



BLOOD LINE

THE *voluntary* BLOOD DONATION JOURNAL

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VOLUNTARY BLOOD DONATION

Blood transfusion is vital in the treatment of people suffering from various acute and chronic diseases, and it permits safe surgery. Human blood should be recognized as a national resource to be shared with those whose life or health depends on its availability, safety and appropriate use. Traditionally, however, blood transfusion services have not enjoyed a high priority in the health care systems, especially in developing countries, where, according to some estimates 80% of the world population has access to only 20% of the global blood supply. The position of blood transfusion services within the health care system attracts little interest and absorbs a very small percentage of the budget assigned to health. Under such circumstances, the quality and development of blood services are considered very costly and resource hungry activities.

While advances have been dramatic in most western countries, blood transfusion in the developing countries has tended to stagnate with chronic shortages, lack of component therapy and unsolved safety problems. In many instances these problems were perpetuated by financial limitations, political instability, endemic infections which can be transmitted by transfusion and cultural taboos which inhibited blood transfusion. Paid donations were a norm and millions of transfusions took place from such professional donors. The net effect is that blood transfusion took place in dangerous conditions from harmful sources, its life-saving purpose subverted by lack of effective control. There was a risk of commercialization of the blood donation and transfusion systems. In countries like India, there was the threat of exploitation of both donor and patients and it would have led to increased risk of Transfusion Transmitted Diseases (TTD) through blood transfusion if gone unchecked. Fortunately, there were two major initiatives in early nineties which infused new vitality in the sagging blood banking system.

in India. The first one was HIV pandemic and the increased awareness that it can be spread by contaminated blood and blood products amongst the public and the health care providers. The need to strengthen blood transfusion services was felt like never before.

The second initiative was from public interest litigation - Common Cause vs. Union of India 1996. The director of NACO (National AIDS Control Organization) filed an affidavit in the apex court and a scheme for the organization of blood donation in India took concrete shape. The outcome of the Public Interest Litigation was a landmark judgment directing the Central government to:

1. Establish national and state blood transfusion councils.
2. Mandatory licensing of all blood banks and
3. Ban on professional blood donors from January 1998.

The guidelines to promote voluntary blood donation - the cornerstone of safe and adequate blood supply was issued by NACO. The Drugs and Cosmetics Act 1945 for functioning of Blood Banks was amended in April 1999, providing the required impetus to set up component preparation units and commitment to human resources. With the promotion of voluntary blood donation system, it sounded the death knell to the professional donors and commercial blood banks operating only for profit from 1998. The World Health Organization (WHO) declared the year 2000 as the year of "SAFE BLOOD" with the slogan "SAFE BLOOD STARTS WITH ME". It formulated four important strategies for the member nations to establish a safe blood supply.

1. Establishment of a National-Level Transfusion Committee
2. Screening of the donated blood for transfusion transmitted diseases (TTD)
3. Optimal use of blood and



Usha Raghavan Subramanyan

Consultant - Transfusion Medicine,
Deputy Medical Administrator.

Frontier Lifeline Hospital Dr.K.M. Cherian's
Heart Foundation.R 30-C ,Ambattur Industrial
Estate Road,Mugappair, Chennai
Ph- 91-44-42017575 ext 112
Web :www.frontierlifeline.com

blood components

4. Recruitment and retention of voluntary Non-remunerated Donors

It became well known that the success of the medical interventions requiring the availability of blood depends totally on volunteer donor base. We cannot think of any other human gesture which directly contributes to the success of therapeutics. WHO has been advocating systematic planning on education, motivation and retention of voluntary non-remunerated donors since it is well established that infection rates for TTD were lower amongst voluntary donors compared to replacement donors..

The National Blood Policy (2002) and an Action Plan for Blood Safety (2003) were adopted by the Government of India. Objective 4 of the Action Plan states "To launch intensive awareness programmes for donor information, education, motivation, recruitment and retention in order to ensure adequate availability of safe blood" The National Blood transfusion Council under the ambit of NACO, is responsible for planning national campaign. State campaigns are regularly conducted for donor motivation, recruitment, selection and retention. Action plans are formulated with wide exposure in electronic and print media. To "Catch them Young", motivational talks are given in high schools and colleges. Voluntary blood donors are recognized and honored on National Voluntary Blood Donation Day (October 1) and World Blood Donor day (June 14) by

Central/State governments The Blood mobiles - Modern collection units have been provided by NACO in various states to facilitate blood donation. It resulted in increase of voluntary blood donation in many states across the country in the past decade.

