INDIA'S LEADING

BLOOD CENTRE

प्रथमा

PRATHAMA BLOOD CENTRE

ADVANCED TRANSFUSION MEDICINE RESEARCH FOUNDATION

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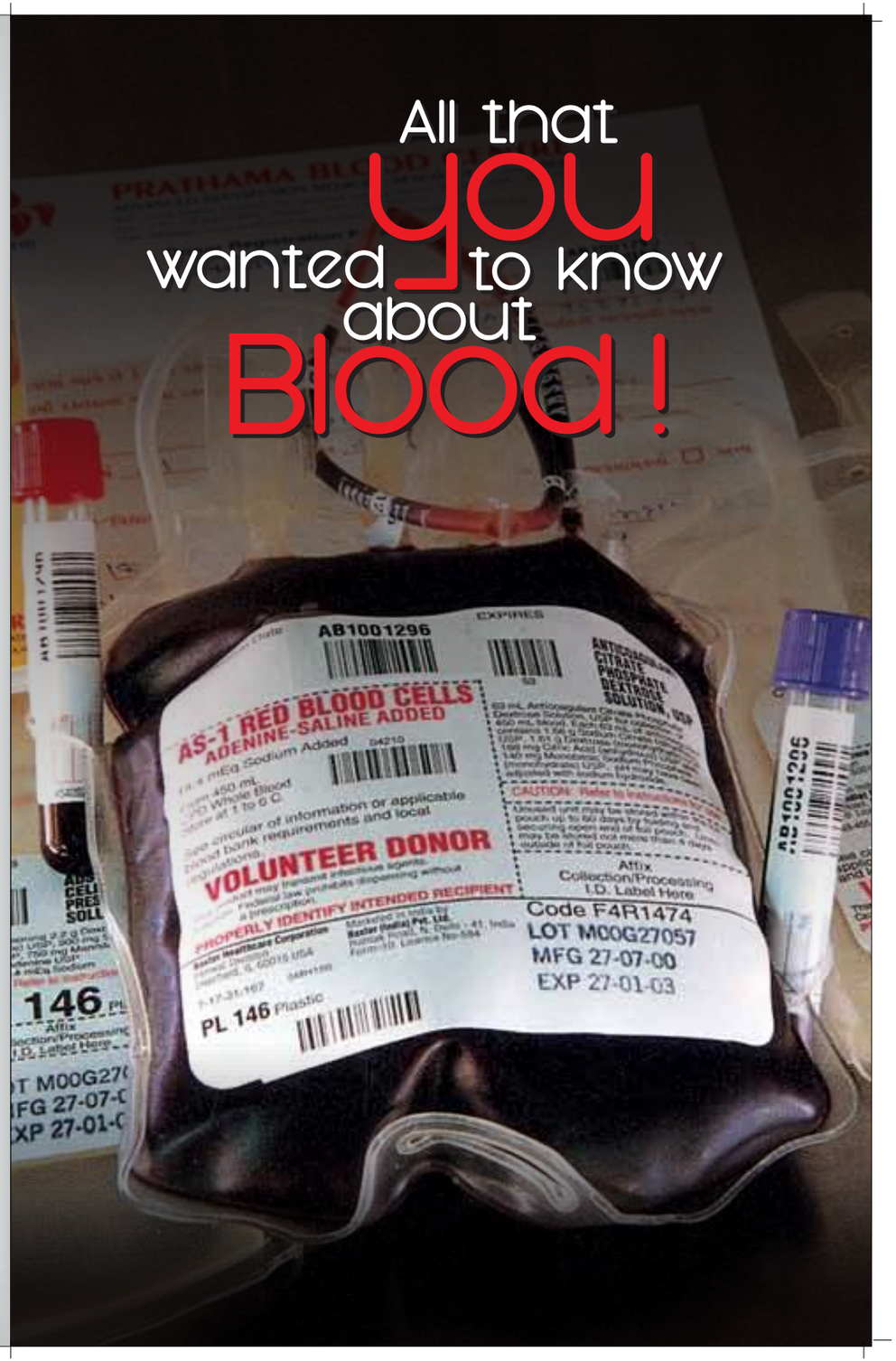
An ISO 9001:2008 & NABH Certified Regional Blood Transfusion Centre

All that you wanted to know about Blood !



Blood has been considered as an essence of life for many centuries.

