I. **Transfusion Administration (including Time and Storage)**
   A. Refer to Blood Administration Policies #HM 1.01A and HM 1.01P.

II. **Documentation of Blood Component Orders**
   A. Order requests for blood components must include an approved indication that is documented both in the clinical record and on the order set request.
   B. Orders with an indication not within these guidelines will require approval by the blood bank (BB) medical director or designee.
   C. The appropriateness of each transfusion must be documented in the medical record as required by:
      1. The Joint Commission
      2. CAP (College of American Pathologists)
      3. AABB (formerly the American Association of Blood Banks)
      4. Medical Staff Rules and Regulations
         a. Whenever possible, each of the patient’s clinical problems must be clearly identified in the progress notes and correlated with specific orders as well as results of tests and treatments.

III. **Hold Orders**
   A. Hold orders are not appropriate.
   B. A current Type and Screen is all that is needed for patients who may need blood component therapy.
      1. With a Type and Screen on file, blood components can be dispensed within minutes of an order.
      2. Type and Screen must be updated every 3 days.
   C. The BB will identify patients with multiple alloantibodies or rare blood types from the Type and Screen.
      1. The ordering practitioner will be notified when significant delays in obtaining blood are anticipated due to a potentially difficult crossmatch.
      2. The BB will determine when it is appropriate to crossmatch and hold units for these patients.
   D. Need in OR is a directive to the BB to have blood available during a surgical procedure and is not considered to be a “hold” order.
      1. 90-Day Disclaimer (CH7864) may be used to notify the BB regarding the need for blood up to 30 days prior to a scheduled procedure.

IV. **Packed Red Blood Cells (PRBCs)**
   A. Dosage
      1. For relief or prevention of symptomatic anemia, patients should receive the lowest effective dose.
      2. In adult patients, one unit of PRBC will increase the hemoglobin by approximately 1 g/dL (hematocrit by 3%).
      3. Single unit transfusions of PRBC are often effective.
         a. Additional units increase the risk of transfusion related adverse events including infection
         b. For routine orders, only one unit will be dispensed at a time.
         i. Justification for additional units should be documented with the order indication.
      4. Two unit transfusions are acceptable for transfusion dependent patients with marrow failure.
      5. Multiple units may be dispensed in appropriate coolers to the OR, critical care areas, or the emergency department for patients with ongoing blood loss. This includes the Massive Transfusion Protocol.
   B. Acceptable Usage of PRBCs

Updated September 2012
1. Acute Blood loss AND at least one of the following:
   b. Blood loss exceeding 30-40% of blood volume. This indication includes the massive blood transfusion protocol.
   c. Blood loss not responding to appropriate volume resuscitation.
2. Patient is normovolemic AND there is evidence of inadequate tissue oxygenation as shown by at least one of the following:
   a. Hypotension not corrected by adequate volume replacement alone. Relative hypotension is a MAP less than 80% of baseline.
   b. Change in oxygenation consistent with inadequate tissue oxygenation.
3. Patients with sickle cell disease rarely need to be transfused above a Hgb of 9 to 10 g/dL. Red cell transfusion is indicated with any of the following complications:
   a. Cerebrovascular accident
   b. Acute chest syndrome
   c. Splenic sequestration
   d. Aplastic crisis
   e. Recurrent priapism
   f. Prior to a surgical procedure requiring general anesthesia
4. Patients requiring red cell exchange rarely need to be transfused above a Hgb of 9 to 10 g/dL. Indications for red cell exchange include:
   a. Sickle cell patients with a treatment protocol for red cell exchange
   b. Emergency exchange transfusion for patients with sickle cell disease
   c. Adjunct treatment in patients with babesiosis or malaria with life-threatening parasitemia
   d. Other red cell exchange protocol as approved by the Apheresis Medical Director or designee
5. Hemoglobin of less than 7 g/dL (hematocrit 21%) with at least one of the additional criteria:
   a. In a normovolemic patient, the patient has symptoms of anemia such as:
      i. Angina
      ii. Mental Status Changes
      iii. Dizziness
      iv. Dyspnea
      v. Headache
   b. Patients with septic shock after the first six hours of septic shock
   c. The patient’s anemia is not correctable with other available treatment. This includes disorders of red cell production and marrow failure.
   d. In preparation for a surgical procedure or other intervention with the potential for significant blood loss. This includes patients receiving chemotherapy or radiotherapy that is expected to significantly suppress red cell production
5. Hemoglobin of less than 8 g/dL (hematocrit 24%) in the following:
   a. Patients with acute cardiac disease including: unstable angina, myocardial infarction, cardiogenic shock or acute congestive heart failure. Patients with chronic cardiac disease should be transfused as indicated in section 4.b.v.
   b. During the first six hours of treatment for septic shock. Patients with chronic sepsis should be transfused at hemoglobins less than 7.

