
B R I E F C O M M U N I C A T I O N

Donate gift of life: save life

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History

History of blood transfusion is more than 380 years old. In 1818 Dr. James Londe of England tried first blood transfusion in a serious patient. In 1900, Dr. Karl Landsteiner (Austria) established ABO blood group and won the Nobel Prize in 1930. In 1914 Dr. Haustin (Belgium) described the method of storing blood outside of human body with the help of sodium citrate chemical. Perhaps the first blood bank was established in Leningrad in 1932.

Background of Blood Transfusion Service (BTS)

Nepal Red Cross Society (NRCS) established the first Blood Bank at Bir Hospital in Kathmandu in 1966 i.e. 3 years after the inception of the Society itself. The service then shifted to Society's own present building at Exhibition Road, Kathmandu on September 19, 1982.

The NRCS currently operates 56 Blood Transfusion Service Centers (BTSC) in 41 of the 75 districts of Nepal. Of these 56 Centers, Kathmandu-based Central BTS is functioning as referral centre; 3 are regional centers at Biratnagar, Pokhara, Nepalgunj; 22 have been delivering a full-fledged blood services; 15 are operating as emergency service units and 15 are set up in the hospitals.

In the initial year, a total of 157 units of blood were collected from professional donors but since 1982 collection of blood was emphasized from voluntary donors only. In the fiscal year 2004/05, the total number of blood supply from all the centers was 124, 142 units annually. The number is increasing every year.

With the expansion of health services and the extension of the medical colleges, and government & private hospitals, the demand of blood and blood products are ever increasing in the country. Patients' life, that

requires blood, can be saved only from human blood. There is no alternate to human blood. Thus it is required to strengthen its services.

A person passes through different incidents in their life. It is, therefore, essential to know about the blood and blood donation.

Requirement of blood

Millions of lives are saved each year through blood transfusion services. Blood transfusion has a particular impact on women (as a consequence of pregnancy-related complications), surgery, blood born diseases, acute and chronic diseases, children (malnutrition, malaria and severe life-threatening anaemia), trauma victims and, especially, the poor and disadvantaged.

Among the total blood donors, male donors are 85.59 percent and female donors are 14.03 percent at national level. Out of which more than 60 percent blood users are female patients mostly with the pregnancy-related complications.

Blood and its component

Blood is a red liquid substance which is circulating continuously in the body through the heart, arteries and veins. Blood is made up of cells (45%) and liquid plasma (55%). Cells are of three types: RBC, WBC, Platelets. WBC contains Neutrophil, Eosinophil, Basophil, Monocyte, and Lymphocyte. The life span of RBC is 120 days. WBC lives for few hours to one week and platelets for few days only.

The liquid portion of the blood is known as Plasma. It contains water, minerals (Na, Cl, Ca, Mg, HCO₃, K, etc.), and other chemical elements - protein (albumin, globulin, fibrinogen and clotting factors).

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Function of blood

RBC carries oxygen from lungs to tissues and carbon dioxide from tissues to lungs. WBC protects our body from foreign bodies including disease causing microorganism. Platelets help blood clotting. Clotting factors help blood to clot to stop bleeding. There are many important substances in blood which are essential for life and which it carries to different parts of the body. In the absence of blood, brain can survive only for 4 minutes and heart can survive only for 6 hours.

Amount of blood in human body

Male contains 76 ml/kg and female contains 66 ml/kg in body. Our body requires only 50 ml/kg blood to do daily work. This way, in a male 26 ml blood is excess per kg in the body and in female 16 ml blood is excess per kg. A healthy person can easily donate around 8 ml/kg body weight of blood. For donation minimum weight required is 45 kg and if with this weight a person donates blood it will be $45 \times 8 \text{ ml} = 360 \text{ ml}$ blood which is excess blood for that person. Thus, donated blood is reformed in our body by taking 250 ml. of liquid food items. Likewise 25 gm of iron is formed in 12 days, 12 to 15 gm protein in 2 to 3 days and remaining elements in few days. Our body maintains the required blood by taking regular food items whenever we donate blood or during blood injuries.

Formation and destruction of blood

Blood circulates in blood vessels through heart and finally destroyed in spleen. Iron, folic acid and other vitamins are important for formation of blood, which are available in foods which we take. In fetus and neonates blood formation takes place in liver and spleen.

Human blood group

For scientific research purposes there are 500 types of groups but there are two main significant groups of our concern. a) ABO group - A, B, AB, O and b) Rh group - Negative and positive group. Other groups like MN, S, P, LUTHERAN, KIDD, DUFFY, SID, LEWIS, CARTWRIGHT, DEIGO etc.

Blood and blood products

Blood is collected in single and multiple bags. Single bag is used to supply whole blood to the patients whereas multiple bags are used for separating blood

products like Plasma, Cryoprecipitate, Platelets, Packed RBC, FFP (Fresh Frozen Plasma), PRP (Platelet Rich Plasma), etc. and then it is distributed to the needy patients.

Criteria of blood donors

Male or female completed 17 years of age and upto 60 years can donate blood. Weight of blood donor should be above 45 kg and he/she should have hemoglobin above 12gm%. Blood Pressure must meet 110/70 to 160/95 mm Hg. Persons having well functioning of liver, lungs and heart can donate blood. Any complications with diseases like jaundice, malaria, typhoid, AIDS and HIV or drug user are advised to meet the doctor before donating blood. Healthy persons can donate their blood four times in a year.

It takes only 5 to 7 minutes for blood transfusion. After donation it is better to take 5 minutes rest in chair and then take one glass of liquid with some light food. After donation it is better not to smoke and to take drugs upto three hours.

Blood testing

All the collected blood is routinely tested against HIV, HBsAg, HCV, Syphilis besides grouping, cross-matching and antibody - titration in the Centre. The screened and safe blood and blood products are supplied to the needy patients.

Testing charge

Safe blood is distributed to the patients in need only after screening against HIV, HBsAg, HCV, VDRL and besides grouping, cross-matching etc. are done in the centre. All the materials are purchased each year to collect and process the blood. There is no price for blood but the costing charges are taken from the patients' party only for blood bags, transfusion sets, testing kits and reagents. BTS is always ready to provide safe blood and maintain its quality.

World Blood Donor Day (WBDD)

June 14th, the World Blood Donor Day, is celebrated on the occasion of birth day of the Nobel Prize winner – Karl Landsteiner, who discovered ABO Blood Group. This is the day for medical doctors and professionals especially those involved in blood related works. The WBDD is the day to thank and honor all the voluntary non-remunerated blood donors across the world. The first WBDD was celebrated on June 14, 2004 by organizing various activities with the theme "Blood, a

gift for life. Thank you". In Nepal it was celebrated jointly by Nepal Red Cross Society Blood Transfusion Service, His Majesty's Government of Nepal, World Health Organization, and Nepal Blood Donors Association of Nepal. Likewise second Blood Donor Day was celebrated with the theme "Celebrating Your Gift of Blood" in June 14, 2005 and it will continue each year.

More information

Although every collected blood and blood products are screened against HIV, HBsAg, HCV and VDRL

before transfusion to the needy patients, there is still risk of diseases due to window period. Due to emergence of TTIs, we, therefore, suggest you to evaluate yourself before donation and be prepared for donating 'gift of life' to the patients waiting for a new life. Those involved in the risk behavior are requested not to donate blood and be responsible to the society.

Medical professionals play a key role for the safety blood and appropriate use of blood & blood products to the patients.