Science & Technology, Government of India.
- First and only NGO blood bank in Karnataka to be accredited by the National Accreditation Board for Hospitals (NABH)
- Designated as a specialized laboratory of Rajiv Gandhi University of Health Sciences (RGUHS) and a Centre of Excellence in blood banking, immunohematology and tissue typing for collaborative research and training.
- Kempegowda Award 2007 in recognition of work in the area of voluntary blood donation.
- Recognition by National AIDS Control Organization (NACO) for 100% voluntary blood donation.
- Awarded every year by KSAPS, for the highest collection of voluntary donor blood.
- It was adjudged the best training centre in blood banking and immunohematology in 2014 by the NBTC- CMC, Vellore- CDC, Atlanta, and the Christian Medical association of India, project on Blood Safety in India

#### Volunteers at BMST:

A number of people contribute their time and effort as volunteers-

- Dr. Latha Jagannathan, Founding Trustee, BMST has been working in an honorary capacity as Medical Director since its inception in 1984.
- Ms. Lakshmi Ravichandran, Trustee, BMST has been taking care of the entire voluntary blood donor program for BMST since 1995.
- Ms. Geetha Santhanam, who volunteers at all our blood donation camps
- Dr. Kamala Balakrishnan, an expert in Blood Banking, Immuno-hematology and HLA has supported in innumerable ways with her expertise to set up the laboratories, training of BMST personnel both in India and in USA for HLA.
- Dr. Darshan Bhat, Mr. V. Shenoy & Mr. Gurumurthy with several years of experience in Quality systems, have helped us with the Quality Management program & accreditation for the blood bank.





- Ms. Lata Amashi, & Ms. Shobha Dilip Kumar have been supporting BMST by arranging for Voluntary Blood Donation Camps and Mrs. Geetha Santhanam, volunteer at the blood donation camps.
- Individual Rotarians from the Rotary clubs of Rotary District 3190 who help us with blood donation drives
- Mr. Pratap has developed "Hemotrace", the software for the blood bank
- Mr. Dilip Kumar, Mr. Praful, & Mr. Amrudesh have volunteered several hours of their time in an advisory capacity.
- The members of our Advisory Board & BMST's Ethics Committee

Other than the blood that we receive from the blood donor organizations and the voluntary support, we have received corporate and individual donations as below:

Donor name	Amount	Purpose
TTK Prestige Limited	100,000	TCS Thalassemia Drive
Dr. Darshan Bhat	50,000	Corpus Fund
Ms. Madhu Uthaya	5,000	Corpus Fund
Ms. Gayathri Bhat	5,000	Corpus Fund
Mr. Surendranath D	1,220	Corpus Fund
Mr. Ramesh	50,000	Corpus Fund
Parameswaran		
TTK Prestige Limited	5,000,000	Corpus Fund
Intel Technologies	377,955	HIV awareness program
DKMS	8,453,415	Stem Cell Registry India
Nagarro Software	500,000	Stem Cell Registry India
Mr. Manas Fuloria	100,000	Stem Cell Registry India
Total	14,642,590	

### Donation received between April 2016 – March 2017

Annexure:

- 1. BMST's Advisory board
- 2. BMST Institutional Ethics Committee members
- 3. List of Rotarians & Rotary clubs supporting in blood donation camps
- 4. Volunteers at BMST
- 5. List of companies / colleges supporting with Blood Donation Drives



## Annexure 1: BMST's Advisory board

#### Prof Paturu Kondaiah

Professor & Chairman Department of Molecular Reproduction, Development and Genetics (MRDG) New Bio-Science Building, Indian Institute of Science Bangalore 560 012. India

### Dr V Ravi MBBS, MD, FAMS, FASc

Professor & Head Department of Neurovirology National Institute of Mental Health and Neuro-Sciences (NIMHANS) Bangalore 560 029, India

### Dr. Kamala Balakrishnan MD

Lt. Col. AMC (retd.), Former advisor in Immunology Armed Forces Medical Services. Prof. Emeritus, College of Medicine, University of Cincinnati Former Director, HLA Laboratory & Professor, Clinical Transfusion Medicine, Hoxworth Blood Center, Former Director, HLA Laboratory, Central Indiana Regional Blood Centre, Indiana Former Director, Community Blood Center & Tissue Services, Dayton, Past chair, International Committee, National Marrow Donor Program,

Past President, American Society for Histocompatibility and Immunogenetics, USA

Past member, Board of Directors, United Network of Organ Sharing, USA.