Many Organizations came forward in large numbers to support the cause. - In a country as diverse as India, religious groups, educational institutions, Corporate houses and many other NGOs have done a commendable job of organizing blood drives, motivating the blood donor population across all States. But much more needs to be done to ensure adequacy and safety of blood supply. There is a significant shortage of the precious resource. Against an annual requirement of 12 million blood units, only 9 million blood units are collected every year in India despite having a population of 1.2 billion. An additional 2% of the population needs to be enrolled annually and retained continuously to overcome the shortage of blood. India is slow to wake up to the needs of modern transfusion sciences. The recent developments in this field, apheresis donations, (where a specific component of the blood is separated and collected with while the rest of the blood is returned to the donor) and Stem cell collection from the Bone marrow (a life saving treatment for patients with Blood disorders) are yet to attract committed donors as there is no nationwide registry and earmarked resources for specialized collections. Some NGOs like DATRI have done a commendable job in this regard.

THE TASK AHEAD:

With the advent of modern medicine and increased need for interventional and curative treatment, the need for the blood is sure to increase. For ensuring sufficient and safe blood supply it is important for every community to identify nurture, and retain a population of healthy and voluntary donors who donate chiefly for altruistic reasons. The problem is how to identify such people from amongst first-time, repeat and family / replacement donors. Hence, we need to have a short term and long term strategy for the efficient functioning of the Voluntary Blood Donor program.

Voluntary non-remunerative blood donor motivation and retention programmes have to be based on the principle of education, motivation, donation and recognition by involving the community as a whole with clear objectives. The establishment and supporting of voluntary organization around the blood banks by way of blood donor's club, council, society, association or the like is vital in this respect.

For short term strategies, popularizing the days of importance for blood collection drive by each group / community and scientific campaign based on direct oral communication backed by display materials for demonstration and distribution is a crucial link between the blood bank and the society it serves. The donor educational material for the self exclusion from donating blood when one is not fit to donate will be the thrust area to ensure safe blood donations. Mass media like TV is to be used judiciously keeping in mind the cost benefit ratio. In the age of social networking gaining widespread acceptance, we also see the growth of blood donor net works through such media. It proves immensely beneficial to contact the donor groups instantly for blood donation in case of emergencies, but it should be cautiously used as there is a tendency for exploitation. Many regular donors prefer to be reminded by personal phone calls rather than group messages

Structured educational Institutions blood donors programmes are also to be considered as the ideal long-term strategy for recruiting the donors of tomorrow. The college

students, youth leaders and the like are to be inducted in the role of honorary donor motivators and recruiter through suitable training programmes. Role models are necessary for the young to emulate and continue the practice of blood donation. Blood Mobiles are to be parked in all important landmarks and colleges during holidays and functions. The Colleges and Schools with maximum number of blood donors are to be honored annually. Attaining the age of eighteen should be followed by a pledge to donate blood and an act of blood donation. The yearly calendar with preplanned blood donation sessions is to be discussed with all educational Institutions. Slogans like "You are eighteen, Have you done your national duty?" relating the blood donation to a patriotic, national act may inspire the younger generation.

Role of Donor Clinics:

Although, the long term goal is to replace all the family donors by voluntary blood donors, the feasibility of such shift is still an enigma in many parts of India. Every effort needs to be made to convert the replacement donor to a regular voluntary blood donor. The Conversion rate of how many replacement donors contributed to the voluntary donor base monthly in addition to the number of new donors enrolled is an indicator for the strength of voluntary blood donation program. The deferred donor counseling is another important area which needs a thrust. As many of them are extremely motivated lot already, a second opportunity should be given to such donors by suitable assessment and rescheduling. The donors should be given an opportunity to know about their test results. Post donation counseling and referral clinics will establish faith in the donor community apart from preventing the infectious donors from blood donation. The patient / relatives waiting areas of the hospital are often overlooked, to spread the message of blood donation. Small token memorabilia can be given to staffs who regularly donate blood in Institutions. Short term targets, focused donor groups recruitments and holiday strategy spacing out donations are important for the donor recruitment department. Sourcing the total requirement of blood through voluntary blood donation requires massive effort starting from the grass root level.

