Manufacturing of Blood Products
Aims

• To give an overview of the processing of blood products and the different processes involved before it leaves NHSBT

• Describe the different products produced
Most vital part!
Precious donation

• Aim to make the most from each donation

• Turn a single donation into:
  – Red cells
  – Plasma product
  – Platelets
Receipt into Manufacturing

• Approximately 22 component donations and 800 whole blood donations each day.

• 7 days a week

• Receive whole blood donations in the afternoon or evening of day 0 and then again at 05:30 on day 1

• Apheresis donations received on evening of day 0.

• The Apheresis platelets can be made into single, double or triple product depending on volume
  - Aim for equal amounts in each pack
  - End up with approx 40 to 60 separate products
  - All products are QM to ensure process is in control and products meet specification checking for:
    - Platelet count
    - White cell count
    - Volume
    - Hct
    - Protein levels
    - FVIII level
Bacterial Screening

- Minimum 36 hours after donation
- All apheresis and pooled platelets are tested
- Sampled for Aerobic and Anaerobic organisms
- Incubated for life of products
- Platelets labelled and stored in platelet agitator
- Mandatory test
- Negative result necessary for release to Validation
Whole blood processing

- Whole blood collection are collected 6 days a week
- Collected from a large area
- Approximately 700 donations
- Aim to make as many products as possible from each donation
- Red cells, Fresh frozen plasma, cryoprecipitate and platelet pools
- Donations sorted into bag types, the final product and the time of venepuncture
- Can be processed on day of bleed or stored over night at ambient temperature
- Strict timelines for each product
Whole blood processing

- The whole blood is mixed and hung up to filter.
- Filtration removed the white cells and platelets from a donation.
- Takes approximately 40 minutes to filter.
- Centrifuged.
- Separation of red cells and plasma.
Separation

- Processed on optipress
- Plasma removed into separate transfer pack and may become FFP or Cryoprecipitate
- SAGM added to red cells, remove the air and create a crossmatch line.
- Products are then weighed and labelled
- Plasma for FFP or plasma to be made into cryoprecipitate is then frozen
- The plasma for cryoprecipitate has to be defrosted slowly overnight
- The cryo precipitates out of the plasma
- Centrifuged
- Removal of waste plasma
- Re-frozen as a cryo single
- Defrost in plasma thawer
- Pool
Secondary processing

• Other products made on request
  – PAS platelets
  – Washed red cells
  – Neonatal red cell or platelet splits
  – Red cells for exchange or IUT
Hospital Services

- All products are validated
- Checks that all mandatory testing is completed
- Label produced
- Store the individual products
- Orders sent in from the hospital via OBOS
- Staff issue the products to that hospital completing the audit trail for that donation.
- Blood delivered to the hospital