

**SARASOTA MEMORIAL HOSPITAL**  
**BLOOD COMPONENT CRITERIA AND INDICATIONS**  
**SCREENING GUIDELINES**

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This document contains screening guidelines. Blood and blood component use falling outside these screening guidelines is not necessarily inappropriate but may be reviewed by the Blood Usage QI Committee as required by accrediting organizations.

In all instances, adequate documentation must be in the chart (admission, progress, consult and operative notes, laboratory results).

If administered when not indicated, blood or blood components often expose the patient to unnecessary risk. Failure to administer them when indicated may decrease the likelihood of a positive outcome for the patient.

The Blood Usage QI Committee will be happy to respond to any concerns that you might have. Please address your questions to Chairman, Blood Usage QI Committee, in care of the Quality Improvement Department



**“One of America’s Best Hospitals”**  
– *U.S. News & World Report*



## **COMPONENT: RED BLOOD CELLS AND AUTOLOGOUS BLOOD - ADULT**

### **CRITERIA/INDICATIONS:**

1. Hypovolemia due to active acute bleeding secondary to surgery, trauma, gastrointestinal or other blood loss, which decreases the oxygen carrying capacity, documented by one of the following:
  - a. Fall in blood pressure greater than 20%.
  - b. Fall in systolic blood pressure to less than 100 mm. Hg.
  - c. Orthostatic drop in blood pressure of 30 mm. Hg or more on movement from supine to upright position. (sitting to standing)
  - d. Estimated blood loss of greater than 15% of total blood volume. (Approximately 750 cc.).
2. Hemoglobin less than 8. SEE EXCEPTIONS
3. Hematocrit less than 25. SEE EXCEPTIONS
4. Specific chronic anemias: leukemia, lymphoma, Hodgkin's disease, aplastic anemia, thalassemia.
5. Renal failure treated by hemodialysis.
6. Symptomatic anemia whatever the cause, which compromises the normal physical activity for which no other medicinal therapy (iron, folate, vitamin B12, etc.) or surgical therapy (splenectomy, repair of site) has or is likely to correct the anemia state. Symptoms might include: tachypnea, angina, profound fatigue with minimal exertion or dyspnea at rest.
7. Deliberate hypotension (anesthesia technique).
8. Patients being hypertransfused for treatment of hemoglobinopathy.

**EXCEPTIONS:** If a patient has coronary artery disease, chronic obstructive pulmonary disease, cerebrovascular disease, sickle cell anemia or overwhelming sepsis, the hemoglobin may be between 8 gm/dl and 10 gm/dl.

**NOTE:** One unit of red blood cells raises the hemoglobin by approximately 1 gm/dl and the hematocrit by approximately 3% in a 70 kg. person.  
Autologous blood may be given with a hemoglobin of 10 gm/dl or below in orthopedic surgery patients. Exceptions may include conditions such as fluid overload.

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## **COMPONENT: WASHED RED BLOOD CELLS - ADULT**

### **CRITERIA/INDICATIONS**

1. Same as for red blood cells plus one of the following conditions:
  - a. Paroxysmal nocturnal hemoglobinuria (PNH).
  - b. Inherited deficiency of IgA or presence of Anti-IgA.
  - c. History of significant allergic transfusion reaction.
  - d. History of two or more febrile non-hemolytic transfusion reactions to leukocyte reduced blood cells.
  - e. Certain candidates for bone marrow or other organ transplant.
  - f. High titer Factor VIII antibody

**EXCEPTIONS:** If a patient has coronary artery disease, chronic obstructive pulmonary disease, cerebrovascular disease, sickle cell anemia or overwhelming sepsis, the hemoglobin may be between 8 gm/dl and 10 gm/dl.

**NOTE:** One unit of red blood cells raises the hemoglobin by approximately 1 Gm/dl and the hematocrit by approximately 3% in a 70 kg. person.