Blood transfusion, as successful practice became established during Second World War, when it came as a life saver to millions of wounded soldiers. Since then blood donation and blood banking has immensely advanced and today blood is the single most important support to the modern health care.

What if I need blood?

Prathama Blood Centre provides blood without the precondition of 'replacement' (replacement means where the family or friend has to donate blood at the blood bank to get equivalent number of units for their patient).

There is a small testing charge, which is levied to sustain the cost of operations.

If you are Prathama donor, you are covered by the donor insurance policy, which not only would give you priority over a non-donor, in many situations the testing charges are waived off. The situations and the assurance policy features are as follows:

- Individual Blood Assurance Cover

  A regular donor for Prathama is eligible to get blood components equivalent to the number of his/her blood donation at Prathama, free of product testing charges and replacement, for himself/herself.

  A regular donor is an individual who has donated blood for Prathama twice in the last 12 months or 4 times in the last 24 months.

- Individual Life Blood Assurance Cover

  By donating blood 25 times or more for Prathama, a donor acquires a special status. As recognition of this Prathama offers to provide for the requirement of blood for this individual ever in life, equivalent to the number of his donation for Prathama; free of product testing charges and replacement. This offer can be availed from the day of the 25th blood donation for Prathama Blood Centre.

- Family Blood Assurance Cover

  Any individual who has donated blood 5 times for Prathama Blood Centre can use this credit of 1 unit of blood component free of product testing charges and replacement for the use of his family/friend. This offer can be taken up beginning from the day of 5th blood donation for Prathama. This offer stands for life.

Do you pass subsidy to poor patients ?

Yes, we do. All components, which go to municipal hospitals, Thalassemics, Hemophiliacs go at subsidy varying from 30% to sometimes 100%. Whenever a doctor, who writes the prescription or the patient's relative tells us about financial difficulty of the patient, appropriate subsidy is passed to the patients admited in government and private hospitals.

Prathama Blood Centre

Blood Basics

What is Blood ?

It is a red colored, viscous liquid, which flows in blood vessels throughout the body. It has two parts; liquid part (55% by volume) is called plasma. It is light yellow in color. The second part is cellular (45% by volume) and contains different types of cells viz. Red cells, White cells, Platelets.

What does Blood do ?

Blood is the transport system of our body.

Red cells transport gases like Oxygen (O2) from lungs to each and every cell of our body and Carbon-dioxide (CO2) produced by the cells is transported to lungs to be exhaled out.

Plasma transports food material (glucose, amino-acids etc.) to the tissues and carries back waste material like carbon dioxide to lungs and urea to liver and kidneys. Similarly it also transports hormones, vitamins and minerals across the body.

White blood cells in blood fight infections.

Platelets in blood help in forming a platelet plug to prevent loss of blood, whenever there is an injury, internal or external.

Where is Blood made ?

Our blood cells, viz. Red Cells, White cells and Platelets are made by cells called “Progenitor Cells” in the bone marrow of few bones like femur(thigh bone), scapula(hip bone) etc. Bone marrow is a dull red colored tissue present in the central cavity of the bones.

Liquid part of blood called Plasma has mainly water with proteins dissolved in it. These proteins are mainly made by liver.
The life span of red cells is about 120 days, and that of platelets is about 7 – 9 days. The cells and proteins keep getting replenished inside the body.

How much Blood do we have ?

The blood volume is around 70ml/Kg, so a young healthy adult of 70 Kg would have 5 liters of blood (4900ml to be precise)

Why should I donate blood ?

Blood donation gives a great feeling of touching someone’s life in a beautiful way. It is an experience that no words can define. You have to donate blood to get this feeling and to gain this experience.

What steps are taken to reduce the risks involved in receiving a transfusion?

Steps to ensure maximum transfusion safety, involve both donor and recipient. Donors are screened very carefully, using a detailed questionnaire, for health problems or circumstances that increase risk of transmitting infection. After blood is drawn, it is tested for numerous viruses and other potentially harmful disease agents, and positive or doubtful units are discarded. Donor blood is tested for ABO, Rh and the presence of possibly dangerous blood group antibodies, as well.

After the recipient’s blood is tested for ABO, Rh and the presence of blood group antibodies, donor units are selected of the same blood group and cross matching is then performed to transfuse compatible blood.

What is risk behavior?