QMS and Blood Banks:

The implementation of quality management system in the operations of blood bank yields better results through systematic coordination. Defining standards and having operational manuals are necessary for the uniform functioning of the donor recruitment division and clinics. Accreditation of blood banks is another milestone in the evolution of quality services for the voluntary blood donors. The continuous quality indicators in blood bank like the wastage of screened blood and the percentage of component transfused should be monitored and analyzed. The appropriate use of blood and blood products is an area that requires immediate attention by the clinicians. They need to strictly follow certain guidelines for transfusion given by their professional societies. A periodic, impartial audit of the same is to be done by the specialists to refine the institutional policies on transfusion triggers. Thus, the challenges before the physicians in Transfusion medicine and blood banking professionals in India are many but not impossible to overcome.

In conclusion, in India, the road to the safe and adequate transfusion is not without bumpy rides, but the engine of voluntary blood donation is strong enough to scale the summit for all of us to enjoy the view from top - "Health for All" sooner than later.



WORLD AIDS DAY EVENT INAUGURAL CEREMONY

TERUMO PENPOL Private Limited observed WAD in association with The College of Engineering, Trivandrum. The main objective of the event was to promote the importance of repeat regular voluntary blood donation to prevent HIV AIDS.



Mr. Kadakampally Surendran, Minister for Devaswom, Tourism and Co-Operation in Government of Kerala, was the Chief Guest for the function. Prof Vrinda V Nair, Principal, College of Engineering, Trivandrum presided over the function. Ms. Sarada Jayakrishnan, DGM (Operations), TERUMO PENPOL delivered the keynote address. Mr. Joy Varghese, the NSS Program Officer welcomed the gathering.



TPPL also recognized College of Engineering Trivandrum for promoting voluntary blood donation and for regularly sending donors to Regional Cancer Center.

Various curtain raiser events like Flash Mob, Cycle Rally and Candle Light rally were organized. An awareness session on importance of repeat regular voluntary blood donation to prevent HIV AIDS and a Quiz Contest for Students were conducted at Schools.

World AIDS Day activities were informed to a large group of people through the blogs, Facebook and through the other social media websites.



Mr. Kadakampally Surendran
Minister for Devaswom, Tourism & Co-Operation -
Inauguration and Inaugural Address



Prof. Vrinda V Nair
Principal, College of Engineering,
Trivandrum - Presidential Address



Ms. Sarada Jayakrishnan
(DGM Operations),
TERUMO PENPOL
-Keynote Address



Mr. Joy Varghese
NSS Program Officer, College of
Engineering, Trivandrum -
Welcome Speech

Flash Mob To promote Blood Donation

As part of World AIDS Day TERUMO PENPOL & CET organized a Flash Mob on 30th November at Museum Ground to highlight the cause for promoting voluntary blood donation.

So, when it came to raising public awareness on blood donation, especially with the rise in road traffic accidents CET Students who are the partners of WAD event chose to hit Museum with a Flash mob event.

On Nov 27th evening the small assemblies of CET Students scattered around the museum like any of the tourist groups which make a beeline for Museum over the weekend. Soon, these groups began to move towards some imaginary nucleus on the public space in front of the Kalmadapam at Museum.

The music began and a group of Students performed synchronized dance moves. The immediate goal has been achieved. The audience was transfixed. Shortly, many onlookers turned cheerleaders as the music segued into a string of foot tapping songs.



BLOOD DONATION

AWARENESS SESSION AT MUSEUM

As part of world AIDS Day a Blood Donation Awareness Session was held at Museum. Baby P S, Manager (PR & CSR) spoke about the importance of Voluntary Blood Donation.





CYCLE RALLY TO PROMOTE BLOOD DONATION



As part of World AIDS Day TPL & CET observed a cycle rally to promote blood donation.

They distributed pamphlets in Malayalam requesting the people enroute to register themselves on the Blood Cell website so that they can donate to anyone who needed blood in emergencies. They shouted slogans 'Donate Blood Save Lives'.

Scarcity of voluntary blood donors is a common phenomenon in Trivandrum with someone requiring blood every two seconds.

Spreading awareness on need for donating blood voluntarily and to have a comprehensive 'Registry' of Blood Donors is of prime importance today.

