

BRONSON METHODIST HOSPITAL
Kalamazoo, Michigan

MEDICAL STAFF QUALITY ASSESSMENT AND IMPROVEMENT PROGRAM: BLOOD USAGE REVIEW

GUIDELINES FOR ADMINISTRATION OF BLOOD AND BLOOD PRODUCTS: ADULT AND PEDIATRIC

GENERAL INFORMATION:

1. The medical indication and/or rationale for the administration of blood or blood products must be clearly documented in the medical record prior to administration of the product.
2. All transfusion reactions and complications are reviewed.
3. Blood and blood products should be ordered using form 9000211 Transfusion Blood/Blood Products Orders.

I. PACKED RED BLOOD CELLS

INDICATION: To promote delivery of oxygen to tissues in patients who are actively bleeding, in those who have symptomatic anemia unresponsive to conservative therapy, or in situations in which medical necessity does not allow for alternative treatment.

GUIDELINES: ADULTS AND PEDIATRICS

- A. Hemoglobin less than 7 gm/dl with symptoms attributable to anemia. Transfusion may be considered at hemoglobin greater than 7 gm/dl if there is a significant underlying medical condition.
- B. Acute blood loss unresponsive to fluid resuscitation or evidence/risk of significant ongoing blood loss.
- C. Hemoglobin less than 7 gm/dl in a critically ill patient who is persistently hypoxemic with clinical evidence of tissue hypoxia.
- D. Risk for significant intraoperative blood loss (10% or greater of total blood volume).
 1. If there is low risk for significant intraoperative blood loss, transfusions maybe considered for a hemoglobin less than 7 gm/dl.

GUIDELINES: PEDIATRICS

- E. In newborns with respiratory distress:
 1. Hct less than 40%
 2. Hypovolemia as evidenced by: pallor, pulse rate greater than 160 beats per minute, systolic blood pressure less than 50 mmHg (if birth weight was greater than 1000 gms)
 3. If more than 10% of the blood volume (85 ml/kg) has been removed within 48 hours and the Hct is less than 50% or the Hgb is less than 15 gm/dl
- F. In newborns without respiratory distress:
 1. Hct less than 30% in the first week of life
 2. Pulse is greater than 160 beats per minute
 3. Respiratory rate is greater than 60 breaths per minute
- G. Neonatal exchange transfusions (RBCs reconstituted in Fresh Frozen Plasma).

II. WHOLE BLOOD

There are no routine ordering indications for this product. This product is not usually stocked and is available only upon request to and approval of a pathologist.

III. PLATELETS

INDICATION: Platelet concentrates are indicated for the treatment and/or prevention of hemorrhage due to thrombocytopenia or platelet dysfunction.

GUIDELINES: ADULT AND PEDIATRIC

- A. Transfused when the platelet count is less than 10,000/ul or less than 20,000/ul when signs of bleeding or other major risk factors for bleeding or with expected further decrease in platelet count.
- B. Transfused when the platelet count < 50,000/ul and the patient will have a biopsy or minor surgery within one day.
- C. Transfused when the platelet count is less than 100,000/ul in the perioperative period for the patient with vascular surgery, other major surgery or any surgical patient who is actively bleeding.
- D. There is a platelet dysfunction (thrombocytopathy) and the patient is actively bleeding or an invasive or surgical procedure is planned.
- E. Reversal of hemostatic disorders in patients who have received massive blood transfusions (greater than total blood volume within "several" hours).

GUIDELINES: PEDIATRIC ONLY

- F. Ill premature infant (less than 37 weeks) with platelet count less than 100,000/ul.
- G. Children with central nervous system tumor with a platelet count less than 50,000/ul.

IV. FRESH-FROZEN PLASMA /PLASMA FROZEN WITHIN 24 HOURS

INDICATION: To correct deficiency of multiple clotting factors in bleeding patients or patients at risk of bleeding by virtue of requiring an invasive procedure. Multiple deficiencies occur as a result of liver disease, vitamin K deficiency, massive bleeding, DIC, or secondary to anticoagulation therapy. FFP can be used to correct an isolated deficiency when specific component therapy is not available.

