TABLE OF CONTENTS

SUBJECT                        PAGE

ADULT CRITERIA

Red Blood Cells/Autologous     2
Washed Red Blood Cells         2
Cryoprecipitate                3
Platelets                      3
Fresh Frozen Plasma            3
Rh Immune Globulin (RhIG)      4

PEDIATRIC CRITERIA

Whole Blood (Reconstituted)    5
Red Blood Cells                5
Platelet Concentrate           6
Fresh Frozen Plasma            6
Factor VIII Concentrate OR Prothrombin 7
Granulocytes – Buffy Coats     7
Cryoprecipitate                7

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 Medical Staff QI Committees 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.

Thank you very much for your cooperation and assistance.
COMPONENT: RED BLOOD CELLS AND AUTOLOGOUS BLOOD - ADULT

CRITERIA/INDICATIONS:

1. Transfusion should be considered at hemoglobin concentrations of 7 g/dL or less.
2. For patients with symptoms (chest pain, orthostatic hypotension or tachycardia unresponsive to fluid resuscitation, or congestive heart failure), transfusion should be considered at a hemoglobin concentration of 8 g/dL or less.
3. In postoperative surgical patients, transfusion should be considered at a hemoglobin concentration of 8 g/dL or less.
4. Intraoperative/intraprocedure for patients with CAD, may transfuse at a hemoglobin concentration of 10 g/dL or less.
5. OB Hemorrhage
   - If < 1500 ml cumulative blood loss: transfuse 2 units of packed RBC’s based on clinical signs and response
   - For massive blood loss give 6 units of packed RBC’s

Autologous predonated red cells: same criteria as above

CHRONIC ANEMIA
1. Treat with specific pharmacologic agent (Vitamin B12, iron, folate, erythropoietin)
2. Transfuse to minimize symptoms and risks of anemia (typically at hemoglobin concentration of 5-8g/dL range).

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.

DO NOT TRANSFUSE RBCs
1. For volume expansion only
2. In place of specific pharmacologic therapy
3. To enhance wound-healing

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.

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
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.

COMPONENT: CRYOPRECIPITATE - ADULT

CRITERIA/INDICATIONS:
1. Fibrinogen ≤ 100 mg/dL
2. Fibrinogen ≤ 150 mg/dL with active hemorrhage
3. Active disseminated intravascular coagulation
4. Inherited coagulation disorder
5. Drug Induced Bleeding Protocol (e.g. Pradaxa, Rivaroxaban) Give 10 units for suspected hemorrhage

COMPONENT: PLATELETS - ADULT

CRITERIA/INDICATIONS:
1. Platelet count ≤ 10,000/cc³ prophylactically in a patient with failure of platelet production
2. Platelet count ≤ 20,000/cc³ and signs of hemorrhagic diathesis (petechiae, mucosal bleeding)
3. Platelet count ≤ 50,000/cc³ in a patient with:
   a. Active hemorrhage
   b. Invasive procedure (recent, in-progress, planned)
4. Platelet dysfunction documented
5. Platelet dysfunction related to cardiac bypass to treat excessive bleeding
6. Intraoperative/intraprocedure: give 1 apheresis pack after 8 units of RBC's
7. OB Hemorrhage- Massive blood loss give 1 apheresis pack of platelets
8. Drug Induced Bleeding Protocol (e.g. Pradaxa, Rivaroxaban) - Transfuse for suspected hemorrhage.

