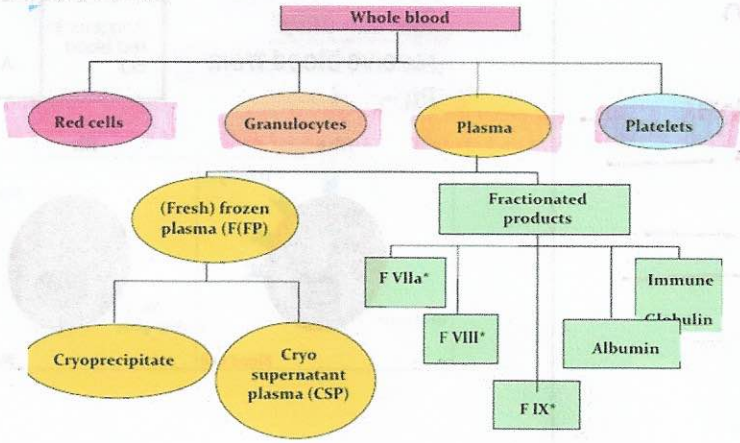
Blood Administration

OVERVIEW

When is blood administration usually done?

- Blood administration is usually done for pts with **anemia**
  - Pt's **hemoglobin and H and H is low**
- Blood is rare, so we don't give it to all anemic pts
  - Given to pts with hemoglobin **less than 7.0**
    - → Some pts may be symptomatic at hgb less than 8.0, so you may have to give it before it falls to 7.0
    - → Pts outcomes are bad once hgb falls below 7.0
- Blood components



- B/c most pts do not need all the components in blood, we will separate the components and give what is needed

- Why would a pt receive RBC?
- Why would a pt get plasma?
- Why would a pt get cyroprecipitate?
- Why would a pt get immunoglobulin?
- Why would a pt get platelet?

COMPONENT	REASON GIVEN
RBC	Anemic pts Pts who lost of blood
PLASMA	Pts with low blood proteins Pts with low clotting factors (esp. **fresh frozen plasma**)
CYROPRECIPITATE	Pts with low **fibrinogen**
IMMUNOGLOBULINS	Pts needing immunotherapy
PLATELETS	Pts with thrombocytopenia

ANEMIA

Anemia

- Name a few S/S of anemia.

- Anemic pts are
- not _____

- Symptoms
  - SOB
  - Increased RR (compensatory mechanism for low O2)
  - Dizziness and altered LOC due to low BF to brain
  - Fatigue
  - Pallor (not cyanosis b/c pt does not have enough hgb)
- RBC will be given

Blood system

- Define "antigen" & "antibodies"

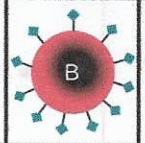
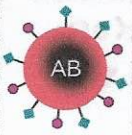
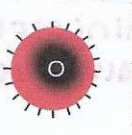
- Blood A, has ____ antigens & ____ antibodies

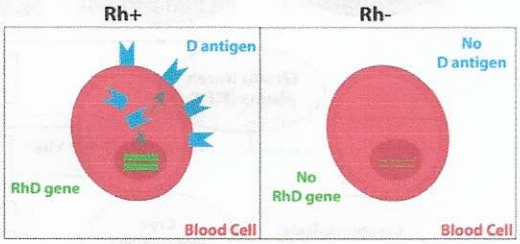
- Explain Rh factors

- Blood AB has ____ antigens & ____ antibodies
- Blood O has ____ antigens & ____ antibodies

BLOOD SYSTEM

- **Antigens:** surface proteins that can create an immune response
- **Antibodies:** attach to antigens and lyse the RBC
- **Rh+** can receive blood from both Rh+ and Rh – but **Rh–** can only receive blood from Rh –

	Group A	Group B	Group AB	Group O
Red blood cell type				
Antibodies in plasma	 Anti-B	 Anti-A	None	 Anti-A and Anti-B
Antigens in red blood cell	 A antigen	 B antigen	A and B antigens	None



Blood Processing

- What are the tests done on donor blood? (5 things are checked)

BLOOD PROCESSING

- All donors are examined and interviewed
- Once blood is donated, blood is tested for:
  - HIV type 1 and 2
  - Hep B and C
  - Human T-cell lymphotropic virus
  - Syphilis
  - CMV

Administrating Blood

- What should you to prevent mis-labeling blood of pt?

- Once blood is removed from fridge it must be given before ____

ADMINISTRATING BLOOD

- Transfusions are usually safe but can be fatal if incorrectly given
- Considered a **high-risk procedure**
- Critical points where errors happen most often:
  - Pt identification
  - Sampling or labeling of the pre-transfusion specimen
    - → Make sure you are labeling the tubes in the pt's **room and verify with pt's armband right after**
  - Removal of blood from the blood fridge before transfusion
    - → Blood has limited shelf-life once it is removed from fridge **(30 mins)**
  - Checking the **identification** of both the pt and the blood component at bedside

- What are the 4 s/s you should watch out for after giving blood? (4 compli cations)

Adverse Rx Procedures

- A pt seems like he is having a transfusion rx, what are your interventions? (order)

Type of Adverse Rx

- What are some s/s of hemolytic rx?

