

2007-02-21

BLOOD COMPONENT ORDERING AND ADMINISTRATION

GUIDELINES FOR ADMINISTERING BLOOD PRODUCTS AT UWMC

A. COMPONENTS

Packed Red Blood Cells (PRBCs)
Divided units of PRBCs (Pedi-packs)
Assigned Pediatric Aliquots
Platelet Concentrate
Fresh Frozen Plasma
Cryoprecipitate

B. COMPONENT-SPECIFIC GUIDELINES FOR ADMINISTRATION

1. COMPONENT: PACKED RED BLOOD CELLS

Description: Concentrated red blood cells with most plasma and platelets removed. (Aka "PRBCs") No functional platelets. For NICU patients (< 4 mo old) use CMV-safe (either leukocyte-depleted or CMV-negative), Hgb S negative PRBCs, irradiated at time of issue for routine transfusions. O-negative PRBC unit stored for use in a "Bleeding Emergency" is not irradiated to decrease risk of hyperkalemia.

Administration:

- Full ("adult-sized") RBC units (250 or 350mL)
Preservatives:
 - RBC AS-5 250 ml (Optisol) – standard preservative
Average volume 350mL/unit
Average Hct=57%
 - RBC CPD 250 ml - for large volume transfusion to children <4 Mo and to accompany patient to OR where bleeding is a risk (DO NOT USE FOR ROUTINE TRANSFUSION).
Average volume 250 mL/unit
Average Hct=72%
- RBC CPD Divided, aka "Pedi-packs" (60mL each)
 - ¼ CPD-preserved PRBC unit
 - Average Hct =72%
 - Up to 4 units ordered AT THE SAME TIME will be issued from the same donor.
- RBC AS-5 Divided (30-40mL each)
 - 1/8 AS-5-preserved PRBC unit
 - Average Hct=57%
 - From the 8 units created in each set, request ONLY the number of units needed that day
 - Remaining units not sent to the University are held at PSBC for exclusive use of the recipient for 40-42 days

- **Initial order is not available for emergency transfusion**
- **Takes 4 hours to prepare initial order**
- **Donor exposure is minimized, as all 8 aliquots are from the same donor**

Indications: Severe anemia; surgical blood loss; suppression of Erythropoiesis (e.g., thalassemia or sickle cell anemia)

For preoperative orders, where emergency blood may be needed, e.g. PDA ligation, order: 1 unit Full Packed Red Blood Cells (250 mL), CMV negative, irradiated, Hgb S negative (the “adult-sized” unit is preferred as it can be returned to the Puget Sound Blood Center if not used).

Dose: Usual dose is 10 to 20 mL/kg. (1 mL/kg will increase hematocrit by approximately 0.5 to 0.7%).

Rate: 5mL/kg/hour; 2mL/kg/hour if patient has incipient congestive heart failure. **(Note you may not hang blood components greater than 4 hours at room temperature.)**

Filter: Hemo-Nate Filter (18 Micron)

Tubing: Hemo-Tap Valve (Blood Bag Spike with stopcock)
Baxter/Blood component straight type blood set (MN 101375)
Syringe pump
60-inch macro-bore extension tubing set

2. **COMPONENT: PLATELETS**

Description: Platelets suspended in small amount of plasma (average volume 50-70 mL/unit). **(Cannot be refrigerated)**

Indications: Severe thrombocytopenia (platelet count <20,000)
Platelets count < 50,000 in patients who require surgery or in patients with active hemorrhage, risk of imminent bleeding or increased risk for intraventricular hemorrhage (< 32 weeks post-conceptual age).

Dose: **20 mL/kg** (1 unit for every 10-kg body weight will increase platelet count by 50,000 per mm³.)

Infants < 3.5 kg

Order 1 unit of CMV-negative, irradiated platelets.
administer 20 mL/kg

Infants ≥ 3.5 kg:

Order 2 units of CMV-negative, irradiated platelets
Administer 20 mL/kg

If the infant is volume sensitive, volume reduced platelets can be used. However, full volume platelets are preferred because the process of volume reduction activates platelets, causing degranulation, making them less effective.

Dose for volume reduction:

Infants < 2 kg:

Order 1 unit of volume-reduced CMV-negative, irradiated platelets.
Reduce volume to 20 mL
Administer 10 mL/kg

Infants 2-4 kg:

Order 1 unit of volume-reduced CMV-negative, irradiated platelets
Reduce volume to 10 mL/kg
Administer 10 mL/kg

Infants >4 kg:

Order 2 units of volume-reduced CMV-negative, irradiated platelets
Reduce volume to 10 mL/kg
Administer 10 mL/kg

Rate: Administer no faster than 2-3 mL/minute via syringe pump. If volume overload is a problem, administer total dose over 1 to 2 hours via pump or request volume reduced platelets.

Tubing: Baxter/Blood Component Straight Type Blood Set (MN 101375)
Syringe pump
60-inch macro-bore extension tubing set

3. COMPONENT: FRESH FROZEN PLASMA

Description: Portion of blood that contains clotting factors and proteins. Adult unit = 250 mL, pediatric unit = 50 mL. (May use type AB plasma in emergency. Can be refrigerated up to 24 hours.)

Indications: Massive hemorrhage
Multiple clotting deficiencies (e.g. liver disease, disseminated intravascular coagulation)

Dose: Acute hemorrhage: 15-30 mL/kg
Clotting deficiency: 10-15 mL/kg
May be repeated up to 3 times each 24 hours as necessary.
Monitor for congestive heart failure secondary to volume overload.

Rate: Hemorrhage: As indicated by patient's condition
Clotting Deficiency: over 2 to 3 hours
(Thawed FFP has a 24-hour expiration, as long as it is kept refrigerated, otherwise it expires 4 hours after the bag is spiked.)

Tubing: Baxter/Straight Type Blood Component Recipient Set (MN 101375)
Syringe pump
60-inch macro-bore extension tubing set

4. COMPONENT: CRYOPRECIPITATE

Description: Concentrated Fibrinogen (15 mL/unit, must be used within 6 hours of thawing, do not refrigerate)

Indications: Hypofibrinogenemia
Disseminated intravascular coagulation

Dose: <2.5 kg => 0.4 unit (6 mL) per kg body weight
2.5 –5 kg => 1 unit (15mL)
5-10 kg => 1-2 units

Infants who can tolerate or who need extra intravascular volume, administer as much of the unit as tolerated to reduce donor exposure.

Rate: Via syringe or drip as rapidly as solution will infuse.
Administer within 6 hours of thawing

Tubing: Baxter/Blood Component Straight Type Blood Set (MN 101375)
Syringe pump
60-inch macro-bore extension tubing set