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### **COMPONENT: CRYOPRECIPITATE - ADULT**

#### **CRITERIA/INDICATIONS:**

1. Correction of known coagulation defects for which specific concentrates are not available and one of the following:
  - a. Hypofibrinogenemia with laboratory evidence of fibrinogen level less than 80 mg/dl.
  - b. Uremia
  - c. Red blood cell transfusion of over 12 units with microvascular bleeding.
  - d. Over four hours pump time with microvascular bleeding.
  - e. Von Willebrand's Disease
2. To control leakage of air, blood and fluid in a variety of thoracic, cardiovascular and neurosurgical procedures.
3. To glue fractured bone edges.
4. As a hemostatic agent in skin grafting and in a variety of plastic and reconstructive surgeries.
5. To seal fistulae.
6. To close perforated or pre-perforated corneal ulcers.

**NOTE:** For indications #2 - #6 cryoprecipitate is used in conjunction with thrombin to form fibrin glue.

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### **COMPONENT: PLATELETS - ADULT**

#### **CRITERIA/INDICATIONS:**

1. Platelet count less than 10,000/ul with or without active bleeding.
2. Platelet count less than 20,000/ul undergoing myelosuppressive therapy
3. Platelet count less than 50,000/ul and one of the following;
  - a. Scheduled for an operative or invasive procedure within 12 hours of transfusion.
  - b. Intra-or post-operative microvascular bleeding.
  - c. Over 8 units red cell transfusion
  - d. Over four hours pump time with microvascular bleeding
4. Post-operative platelet count less than 100,000 with unexplained bleeding.
5. Active bleeding or pre-operatively in a patient with documented platelet dysfunction.
6. Cardiac surgery patient on GP IIB, IIIA inhibitors, other anti-platelet agents, recent thrombolytic agents or plavix therapy.
7. Preoperative ASA, anti-platelet drug or suspected platelet dysfunction.
8. Precipitously falling platelet count below 50,000/ul with or without clinical evidence of bleeding.
9. Platelet count at a level previously associated with bleeding in a particular patient.
10. Platelet count less than 100,000/ul for invasive procedures involving brain, spinal cord, or epidural space, ophthalmic, etc., ureter, or upper airway or if bleeding is occurring in these sites.
11. Platelet dysfunction, congenital or acquired, not responding to desmopressin acetate (DDAVP/Stimate), before an invasive procedure.

#### **Comments**

The usual adult therapeutic dose is platelets pooled from 6 units (platelet concentrate or pooled platelets) or an equivalent amount of single donor apheresed platelets. (Platelet concentrate or pooled platelets) or an equivalent amount of single donor apheresed platelets.

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**COMPONENT: FRESH FROZEN PLASMA - ADULT**

**CRITERIA/INDICATIONS:**

1. Correction of known coagulation defects for which specific concentrates are not available and one of the following:
    - a. Active bleeding
    - b. Scheduled for an invasive procedure
  2. Operative or post-operative microvascular bleeding and one of the following:
    - a. PT or PTT greater than 1.5 x upper limit of normal
    - b. After red blood cell transfusion greater than 12 units
- Over four hours pump time
3. Replacement of deficiency of multiple coagulation factors that may occur with:
    - a. Liver disease that is unresponsive to vitamin K administration.
    - b. Acute disseminated intravascular coagulation.
    - c. A transfusion greater than 12 units
  4. Reversal of warfarin therapy.
    - a. Life threatening bleeding that cannot await time delay for vitamin K effect (8 to 12 hour period).
    - b. Actively bleeding or when emergency surgery is required in less than 6 hours.
  5. Other plasma defects including:
    - a. Antithrombin III deficiency in patient with recurrent thrombosis or requiring heparin but are refractory to heparin.
    - b. Thrombotic thrombocytopenia purpura.
    - c. Hereditary angioneurotic edema with C1 esterase inhibitor deficiency resulting in life-threatening edema.
    - d. Protein C or S deficiency.
  6. Plasma exchanges for such conditions as T.T.P./H.U.S. (Cryo poor plasma may be used for T.T.P./H.U.S.)

**COMMENTS**

One jumbo unit (>400 ml) of pheresed FFP may be substituted when 2 or more units of FFP are used.