GUIDELINES: ADULT AND PEDIATRIC

- A. Patients actively bleeding and documented INR >1.5 or partial thromboplastin time (PTT) >1.5 times the upper limit of normal for age.
- B. Patients with prolonged PT or PTT at risk of bleeding because of scheduled invasive or surgical procedure.
- C. Replacement of antithrombin III (concentrate is available) in patients who are deficient and are undergoing surgery or who require Heparin for treatment of thrombosis.
- D. Correction of anticoagulation therapy when reversal by vitamin K is not feasible because of time restraints.
- E. In conjunction with therapeutic pheresis for the treatment of Thrombotic Thrombocytopenic Purpura (TTP).

- F. Reversal of hemostatic disorders in patients who have received massive blood transfusions (greater than total blood volume within "several" hours) AND/OR in who factor deficiencies that are presumed to be the sole or principle derangement.
- G. Replacement of ISOLATED deficiencies only when specific component therapy is not available.
- H. Patients on chemotherapy, such as asparaginase, with fibrinogen levels below 100 mg/dl.

GUIDELINES: PEDIATRIC

- I. Potential use in exchange transfusions particularly in the neonate.

V. CRYOPRECIPITATE

INDICATION: Cryoprecipitate transfusion is second line of therapy for the treatment of von Willebrand's disease, factor VIII deficiency, either acquired or congenital. Cryoprecipitate may also be used in DIC or massive bleeding to increase fibrinogen, used to treat Factor XIII deficiency, or to treat bleeding related to renal failure.

GUIDELINES: ADULT AND PEDIATRIC

- A. Fibrinogen levels below 100 mg/dl with active bleeding.
- B. Bleeding or prophylaxis in von Willebrand's disease or Hemophilia A when Desmopressin (DDAVP) is insufficient therapy and appropriate Factor concentrate is not available.

VI. GRANULOCYTES

There are no routine ordering indications for this product. This product is not stocked and is available only upon request to and approval of a pathologist.

- A. Selected patients with severe neutropenia and life-threatening infection.

VII. AUTOLOGOUS BLOOD

INDICATIONS: Autologous blood is used to decrease or eliminate use of homologous blood. Preoperative blood donation is generally NOT recommended for procedures in which blood usage is unlikely. The use of autologous blood is recommended only for older children or adults.

GUIDELINES: ADULT AND PEDIATRIC

- A. The last phlebotomy is performed 72 hours or more before the operative procedure. Sufficient time should be allowed between donation and surgery for the patient's hemoglobin to return toward normal range. Iron deficient patients must receive supplementation during period of time between donation and procedure.
- B. The donated blood undergoes ABO and Rh group testing, antibody screening and screening for Hepatitis B & C, HTLV - I/II, HIV-1/2 and others as may become required.
- C. The patient-donor is tested for ABO, Rh, antibody screen and cross-match.
- D. Indications for reinfusion are the same as those for homologous blood. Although reinfusion of autologous units decreases the risk of infectious processes and other complications, notable risks remain and may include:
 - 1. Bacterial contamination of product
 - 2. Circulatory overload
 - 3. Potential infusion of allogeneic (random donor) unit through error

VIII. IRRADIATED BLOOD PRODUCTS GUIDELINES:

- A. Fetuses receiving intrauterine transfusions.
- B. Selected primary or secondary immuno-incompetent or immuno-compromised recipients.
- C. Recipients of donor units known to be from a blood relative.
- D. Patients who have had or are candidates for allogeneic hematopoietic stem cell transplantation.
- E. HLA products are irradiated.

IX. WASHED RED BLOOD CELLS

- A. History of anaphylactic reaction to blood products.
- B. IgA deficient patient with documented anti-IgA antibodies.
- C. Repeated severe allergic reactions not prevented by premedication with antihistamine.
- D. Pediatric and neonatal patients on ECMO.
- E. Hyperkalemic patients with renal failure who are not being dialyzed.
- F. Allogeneic hematopoietic stem cell transplant patient in the peritransplant period to remove isoagglutinins from the donor unit when there is minor incompatibility between the donor and patient blood groups. (e.g. Group O transplant in a group A patient).

IX. INTRAUTERINE TRANSFUSION GUIDELINES

- A. Blood group incompatibility, sensitized pregnancy with evidence of fetal anemia.
- B. Known immune hydrops, fetal maternal bleed with evidence of fetal anemia.
- C. Documentation of fetal anemia of any etiology with fetal compromise.

NOTE: All criteria are subject to delivery not being an option.

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