Risk behavior of a person exposes him/her to a high risk of Sexually Transmitted Diseases (STD) including AIDS. Such people are requested not to donate blood. Risk behavior includes people with following traits.

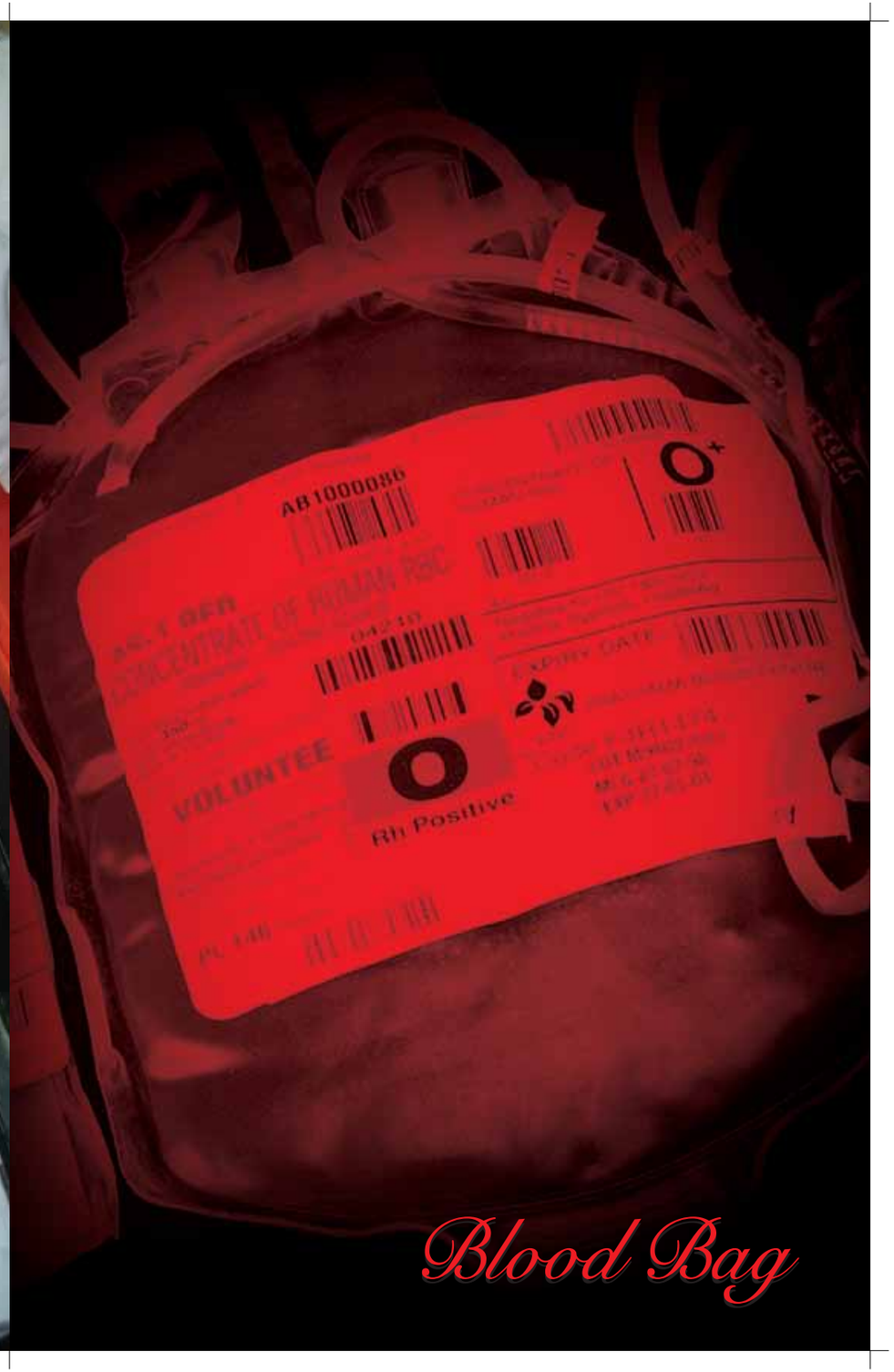
- Homosexuality
- Multiple sexual partnership
- Intravenous drug addiction
- Males / females who had sex for money
- Sex with any stranger or with any person during a short term relationship
- Sex with an AIDS victim
- Sex outside marriage
- Sexual partner of any in the above mentioned category

Who sustains cost of operations of Prathama Blood Centre ?

