**BLOOD PRODUCT ADMINISTRATION**

*This protocol is for Paramedic use only*

**Purpose:** To define the indications and process for transfusion of blood products within the Genesee County Medical Control Authority.

**Definitions:**

1. Blood Products – Therapeutic substances derived from human blood
    a. Low-titer whole blood (LTWB) – Whole blood that has low levels of anti-A and anti-B antibodies.
    b. Packed Red Blood Cells (PRBC) – Concentrated preparation of red blood cells that is obtained from whole blood by removing the plasma
    c. Liquid Plasma (LP) – blood product made from the liquid portion of whole blood.

**Indications:**

**Suspected hemorrhagic shock from trauma or medical cause:**

a. HR > 120 bpm for adults and pediatric patients equal to or greater than 11 years old; HR greater than 140 for patients 2-10 years of age; HR greater than 190 for patients 1 year old or younger
b. Systolic BP less than 90 for adult patients and pediatric patients equal to or greater than 11 years old; SBP less than 70 plus age in years x2

**AND**

One or more of the following physiologic criteria indicative of hypoperfusion:

- Altered mental status (not believed to be due to intoxication or head injury)
- Pale, cool, clammy skin; pale mucosa
- Delayed capillary refill (> 2 seconds)
- Tachypnea
- $ETCO_2$ < 25 mmHg

Exclusion Criteria:

- Isolated fall from standing injury mechanism with no active bleeding
- Suspected cervical cord injury with motor deficit and no active bleeding
- Traumatic arrest with > 5 minutes of ongoing CPR and no reversible cause of cardiac arrest (extremity hemorrhage or suspected tension pneumothorax)
- Brain matter exposed or isolated penetrating brain injury (GSW)
- Isolated drowning or hanging victims
- Isolated burns > estimated 20% total body surface area
- Conscious patients, with decision-making capacity, should be evaluated for refusal of blood transfusion, whether for religious, cultural, social, or personal reasons.
- Unconscious or incapacitated patients should be briefly assessed for the presence of medical alert identifiers, power of attorney wallet cards, or other obvious documents indicating patient



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objection to receiving blood products. Do not delay transfusion for more than 1 minute for this assessment.

**Treatment:**

1. Follow **General Pre-hospital Care- Treatment Protocol.**
2. Control bleeding according to **Bleeding Control (BCON)- Treatment Protocol** when applicable.
3. Transport according to **Adult and Pediatric Trauma Triage- Treatment Protocol** and GCMCA Transportation Protocol.
4. No intervention should delay transport
5. Obtain vascular access
   2 (>18 for adults, > 20 g for pediatrics) IVs recommended.
      i. Second IV can be started after blood products are initiated.
   b. IO access may be utilized if two attempts at IV access are unsuccessful
6. Two GCMCA active personnel with a license level of EMT or higher (one must be a paramedic with GCMCA-approved blood administration training) must confirm the following on the blood products:
   a. Product type
   b. Expiration date
   c. Integrity of the bag
   d. Verify blood type
   e. Temperature indicator compliance
   f. Document verbal or implied consent
   g. **If any discrepancy exists in the above checks. DO NOT PROCEED WITH THE TRANSFUSION**
7. One set of vitals (HR, BP, Temperature, SPO2) must be documented prior to administration.
8. Administer blood via blood tubing over 3-5 minutes or approved infusion device
   a. Adult dose: One unit of blood product
   b. Pediatric dose: 10 mL/kg of blood product (max 1 unit of blood product)
   c. Administer additional units/doses based on clinical response and transport time
9. Blood products must be infused through a GCMCA approved fluid warmer, unless there is a warmer equipment failure and the blood cannot be warmed, then it may be administered cold. In the event of an equipment failure and blood is administered cold, this must be specifically reported to the GCMCA .
10. Monitor for transfusion reaction.
    a. If present, STOP THE TRANSFUSION, change all lines, and utilize normal saline.
    b. If necessary, treat a transfusion reaction using **Anaphylaxis/Allergic Reaction Protocol**
11. Monitor and document vital signs every 5 min during transfusion (before, during, and after transfusion):
    a. Blood pressure



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   b. Heart rate
   c. Respiratory rate
   d. Oxygen saturation
   e. $ETCO_2$ (if available)
   f. Temperature (if available)
12. Administer calcium chloride after 2 units of blood have been administered.
   a. Adult Dose: 1 g IV
   b. Pediatric dose: 20 mg/kg (max 1 g) IV
   c. Flush line with minimum 10 mL of saline
13. Contact Medical Control ASAP
14. One copy of the transfusion form will be left with the patient in the emergency department; one copy will be uploaded in the EMS PCR, and one copy will be returned to the blood bank.
15. Bag blood products, segments, and tubing for submission to the receiving facility in biohazard bag.
16. No other medications can be infused in the IV line with the blood product.

**Agency Requirements:**

1. Blood products must always be stored in a GCMCA approved blood products cooler.
2. Agencies must submit their blood procurement and exchange/replacement process to the GCMCA prior to initiation of their program for approval. Any changes to that process must be submitted for approval.
3. A roster of all paramedics completing the GCMCA-approved blood administration training must be submitted to the GCMCA prior to those individuals providing that intervention.
4. All blood product administrations must be submitted to the GCMCA within 72 hours for quality review.



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