BLOOD PRODUCT ADMINISTRATION

PURPOSE

Outlines the method of administration of blood or blood products during Interfacility Transports.

EXPECTATIONS

Agencies that wish to transport patients which have blood or blood products hanging must conform to NYS BEMSAT Policy 15-06 “Transporting Patients with Blood/Blood Products and be a designated Ambulance Transfusion Service (ATS).

Agencies must have a written policy in place prior to implementation of a transfusion program.

Agency Medical Director must approve of ATS application and ensure the proper training and credentialing of any SCT provider prior to being eligible to transport.

MLREMS REMAC must be notified of any agency wishing to be designated an ATS agency within the region.

Important information about blood and blood components includes the following:

- No blood container may be vented
- All blood components must be administered through a filter (170 to 260 microns standard)
- No medications or intravenous solutions may be added to or infused through the tubing with blood or blood components, with the exception of 0.9% Sodium Chloride solution (Normal Saline)

PROCEDURE

1. Prior to transporting the patient, the Paramedic MUST check the following:
    a. Confirm the written physician order for blood transfusion.
    b. Make sure the patient is wearing an ID bracelet with his/her name and hospital ID number from the hospital of origin.
    c. Identify the patient with the nurse and verify the Patient ID band against the blood label and blood order for name, blood type and unit identification number. Verify exact spelling of the patient’s first and last name, medical record/ID number and an expiration date/time.
    d. Verify IV catheter size and document (IV catheter size should be large enough to minimize hemolysis – no smaller than 20 gauge catheter should be used. If a 20 gauge catheter is used, avoid rapid infusion under pressure).
    e. Verify the patency of the infusion site and document.
    f. Verify the infusion rate as ordered by the MD.

2. If possible, all blood should be prepared for administration and hung prior to leaving the sending facility. If transport time exceeds the time for administration of blood hanging and additional units are required, each unit must be verified using the above procedure and the signature of the reviewing nurse and the Paramedic must be documented on the transfusion record.

3. Blood and FFP not being infused must be kept in a shipping container where the temperature is maintained between 1 and 10^0C. Dry ice is NEVER to be used to cool blood or blood components. Blood removed from this cold storage container must be used immediately. Platelets and cryoprecipitate *must* be stored between 20-24°C.

4. Prepare the Y-Type administration set.

    a. Y-type blood administration sets can be used to administer a maximum of two units of whole blood or packed RBCs simultaneously, but usually only one unit at a time is hung per administration set. Should two (2) units be transfused simultaneously two (2) separate IV sites are required.
    b. Close both roller clamps
    c. Spike a 1000mL bag of 0.9% normal saline and prime tubing (make sure drip chamber is filled with enough saline to saturate the filter to prevent hemolysis as blood drips from the bag). Close roller clamp.
    d. Spike unit of blood component.
    e. Open the roller clamp between the unit and drip chamber, making sure the filter is covered with liquid.
    f. Prime the remaining length of tubing.
    g. Administration sets are required to be changed after four (4) hours

5. Attach the administration set to the primary IV line or insertion site.

6. Adjust the rate of infusion to infuse 10 to 15 drops per minute for the first 15 minutes.

7. Monitor the vital signs every 5 minutes during the first 15 minutes of the transfusion, then at least every 15 minutes for the remainder of the infusion. Temperature must be included in vital signs, as an increase in temperature is an early sign of transfusion reaction.

8. Monitor the patient for any signs of transfusion reaction, including temperature changes, as described above. Stop the transfusion immediately if the patient becomes agitated, short of breath, tachycardic, hyperthermic, or develops a rash, chills, hematuria, or any other symptoms described below. If the provider is concerned that there MAY be a transfusion reaction occurring,

the transfusion should be stopped immediately. The following are signs of the most common types of transfusion reactions that may occur:

a. Hemolytic reactions
    i. Hemolytic reactions are the most life-threatening. Clinical manifestations may vary considerably: fever (<1^{0}C [mild] to >2.5^{0}C [severe]), chest or back pain, pain at the infusion site, hypotension, nausea, generalized bleeding, impending sense of doom or oozing from surgical site(s), shock. The most common cause is from ABO incompatibility due to a clerical error or transfusion to the wrong patient. Chances of survival are dose dependent. Therefore, it is important to stop the transfusion immediately if a hemolytic reaction is suspected. Do not discard blood, blood product container or administration set.

b. Febrile, non-hemolytic reaction
    i. Chills and fever (rise from baseline of 1^{0}C or 1.8^{0}F)

c. Allergic reaction
    i. Characterized by appearance of hives and itching (urticaria or diffuse rash)

d. Anaphylaxis
    i. May occur after administration of only a few milliliters of a plasma-containing component. Symptoms include coughing, bronchospasm, respiratory distress, vascular instability, nausea, abdominal cramps, vomiting, diarrhea, shock and loss of consciousness

e. Transfusion-Associated Cardiac Overload (TACO)
    i. Characterized by dyspnea, headache, peripheral edema, coughing, frothy sputum or other signs of congestive heart failure occurring during or soon after transfusion (restrict fluids).

f. Transfusion-Related Acute Lung Injury (TRALI)
    i. Characterized by dyspnea, pulmonary edema and symptoms similar to Acute Respiratory Distress Syndrome (ARDS), usually within 6 hours after transfusion. Consider oxygen and ventilator support.

9. If a transfusion reaction occurs or is suspected:
    a. Stop the transfusion immediately; keep saline open at a KVO rate.
    b. Do not discard any blood, blood product container(s) or tubing used
    c. Treat the patient for shock as needed
    d. Administer Diphenhydramine 50 mg IV or IM as necessary.
    e. Consider Epinephrine per Anaphylaxis/Allergic Reaction Protocol if anaphylaxis is evident.

f. Contact medical control prior to any administration of epinephrine intravenously.
g. **UNDER NO CIRCUMSTANCES MAY THE TRANSFUSION BE RESTARTED UNTIL THE PATIENT HAS BEEN EXAMINED BY A PHYSICIAN.**

10. Documentation must include the blood donor identification number and the product type transfused, amount transfused, temperature, and any adverse reactions noted, as well as any subsequent treatment.

11. Calcium Chloride 10% (1 g) may be considered if massive transfusion (5-6 units) Medical Control must be contacted prior to the administration of calcium.

12. Medical control must be contacted prior to initiating any additional units of blood products.

GENERAL INDICATIONS AND GUIDELINES FOR THE ADMINISTRATION OF VARIOUS BLOOD PRODUCTS

Product	Composition/Volume	Indications	Administration
Packed Blood Red Cells	300 ml whole blood with 80% of plasma removed	Anemia, shock	100 mL/hr to wide open
Fresh Frozen Plasma	200 - 250 mL of fluid portion of blood with clotting factors (platelets, RBC's and WBC's removed)	Need for clotting factors (massive transfusion, DIC, etc.)	2 units at a time, over 60 min
Cryoprecipitate	20 – 30 mL; contains clotting factors VIII, XIII, and fibrinogen	Need for clotting factors (Von Willebrand Disease, low fibrinogen, bleeding following rTPA)	Several units (150mL) at once, wide open
Albumin 5% or 25%	50 – 100 mL of the plasma protein albumin	Shock, burns	Use 15 micron filter at 5-10 mL/min (5%) 2-3 mL/min (25%)
Platelets	200-300 mL of platelets	Massive transfusion, thrombocytopenia	Wide open for life threatening hemorrhage or total in 60 min
Whole Blood	500 mL of all blood components with added preservatives	Severe hemorrhage with volume deficit and anemia (rarely used)	Wide open

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