COMMENTS
The usual adult therapeutic dose is one unit of single donor pheresis platelets. A single dose of apheresis platelets will increase the platelet count by 25,000 - 35,000/ cc³

DO NOT TRANSFUSE PLATELETS: Patients with idiopathic thrombocytopenic purpura (ITP), thrombotic thrombocytopenic purpura (TTP), and/or heparin-induced thrombocytopenia (HIT), unless there is clinically significant bleeding or significant surgical challenge

COMPONENT: FRESH FROZEN PLASMA - ADULT

CRITERIA/INDICATIONS:
1. Abnormal coagulation studies and significant hemorrhage
2. Prophylactic use for PT/ APTT > 1.5 times the mean of the reference range
3. Emergent reversal of Coumadin
4. **Intraoperative/intraprocedure** - for hemorrhage give 1 unit after 4 units of RBC’s

5. **OB Hemorrhage**
   - For < 1500 ml cumulative blood loss give FFP if transfusing RBC’s
   - Massive blood loss: give 4 units FFP

6. **Drug Induced Bleeding Protocol** (e.g. Pradaxa, Rivaroxaban) - Transfuse for suspected hemorrhage.

   Do not transfuse FFP:
   - When more effective to correct coagulopathy with specific therapy (Vitamin K, Factor VIII, or Factor IX concentrate)
   - For volume expansion
   - Prophylactically (except OB hemorrhage protocol using 1 FFP per 2 units blood)

**COMMENTS**

*A dose of 10 - 15 mL/kg is usually adequate to correct a coagulopathy.* One jumbo unit (>400 ml) of pheresed FFP may be substituted when 2 or more units of FFP are used.

---

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

**CRITERIA/INDICATIONS:**
1. Perinatally to Rh(D) negative women who are un-immunized to Rh(D) antigen. Antepartum administration for:
   - Abortion
   - Miscarriage
   - Vaginal hemorrhage
   - Ectopic pregnancy
   - Abdominal trauma
   - Amniocentesis
   - 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. (IV IG is preferred)

**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.

COMPONENT: WHOLE BLOOD (Reconstituted) - PEDIATRIC

CRITERIA/INDICATIONS:
1. Patients with active bleeding and 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%.

COMPONENT: RED BLOOD CELLS - PEDIATRIC

CRITERIA/INDICATIONS:
1. Patients with hypovolemia resulting from acute loss > 15% of blood volume.
2. Patients who have acute anemia, unresponsive to medical therapy,
   a. with a hemoglobin < 8 gm/dl,
   b. with a hematocrit < 24%,
   c. and/or significant clinical symptoms due to anemia.
3. Patients who have beta thalassemia, sickle cell anemia, or other congenital anemia and who are on a chronic transfusion regimen.
4. Congenital heart disease or pulmonary disease patients and hematocrit< 40%.
5. Neonate with respiratory distress/apnea or congenital heart disease and hematocrit < 45%.
6. Normovolemic patients who require an increase in their oxygen carrying capacity and red cell mass, such as patients with renal failure or malignancy or other major medical problem or preoperative patients with 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 medical or surgical therapy. Hemoglobin, hematocrit and reticulocyte count should be obtained to document the need for transfusion.
COMPONENT: PLATELET CONCENTRATE - PEDIATRIC

CRITERIA/INDICATIONS:
1. Platelet count < 20,000/μL.
2. Healthy preterm infants <28 days of age and platelet count <50,000/μL.
3. Seriously ill preterm infants <28 days of age and platelet count <100,000/μL.
4. Critical bleeding, coagulopathy, or invasive procedure and platelet count <100,000/μL.
5. Active bleeding and functionally abnormal platelets.
6. Intraoperative bleeding > anticipated blood loss.
7. Platelet count at a level previously associated with bleeding in a particular patient.

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.

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 (TTP)
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 12 Units of 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 medical and/or recombinant therapies to achieve hemostasis
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.

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.

COMPONENT: CRYOPRECIPITATE - PEDIATRIC

CRITERIA/INDICATIONS:
1. Active bleeding and fibrinogen <100 mg/dL
2. Neonate with fibrinogen < 200 mg/dL and pulmonary hemorrhage.
3. Intraoperative bleeding, pending coagulation studies.
4. Patients with documented or suspected von Willebrand’s disease, or Factor XIII deficiency.
5. 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 (desmopressin) first, except in the event of massive hemorrhage. Consider consulting SMH neonatologist or All Children’s at SMH physician to discuss medical and/or recombinant therapies to achieve hemostasis.