BLOOD AND BLOOD PRODUCT TRANSFUSION

Meeting The Joint Commission Standards
Objectives

- Describe the different blood components and their indications for use.
- Review the policies for blood and blood product administration at Guadalupe Regional Medical Center
- Review the documentation procedures
- Discuss indicators of a blood transfusion reaction and the appropriate actions to be taken.
The Joint Commission

• Developed patient safety goals which include requirements to further ensure the safe delivery of blood products.

• Two patient identifiers – name and date of birth will be used by all staff interacting with the patient - to include blood draws by lab technicians and during medication administration.
Blood and Blood Products

- PRBC’s
- Washed PRBC’s
- Radiated PRBC’s
- Plasma
- Platelets
- Cryoprecipitate
- Albumin
HEMATOLOGY  COMPONENTS OF THE BLOOD

Whole Blood

- Plasma
- White Blood Cells: 6-9000/mm³
- Platelets: 200-400,000/mm³
- Red Blood Cells: 4-5 Million/mm³

Hematocrit (Packed Cell Volume)

- Plasma
- RBCs: 36%–54%

Blood Cells

- RBC
- Eosinophil
- Neutrophil
- Basophil
- Platelets
- Monocyte
- T-Lymphocyte
- B-Lymphocyte

Marrow
Red Blood Cells & Use

- RBC’s are the most recognizable component of whole blood.

- Red blood cells contain hemoglobin, a complex iron-containing protein that carries oxygen throughout the body and gives blood its red color.

- The percentage of blood volume composed of red blood cells is called the “hematocrit.”

- Patients who benefit most from transfusions of red blood cells include those with chronic anemia, gastrointestinal bleeding and/or with acute blood loss resulting from trauma or surgery.

- Since red blood cells have reduced amounts of plasma, they are well suited for treating anemia patients who have congestive heart failure or who are elderly or debilitated.
Normal Hemoglobin/Hematocrit

- The average hematocrit in an adult male is 47% and the average female hematocrit is 42%.
- Using PRBC’s (instead of whole blood) can raise the patient's hematocrit and hemoglobin levels while minimizing an increase in volume.
- Each unit of PRBC’s will approximately increase the HCT by 1 point.
- Hemoglobin to Hematocrit ratio is 1:3.
Plasma

• The liquid portion of the blood is 90 percent water, constitutes about 55 percent of blood volume. Plasma contains albumin (chief protein), fibrinogen (for the clotting of blood), globulins (antibodies), and other clotting proteins.

• Plasma serves a variety of functions, from maintaining a satisfactory blood pressure and volume to supplying critical proteins for blood clotting and immunity.

• It also serves as the medium of exchange for vital minerals such as sodium and potassium, thus helping maintain a proper electrolyte balance.

• Plasma is usually not used for transfusion purpose but is separated into specific products such as albumin, specific clotting factor concentrates and intravenous immune globulin (IVIG)
Platelets

- **Platelets** (or thrombocytes) help the clotting process by sticking to the lining of blood vessels.

- Platelets are made in the bone marrow and survive for an average of 9–10 days before being removed from the body by the spleen.

- The platelet helps prevent massive blood loss resulting from trauma, as well as blood vessel leakage that would otherwise occur in day-to-day activity.

- Normal platelet count is 150,000 to 450,000
Cryoprecipitate

- The portion of plasma that is rich in certain clotting factors.

- This includes Factor VIII, fibrinogen, von Willebrand factor, and Factor XIII...
- Cryoprecipitate is removed from plasma by freezing and then slowly thawing.