LANTERN LIGHTING



As part of World AIDS Day a lantern procession was held at College of Engineering, Trivandrum. Big FM RJ Firoz inaugurated the function. All of us gathered at the dusk of 30 November at the field of CET for a simple but beautiful ceremony to host the message in the sky.

Lanterns were set free to the sky to share the message of hope, love and care. We stand in solidarity with the people who have become infected with HIV and remembered those who have died from AIDS-related illnesses.

WINNERS OF QUIZ CONTEST RECEIVING THE AWARD FROM MR. JOY VARGHESE, NSS PROGRAM OFFICER, COLLEGE OF ENGINEERING, TRIVANDRUM



Mr. Kadakampally Surendran , Minister for Devaswom, Tourism and Co-Operation Recognizing Mr. Ajay Krishnan the first Stem Cell Donor of Kerala from College of Engineering, Trivandrum



Mr. K P Rajagopalan, General Secretary of KEBS during an interactive session on the importance of Safe blood donation to prevent HIV AIDS.

The Blood Cell CET Inaugurated By Mr. Kadakampally Surendran, Minister for Devaswom, Tourism and Co- Operation

Promotion of voluntary blood donation is the major service by Blood cell CET. Blood cell CET is available for donors 24x7 basis over a phone which is operated by trained student volunteers on turn basis. Donors will be arranged against the requirements raised by patients from various hospitals in Trivandrum District and along with that there will be minimum 5 voluntary blood donations at RCC every day by CET Students. This began from November 2016. Blood Cell CET is also promoting voluntary blood donations by counselling public over phone and preparing them for voluntary blood donations.

Organizing mass blood donation campaigns at RCC Trivandrum is the next major event that Blood Cell CET is planning to organize by January 2017. This will be arranged in association with various Engineering colleges in Trivandrum.



Dr. Vijayalekshmi, Chief Blood Transfusion Officer of Regional Cancer Center sharing the crisis of blood shortage at RCC

More than 100 blood donations are needed every day, Cancer treatments or the cancer itself may cause the need for a transfusion. Platelets are blood cells critical to blood clotting, which is the process that stops bleeding. When cancer and/or cancer treatment causes a person's platelet level to fall too low, a transfusion can reduce the risk of serious or life-threatening bleeding. The critical blood shortage remains. We urge the students to donate blood to help ensure blood is available to meet patient needs. At times, blood and platelets are being distributed to Patients faster than donations are coming in, which impacts the ability to rebuild the blood supply. We strive to have a full supply at all times to meet the needs of patients every day and be prepared for emergencies that may require significant volumes of donated blood products.



Mr. Ratheesh Sahadevan, Scientist, VSSC expressing his views on how to overcome the shortage of Blood at Regional Cancer Center



HEALTH TALK & BLOOD DONATION CAMPAIGN

18 OCTOBER 2016: TRIVANDRUM

IWN Kerala jointly with Sree Chitra Institute of Medical Sciences & Technology organized a Blood Donation Campaign at DCSSMAT College, Trivandrum on 18th October 2016, along with a Health Awareness talk on Anemia. Dr. Vinu, from Sree Chitra Thirunal Institute for Medical Sciences & Technology gave the participants an overview of the many types, causes and the treatment of anemia. Following the talk, he also answered the various queries of students about the disorder. The session was followed by the blood donation campaign which was supervised by Dr. Sulochana and her team.

The session was well received by the participants as it helped clear a lot of myths and ambiguities associated with blood donation although it is a familiar concept for people in general. The session and campaign proved to be a success, and was participated by around 75 students and staff from the college.



Thanks. A very well written article. Could I request you to modify my email id for receipt of this newsletter to shobini@yahoo.com in your records. I look forward to receiving this regularly.

regards

Dr Shobini Rajan

Assistant Director General National AIDS Control
Organization Ministry of Health and Family Welfare
9th Floor Chanderlok building, 36 Janpath
New Delhi 110001
Ph - 011 43509956, 23731810
Mob - 09871002535

Dear Ms Baby,
Thanks for sending the latest issue of "Blood Line". A very interesting read as always, and a great way to keep up to date with developments in India.

Best regards,

Fredrik Dalborg

Vice President, Hospital Customer Segment
Global Therapeutics Systems Sales

Hello Baby-san,
Happy Diwali !
Thank you for sending the Blood Line as usual, which I am looking forward to receiving.

