

**Q: What is blood?**

A: Blood is the red coloured fluid flowing continuously in our body's circulatory system.

**Q: How much blood does a person have?**

About 1/10 th of the body weight of a healthy individual is blood. On an average there are about 5- 6 litres of blood present.

**Q: What is the composition of blood?**

A: Blood contains mainly fluid called plasma in which is suspended cellular elements. Three types of cells Red Blood Cells or RBC's, White Blood Cells or WBC's and tiny platelets form the cellular element.

**Q: What are the functions of these components?**

A: (a) Plasma: acts as a vehicle to carry many substances like glucose, fats, and proteins, enzymes, and hormones etc., in addition to the blood cells.

(b) Red Cells: carry oxygen from lungs to various body tissues and take back carbon dioxide from the cells and tissues to be thrown out of body in the form of exhaled air.

(c) White cells: mainly act as body scavengers and guards. They help in the immune system of the body and act as defence forces of the body killing the bacteria or any other organisms entering the body.

(d) Platelets: help in the clotting and coagulation of blood. We have experienced in our life that whenever we get injured the bleeding stops after a few minutes. This is brought about by a mechanism called clotting of blood in which platelets plays a very vital role.

**Q: How is blood formed?**

A: Blood consists of RBCs, WBCs, platelets suspended in plasma. In early nascent life blood cells are formed in liver and spleen. But by the fifth month the Haemopoiesis (i.e., formation of blood.) occurs in bone marrow and lymphatic tissues. At birth the entire bone marrow is red and active. Gradually as the child grows, the marrow remains red only in the flat bones and vertebrae. The RBC, granulocytes of WBC and platelets are produced mainly by bone marrow. The lymphocytes, monocytes, plasma cells are formed in the lymphoid and Reticulo Endothelial tissues. The orderly proliferation of the cells in the bone marrow and their release into circulation is carefully regulated according to the needs of body. Every day, new blood cells are being produced in the bone marrow and every day old cells are dying and being removed from the body.

Red blood cells have a life of 120 days and when it becomes old and senile it is thrown out.

White cells live for a few days and platelets for a few hours. Thus daily new cells are added to the circulation and old are removed from it.

**Q: What is haemoglobin?**

A: Haemoglobin is a substance present in the red cells. It is helpful in carrying oxygen and carbon dioxide. On an average, in a healthy male it should be between 14 16 gm % and in a female it should be about 12 14 gm %. This is also being daily synthesized and the new is replacing the old stock.

**Q: What are blood groups?**

A: Every individual has two types of blood groups. The first is called the ABO grouping and the second type is called Rh grouping.

In the ABO group there are four categories namely A Group, B Group, O Group and AB Group. In the Rh Group either the individual is Rhpositive, or Rhnegative. Rh is a factor called as Rhesus factor that has demonstrated to us from Rhesus monkeys.

Thus each and every human being will fall in one of the following groups.

A positive or A negative

B positive or B negative

O positive or O negative

AB positive or AB negative

There are also some sub groups as well as a few other classifications.

**Q: What is the importance of knowing the blood groups?**

A: For all practical and routine purposes, it is ideal to transfuse to the patient the same group of blood which he belongs to. It is only under very dire emergency that we take O group as universal donor and AB groups as universal recipient. Under no circumstances O group can get any other blood except O. Similarly A group patient cannot be given B group blood and vice versa.

**Q: Why is A group not given B group blood?**

A: This is due to the reason that, the blood of A Group people contains anti B antibodies. In B group people there are anti A antibodies. If we give A group blood to a B group patient, it is bound to be incompatible and will result in serious consequences.

**Q: Why are Rh negative and Rh positive incompatible?**

A: A patient with Rh negative blood cannot be given Rh positive blood as the antigen-antibody REACTIONS WILL RESULT IN SEVERE consequences.

In cases where a woman is Rh negative and her husband is Rh positive, the first child is Rh positive the child may be normal. But subsequently the woman may not conceive or may have repeated abortions. There may be intra uterine fetal death. If the child born is alive, it will suffer from a fatal disease called "Erythroblastosis Foetalis". This is due to the presence anti-D antibodies formed in the mother during mother's first pregnancy. Now mother can be given an injection of anti-D within 24 hours of the delivery of a Rh positive child and thus protect the next baby from this catastrophe.

**Q: What is a unit of blood?**

A: Blood is collected in plastic bags in which coagulant is added and 350/450 ml is collected is known as one unit of blood.

**Q: Can blood of animals be transfused to human beings?**

A: Scientists have tried a lot but so far they are not successful. Only the blood of a human being can be transfused to a human patient.

**Q: How long can blood be stored?**

A: Whole blood can be stored up to 35/42 days, at 2-4 deg C. depending on the anti coagulant CPDA or CPDA SAGAM.

**Q: Can we separate blood into its components?**

A: Yes! Now with technical advancements, we can make components of blood and store them. For example, plasma can be separated from whole blood and quick frozen at -8 deg C and then stored at -30 deg C for one year. This is called Fresh Frozen Plasma. Similarly there are other components like Platelet Rich Plasma; Platelet Concentrate (can be stored as a life saving measure upto 5 days now at 22-24 degrees C in a platelet incubator and agitator); Cryoprecipitate (which is very useful in treating bleeding disorders due to the deficiency of factor VIII and IX); Factor VIII and IX; Albumin, Globulin and many others.

In most progressive blood banks more than 85 % of the blood collected is converted into components and stored. This is because many patients do not require whole blood. For example, a patient whose hemoglobin is low and is therefore anemic, may just require Packed Cells i.e. only red cells; a patient with burns may need more of plasma than cells; a patient with hemophilia may require only Factor VIII.

Now with the advent of apheresis we can directly draw a particular component from the donor, while rest of the blood constituents go back to the donor.

