BLOOD TRANSFUSION

Whole Blood

Indication: Haemorrhage

Loss of about 800 ml of blood in adult may be managed by colloid solutions& blood transfusion may not be needed.

Storage of blood should be at 4 to 60c in a blood bank refrigerator.

Changes in stored blood:

In RBC: Reduction of intracellular ATP,K+,2-3 DPG (least with CPD adenine preservative)

In Plasma: Rise of K+, ammonia, reduced clotting factors

Progressive reduction of Platelets & WBC-s.

Others: formation of microaggregates

Rewarming of blood :Mostly unnecessary

Should be done in shocked pts.,in paediatric & old pts. during massive transfusion.

Use of blood filters – should remove particles to a size of 20 micron

Packed RBC

Indication: Anaemia

Hb>8.5g% - no need
Hb – 7-8.5g%-±
Hb - < 7 g% - yes

Platelets

Indications:

Thrombocytopenia+bleeding – yes
Thrombocytopenia below 20,000+infection – yes
Thrombocytopenia abv 5000
no infection, no bleeding – no
Platelets should be used within 12hrs of collection and preferably stored at 220C

Type – SDP or RDP

CCI(Corrected count increment)
CCI=(Post-Pre)X BSA/(number of platelets transfused x 10 -11)
CCI < 5000 ---- Platelet refractory ----Rx cross match compatible platelets or HLA matched SDPs / Platelet drip

Granulocytes

Indications: Neutropenic pts. +sepsis not responding to antibiotics for at least 24 hrs.

Fungal infection.

Short half-life -- daily admin.(rate-1-2ml/min.through a standard microaggregate filter)

Granulocytes should be ABO compatible & cross matched & should be irradiated (25 Gy)
Stored at 20-240 c for 24 hrs.
One unit contains about 1x 1010 neutrophils (from nonstimulated donors)
One unit contains about 6 to 8x 1010 neutrophils (from stimulated donors)
Benefit is not clear– lack of trials

Risk to the donor—Hydroxyethyl starch related
fluid retention,hypotension,citrate induced hypocalcemia

Risk to the recipient- Febrile reaction is very common
(Paracetamol is prerequisite)
Pulmonary infiltration

Adverse effects

- Febrile reactions
- Allergic manifestations
- Overloading of circulation
- Bacterial contamination
- Biochemical changes following massive blood transfusion
  Massive–1) replacement of half of estimated blood volume in 1 hr. or less
  2) replacement of whole estimated blood volume in 24 hrs. or less
  3)at a rate of 500ml in 5 min. or less
  Hyperkalemia
  Citrate intoxication --hypocalcemia
  Metabolic acidosis
  Ammonia
- Transfusion related Acute Lung injury (TRALI)occurs within 6 hrs. of transfusion dyspnoea,tachypnoea,cyanosis,fever,hypotension
- Microembolisation
- Hypothermia
- Hypoxia
- Air embolism
- Haemolytic transfusion
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Delayed reactions

- Delayed sensitisation usually complicates future transfusion or pregnancy due to Rh factor.
- Delayed haemolytic transfusion reaction
- Jaundice due to bilirubin overload from blood transfusion
- Diseases transmitted from donors like malaria,viral hepatitis,AIDS etc.
- Transfusional haemosiderosis
- Thrombophlebitis
- Immunosuppression
- GVHD