Best regards,

Y. Kimura, IAD/TC

Thanks for sharing the journal. Wanted to understand if the Blood Donation Camp that IWN had organized at DC-SMAT College on 18th October can be covered in the next issue of this journal with a small write up on IWN. This will help us reach out to more people on IWN and also continue to promote the cause of blood donation.
Look forward to your favourable reply.

Thanks and regards,

Siny Maria Skaria

Associate - Indian Women Network
Confederation of Indian Industry
Kerala State Office

Dear Baby san,
Thank you for sending the latest issue of Blood Line Journal.
Best regards

Hideki ITO, IBD-TC

Tel. +81 3 6742-8639,
Fax. +81 3 6742-8059,

Thank you Baby san
for sending the bloodline journal
Best regards,

Yosuke Sato

Global Product Marketing Manager
Whole Blood Manual
TERUMO BCT

Mam,

Happy to receive this issue today. After transferring back to Govt. Engineering College Wayanad I took NSS Programme officer's charge one and half year ago. Today morning I happened to discuss about blood journal with another transferred programme officer. And moreover yesterday the first blood donation camp in this college under NSS and Red Ribbon Club (eventhough they were functioning from 2004 onwards) was conducted. I will send the reports and photos to this mail id. If any promotional programs are there let me to know

ABID Arcode

NSS Program Officer
Govt Engineering College, Wayanad

Dear Baby,

Thanks a lot for the Blood line Journal a very useful publication. I usually forward the same to those cooperating with me in voluntary blood donation. By God's grace, and the support of philanthropist organisations like yours all the 3 projects Blood Bank, Haemophilia Treatment Centre & Dialysis Centre are doing well. Trust this finds you family & colleagues in fine fettle.
With prayers & best wishes

Dr N Vijayakumar

In Charge of Blood Bank,
Govt Taluk Hospital, Alewaye

Hi Baby,

Thank you for sending this to me. I think that we could make an article out of some of the content. Do you create this publication? Or is there a contact that I could get some of the snaps in their original format?

Thanks,

Roming Foster Tawnya

Global Internal Communications
Business Partner, TERUMO BCT

Dear Sir/Madam,

Thank you for sending the latest Blood line journal. We were glad to know the excellent efforts taken to promote voluntary blood donation in Kerala. The article by Dr. Neelam discussing medical legal and ethical issue in blood transfusion service is very useful to all the blood banking professionals.

Keep up the good work.

Best wishes
Regards

Dr. Usha Raghavan Subramanyan,

Consultant - Transfusion Medicine,
Deputy Medical Administrator.
Frontier Lifeline Hospital Dr.K.M. Cherian's Heart Foundation.
R 30-C, Ambattur Industrial Estate Road,



Dear Baby-san,
Hello.
Hope you and your family fine.
Thank you very much for the Journal.
With Best Regards,

M. Sato

TERUMO CORP

Dear Madam.

Thanks for sending the Blood Line Journal 41st Issue. We want to congratulate and appreciate your life saving work through voluntary blood donation motivation in different ways.
Blood Donors Association Nepal

Dear Madam

Thank you madam for sharing the journal. Great work.
Regards

Dr. Prakash Pillai R

Head
PG Department of Personnel Management
Loyola College of Social Sciences

Dear Ms. Baby,

Thank you. The article on Medico-Legal and Ethical Issues in blood transfusion was very informative.

Kind regards,

Dilip Varma

HR Consultant

Thanks for attaching the 41st. issue of Blood Line.

My letter has been published in the said issue. Unfortunately I have been mentioned as a resident of Nepal. I am absolutely an Indian residing in Serampore of district Hooghly of state West Bengal and my surname is BHADURI.

The report of observance of National Blood donation day has been published. If the reason of observance on 01/10 as National Blood donation day is published then the same would have been useful to the readers whom it is not known..

Sitangsu Kumar Bhaduri

Blood Donor Motivator, Serampore
Hooghly, West Bengal

TERUMO PENPOL RECOGNIZED COLLEGE OF ENGINEERING TRIVANDRUM FOR PROMOTING VOLUNTARY BLOOD DONATION



The Students of the National Service Scheme (NSS) unit attached to College of Engineering has launched a round-the-clock call centre for blood donation, "Blood Cell CET." The centre is an extension of the college's ongoing blood donation campaign. The NSS unit has been arranging five students daily to donate blood to the Regional Cancer Centre, and as many as 434 students have donated blood till October this year.