Prathama blood Centre is run on a “Not for Profit” and self sustaining basis. There is a product testing charge levied on blood that is distributed. This charge is essential for meeting cost of raw material, testing, processing, and providing for depreciation and administration expenses. This also gives Prathama an opportunity to undertake research in the field of transfusion medicine and develop more Blood Banks like Prathama.

Prathama is committed to up lift the standards of blood banking and in turn the quality of Life of the common man in our society.

Blood Science



Blood Bag

What is Hemophilia ?

Hemophilia is a blood disorder where blood clotting is defective. Patients suffering from Hemophilia lack blood clotting factor VIII/IX. As soon as they bleed, they need clotting factors which are prepared from plasma. Any delay may cause excessive bleeding and death. India has about 50,000 to 75,000 of hemophilia patients. A huge majority of them still do not have access to safe blood components/products.

What is Hemolytic disease of the new born ?

Hemolytic disease of the new born (HDN) is a condition in which antibodies from the mother cross the placenta and destroys the red blood cells in the fetus, she is carrying. The destructive process may be mild or intense, causing problems that can range from mild anemia and jaundice to severe fetal or neonatal distress or even to intrauterine death. HDN occurs when the mother develops an antibody to a blood group antigen that is absent from her red blood cells but present on the fetal red blood cells. The most common cause is anti-D in an Rh -negative mother carrying an Rh-positive child. Other antibodies sometimes cause the same problem.

Severe HDN is treated by transfusion. Intrauterine transfusion can be performed if necessary. More commonly after delivery, an infant can be treated by “exchange transfusion,” which substitutes Rh negative blood of same ABO group as that of baby’s for the infants damaged antibody coated red blood cells

Why is blood transfusion required?

Blood transfusion is primarily required for the conditions in which either blood or blood component is lost or destroyed to a dangerous level. Normally our body can tolerate blood loss to an extent of 20% or about 1.0 liter. But above that, blood has to be supplemented. So conditions like surgery (operation), accidents, child birth, some infections, cancer, thalassemia, hemophilia, anemia etc. may require blood.

Are there any risks in receiving a transfusion?

As with any medical procedure, blood transfusions carry some risk. There is a remote chance of receiving blood of the wrong type. In addition, several infectious diseases can be transmitted by blood transfusions. Among the viruses that may be transmitted by blood are: human immunodeficiency virus (HIV), the virus that causes AIDS; several Hepatitis viruses; Malaria; and Syphilis.

What is Hemoglobin (Hb) ?

Hemoglobin is protein molecule, which contains iron. Hemoglobin is present in red blood cells of our blood. It is because of Hb, that our blood looks red. According to WHO, men should have 13-17 gm% and women 12-15 gm% of hemoglobin.

What is Anemia ?

Anemia is a condition when hemoglobin falls below the normal level. It can happen because of Iron deficiency, Vitamin B 12 deficiency, blood loss, genetic reasons and a few other conditions. The physician would be able to diagnose and treat anemia.

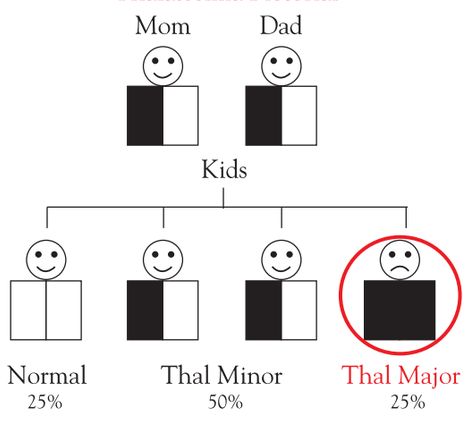
What is Thalassemia ?

Thalassemia is a genetic disorder. It is of 2 types – Thalassemia major and Thalassemia minor.

Thalassemia major patients do not possess capability to produce healthy and effective red blood cells. They have variety of symptoms like pallor, failure to grow, thrive, skeletal deformities etc. They survive only on blood transfusion once or twice a month. The only cure for Thalassemia major patients is bone marrow transplantation, which is not easily accessible or affordable. India has about 100,000 thalassemia patients.

