

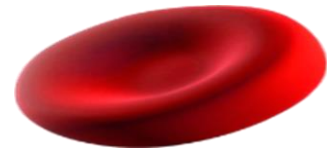


- **Definition of blood:** Blood is a specialized bodily fluid that delivers necessary substances to the body's cells. In vertebrates, blood, considered a connective tissue because it contains cells, a liquid ground substance (called plasma), and dissolved protein fibers. The blood cells, or formed elements, which represent approximately 45% of the blood volume, are the RBCs, WBCs and platelets. The remaining 55% of the blood volume is the plasma. In a normal sized human, the total blood volume is about 5 litres.



Functions of blood:

1. Supply of oxygen to tissues (bound to hemoglobin, which is carried in red cells).
2. Supply of nutrients such as glucose, amino acids, and fatty acids (dissolved in the blood or bound to plasma proteins)(e.g., blood lipids)
3. Removal of waste such as carbon dioxide, urea, and lactic acid.
4. Immunological functions, including circulation of white blood cells, and detection of foreign material by antibodies .
5. Messenger functions, including the transport of hormones and the signaling of tissue damage & regulation of body pH (the normal pH of blood is in the range of 7.35–7.45) (covering only 0.1 pH unit).
6. Regulation of core body temperature.



Introduction about blood transfusions:

Blood transfusions have become an integral part of the treatment of many blood diseases, in the management of trauma, and in the operative setting. Given this central role of blood transfusions in modern medicine. Used correctly, it can save life and improve health.

Definition of Blood transfusion: Blood transfusion is the process of receiving blood products into one's circulation intravenously. Early transfusions used whole blood, but modern medical practice commonly uses only components of the blood, such as red blood cells, white blood cells, plasma, clotting factors, and platelets.



Type of blood transfusion:

a)Autologous blood transfusion

This is the retransfusion of a patient's own blood during surgery.

1) It is practice among patients with ruptured ectopic pregnancy and thoracic-abdominal vascular injuries . This type of transfusion is safe where blood in the peritoneal cavity is less than 6 hours old and is not contaminated by bile or intestinal content.

2) Blood can be removed from a patient 2-7 days before elective surgery and retransfused if necessary for this to be done the patient Hb must be above 80% .After the blood collection Ferrous sulphate tablets are given

b) Heterologous blood transfusion

This is the most commonly practiced method of transfusion and involves giving the patient some one's else blood .To avoid in compatibility and transfusion reaction , cross-match (or in an emergency, group specific or O negative) blood is given.

Indications for blood transfusion

- ✚ To increase the oxygen capacity of blood by giving red cells.
- ✚ To restore the blood volume to maintain effective tissue perfusion.
- ✚ To replace platelets, coagulation factors and other plasma proteins

Blood may be needed in the following circumstances:

1. Acute blood loss:
 - Bleeding (during surgery or due to a serious injury).
 - Trauma
2. Inadequate production:
 - Various haematologic disorders (if body can't make blood properly because of an illness) such as thalassemia, leukaemia.
3. Excessive destruction of cells:
 - Disease (A severe infection or liver disease that stops body from properly making blood or some parts of blood)
 - Mechanical



Blood is more often needed under the following circumstances:

1. Maternity: women during pregnancy and at the time of delivery

– Anaemia of pregnancy; bleeding in pre- or post-partum stage of delivery.

2. 5-29 years

– Vulnerability during this age range due to infancy on the one hand (e.g. malnutrition, malaria) and youth on the other (e.g. nature of work which may be more physical and more likely to expose individual to accidents).

3. Patients with chronic blood disease

– e.g. thalassemia, leukaemia.

Transfusion trigger (adults)

☐ One unit of whole blood/PRBC can increase Hb by 1g/dL in an adult or Hct by 3% (Hb of unit must be >75%).

☐ Perioperative transfusion:

– 8g/dL for patient undergoing cardiovascular surgery, orthopaedics and acute GI bleeding.

☐ Chronic anaemia:

– 7g/dL in adults.

☐ Acute blood loss:

– 30% of volume of blood.



Transfusion Procedures And Blood Storage

The procedure for transfusing blood is simple and straightforward. About 450 millilitres (one pint) or more of blood is withdrawn from a donor's arm vein by means of a hypodermic syringe and is passed through a plastic tube to a collection bag or bottle to which sodium citrate has been added in order to prevent the blood from clotting. In transfusing blood into the recipient, donor blood of the appropriate type is passed by gravity from a container down through a plastic tube and into a vein of the recipient's arm. The procedure is accomplished slowly, and two hours may be needed to infuse 450 millilitres of blood into the recipient. The use of sterile containers, tubing, and needles helps ensure that transfused or stored blood is not exposed to disease-causing microorganisms. Blood can be kept in a state satisfactory for use in transfusion by the addition of special preservatives and refrigeration.



Definition of blood bank: blood bank' means a place or organization or unit or institution or other arrangements made by such organization, unit or institution for carrying out all or any of the operations for collection, apheresis, storage, processing and distribution of blood drawn from donors and/or for preparation, storage and distribution of blood components.

Blood banking defined: Blood banking now typically refers to the collection, processing, storage and distribution of whole blood and apheresis-derived blood and blood components at a blood collection facility or blood center



Remember

use of right products to the right patient at the right time