- It is used to prevent or control bleeding in individuals with common, inherited major coagulation abnormalities (i.e. hemophilia or Von Willebrand’s disease)

- It may also be used as a hemostatic fibrin sealant or fibrin glue in surgery.
Consent and Pre-transfusion Process

- Obtain patient/family consent for transfusion or refusal to permit blood transfusion before the order is sent to lab. Patients will start incurring charges when the lab draws blood for a type and crossmatch
  - One consent for transfusion will stand for multiple blood/blood products transfusions given during the course of the hospitalization
- Obtain an order for transfusion from the physician and assure that it is entered into Meditech. This order must be a “transfuse” order
  - This order must be verified by the lab and nursing staff before blood is released (except in an Emergency situation) – a copy or screen shot of the order will be taken to the lab when picking up blood/blood products.
  - Ensure that MD has ordered a type and cross match for the appropriate blood/blood products and an H&H or appropriate lab test for the blood product being transfused
  - Obtain and review pre-transfusion lab results and document that they were reviewed on the Blood Administration Record
Blood Bank Process

- When an order for T&Crossmatch is entered in Meditech and the lab is notified, Lab will come to the unit for the blood draw if patient does not have blood on hold.

- Lab personnel will place a specific “blood bank” armband on the patients wrist with a number which will correlate with the transfusion check.

- DO NOT cut this bracelet off at any time

- All blood and blood products are screened for:
  - Infection
  - Hepatitis B and Hepatitis C
  - HIV 1 and HIV 2
  - HTLV 1 and 2
  - Syphilis
  - West Nile Virus

- Although donor blood is screened routinely, some blood may not have seroconverted at the time of donation.
"He has a pretty rare bloodgroup."
REMEMBER

• Blood or blood products initiation is an RN only procedure!
• LVN’s may monitor ongoing infusion
• Pre-administration labs will be reviewed prior to starting the infusion
• (2) Licensed staff will check the transfusion order prior to administration (one of the staff members will be the transfusionist)
Administration

• Equipment
  • Hema Y-type blood set or infusion pump blood Y-set.
  • Normal Saline only
  • Infusion site. (peripheral IV sites need to be ≥ 20g or larger)
  • Standard Precautions (at least)
  • Consent
  • Blood transfusion Record (paper form)
Figure 15-20 Blood transfusion tubing.

Procedure

Two licensed persons will check and verify (at the bedside)
• the correct patient per physicians order and ID band
• Correct blood type according to the blood slips
• Blood unit number
• blood band ID bracelet
• confirmation of consent
• confirmation of the order for transfusion
• Patient Teaching will include; Expected length of time, Desired outcomes, symptoms of adverse reaction

If ANY of the items do not match, **DO NOT TRANSFUSE BLOOD OR BLOOD PRODUCTS.** Immediately return the unit and all slips to the Blood Bank for resolution.
• The following items must be identical on patient arm bands, Product chart copy, and blood bag:
  • 1. Patient Name
  • 2. Patient Medical Record Number
  • 3. Blood Bank Arm Band Number
In addition, the following items must be identical on the Product chart copy and blood bag:
• 1. Type and Rh
• 2. Unit number
• 3. Expiration date
• Transfusion must be started within **20 minutes** from when the blood was issued from the Blood Bank.
• Transfusion must be completed within 4 hours from the time it was started.
• A patent IV site will be established **prior** to retrieving the blood
• Close all clamps on the tubing
• **0.9% Normal Saline ONLY!**
  *Other Crystalloid solutions and all medications are incompatible with blood products, as they may cause agglutination and/or hemolysis*
• You will need two IV sites if needing to infuse other medications during the blood transfusion

**Verify Lab Slip and Blood Product Unit:**
• Patient’s name, DOB, medical record number
• Patient’s blood group
• Unit/product pack number
• Date unit cross-matched
• Unit/product expiration date
• Blood group of unit/product
• Unclamp NS line and prime the tubing.
• Fill the lower filter chamber completely and fill the upper filter chamber ½ full.

• Continue to prime remaining tubing.

• Close NS clamp

• Open the flaps on the blood bag and spike the port with the free arm of the Y-tubing.

• Agitate the blood unit bag by **gently** tipping it back and forth. This helps to suspend the red blood cells in the anticoagulant.