- Hemolytic anemia usually happens within ____

- How can you manage febrile rx?

- A pt states that she had 4 previous blood transfusions, what is your top concern?

- What can you do to prevent & or treat circulatory overload due to blood transfusion?

- What are some s/s of circulatory overload?

- Monitor for signs of:
  - → **Hemolytic reaction**
  - → **Allergic reaction** (esp. for pts who previously had transfusions)
  - → **Febrile reaction**
  - → **Fluid overload**

H A F F

- Stop infusion **immediately** if any transfusion reaction is seen

ADVERSE REACTIONS PROCEDURE

1) Stop transfusion
2) Hang normal saline using **new tubing** to keep vein open
   - To prevent IV port clotting in case you need to give med via IV
3) **Assess pt** –check v/s and look out for following
   - **Temp> 100 F**
     - → If pt was febrile before transfusion, notify HCP before giving blood
   - **HR> 110 bpm**
   - **Low BP**
4) Ask someone to notify provider; **you should not leave the pt alone**
5) Notify blood bank and **keep the blood tubing** for testing to be done

TYPES OF ADVERSE REACTIONS

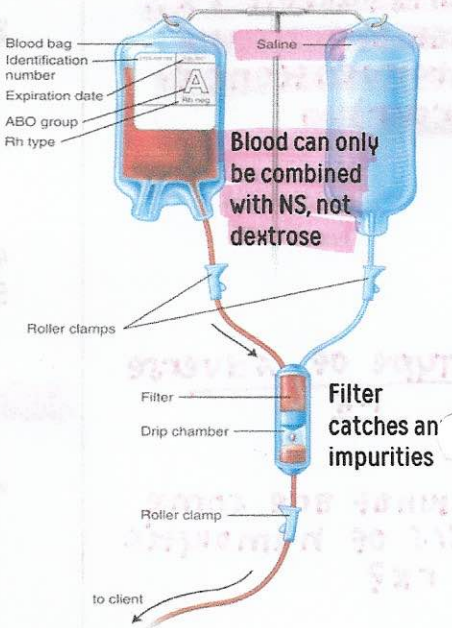
- Hemolytic
  - Type 2 **hypersensitivity**
  - Our antibodies are attacking RBC of the donor's blood
    - → RBC are lysed → can start clogging small capillaries
      - ✓ In kidneys = can cause **flank pain and hematuria**
      - ✓ In liver = can cause **jaundice**
  - Occurs within **an hour** of transfusion
- Febrile nonhemolytic reaction
  - Body builds up **antibodies** for minor antigens in donor's blood (usually **WBC of donor is attacked)**
  - Happens mostly to pts who previously had transfusions
  - Pts can be given **acetaminophen** to prevent this
- Allergic reaction
  - Can be minor (like itching) to fatal (like **anaphylaxis)**
- Hypervolemia or circulatory overload
  - S/s: SOB, jugular vein distention, edema, pulmonary edema, etc.
  - May be given orders to administer **Lasix**
  - May need to run blood slower for at-risk pts (HF pts)
    - → If you have you run slower than **4 hrs** = ask blood bank to split blood into 2 separate bags

Procedures

- What are the nurs actions before giving blood?
- What are the nurs actions during blood administration? (at bedside)
- What are the 4 "checks" to do before hanging blood?
- Which catheter should be used for blood transfusion?
- Blood can only be mixed w/ _____
- What are some s/s you should educate your pt to detect transfusion rx?
- How fast can you give blood? How slow? Why?

Procedures

- **Pre-Procedure (labs)**
  1. Check type and screen (takes about 5 mins)
  2. Crossmatch (usually takes about 30 mins)
- **Blood administrating procedure (nurs. actions)**
  1. Verify orders
  2. Verify that pt has signed and written consent –remember that you cannot **obtain the consent, only verify**
  3. Check that type and crossmatch has been completed by blood bank
  4. Obtain **baseline v/s** to ensure that there are no transfusion reactions
  5. Send for the blood from blood bank
  6. Administer blood **within 30 mins** once removed from bank
- **Procedure at the bedside**
  1. 2 RNs check at pt's bedside (can check with MD, NP, or physician's assistance) for:
     - → Blood type
     - → Rh factor
     - → Pt identification
     - → Expiration date
  2. Assess IV site and make sure there are 2 IV sites
     - → Administration should be done with large **bore catheter number 22 or larger** (for smaller pts)
     - → You need 2 IV sites b/c blood **cannot be mixed with meds or other substance except normal saline**
  3. Hang blood using specific blood tubing containers (depends on facility)
  4. Stay with pt for first **15 mins** b/c reactions usually happens within the first 15 mins
  5. Check **v/s** at **5 mins, then at 15mins, then at 30 mins, then every hour** until administration is done



Step 10. Setup for blood administration.

- **Precautions**
  - Educate pts to notify RN if s/s of reaction occur
    - → **Itching**
    - → **Rash**
    - → **Edema**
    - → **SOB**
    - → **Back or flank pain**
    - → **Hematuria**
    - → **Fever or chills**
  - Make sure administer **slowly** (no faster than **2mL/min**) for first 15 mins, then you can increase rate
    - → Do not administer longer than **4 hrs** due to risk of **sepsis** and others