



Blood Science:

What is blood?

Blood is a vital body fluid or tissue circulating in human body consisting red blood cell (RBC), white blood cells, platelets and plasma. Plasma consists of albumin, globulin, fibrinogen and more than 200 different proteins. Hemoglobin, the main constituent of RBC, transports oxygen from lungs to tissues. Loss of large volume of blood can result into death.

Why blood bank depends on human volunteers?

Blood cannot be manufactured. Animal blood is not suitable for human beings. Therefore, to save patient's life healthy volunteers must donate blood.

How much blood is there in an adult?

Adult male has about 76 ml blood / Kg and female has 66 ml/kg

What is the requirement of blood for body functions?

About 50ml/kg blood is necessary for the various functions of human body. Hence everybody has excess blood in the body.

What are blood groups?

RBCs have genetically controlled antigens on their surface known as blood group antigens. There are 29 well-defined blood group systems consisting more than 300 antigens. However compatible blood is selected by testing for the antigens of ABO and Rh blood group systems only. ABO system has A, B, O and AB groups. Rh typing is done for "D" antigen. If it is present then the person is Rh (D) positive and if absent the person is considered Rh (D) negative. The ABO group distribution in our blood donors is:

O: 32.4%, B: 35.4%, A: 23.4% and AB: 8.8%. The incidence of Rh (D) negative group is 5%.

Rejection/Deferment of Blood Donors:

On number of occasions a blood donor is either rejected or deferred from blood donation due to various reasons. The common diseases responsible for it are an attack of malaria during previous six months or an episode of jaundice within last one year. Uncontrolled diabetes and hypertension, coronary artery disease, kidney or liver diseases etc. are other reasons for rejection or postponement of blood donation.

At times, young and enthusiastic donors below the age of 18 years come for donation; they are advised to celebrate their 18th Birthday with blood donation and thereafter to follow it up every three months.

Some times, we come across with under weight donors (< 45 Kg) also, we advise them to cross the hurdle of 45 Kg body weight for becoming eligible for blood donation.

But, the most common cause of postponement of blood donation is the low hemoglobin level of < 12.5 g/dl. This is rampant in our female donors, at times we find our regular voluntary donors also fail to qualify for blood donation on this account. Such anemic donors are clinically examined followed by their detailed blood examination. Proper nutritional/dietary advice along with a list of food items rich in iron, folic acid, and Vitamin B 12 is handed over to them. Supplemental iron /folic acid tablets where indicated are supplied to them by our centre free of any charge. These donors are advised to come for follow-up every three weeks for continuation of their treatment as well as for repeat blood examination. Whenever their hemoglobin level goes up, they are declared fit to donate blood.

Pre Blood Donation Counseling:

Pre Donation Counseling is one of the important steps to ensure safe blood collection, free from any transfusion transmitted infections. The procedure involves the followings:

- Education and information to the donors about the signs and symptoms associated with HIV infections and AIDS and also of the high risk activities for HIV transmission
- To impress on the donors the importance of refraining from donating blood if they have engaged in the high risk activities or if they have experienced the signs and symptoms associated with HIV infections
- To provide information to the donors of the various tests which will be performed on their blood for detection of HIV 1, HIV 2, Hepatitis B, Hepatitis C, Syphilis etc.
 - To obtain the donors consents for the test as well as their willingness to know adverse results if any.

If any of the tests for infectious diseases is reactive, the donor is called again, a fresh sample of blood is obtained and re-tested using either a different kit or by a different method for confirmation of the results. OR The donor is suitably informed and referred to a VCTC for getting Confirmation done as Blood Bank undertakes only Screening Tests on Donor's Blood.

Counseling of the donors who have tested Seroreactive for Hepatitis B, Hepatitis C or Syphilis is done by our Blood Transfusion Officer, where as donors tested positive for HIV are referred to VCTC centres for counseling as per the norms led down by State Blood Transfusion Council. Confidentiality is maintained throughout the process.

The following advice and information are imparted to the donors during counseling

- Although they are not suffering from the active diseases themselves but they are harboring the infection in their blood and can transmit it to others
- They should take to precautions to prevent infection to others such as sharing their shaving blade/razor, scissors, nail cutters, tooth brush etc. They should permanently refrain from any further blood donation in future.
- Advise regarding test and protection of the family.
- To know the present status of the diseases in themselves, they are advised to consult a gastro-enterologist who will perform liver function tests as well as other investigations and may prescribe anti-viral drugs.