In Thalassemia minor, the patient does not suffer from any of these symptoms other than mild anemia in some of the cases as he is merely a carrier. Thalassemia minor can lead a normal life with just being careful of not marrying another Thalassemia minor as off springs of such wedlock could be Thalassemia major.

Thalassemia Pictorial



By keeping the blood line flowing, you will greatly contribute towards a healthier, happier society. Do remember, any one may require blood any time, including ourselves and our dear ones.

You also benefit in other ways by donating blood. It reduces the chances of Ischemic Heart Diseases (beginning of heart problems) as frequent donations reduce the accumulated and unwanted iron load from the body.

Your blood donation will also get you your blood insurance from us.

Any side effects of Blood donations ?

No! Not really. Do ask any regular blood donor about it. A small percentage of first time donors may (psychologically) feel a little dizzy but only for a few minutes. Our staff at the blood drive will ensure that your first blood donation is a happy experience. We are sure this will make you a regular blood donor. In fact there are many people who have donated more than 100 times in their life time.

Can I get any disease like AIDS or Hepatitis or any other disease by Blood donation ?

This is impossible. Only sterile disposables are used to collect your blood. These disposables can be used only one time. This totally eliminates any chance of catching any disease from donating blood.

How much Blood can I donate?

Eligible donors (any body between 18 to 60 years of age and leading a healthy life) with weight above 50 kilograms can donate up to 450 ml of blood. Your body would replenish this volume after 24 hrs.

How frequently can I donate Blood ?

- Males every 3 months
- Females every 4 months

Why should I become a regular blood donor ?

As you know, blood is a life saving medicine, which works wonders in certain medical treatments, and life threatening situations. It is an emergency medicine. Our society is today threatened by scarcity of blood. The only source of blood right now is human beings. This issue has got further complicated by paid and professional blood donors, who donate blood for money. These donors have contributed towards rapid spread of killer diseases like AIDS, Hepatitis B & Hepatitis C in the society.

WHO strongly recommends only a regular voluntary blood donor as the source of blood. Your regular donation will go a long way in improving the situation of perennial blood shortage in the country.

What should I eat before blood-donation ?

Anything, but preferably something. Eating light snacks and a drink (nonalcoholic) before blood donation makes you more comfortable.

What exactly happens during blood-donation?

Giving blood is a very simple and straight forward process. On arrival at a blood drive, you will be asked to fill a few details on a donor form. Your medical history will be taken by medical personnel. The weight, blood pressure, pulse and temperature are measured and recorded. We take a small drop of blood to ensure that you are not anemic. After your pass this simple medical screening process, you will be escorted/directed to a blood donation area. The actual blood donation takes about 5-7 minutes and is followed by a little rest and refreshments.

What should I eat after blood donation ?

Drink some liquid like tea, cold drink, juice etc. to replenish fluid and eat some snacks. All this will be available for you at the blood donation site.

What does a blood bank do to my donation ?

It collects blood, processes in to components like red cells, platelets, Plasma etc., tests for any possible disease, stores blood components at optimum temperature and gives these to the needy patients after cross matching and pre transfusion tests.

What happens to blood I donate ?

Your blood goes to a modern blood bank – Prathama Blood Centre. Within 6 hours of blood collection its processing starts at Prathama Blood Centre. It is separated into components viz. Red Cells, Plasma & Platelets.

The donor sample undergoes mandatory tests for Transfusion Transmissible Infections (TTI) like hepatitis B, C, HIV I & II, Syphilis, Malaria etc. The units which are tested negative are then labeled and stored at the appropriate storage conditions. These blood components are then made available to patients admitted to various hospitals and clinics like Corporation Hospitals etc.

The components can be shipped in bulk, stored at hospitals/clinics (storage centers/satellite centers) and issued to patients admitted to that hospital.

A set of such reactions against antibody (reagent) to A, B and Rh confirms the blood group.

What is the Rh factor?

The "Rh Factor" is the principal antigen of the Rh blood group system. It is also called the 'D' antigen. People whose red blood cells express the D antigen are called Rh positive; Rh-negative red blood cells lack the D antigen.

Rh-negative persons may develop anti-D antibodies in their plasma if they are exposed to red blood cells from an Rh-positive person (through Transfusion or Pregnancy).

What is cross matching ?

We have seen in the table earlier, who can donate or accept blood for whom.