A final-year student of computer science, Jayadeep K M, even developed a mobile application, Blood Bank, to help those in need of blood. Around two thousand students have registered their names with the app.

An NSS volunteer would be attending calls to the call centre and coordinate with the registered donors.

The students were planning to provide blood within 15 to 30 minutes of receiving the calls.

The centre that started functioning from November 1 2016, has received nearly hundred calls for blood donation. It was officially inaugurated by Minister for Tourism Kadakampally Surendran on December 1 2016.

CET had invited NSS units from other colleges to join this project, so that there will be no disruption in the facility during examination and vacation in CET.

At present, the call centre number has only been provided to major city hospitals.

A district-level workshop on blood donation for members of NSS technical cell was also organized at CET.

KHOON FOUNDED BY A 16-YEAR-OLD COLLEGE STUDENT, CHETHAN M, IS A BANGALORE-BASED ORGANIZATION THAT IS CREATING A DATABASE OF VOLUNTARY BLOOD DONORS

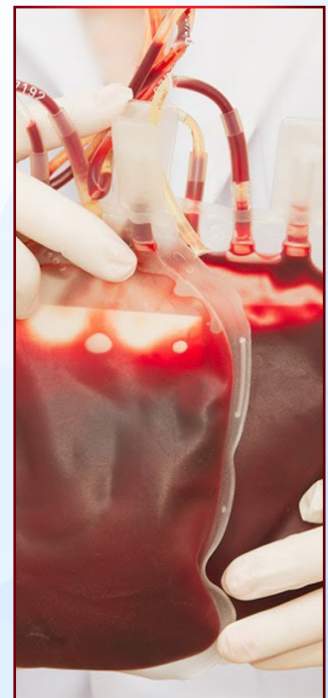
Three million units - that is the reality of blood shortage in our country according to a 2012 World Health Organization (WHO) report. With a population of 1.2 billion, it is a shame that we are falling short of the required 12 million blood units annually. Lack of awareness and incorrect information or myths around blood donation in India are cited as the main reasons behind this shortfall.

It is this gap that a Bangalore-based organization called Khoon is trying to bridge.

True to the name, it is a life-saving organization working towards arranging for blood when blood banks and all other sources are not useful. Founded by a 16-year-old college student, Chethan M, the organisations' vision is simple: "To ensure that no body dies for the want of something that is abundant in everyone's body." People who are willing to become voluntary blood donors register with "Khoon" and they are contacted whenever there is a request for a particular blood group. If available, they donate! "You don't need to be God to save lives...With over 3 million units of blood shortage in India every year, people are either dying for the want of blood or are paying exorbitant prices for a single unit. This can range from Rs. 5000- 25000, depending upon the availability or the blood type," says Chethan. On being asked about how he plans to sensitize more people and make them aware about this reality of blood shortage in the country, he says, "From a population of around 40-50 crore young people, if only 1-2 % start donating regularly, this shortage can be eradicated."

It is precisely for this reason that the organization is trying to get more youngsters to register themselves as voluntary blood donors

Already in touch with various colleges in the city, Chethan outlines some ways in which you can help. First and foremost, you can register yourself as a voluntary donor by sending your details (including your name, blood group, address, contact number, alternative contact number (if any) and your email id) to khoonhelpline@gmail.com. You can also send the message via WhatsApp to the number +1 (267) 725-6685. At present, their operations are restricted to the garden city, but they are building their database of donors all across the country. You can help by encouraging more people to register with Khoon. Those interested can intern with the organization or can request them to organise a blood donation camp or an awareness session as well Chethan's work was recently recognized by Ashoka's Youth Venture program, an international community of young change makers. Are you a superhero? Be one!



BOMBAY GROUP (O^h)



Dr. P V Sulochana
Blood Transfusion Officer,
Sree Chitra Thirunal Institute
For Medical Sciences And Technology

Oh

In 1952, one night one of the Blood bank Medical Officers of a major hospital in Mumbai (Bombay) received a call from the technical staff. He was told that a young female patient of blood group 'O' required blood transfusion and that all O group blood available in the blood bank did not match with the patient's blood. They had cross-matched many units. Later it was found that the patient had an antibody reacting with O group RBC. This led to the discovery of this rare blood group by Dr Y M Bhende. It was named Bombay group as it was first discovered in Bombay (now Mumbai).