C. Transfusion of packed red cells is contraindicated and not recommended for the following indications:
   1. For treatment of “anemia” or “low hemoglobin” in the absence of the above criteria
   2. For volume replacement alone
   3. In place of an available hematonic – any drug or therapy that improves the hemoglobin concentration such as iron, erythropoietin, etc.
   4. For enhancement of wound healing
   5. To improve general “well-being”

V. Washed PRBC

Updated September 2012
A. Dosage
1. Same as for PRBC
2. Acceptable Usage requires the same criteria as for PRBC with at least one of the following additional criteria:
   a. History of severe allergic transfusion reactions/anaphylactic reactions not prevented by pretransfusion administration of antihistamines and/or corticosteroids
   b. Severe IgA deficiency with documented IgA antibodies
B. Not recommended to prevent febrile reactions.

VI. Leukoreduced PRBC
A. With rare exception, all red cell components available at Indiana University Health University Hospital, Riley Hospital for Children, and Methodist Hospital are pre-storage leukoreduced.
   Note: Other facilities may not provide pre-storage leukoreduced components or may have a mixture of pre-storage and non-prestorage leukoreduced components.
B. Dosage
1. Same as for PRBC
C. Indications
1. Same as for PRBC
D. Acceptable Usage
1. Prevention of HLA/WBC alloimmunization
2. Prevention of non-hemolytic febrile reactions
3. Prevention of CMV transmission in immunosuppressed patients. Leukoreduced PRBC are CMV safe blood components and provide substantial reduction in the risk of transfusion transmitted CMV infection.
4. Intrauterine transfusion

VII. CMV Safe Blood Components
A. CMV Safe PRBC and CMV safe APLT provide substantial reduction in the risk of transfusion transmitted CMV infection. The risk reduction is greater than 93%.
B. The following components are considered CMV Safe
   1. Leukoreduced PRBC and PLT
   2. CMV seronegative PRBC and PLT
C. Plasma components including TP and CRYO lack cellular components and are considered CMV safe

VIII. Apheresis Platelets (APLT)
A. Dosage
1. Patients should receive the lowest effective dose to treat or prevent bleeding.
2. The standard dose for an APLT is one unit. For all orders, only one unit will be dispensed at a time. Additional units increase the risk of transfusion related adverse events. The patient’s bleeding risk needs to be reassessed after each unit transfused.
3. In adult patients without platelet refractoriness, one unit of APLT will increase the platelet count 25,000 to 40,000/cumm. A number of clinical conditions (splenomegaly, sepsis, DIC, active bleeding, patients on CRRT) may result in lower than expected post-transfusion platelet counts. In patients with consumptive processes it may not be possible to “transfuse up” to specific post-transfusion thresholds, and administration of additional units may be futile.
4. Patients that are refractory to platelet transfusion often have little to no response to additional APLT transfusions. The underlying condition of the refractoriness should be treated if possible. In some cases, HLA-Matched or Solid Phase Red Cell Adherence (SPRCA)-Crossmatched Platelets may be useful (see below); these products require additional time to procure.
5. One unit of APLT contains approximately 250-300 mL of plasma.
6. One APLT unit is equivalent to approximately 6 to 8 units of whole blood-derived platelets (also called random donor platelets, or RDPLT).
a. When compared to RDPLT, APLT may reduce risk to the patient by reducing the number of blood donor exposures and, therefore, reducing the risk of exposure to transfusion transmitted infection. In general, APLT has a lower risk of red cell exposure than RDPLT, preventing the risk of alloimmunization to red cell antigens.