Still, to ensure full safety, the patient's and donor's blood is incubated in a special micro-tube to check if donor red cells would be totally compatible to the recipient (patient).

Only compatible blood is used for transfusion to the patient.

What is an antibody ?

These are protein molecules. Various types of antibodies are found in the body. Antibodies are normally present in plasma. These antibodies react against the antigen and are antigen specific.

In ABO blood group system a person would not have the antibodies against the antigen present on their red cells and would have antibody against the missing antigen (reciprocal antibody).

For example, a person with blood group A will not have antibody (anti-A) against antigen A in his blood. He would have anti-B antibody present in his blood.

Bombay blood group

Bombay blood group is a special type of blood group was first discovered in Bombay in 1952 and hence got this name. Its frequency is about 4 in 10 lakh persons through out the world. Generally ABO group of blood will have their own specific antigens and antibodies in their blood. All the blood groups in this category will have antigen H in common in addition to their own specific antigens and antibodies. But Bombay blood group doesn't include any antigens in its blood and it has antibodies H, A and B in its blood. Thus they can donate blood to anybody with ABO grouping but can receive blood only from Bombay blood group people.

Medical setups, which do not have blood storage facilities, send the individual patient's prescription and blood samples to us for cross matching following which blood is given to the individual patient directly.

This is how each time you donate blood, you save up to 4 lives.

What are blood components ?

As we mentioned earlier blood is a mix of various cells and plasma. Primarily red blood cells (RBC), platelets and plasma. These cells and plasma have different functions to perform. A patient never requires whole blood but only particular components. Besides that these components have different life span and storage conditions. For better survival of each component they should be separated and stored at optimum conditions.

The blood is separated into its components through the process of centrifugation. From a single unit of blood, we get one unit each of red cells (RC), platelets (PC) and Plasma (FFP). Plasma can be further separated into Cyroprecipitate (CRYO) and Cyro-Poor Plasma (CPP).

Why blood components ?

In modern medicine there is no room for whole blood. Developed countries have switched over to blood components for more than 30 years.
Unfortunately in India, overwhelming usage is that of whole blood.
By making blood components, all the useful parts of blood can be used. In whole blood, platelets die and clotting factors become ineffective and the patient receives unwanted and ineffective components.

How are blood components preserved?

When blood is drawn from a donor, the blood bag contains an anticoagulant and also nourishment for blood cells. This keeps blood in a liquid or fluid form and keeps the cells alive. Depending upon the type of anticoagulant used, red blood cells can be stored in the liquid state for 35-42 days. Platelets are stored at 22 to 24 degree centigrade for 5 days. Plasma is stored at – 35 degree centigrade for one year.

All blood components are stored in special containers, inside refrigerators, freezers or environmental chambers. All these storage devices have temperature gauges and the temperature is checked daily. This ensures that the blood components are stored at the appropriate temperature.

Leukodepleted Blood Components ?

Leukodepletion is the removal of white blood cells (or leukocytes) from the blood or blood components supplied for blood transfusion.

Donor leukocytes, the residual white blood cells in platelet or red cell transfusions, are associated with potential adverse reactions.

Today's technology permits removal of more than 99.9% of donor leukocytes, usually by means of filtration of the red cells and or platelets. Filtration may occur at the time of blood donation; this is known as pre-storage leukodepletion. For this special blood bags are used to collect donor's blood.

Benefits of pre-storage leukodepletion are significantly more than post-storage process of leukodepletion. "We are lucky that such blood components are available at Prathama on demand.

Results of our quality control reflect 99.9% of leukocytes reduction in our blood components.

What are blood groups ?

Blood groups are the result of antigens (large protein molecules) which are present on red blood cells. Primarily there are two such antigens A & B which decide our ABO blood group.

ABO blood groups were first discovered by Dr. Landsteiner in 1900. Rh antigen was discovered forty years later again by Dr. Landsteiner and Weiner. Rh gets it name from Rhesus monkey, in whom it was discovered. On the basis of the presence of these antigens along or in combination the blood groups are decided as given below.