• Hang the blood unit on the IV pole.
Begin Transfusion

- Load the tubing into the infusion pump if using a pump (by gravity or pressure bag will occur in the ER, OR, or ICU on occasion)
- Set the pump to infuse the blood at 120cc/hr for the first 15 minutes
  - *Most reactions occur in the first 15 minutes*
- Open roller clamp on blood side of the tubing. Start infusion at 2ml/min (120cc/hr)
- RN must remain with the patient for at least the first 15 minutes of the blood, (not the saline) infusing into the patient.
- If no s/s of reaction, infusion can be increased to approximately 163cc/hr or to the needs of your patient.
- Vital signs are taken at a minimum of:
  - Immediately before transfusion begins (baseline)
  - 15 minutes after initiation
  - At the completion of the each unit and after all units have been transfused
In the Event of a Suspected Reaction

- Immediately stop transfusion
- Initiate IV of NS at KVO rate (new tubing all the way to the hub)
- Take vital signs every 15 minutes
- Notify Physician and Blood Bank of possible Reaction
- Save blood and blood tubing
- Send patients' 1st voided urine specimen to lab along with the blood bag and tubing
- Document in Meditech!
Documentation

- Consent for transfusion or Refusal for transfusion (if indicated)
- Blood/Blood product administration record which includes suspected transfusion reaction form (Hard copy from lab) and Documentation that 2 licensed personnel checked blood and patient ID and at bedside
- Documentation on the Pre-Issue checklist section and Blood Band and Unit # Check Section – Transfusion order verified and Review of Pre-transfusion labs
- Documentation that patient was instructed on and given the handout of transfusion reactions
BLOOD ADMINISTRATION RECORD

Changes To The Form

- Verify Transfusion Order
- Review Pre-Transfusion Lab
- Verify Transfusion Order by (2) Licensed Staff Members Signatures

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**BLOOD/BLOOD PRODUCTS ADMINISTRATION RECORD**

Guadalupe Regional Medical Center
1253 E. Court
Sequim, WA 98382

**Pre-Transfusion Checks:**
- Verify Transfusion Order
- Consent form Signed
- Patient education
- Prior Blood Product Transfusions
- Type of previous reactions if any:

**Pre-Transfusion Lab:**
- Blood Warmer Used
- Blood Warmer Temperature
- Review Pre-Transfusion Labs
- N started
- Pre-administration vital signs taken and acceptable

**BLOOD SAND AND UNIT NUMBER CHECK**

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<th>Unit Number</th>
<th>Blood Bank Number</th>
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**Suspected Transfusion Reaction Procedure**

1. Stop Transfusion
2. Prime new IV tubing with Normal Saline, disconnect tubing and infuse Normal Saline
3. Monitor patient's vital signs every 15 minutes
4. Notify Blood Bank and call Physician
5. Fill out Transfusion Reaction form (back of this form)
6. Enter Transfusion Reaction Order in Meditech
7. Send the unit, all tubing, the Transfusion Reaction Form and the first voided urine specimen to the Lab.

**References**

- Anaphylaxis
- Fever
- Hypotension
- Hypokalemia
- Hypoxia
- Hyperkalemia
- Hypovolemia
- Hypothermia
- Shock

**VITAL SIGNS**

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**Signature**

Nov 16

Guadalupe Regional Medical Center

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Transfusion Reactions

• Hemolytic
  • Fever
  • Chills
  • Flushing
  • Nausea
  • Burning at site
  • Chest Tightness
  • Restlessness
  • Apprehension
  • Joint Pain
  • Back Pain

• *Tachycardia
• *Tachypnea
• *Hypotension
• *Oliguria
• *Dark Urine
• *Oozing at site

*major life threatening reactions
Anaphylactic Reaction

- Tachycardia
- Flushing
- Urticaria
- Wheezing**
- Laryngeal Edema**
- Hypotension**

**OTHER REACTIONS**

- Hypocalcemia or other electrolyte changes
- DIC
- Hepatitis B and C
- HIV 1 and 2
- Cytomegalovirus
OCT 2016 CHANGES TO THE GRMC BLOOD ADMINISTRATION POLICY/PROCEDURE

• There must be a Physician’s order for transfusion in the computer before blood is released from the lab (except in Emergency)
• The order must be verified by lab staff and staff obtaining blood (take copy/screen shot of order to lab when obtaining blood)
• Pre- administration Labs will be Reviewed
• (2) Licensed staff will check the transfusion order prior to administration
• Documentation on the Blood Administration Record includes – Verification of Transfusion Order and Review of Pre- Transfusion Labs