We can give either → Blood
→ Parts of blood → RBCs
→ Platelets
→ Plasma → cryopercipitate (rich in factor VIII)
→ FFP

* Whole blood is the best because it has the whole coagulation cascade, but is not easily accessable because: storage problems, needs so much testing

* transfusion only indicated if Hb < 7g/dl
7-8 g/dl → only if post-operative
or symptomatic (chest pain, tachycardia, CHF)

Complications

acute

1. Hemolytic: (AHTR)
ABO incompatibility

- High fever/chills
- Hypotension
- Back/abdominal pain
- Oliguria
- Dyspnea
- Dark urine
- Pallor

2. Febrile (FNHTR)
Platelet transfusion>
abs against HLA
3. Allergic (ANHTR)

chronic

1- Alloimmunization
2- GVHD
3- Iron overload
4- transfusion transmitted infection

infections

- very low rate
- HCV, HBV, HIV, ..

4- TRALI

Caused by WBC antibodies present in donor blood that result in pulmonary leukostasis
Treatment is supportive
High mortality

6- TACO s

transfusion associated cardiac overload.

5- Bacterial contamination (not infection)

Stored RBCs

Decreased RBC deformability
Decreased 2,3, DPG
Metabolic acidosis
Altered oxygen carrying capacity
Increased red cell death with increased age of blood (~30% dead)
No improvement in oxygen utilization at the tissue level

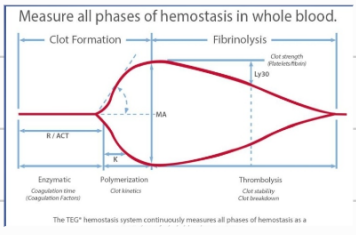
Class III of hemorrhage → start giving blood
↳ if we give crystalloids the outcome will get worse because coagulation factors will get diluted.

* Massive transfusion s

10 units of red cells in 24 hours
OR
Total blood volume is replaced within 24 hours
OR
Three units over one hour with ongoing bleeding
OR
50% of total blood volume is replaced within 3 hours

Complications:
- hypothermia : use blood warmers
- coagulopathy (consumption/dilutional)
- hyperkalemia (rare)
- hypocalcemia.

Viscoelastic whole blood assays /TEG/ ROTEMs
graphic display of clot formation.
* the graph should look like this:
if not, it tells you what you should



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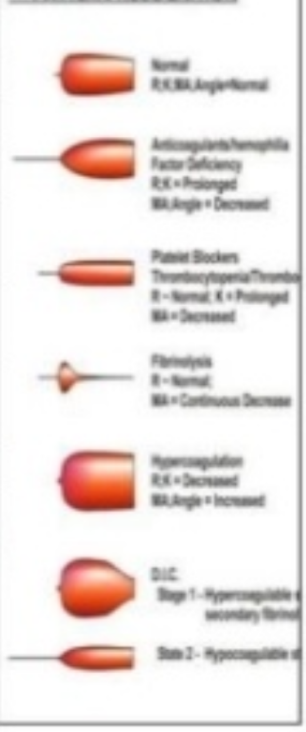
Laboratory Value	Interpretation	Blood Product Transfusion	QUALITATIVE INTERPRETATION — PATTERN RECOGNITION
R less than 4 min	Enzymatic Hypercoagulability	No treatment if bleeding	
R between 11-14 min	Low clotting factors	Plasma and RBC's	
R greater than 14 min	Very low clotting factors	Plasma and RBC's	
a-angle<45 degrees	Low fibrinogen level	Cryoprecipitate/ Fibrinogen /Platelets	
MA between 46-54 mm	Low platelet function	Platelets / Cryoprecipitate/ Fibrinogen	
MA between 41-45 mm	Very low platelet function	Platelets / Cryoprecipitate/ Fibrinogen	
MA at 40 mm or less	Extremely very low platelet function	Platelets / Cryoprecipitate/ Fibrinogen	
MA greater than 73 mm	Platelet Hypercoagulability	No treatment if bleeding	
LY30 greater than 3% , CI less than 1.0	Primary fibrinolysis	**Tranexamic acid** 1g IV over 10 minutes followed by 1g in 250cc NS infused over 8 hours	