Antigen A or B	Antigen Rh (Yes/No)	Blood Group	Can donate Blood to	Can take Blood from
A	Yes	A+	A+, AB+	A+, A-, O+, O-
B	Yes	B+	B+, AB+	B+, B-, O+, O-
A & B	Yes	AB+	AB+	A+, B+, AB+, O+, O-, A-, B-, AB- (Universal recipient)
Neither A nor B	Yes	O+	A+, AB+, B+, O+	O+, O-
A	No	A-	A+, AB+, A-, AB-	A-, O-
B	No	B-	B+, AB+,B-, AB-	B-, O-
A & B	No	AB-	AB-	A-, B-, AB-, O-
Neither A nor B	No	O-	A+, B+, AB+, O+, A-, B-, AB-, O- (Universal Donor)	Only O-

What are rare blood groups ?

Besides A, B and Rh antigens on our red cells there are many more rare antigens. They are clinically not significant in normal conditions. However antibodies against some of these rare antigens may develop in case of multiple transfusions or during pregnancy/child birth. In such situations, blood group required has to be matched for rare antigens.

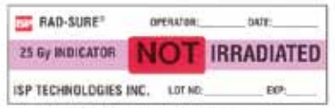
How is blood group tested ?

Blood groups are tested using antigen-antibody reaction. For example, if a blood group A blood/red cells are incubated with antibody A (commercially available reagent), then the red cells will agglutinate (form a clump), which might be confirmed under microscope.

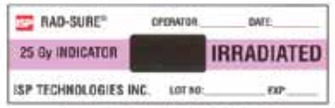
Irradiated Blood Components

Why is irradiated blood needed?

Irradiated blood is given to prevent a rare complication of transfusion called Transfusion-Associated Graftversus-



BEFORE IRRADIATION



AFTER IRRADIATION @ 25 Gy

Host Disease (TAGvHD), a rare but serious complication of blood transfusion caused by white blood cells (lymphocytes) in the blood transfused.

Who are at increased risk of TA-GvHD?

Patients who have had Hodgkin lymphoma or

undergone procedures such as stem cell transplantation, patients of immuno suppressed and immuno compromised because of chemotherapy and blood transfusion in blood relation are at risk of GvHD.

How does irradiation work and do all types of blood need to be irradiated?

Gamma-irradiation of blood prevents lymphocytes dividing and causing harm. Red cell (blood) and platelet transfusions are need to be irradiated 'on demand' for specific patients.

Irradiation is not thought to cause any significant damage to the blood. The blood does not become 'radioactive' and will not harm you or anyone around you.

Platelet Aphaeresis: (SDP) Single Donor Platelets

Modern automatic platelet apheresis procedure allows blood donors to donate only a portion of platelets where red blood cells and plasma returned to the donor. Though it is different from whole blood donation, it helps you donate specific component in much relaxed environment. You only need to give 2 to 3 hours time for this procedure.

Platelet Apheresis is a life saving procedure in preventing and treating serious complications from bleeding, hemorrhage, disorders or platelet dysfunction. Platelets have a life span of just 5 days and there is always a need for single donor platelets.

Unlike your whole blood donation where you are advised to donate once in 3 months, you can donate platelets once in seven days. You may donate up to six times in 2 months or 24 times in a year. Body recovers platelets donated within 3 to 5 days.

Next time when you want to donate whole blood; check out for Platelet Apheresis and become a Platelet Donor.

Peripheral blood stem cell (PBSC) donation

Normally, few stem cells are found in the peripheral blood. But giving hormone-like substances called growth factors to stem cell donors a few days before the harvest causes their stem cells to grow faster and move from the bone marrow into the peripheral blood. The stem cells are then collected by a procedure called leukocytapheresis. A very thin flexible tube (called a catheter) is put into one of the donor's veins and attached to tubing that goes to a special cell separator machine. The machine separates the blood, and collects only the stem cells. The rest of the blood goes back to the donor. This takes 4-6 hours. The stem cells can be stored as frozen until the patient is ready for them. At Prathama blood center we are collecting stem cells from peripheral blood on regular basis.

What all things you test my blood for ?

Automatic and highly sensitive Robotic blood testing set up is used to test each and every unit of blood for HIV Virus (AIDS), Hepatitis B&C virus (Jaundice) Malaria Parasite, Syphilis and also blood groups. Bar Code systems, fully integrated computer network, real time information processing makes our lab only of its kind in India. This lab ensures highest level of blood safety to each unit of blood. Thanks to robotic machines the lab technicians also have minimal contact with the blood, which ensures their safety from blood transmitted disease.