b. In rare cases RDPLT may be provided

B. Acceptable Usage of APLT

1. Prophylactically if platelet count less than 10,000/cumm in a nonbleeding patient with failure of platelet production
2. Platelet count less than 20,000/cumm in patients with signs of hemorrhagic diathesis as manifested by petechial or mucosal bleeding.
3. Platelet count less than 50,000/cumm in patients:
   a. with active bleeding
   b. to undergo surgery or invasive procedure where clinically significant bleeding is anticipated
   c. with diffuse microvascular bleeding following cardiopulmonary bypass or with intra-aortic balloon pump
4. Platelet count less than 100,000/cumm (this practice is consensus-based and not evidence-based practice) in patients:
   a. with active or at risk for intracranial, intraspinal, or intraocular hemorrhage
   b. prior to neurosurgical procedures or high risk ophthalmologic procedures (including lumbar puncture and epidural anesthesia)
5. Bleeding in a patient with congenital acquired platelet dysfunction
   a. Documentation of evidence for platelet dysfunction must be noted in the transfusion order
6. Bleeding in a normothermic patient with acquired platelet dysfunction due to mechanical injury or anti-platelet medications
   a. Documentation of evidence for the acquired platelet dysfunction must be noted in the transfusion order
   b. This includes recent or current administration of antiplatelet medications prior to a procedure. Examples of common antiplatelet medications include but are not limited to:
      i. Aspirin
      ii. Clopidogrel (Plavix®)
      iii. Ticlopidine (Ticlid®)
      iv. Prasugrel (Effient®)
   c. This includes membrane oxygenator defect secondary to ECMO or bypass surgery.
7. Abnormal platelet function by platelet function analyzer, or platelet aggregation studies.
8. Massive transfusion with diffuse microvascular bleeding and inadequate time to obtain platelet count. This includes the Massive Transfusion protocol.

C. Other considerations with APLT

1. Thrombotic Thrombocytopenic Purpura (TTP)/Hemolytic-Uremic Syndrome (HUS): platelet transfusions are a relative contraindication and may worsen the patient’s condition. However, platelet transfusion may be used for life-threatening bleeding.
2. Heparin Induced Thrombocytopenia (HIT): platelet transfusions are a relative contraindication and may worsen the patient’s condition. However, platelet transfusion may be used for life-threatening bleeding.
3. Idiopathic Immune Thrombocytopenic Purpura (ITP): platelet transfusions are generally ineffective, and are not indicated unless there is life-threatening bleeding.
   a. During splenectomy, platelet transfusions may be used immediately prior to and after clamping the splenic vascular pedicle.
4. Platelet transfusion may be ineffective in a patient with systemic hypothermia less than 35 degrees Celsius (95 degrees Fahrenheit).
5. Platelet components supplied by the BB are pre-storage leukoreduced APLT. There may be rare instances where leukoreduced products are not available.

IX. Washed Apheresis Platelets
A. Dosage
   1. Same as for APLT
B. Acceptable usage requires the same criteria as for APLT with at least one of the following additional criteria:
   1. History of anaphylactic reaction to blood components
   2. History of prior severe allergic transfusion reactions not prevented by pre-transfusion administration of antihistamines and/or corticosteroids
   3. Severe IgA deficiency with documented IgA antibodies
   4. Washed maternal APLT are indicated for treatment of neonatal alloimmune thrombocytopenia (NAIT).
C. Not recommended to prevent febrile reactions through leukocyte reduction.

X. Leukoreduced APLT
A. With rare exception, all platelet components available at Indiana University Health University Hospital, Riley Hospital for Children, and Methodist Hospital are pre-storage leukoreduced. Note: Other facilities may not provide pre-storage leukoreduced components or may have a mixture of pre-storage and non-prestorage leukoreduced components.
B. Dosage
   1. Same as for APLT
C. Indications
   1. Same as for APLT
D. Acceptable Usage Reference
   1. Prevention of HLA/WBC alloimmunization
   2. Prevention of non-hemolytic febrile reactions
   3. Prevention of CMV transmission in immunosuppressed patients
   4. Leukoreduced APLT are CMV Safe and provide substantial reduction in the risk of transfusion transmitted CMV infection
      a. Intrauterine transfusion
E. Possible Additional Benefits of Leukoreduction
   1. Reduced transfusion-induced immunomodulation (post-operative infections)
   2. Prevention of post cardiopulmonary bypass lung injury

