

Drug Name: Blood Products
Trade Name: PACKED RED CELLS, FRESH PLASMA, PLATELETS, WHOLE BLOOD

REVISED: November 1, 2018

Class:

- Naturally occurring colloid

Mechanism of Action:

- Increases vascular volume
- Increases oxygen carrying capacity (Whole Blood, RBCs)

Indications:

- Initiated by sending facility
- To maintain vascular or blood volume
- To replenish blood loss
- To support homeostasis

Contraindications:

- Incompatibility

Precautions:

- Risk of reactions

Dosage:

IV Infusion is variable and based on institutional policy/physician order. The following are *guidelines* only. Some infusion rates may be significantly faster :

- Packed Red Blood Cells:
 - 10-20 ml/kg infused at 5 ml/kg/hr
- Platelets:
 - 20 ml/kg, no faster than 3 ml / min
- Fresh Frozen Plasma:
 - 10-30 ml/kg
- Whole Blood:
 - Based on patient's condition.
- CRYO:
 - Based on patient's condition.

Onset:

- N/A

Duration:

- Based on infusion duration

Side Effects:

- Hemorrhage
- Thrombocytopenia
- Transfusion reactions including fever and allergic reactions.

Interactions:

- Incompatible in same line with Lactated Ringers.

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This document is for **reference only**. Please refer to Physician Order's for specific indications, dosages, and applications

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PEARLS:

If spontaneous hemorrhage develops, evidenced by hematuria, hematemesis, epistaxis, ecchymosis, etc., immediately contact medical control with regards to discontinuing administration

NOTE: To discontinue the infusion, disconnect all tubing to the IV Hub and replace. Save tubing and blood for laboratory analysis.

- Blood administration initiated by a sending facility may be continued by ACP Paramedics. If additional units are indicated they may be initiated as directed by the written order of the sending facility. Any left-over blood is turned over to the sending facility.
- Pumps are not required for blood product infusions
- Double check blood ID # and patient ID.
- Close monitoring of body temperature and vital signs are mandatory during infusion.

Monitoring Requirements (every 15 minutes, at least two readings):

- Blood Pressure
- Heart Rate
- SAO2
- Temp
- Lung Sounds
- ECG

IMMEDIATELY discontinue infusion if:

- S/S of **febrile non-hemolytic reaction: May occur within hours of administration**
 - Patient becomes febrile, i.e., one or two degrees Fahrenheit above baseline
 - Symptoms include fever, hives, itching and dyspnea.
- S/S of **acute hemolytic reactions**
 - Typically occurs **within minutes** of receiving blood.
 - The donor red blood cells are destroyed by patient's antibodies.
 - S/S includes Chest pain, SOB, Back Pain, dark urine, fever, chills, hypotension.
 - Treat with fluid resuscitation.
 - Treat profound shock under protocol M-03: Adult hypotension and shock
- S/S of **anaphylaxis**: Symptoms usually occur **rapidly** with **less than 10 mL** of blood transfused
 - See protocol M-10 or PM-03
- S/S of Hyperkalemia/Hypocalcemia
 - Contact Medical Control
- S/S of Fluid Overload/CHF with acute pulmonary edema
 - See protocol C-8: Congestive Heart Failure
- S/S Acute Joint or Back Pain
 - Monitor fluid output and color (dark may suggest hemoglobinuria).
- S/S of tremors, weakness, and paresthesia (tingling) in skeletal muscles: Suspect hypocalcemia.
 - Calcium may be ordered by medical control.

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Description of types of blood products:

Whole Blood

- Whole blood is one unit of donated and unaltered (except for the addition of anticoagulant and preservative) blood. It contains the plasma and cells normally found in human blood.

Red Blood Cell Components (RBC's)

- This category includes red blood cells, washed red blood cells, and leukoreduced red blood cells. The cells are separated from whole blood through centrifugation. In the United States, one unit of red blood cells contains, on average, 180 mL of actual red blood cells, a nutritive solution called Optisol, and plasma. Washed red blood cells, are simply red blood cells that have been rinsed with normal saline in an attempt to remove proteins that may cause a hypersensitivity reaction in susceptible individuals.
- Leukoreduced red blood cells contain leukocytes in a specifically reduced amount, in an attempt to minimize the occurrence of a febrile transfusion reaction in susceptible individuals. Red blood cell administration is indicated in patients with symptomatic anemia. In a normal adult, one unit of red blood cells can be expected to increase hematocrit by about 3 %.

Platelets

- Platelet products contain plasma, coagulation factors, as well as some red and white blood cells. Platelets are separated from whole blood through centrifugation. IV platelet administration is indicated in patients with active bleeding due to thrombocytopenia, platelet dysfunction, or a combination of the two.

Granulocytes (Neutrophils)

- Granulocyte administration is indicated in patients with severe neutropenia and an established life threatening infection that is unresponsive to appropriate antimicrobial therapy.

Fresh Frozen Plasma (FFP)

- Fresh frozen plasma is the plasma removed from a unit of whole blood and frozen within eight hours of collection. FFP contains all of the coagulation factors in the normal concentrations, and is free of blood cells. FFP administration is indicated in those patients with established coagulation factor deficiencies who are actively bleeding or who are about to undergo a procedure in which bleeding may result.

Cryoprecipitate (CRYO)

- Cryoprecipitate is a concentrate of hemostatic proteins, prepared from whole blood. It contains factor VIII, von Willebrand factor, fibrinogen, factor XIII, and fibronectin. CRYO is administered to patients with hypofibrinogenemia, who are actively bleeding, or who are undergoing a procedure where bleeding may result.

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