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**COMPONENT: ALBUMIN/PLASMA PROTEIN FRACTION/PLASMANATE - ADULT**

**CRITERIA/INDICATIONS:**

1. Cardiopulmonary bypass pump prime, using albumin and crystalloid to achieve Hct 20%, plasma protein 2.5 gm/dl and or serum protein of 5.2 gm/dl.
2. Neurosurgical patients when albumin is needed to support cerebral blood flow.
3. Plasma exchanges in such conditions as Guillain Barre or Myasthenia Gravis.
4. Fluid replacement in patient with serum albumin <2.0g/dl and clinically significant pulmonary or peripheral edema.
5. Fluid replacement in patients with serum albumin <2.0g/dl and who undergo paracentesis of 4 liters or more of fluid.
6. Fluid replacement in patients who have already received 2 liters of crystalloid IV solution (such as NS, RL, D5-1/2NS, etc.), and 1 liter of hetastarch and still require more fluid to maintain their blood pressure.
7. Fluid replacement in patients with cerebral aneurysm prior to surgical "clipping".
8. Enteral feeding intolerance when diarrhea is > 2L per day and serum albumin is <2.0 g/dl and other causes of diarrhea have been ruled out.
9. Hespan (hetastarch) is contraindicated (i.e. history of ADR or chronic renal failure that does not respond to crystalloid).
10. Hemodialysis patients who have hypotension during dialysis and have already gone through the following treatments:
  - a. Decrease in ultrafiltration
  - b. Administration of 50 ml of 0.9% Normal Saline IV up to 4 doses if needed
  - c. Administration of 5 ml of 23.4% hypertonic sodium chloride IV slowly over 5 minutes (up to 2 doses).
  - d. Administration of 50 ml of Mannitol 25% IV (but not during the last hour of dialysis).
  - e. If patient does not respond to above: Administer 50 ml of Albumin 25% I.V.
11. Hemodialysis patients with a history of hypotension during prior dialysis treatment, and whose serum albumin is <2.0 and have clinically significant pulmonary or peripheral edema.

**LIMIT ON ALL ALBUMIN ORDERS:**

- Maximum of 4 vials of 25% albumin 50 ml in a 24 hour period. (Total of 50 grams).
- Patient must be reassessed on a daily basis for albumin need and new orders written daily.

ALBUMIN GUIDELINES: based upon SMH Pharmacy's Clinical Guidelines for the use of Albumin, approved November 24, 1998

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**COMPONENT: GRANULOCYTES - ADULT**

**CRITERIA/INDICATIONS:**

1. Life threatening infection in patients with neutropenia or granulocyte dysfunction as documented by ALL OF THE FOLLOWING:
  - a. Neutropenia: Neutrophil count of less than 500 polymorphonuclear leukocytes (< 500 polys/ul.)
  - b. Evidence of myeloid hypoplasia.
  - c. Fever unresponsive to appropriate antibiotic therapy for 48 hours, or documented infection unresponsive to antibiotics or other mode of therapy.
  - d. Reasonable expectation that the patient will survive.

**Comments**

Orders are 100% reviewed by the Medical Director of the Blood Bank.

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**COMPONENT: FACTOR VIII - ADULT**

**CRITERIA/INDICATIONS:**

1. History and laboratory evidence of Hemophilia A, von Willebrand's Disease and Factor VII inhibitors.
2. Decreased circulatory Factor VIII level documented by ALL OF THE FOLLOWING:
  - a. History of decreased Factor VIII concentration.
  - b. Factor VIII assay pending or completed (assay levels unnecessary when the patient has a known and documented history of hemophilia).
  - c. Absence of a Factor VIII inhibitor on screening test.

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**COMPONENT: FACTOR IX - ADULT**

**CRITERIA/INDICATIONS:**

1. History and laboratory evidence of hereditary decrease in Factors II, VII, IX or X (Hemophilia B, Christmas Disease, Factor VII with antibodies).
2. Reversal of Warfarin overdose:
  - a. Life threatening bleeding that cannot await time delay for Vitamin K effect (8 to 12 hour period) or FFP when not contraindicated by underlying disease process.
  - b. Actively bleeding or when emergency surgery is required in less than 6 hours.