XI. HLA-Matched or Solid Phase Red Cell Adherence (SPRCA)-Crossmatched Platelets
A. Dosage
   1. Same as for APLT
B. Acceptable Usage: For patients who require APLT transfusion and are immunologically refractory to platelet transfusion as evidenced by:
   1. At least two consecutive APLT transfusions with poor response within 10-60 minutes post-transfusion as documented by:
      a. Inadequate corrected count increment (CCI)
      b. Minimal raise in platelet count. Requires consultation with the BB.
C. HLA and SPRCA crossmatched platelets are not effective for correcting thrombocytopenia from non-immune causes of platelet refractoriness. There are many non-immune causes of platelet refractoriness including; massive bleeding, fever, sepsis, splenic sequestration, DIC, allogeneic transplantation, medications, and microangiopathic hemolytic anemias.
D. HLA-Matched and SPRCA-Crossmatched Platelets are usually clinically equivalent. The BB will determine the most efficient product to acquire based on the patient’s laboratory findings.
   1. HLA matched may be used to prevent HLA immunization
E. There may be a delay in obtaining HLA and SPRCA crossmatched platelets for patients. Communication with the BB is critical, especially for patients with anticipated ongoing needs.

XII. Thawed Plasma (TP):

Updated September 2012
A. Definition: Thawed plasma is derived from FFP [or PF24] that has been thawed in a closed system and stored at 1 – 6 degrees C for 1 to 5 days.
   1. Thawed plasma contains hemostatic concentrations of labile coagulation Factors V and VIII.
   2. The majority of plasma dispensed at Indiana University Health University Hospital, Riley Hospital for Children, and Methodist Hospital is Thawed Plasma.

B. Dosage
   1. Patients should receive the lowest dose possible to correct or prevent bleeding.
   2. To obtain a clinically relevant increase in procoagulants, the standard dosage of plasma should be 10 – 20 mL/kg.
   3. A maximum of 4 units of TP will be prepared at one time (with the exclusion of TP for the massive transfusion protocol). Transfusion of TP must be completed within 4 hours of issue from BB or removal from BB approved storage (e.g. BB monitored refrigerator; BB validated cooler).
   4. For correction of coagulopathy prior to a scheduled procedure, plasma should be transfused as close in time as possible to the procedure.
      a. Several of the clotting factors have short half-lives. For example, the half-life of Factor VII is approximately 5 hours.
      b. If pre-procedure plasma transfusion is given too far in advance of a scheduled procedure, the effectiveness of the transfused plasma in correcting the coagulopathy could be diminished at the time of the surgery.

C. Acceptable Usage of TP
   1. The following laboratory findings may be associated with clinically significant deficiencies of multiple clotting factors:
      a. INR greater than 1.6
      b. INR greater than 1.5 in patients with bleeding (or at significant risk for bleeding) into the brain, eye, or spinal cord
      c. In patients without exposure to heparin, aPTT greater than 1.5 times the upper limit of the reference range
      d. Evidence of significant coagulopathy determined by coagulation analyzer that is expected to improve with TP therapy
   2. Replacement therapy for clinically significant deficiencies (see above) of multiple clotting factors other than Factor VII, VIII, IX and at least one of the following:
      a. Actively bleeding patient
      b. Patient scheduled for surgery/invasive procedure
      c. Prophylaxis in critically ill patients with a clinically significant coagulopathy at risk for bleeding
   3. Patients undergoing transfusion per the massive transfusion protocol.
   4. Emergent correction of coagulopathy due to anticoagulant therapy
      a. Prothrombin Complex Concentrate (PCC) obtained from the pharmacy should be considered as the first line of treatment for warfarin reversal. It may be used in place of TP or with reduced amounts of TP (1-2 units). (See Warfarin Reversal Guidelines)
         i. Patients with significant bleeding.
         ii. Trauma patients or patients requiring emergent surgery on Coumadin may require immediate reversal using both TP and vitamin K.
         iii. Vitamin K therapy should be given without TP transfusion for non-bleeding patients with INR less than 20. Vitamin K usually reverses Coumadin effect in 12 to 24 hours.
         iv. Examples of common classes of anticoagulant medications include but are not limited to:
            (a) Vitamin K antagonists
            (b) Low molecular weight heparins
            (c) Direct thrombin inhibitors
            (d) Factor Xa inhibitors
   5. Patients with liver failure and bleeding or those at significant risk for bleeding.
a. Plasma transfusion is generally not recommended in non-bleeding cirrhotic patients with chronic minor coagulopathies.

b. In patients with liver failure, INR and PT testings may have decreased reliability for predicting bleeding.