Genetics

Each and every character of an individual is determined by the genes present in their chromosomes. Genes are transferred from parents to off spring. An individual acquires 50% of the genes from the father and 50% from the mother. Two genes from each parent control each character. Blood groups are also determined by two sets of genes. So the parent's blood groups determine the blood group of any individual. Genes which control ABO blood group system are H, A & B. The H gene helps to produce H antigen and A & B genes help to convert H antigen to A & B antigens depending up on the presence of respective genes. If the H gene is absent or nonfunctional, the H antigen is not produced and so also the A & B antigens, even if the individual has A/ B gene.

Antigens and antibodies.

In 1900, Dr Karl Landsteiner discovered the ABO blood group system. Persons with A antigen are grouped as A and B antigen are grouped as B. If both antigens are present, the individual is AB and no A /B antigens, is 'O' group. All these individuals will have H antigen in varying strength depending on the number of H antigen converted to A/B. O group persons have the maximum H antigen as there is no conversion and AB group persons have the least.

Apart from antigens on the red cells, individuals have antibodies in their plasma. There is a reciprocal relationship between the antigen and antibody. Individuals produce antibodies against the antigens they lack. 'A' group person has antibody- 'B', 'B' group has antibody- A, 'AB' group has no Anti -A or Anti -B, and the O group has both the antibodies.

Bombay group persons either do not have H gene or if present it is non functional. So they do not produce H antigen and therefore no A or B antigens. They have antibodies against A, B and H antigens. While doing blood grouping, the results of cell grouping will be that of 'O' but serum grouping will show the presence of antibody to H antigen. Further testing will confirm the Bombay group. It is written as Oh as H gene is absent. If Oh persons receive O group blood, the RBCs are destroyed by anti H in the plasma of patient causing serious transfusion reaction which may be fatal. They can receive only Oh blood and donate to Oh patients.

Prevalence of O^h

The reported prevalence of Oh in India is 1/10,000 and in Europe is 1/1, 00,000. Prevalence differs in difference communities. Prevalence is more in KutiaKondh tribal group in Odisha, and in Bhuyantribals it is 1/278. In Kerala, the experience of a tertiary centre blood bank revealed a prevalence of 1/21770 among patients.

Blood needs for O^h group patients.

It is a real challenge. Years ago an Oh group blood was air lifted from Mumbai for a patient in Thiruvananthapuram. Recently Sree Chitra Tirunal Institute for Medical Sciences & Technology, Thiruvananthapuram had a 6 months old child who required a complicated heart surgery. Blood was grouped as O+ elsewhere but was found to be Oh+ when tested here. Her father was AB Negative and mother was O+. Both of them were educated. Oh group offspring is possible if both parents have one nonfunctional H gene (Hh, heterozygous for H) and these nonfunctional genes are transferred to the child (hh). There was no history of Oh group in the family. The child might have acquired A/B gene from the father as the father was AB but had not expressed due to the absence of H gene.

The surgeons requested 4 units of blood considering the complexity of the surgery and the difficulty in getting donors if there was bleeding. Voluntary donor organizations associated with this blood bank (KEBS & TEJAS) were contacted and two voluntary Oh group donors responded and donated in this blood bank. Patient's father, who himself was a voluntary donor contacted the organization he was associated with. Through them and others two more donors responded but they were not in a position to come to this blood bank as they lived far off. Blood donation was coordinated with two blood banks in Kerala and blood bags were transported to this blood bank at proper storage condition. The surgery was successful and baby was discharged in a good condition. This was possible by the collective effort and coordination of blood banks, donor organizations, and donor community. Apart from the child, we could support a patient of Oh in another hospital with one unit blood, which was not used by the child, who required hemodialysis for renal failure.

All transfusions are not planned like this. There are situations where patients need emergency transfusions like accidents, complicated deliveries etc and may not get time to arrange blood. In the case of the Oh group patients there is no alternative blood that can be given even in life threatening bleeding. Donors should be made aware of the importance of keeping Oh group registry and should be able to mobilize them in emergency situations.