Blood Administration

Mechanism of Injury / Nature of Illness
Patients age > 5 years with:

- Signs of massive hemorrhage
- Traumatic injury (Penetrating or Blunt)
- Suspected dissecting / rupturing aneurysm (Abdominal or Thoracic)
- GI Bleeding
- Signs of intra-abdominal bleeding

Physiological Parameters:

- Systolic (SBP) < 90 mmHg
- HR > 120 bpm
- Shock Index (SI) > 0.9
- Pediatric Patients > 5 Y/O whose VS are consistent with blood loss as defined by their weight or age-based parameters in the Pediatric Multiple Trauma Protocol

DEFINITIONS:

- Shock Index (SI): HR divided by SBP = SI

REQUIRED DOCUMENTATION:

- In Flowchart and ePCR document Rh type, amount, unit lot number, and expiration date for EVERY unit administered to patient.

If patient with Mechanism of Injury / Nature of Illness + 2 Physiological Parameters

Vascular Access C.O.G.

In cases of extreme blood loss, proceed directly to blood product administration concurrent with crystalloid administration

A

Initiate IV/IO of 1 – 2 L of Normal Saline Bolus

Pediatric patients: Initiate IV/IO of 20 mL/Kg of Normal Saline Bolus x2

Continously monitor during transport for changes

Set up Blood Warmer. All blood products MUST be warmed during administration

P

Administer whole blood or PRBC and/or FFP at a ratio of 1:1 if possible; May repeat x1 if hypotension is NOT corrected.

Pediatric patients*: Administer 10 mL/Kg of O positive whole blood or O Negative PRBC

MONITOR FOR TRANSFUSION REACTION

NO → Continuously Monitor patient through all phases of transport

YES → **STOP INFUSION! Follow Anaphylaxis Guideline**

*A Pediatric patient is defined as ≤ 12 years old and < 55 Kg

ADULT TRAUMA

Blood Administration

PEARLS:

- Prime blood tubing and warmer. Tubing should be changed after 2 Units if possible, or as manufacturer recommends. Care should be taken to prevent hypothermia.
- Monitor patients for signs and symptoms of transfusion reaction and adverse effects, including temperature at time of infusion and 15 minutes after start.
- **For any reaction, STOP the infusion,** remove all tubing and product from the patient and save all equipment. Flush IV line.
- Consider any fluid overload issues such as CHF or patient weight (pediatrics) , and monitor for signs and symptoms appropriately.
- **Allergic reaction** (onset <15 min) –
  - Minor/Mild: Mild skin itching or hives < 25% body,
  - Moderate: Temp 38C (100.4F) or change of >1C (>1.8F) from pre-transfusion value, chills, and hives/rash >25% body
- **Febrile transfusion reactions:** -
  - Temp 38C (100.4F) or change of >1C (>1.8F) from pre-transfusion value, chills, headache, facial flushing, palpitations, cough, chest tightness, increased pulse rate and/or flank pain
- **Hemolytic transfusion reaction:** -
  - Immediate lysis of transfused blood can result in fever and/or tachycardia.
  - Other symptoms can include chills, back/flank pain, nausea/vomiting, dyspnea, flushing, bleeding, and/or hypotension.
  - Begin aggressive NS 0.9% treatment
- **Dilutional thrombocytopenia** - This is generally not seen with infusion of 1 – 2 units, unless patient has pre-existing thrombocytopenia or disseminated intravascular coagulation.
- **Potassium intoxication (hyperkalemia)** - Symptoms can include flaccidity, muscle twitching, bradycardia, EKG changes (tall peaked T waves, prolonged P -R interval, absent P waves, prolonged QRS) and/or cardiac arrest.
- **Hypocalcemia: (from citrate toxicity that binds Ca)** - Symptoms can include arrhythmias, hypotension, muscle cramping, nausea, vomiting, seizure activity, and/or tingling sensation in the fingers. Patient with acute or chronic hepatic insufficiency are at relatively higher risk of citrate toxicity. To avoid, administer PRBC at a minimum rate of 1 unit > 5 minutes. Treatment with Calcium Gluconate 1 gm infused slowly in a different IV/IO line.
- Contact Medical Control for additional boluses as necessary

❖ **If administering O postive blood product to a female under 50 years of age, you MUST have a physician's order!**

- **Key Documentation Elements**
  - ❑ **Pre-transfusion:**
    - ❑ Reason for transfusion, including relevant clinical data.
    - ❑ Vital Signs and Clinical History
    - ❑ The components to be transfused and their dose/volume and rate.
  - ❑ **During transfusion:**
    - ❑ Identification of Paramedic starting the transfusion.
    - ❑ Date and time transfusion started and completed.
    - ❑ Donation number of the blood component.
    - ❑ Record of observations made before, during and after transfusion.
  - ❑ **Post-transfusion:**
    - ❑ Management and outcome of any transfusion reactions or other adverse events.
    - ❑ Whether the transfusion achieved the desired outcome (e.g. improvement in symptoms, improvement in Vital Signs, etc.).
    - ❑ Provide any completed blood product containers to receiving facility on patient transfer

Blood Administration

Clinical Indications:

- Any patient where Blood Product Administration is indicated in the blood administration guideline, or where as ordered by a Physician.
- **Blood products are NOT to be administered to patients in Cardiac Arrest**

Procedure:

- Large bore IV access available. Separate IV sites are needed for FFP and PRBC products
- Normal Saline IV fluid initiated
- Remove Units from storage to be administered. **TWO** providers much cross check and confirm transfusion is required prior to administration
  - Verify Correct patient
  - Verify Blood Component is correct (Correct type, Correct component)
  - Verify Expiration Date
  - Confirm Temperature monitor in each unit is appropriate (not out of range/red)
  - Check for discoloration or gas bubbles present
  - **Check and document patient temperature**
- If patient has apparent capacity and condition allows, discuss the procedure with the patient
- Prime the tubing set and blood warmer if applicable
  - EMS provided blood and blood products must be warmed during administration
  - Interfacility blood administration does not have to be warmed
- Initiate blood product administration and set appropriate rate
- Monitor for transfusion reactions during the next 15 minutes
  - Second temperature must be taken at this time (i.e 15 minutes into transfusion).
  - If a reaction occurs, **STOP** infusion and follow appropriate guideline. Retain all blood product and tubing for source testing
- Document the procedure, time, and results
  - **Blood product type, expiration date, and lot number MUST be documented for EACH blood product unit administered**
  - **Patient temperature must be documented prior to and 15 minutes after initiation of blood product administration**
  - Blood bank paperwork must be completed with the yellow form given to the receiving staff at transfer of patient care

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