6. Patients with documented or presumptive Antithrombin deficiency only if Antithrombin concentrates are not available or contraindicated.

7. Treatment of TTP or hemolytic HUS.

8. Rare documented deficiencies of certain complement factors.

D. Support during treatment of DIC.

E. Transfusion of plasma is not indicated for the following:
   1. For prophylactic treatment of minor coagulopathies
   2. For volume expansion
   3. For enhancement of wound healing
   4. For treatment of nutritional deficiencies

XIII. Cryoprecipitate (Cryo)

A. Dosage
   1. Patients should receive the lowest dose possible to treat or prevent coagulopathy due to inadequate fibrinogen or one of the specific criteria listed below.
   2. The adult dose is 10 units.
   3. Only a single dose of 10 units of cryoprecipitate will be prepared at one time with the exception of the following:
      a. Patients that are receiving fibrinolytics or have a fibrinogen less than 50 mg/dL may require a higher dose of cryoprecipitate to achieve hemostasis.
      i. The expected recovery from the above dosage is 60 – 100 mg/dL increase in fibrinogen.

B. Acceptable Usage (Cryo)
   1. Documented hypofibrinogenemia
      a. Fibrinogen less than 100 mg/dL and at least one of the following:
         i. The patient is actively bleeding.
         ii. Prophylaxis in patients for whom a bleed may cause serious clinical sequelae.
         iii. Prophylaxis prior to a surgical procedure with risk of significant bleeding
      a. Fibrinogen less than 125 mg/dL and diffuse microvascular bleeding.
      b. Dysfibrinogenemia
   2. Von Willebrand’s disease not treatable with desmopressin and von Willebrand concentrate (intermediate purity factor VIII concentrates such as Humate P® or Alphanate®)
   3. Select cases of hemophilia A unresponsive to desmopressin when factor VIII concentrates are unavailable
   4. Factor XIII deficiency with active bleeding or pending invasive procedure when Factor XIII concentrates are unavailable
   5. When needed for the preparation of Fibrin Glue
   6. Patients with uremic bleeding unresponsive to desmopressin
   7. Massive Transfusion Protocol

XIV. Consult with pharmacist for other blood derivatives and recombinant blood factors that are provided by the pharmacy (see patient care policy MD 1.38 AP)

XV. Directed Donation

A. This alternative to choose specific donors to provide blood for transfusion is available to patients. Appropriate indications and schedules of collection can be discussed with the BB or Blood Center physicians.

B. There is no evidence that directed donors are safer to use than volunteer community donors. Blood donated by blood relatives may put the patient at a higher risk for graft versus host disease (GVHD).
C. Directed donors must meet all of the same criteria as voluntary donors. Therefore, the blood can be used for other patients if not needed by the individual for whom the donations were intended.

XVI. Pre-operative Autologous Donation (PAD) for Transfusion
A. Autologous (self) blood donation may be an option for patients prior to elective procedures for which there is a greater than 10% chance of requiring red cell transfusion. Appropriate indications and schedules of collection can be discussed with the BB or Blood Center physicians.
B. Due to improved testing and screening of blood components for concerning infectious diseases, there is minimal medical benefit to PAD and the benefits may not outweigh the risks which are as follows:
1. Complications related to donation such as vasovagal reactions, fatigue, local nerve injury, arterial puncture, DVT, and possibly death.
2. Anemia secondary to donation which increases the chances of requiring an intra-op or post-op transfusion
3. Intraoperative blood loss is unpredictable, and approximately half of PAD units are typically discarded.
4. Donation of autologous units does not prevent the need for allogeneic transfusion after the autologous units have been used.
5. Transfusion of an autologous unit is not risk-free. Risks inherent to autologous transfusion include:
   a. Misidentification of unit with potential resultant hemolytic reaction or disease transmission.
   b. Accidental use of allogeneic blood rather than autologous unit; possibility of transfusion reaction or disease transmission.
   c. Bacterial contamination of unit with subsequent sepsis.
   d. Volume overload
   e. Non-immune hemolysis of the red cells within the blood bag or during transfusion.
   f. Allergic reaction due to processing or storage techniques, e.g., plasticizers used in production of bags and tubing, anticoagulants, and sterilization compounds, such as ethylene oxide gas.