#### Suneeta Krishnan, PhD

Social Epidemiologist, Women's Global Health Imperative, RTI International, San Francisco Technical Lead, India Liaison Office, RTI International, New Delhi Adjunct Associate Professor, St. Johns Research Institute, Bangalore. India





#### Annexure 2: BMST Institutional Ethics Committee members:

#### Kishore S. Rao, Chairman

Originally from a corporate background, even while still working with Madura Coats, he found time to initiate the Karnataka branch of the Indian Cancer Society. As the Founder Managing Trustee his main, and continuing activity since 1994, is the setting up and running of the **Bangalore Hospice Trust (Karunashraya)** – the caring centre for terminally ill cancer patients and their families. This is a totally charitable activity providing free care and counselling for cancer patients in their last stages of life. More than 12,500 such patients and their families have benefited from this centre and as many as 7,000 patients have died in their care – free from pain and in peace. As a result of advice and training provided by *KARUNASHRAYA* seven more such independent units have been set up in Chennai, Vellore, Nagpur, Shimoga, Kallianpur, Mangalore, and Puttur in South Kanara.

#### Dr. BK Arun Kumar

With over 30 years of experience in Clinical Pathology, Hematology and Blood Transfusion his main domain of interest is Diagnostic work, Teaching, Training and staff development. His current focus is on improving the clinical laboratory services in hospitals.

#### Prof. A.V.Ramani

A chemical engineer and materials expert, he was the Professor of Metallurgy in IIT Madras and then worked with the National Aeronautical Laboratory. He has more than 53 years of experience in teaching, guiding academic research, technology development, plant design, and project and Research management. One amongst his several achievements is the design and development of the indigenous Chitra Heart Valve.

#### Ms. Shobha kumar

She completed her post graduation from M.S. University, Baroda as a Gold medalist, in Foods and Nutrition in 1977 and since then involved in academics. As Professor and Head of the Department of Home Science Mount Carmel College, Bangalore, she started & coordinated the UGC vocational course in Clinical Nutrition and Dietetics (First one in Karnataka in 1994); was instrumental in making Mount Carmel College as the nodal center for Indira Gandhi National Open University post graduation in health and nutrition. Recently, she has written course material for a certificate course in Nutrition and Dietetics for Mysore University. She was a member of registered dieticians board for four years, a regulatory body which conducts the RD examination for dieticians all over India. At present she is involved in a number of voluntary activities related to education.

#### Dr. Latha Jagannathan – Member Secretary





# Annexure 3: List of Rotarians & Rotary clubs supporting in blood donation camps

Rotarian Name	Name of Rotary Club
Rtn Ramesh Kumar	Banashankari
Rtn Sandeep Mittal	Bangalore Whitefield Central
Rtn Krishnamurthy	Bangalore East
Rtn Subbu	Bangalore Main
Rtn Vinodh	Bangalore North
Rtn Sudhir Navale	Basaveswara Nagar
Rtn. Lata Amashi	Indira Nagar
Rtn Satish Gautham	Brigade
Rtn Sunil Gupta	Diamond District
Rtn Ramesh Cibel	Innerwheel Peenya
Rtn Rajeev Unnikrishnan	IT Corridor
Rtn Ronnie Wilson	Jeevan Bima Nagar
Rtn Gubbi Shivakumar	Koppal
Rtn Narasimhan	Koramangala
Rtn Ramki	Lake Side
Rtn Ramachandra Rao	North West
Rtn Srinivas Murthy	Peenya
Rtn Usha Madina	Raj Mahal Vilas
Rtn Balasubramaniyam KS	Rajarajeshwari Nagar
Rtn Usha Madina	Rajmahal Extension
Rtn Parthasarathy	South East
Rtn Geetha Sukumaran	Vasanthapuram
Rtn Shivakumar	Vijaya Nagar
Rtn Surya Prakash VS	Vijayapura





#### Annexure 4: Volunteers at BMST:

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- The members of our Advisory Board & BMST's Ethics Committee





Annexure 5: List of companies / colleges supporting with Blood Donation Drives