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**COMPONENT: Rh IMMUNE GLOBULIN (RhIG) - ADULT**

**CRITERIA/INDICATIONS:**

1. Perinatally to Rh (D) negative women who are un-immunized to Rh (D) antigen.  
Antepartum administration for:
  - a. Abortion
  - b. Miscarriage
  - c. Vaginal hemorrhage
  - d. Ectopic pregnancy
  - e. Abdominal trauma
  - f. Amniocentesis
  - g. Prophylactically at 28 weeks gestation
2. Postpartum for delivery of an Rh (D) positive infant or infant of unknown Rh status. **NOTE** A fetal-maternal hemorrhage test on the woman's postpartum blood sample is required to determine dosage.
3. Rh (D) negative patients (especially women of childbearing potential) who have received blood components containing Rh (D) positive red blood cells.
4. Idiopathic thrombocytopenia purpura in Rh+ patients.

**COMMENTS**

Consider pre-pubescent females.

## **PEDIATRIC**

**ALL NICU Blood products (Whole Blood, PRBC's, and Platelets) must be irradiated and either CMV negative or leuko-reduced.**

**ALL Pediatrics Blood products must be leukoreduced.**

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### **COMPONENT: WHOLE BLOOD (Reconstituted) - PEDIATRIC**

#### **CRITERIA/INDICATIONS:**

1. Patients with active bleeding and having a loss of more than 25% of total blood volume.
  2. Patients with active bleeding after receiving four units of packed red blood cells.
  3. Patients with life-threatening hypovolemia secondary to surgery or trauma.
  4. For exchange transfusion in newborns.
  5. To Hematocrit of 40-45%.
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### **COMPONENT: RED BLOOD CELLS - PEDIATRIC**

#### **CRITERIA/INDICATIONS:**

1. Patients with hypovolemia resulting from acute loss of greater than 15% of blood volume.
2. Patients who have acute anemia, unresponsive to medical therapy,
  - a. with a hemoglobin less than 8 Gm/dl,
  - b. a hematocrit less than 25%,
  - c. or clinical symptoms due to anemia.
3. Patients who have beta thalassemia, sickle cell anemia, or other congenital anemia and are on a chronic transfusion regimen.
4. Normovolemic patients who require an increase in their oxygen carrying capacity and red cell mass, such as patients with renal failure or malignancy, very premature infants, newborns and children with major medical problems, and pre-operative patients with a hemoglobin <10 gm/dl.

#### **COMMENTS**

Admission notes or progress notes must document indication for transfusion (e.g. symptoms of anemia). Records must reflect that transfusion is the preferred form of therapy as opposed to medicinal or surgical therapy. Hemoglobin, hematocrit and reticulocyte count should be obtained to document the need for transfusion.

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**COMPONENT: PLATELET CONCENTRATE - PEDIATRIC**

**CRITERIA/INDICATIONS:**

1. Patients with active and critical bleeding and platelet count less than 50,000/ul.
2. Patients with active bleeding and functionally abnormal platelets.
3. Patients scheduled for an operative procedure within 12 hours who have a platelet count less than 50,000/ul or who have taken an anti-platelet drug within the prior 24 hours.
4. Patients with platelet counts and below 15,000 /ul in a child and adolescent due to bone marrow hypoplasia.
5. Precipitously falling platelet count below 50,000/ul with or without clinical evidence of bleeding.
6. Platelet count at a level previously associated with bleeding in a particular patient.
7. For Preterm newborns  $\leq 7$  days of age- transfuse for platelet count of  $<50,000$ .
8. For Preterm newborns  $> 7$  days of age- transfuse for platelet count  $<25,000$ .

**COMMENTS**

A platelet count before platelet transfusion should be documented in the chart.  
If clinically indicated, a repeat platelet count after transfusion should be documented.