ABOUT BLOOD DONATION

Blood Donation Basics:

Donating blood is safe and simple. It takes approximately 10-15 minutes to complete the blood donation process. Any healthy adult between 18 years and 60 years of age can donate blood. This is what you can expect when you are ready to donate blood:

A person can donate blood in blood donation camp or at a Blood Bank. If he/she donates blood voluntarily without expecting anything in cash or kind then he/she is termed as “Voluntary Donor” and if the donation is to replace the blood unit given to known patient then the donor is a “Replacement Donor”. The blood collected from the regular voluntary donor is the safest for recipient.

Blood donor selection is based on medical history and limited medical examination done just prior to blood donation. Donor history questionnaire is designed keeping in mind the protection of donor and recipient. The aim is to determine whether giving blood will harm the donor and transfusion of the unit collected from a particular donor will harm the recipient.

A. Questions for Protection of Donor:

- Are you feeling well and healthy today?
- Did you sleep well last night?
- When have you taken your last meal/snacks?
- Have donated blood before?
- If yes, did you feel any inconvenience during or after donation?
- When was your last blood donation?
- In the past 12 months, have you been under a doctor’s care or had a major illness, surgery or blood transfusion?
- Have you ever suffered from any of the following

1. Heart diseases / hypertension
2. Diabetes
3. Asthma
4. Kidney disease
5. Fainting attack / epilepsy
6. Cancer
7. Blood diseases or bleeding problem

For Female Donors

- Are you pregnant or are you giving breast-feeding?
- Did you have any abortion or miscarriage in the last six months

B. To protect the recipients:

- In the past six months did you have malaria, dental extraction, acupuncture, ear/nose piercing, tattoo?
- In the past one year did you have jaundice, typhoid or taken anti rabies vaccine?
- In the past six month did you have any of the following
- Unexplained loss of weight (4.5 kg in a month)
- Profuse night sweats (Recurring sweating at night which wets the bed)
- Fever of more then 99⁰F lasting several days or week and / or recurring frequently
- Blue / Purple spots on or under the skin or in mouth
- Long lasting white spots in the mouth
- Swollen lymph nodes (Lump in the neck or arm-pit or groin) lasting more then a month
- Persistent diarrhea, in spite of adequate treatment (Persisting more then a month)
- Have you ever tested positive for Hepatitis B, Hepatitis C or HIV?
- During the past three days have you taken aspirin or anything that had aspirin in it

C. Donor Eligibility Criteria:

The following criteria are to be followed for donor selection:

1. Age: Between 18-60years
2. Body Weight: Between 45kg and 115 kg
For collection of 450ml of blood, the minimum weight of donor should be 55 kg
3. Hb level: minimum 12.5 g/dl
4. Pulse: between 50-100/min
5. Temperature: should not exceed 99.5° F.
6. Blood Pressure:
Diastolic pressure: should not exceed 100mm/Hg
Systolic pressure: to be decided by B.T.O keeping in mind the psychological factors of the donor and presence of other associated cardio-vascular disease, medication etc. But it should not exceed 180mm/Hg

D. Self Exclusion Instructions:

If any of the following information is applicable, no blood donation is to be done as it might harm the patient who receives it.

- If you ever had a positive test for Hepatitis (HBsAg, Anti-HCV, Anti-HBc)

- If you have ever taken illegal intravenous drugs
- If you have AIDS or one of its Signs or Symptoms which include:
 - Unexplained weight loss (4-5 Kg or more in less then 2 months)
 - Profuse night sweats (Recurring sweating at night which wets the bed sheet)
 - Blue/purple spots on or under the skin or in the mouth
 - Long lasting white spots in the mouth
 - Swollen lymph nodes (lump in the neck or armpit or groin) lasting more than a month
 - Fever of greater then 99° F lasting several days or week and/or recurring frequently
 - Persistent diarrhea in spite of adequate treatment (persisting for more than a month)
 - You have ever tested positive for AIDS or the AIDS Virus (Anti-HIV)
- You are a hemophilic who has been transfused anti-hemophilic factor concentrate
- You have multiple Sex-partners
- You are a man who has had sex with a female prostitute
- You are a woman or man who has been a prostitute

E. Temporary Deferral for the Period Indicated Below:

If the following are applicable, postpone blood donation till the period mentioned against each,

- Jaundice: 1 Year
- Attack of Malaria: 6 months
- Abortion: 3 months
- Pregnancy - Till duration of pregnancy: 1 year
- Breast feeding: 12 months after Delivery
- History of Blood Transfusion: 6 months
- Major / Minor Surgery: 6 months
- Immunization (Typhoid, Cholera, Diphtheria, Tetanus, and Plague): 15 Days
- Rabies Vaccination / Dog bite: 12 months
- Immunoglobulin Injections: 12 months
- Tattoo / Ear piercing / Dental examination: 6 months
- Drugs and vaccination (Antibiotic / Steroid / Aspirin / Alcohol): 72 hours