Newborn is defined as  $< 28$  days of life corrected for gestational age.

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**COMPONENT: FRESH FROZEN PLASMA - PEDIATRIC**

**CRITERIA/INDICATIONS:**

1. Patients with active bleeding who have multiple documented coagulation factor deficiencies secondary to liver disease unresponsive to Vitamin K administration, DIC, massive hemorrhage.
2. Patients with active bleeding who have a suspected factor deficiency, such as a post-circumcision newborn.
3. Patients with dilutional coagulopathy after massive red cell or crystalloid replacement therapy.
4. Patients with documented congenital factor deficiencies for which there are no recombinant coagulation concentrates available, such as Factor V or XI deficiency.
5. Patients with thrombotic thrombocytopenic purpura
6. Patients with an activated partial thromboplastin greater than or equal to 60 sec. and/or prothrombin greater than or equal to 16 sec. but not having specified coagulation defects.
7. Patients with active bleeding who need emergency surgery.
8. Patients receiving greater than 12U PRBC's.

**COMMENTS**

Documentation for the outcome: An activated partial thromboplastin and/or prothrombin time before and within 24 hours after fresh frozen plasma transfusion should be in the chart or clinical indication for necessity documented prior to transfusion.

Consider using vitamin K as time allows in indicated patients (8-12 hours)

Consider consulting SMH neonatologist or All Children's at SMH physician to discuss medicinal and/or recombinant therapies to achieve hemostasis

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**COMPONENT: FACTOR VIII, IX, VII CONCENTRATES OR PROTHROMBIN COMPLEX CONCENTRATE - PEDIATRIC**

**CRITERIA/INDICATIONS:**

1. Patients with documented Factor VIII, IX, VII or X deficiency.
2. Patients with acquired factor deficiencies.
3. Newborns with suspected Factor VIII, IX, VII or X deficiency whose clinical condition warrants administration prior to obtaining test results. Documentation for the outcome:

**COMMENTS**

Patients should have the appropriate coagulant monitored daily or PT/PTT. Clinical indication for the necessity documented prior to transfusion.

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**COMPONENT: GRANULOCYTES – BUFFY COATS – PEDIATRIC**

**CRITERIA/INDICATIONS**

1. For treatment of neutropenia and suspected sepsis in newborns or infants.
2. Patients with severe granulocyte dysfunction syndromes.
3. Patients with a neutrophil count less than 500/ul, febrile and clinically ill despite broad spectrum antibiotics, bone marrow showing myeloid hypoplasia, and a reasonable life expectancy.

**COMMENTS**

Documentation for the outcome: A white blood cell count before and within 24 hours of the end of the transfusion should be documented in the chart.

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**COMPONENT: CRYOPRECIPITATE - PEDIATRIC**

**CRITERIA/INDICATIONS:**

1. Patients with documented von Willebrand's disease, fibrinogen or Factor XIII deficiency.
2. Uremic patients with active bleeding.

**COMMENTS**

Determination of von Willebrand's Factor, fibrinogen, or Factor XIII must be in the chart before and within 24 hours at the end of the transfusion.

Patients with von Willebrand's Disease (except Type IIb) must have a trial with DDAVP **first**, except in the event of massive hemorrhage.

Consider consulting SMH neonatologist or All Children's at SMH physician to discuss medicinal and/or recombinant therapies to achieve hemostasis.

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**COMPONENT: ALBUMIN, PLASMA PROTEIN FRACTION, PLASMANATE – PEDIATRIC**

**CRITERIA/INDICATIONS:**

1. Fluid replacement in patient with serum albumin <2.0g/dl and clinically significant pulmonary or peripheral edema.
2. Fluid replacement in patients with serum albumin <2.0g/dl and who undergo paracentesis of 4 liters or more of fluid.
3. Fluid replacement in patients who have already received >40-60 cc/kg of crystalloid IV solution (such as NS, RL, D5-1/5NS, etc).

**NOTE:** Committee shall review when more than 20 cc/kg are used without evidence of concomitant Ringer's Lactate or Normal Saline.