C. Acceptable Usage of Autologous Blood Transfusion
1. The same as for allogeneic blood.
   a. Note: Transfusion decisions may be divided into three situations:
      i. Patient definitely needs transfusion.
      ii. Patient definitely does not need transfusion.
      iii. Patient probably/possibly may benefit from transfusion. In this situation, the decision to transfuse autologous blood is appropriate.

XVII. Intraoperative Blood Salvage and Normovolemic Hemodilution are alternatives to PAD
A. Acceptable Usage
   1. Expectation of salvage of a clinically significant volume of PRBC.
B. Intraoperative Blood Salvage is Not Recommended with any of the following:
   1. Possible infectious contamination of operative field.
   2. Possible contamination by tumor cells.
   3. Possible contamination by amniotic fluid.

XVIII. Irradiated Blood Products
A. Viable lymphocytes in the transfused cellular blood products may cause transfusion induced GVHD, a usually fatal complication. Irradiation of cellular blood products with 2500 cGy inactivates lymphocytes.
B. Red cells, platelets, and granulocyte transfusions should always be irradiated to prevent this complication in high risk patients.
C. Fresh-frozen plasma, cryoprecipitate and clotting-factor concentrates do not contain viable lymphocytes, and therefore do not require irradiation.
D. Acceptable Usage of Irradiation
1. Intrauterine transfusions.
2. Directed donations from blood relatives.
3. HLA compatible plateletpheresis products by typing or crossmatching.
5. Transfusions during extracorporeal membrane oxygenation
6. Certain patients with congenital immunodeficiency syndromes including but not limited to:
   a. DiGeorge's Syndrome
   b. Severe combined immunodeficiency (SCID)
   c. Wiskott-Aldrich syndrome
   d. other severe congenital immunodeficiencies.
7. Certain patients with (or patients at risk for) acquired immunodeficiency syndromes including but not limited to the following patient conditions:
   a. Received (or are planning to receive) hematopoietic progenitor cell transplantation – “e.g. bone marrow transplant”
   b. Acute leukemia
   c. Chronic lymphocytic leukemia
   d. Waldenstrom’s macroglobulinemia
   e. Lymphoma (including Hodgkin’s and Non-Hodgkin’s lymphoma)
   f. Aplastic anemia
   g. Neuroblastoma
   h. Sarcoma
   i. Receiving immunosuppressive agents such as fludarabine
   j. Other acquired caused of severe immunodeficiency.
   i. Note: The presence of acquired immune deficiency syndrome (AIDS) without other causes of immunodeficiency is generally NOT associated with increased risk for transfusion associated GVHD.

XIX. Resuscitation Notes
A. Refer to the Massive Transfusion Protocol for treatment of exsanguination.
B. Hypothermia, acidemia, and low flow states associated with acute hemorrhage impact the normal hemostatic mechanisms in several ways, e.g., microthrombosis (DIC), impaired platelet function (hypothermia), slowed protein kinetics (hypothermia, acidemia), impairing fibrin formation.
C. Several studies performed in actively bleeding patients have strongly suggested that efforts directed at reversing the coagulopathy with component transfusion in the face of hypothermia (T<35C) and low flow states are ineffective without first achieving better resuscitation. The Trauma Committee strongly recommends all effort be expended on achieving optimal resuscitation end points before consideration of treating the coagulopathy with component therapy.
D. Hypocalcemia may contribute to coagulopathy in patients who have been massively transfused (10 or more units of RBCs in a 24 hour period of time).

XX. Granulocytes
A. The efficacy of granulocyte transfusion is controversial and associated with a substantial adverse risk and mortality including:
   1. Transfusion related acute lung injury
   2. Anaphylaxis and severe allergic reaction
   3. Transfusion associated GVHD
   4. Hemolytic transfusion reaction
   5. Inflammatory reaction
   6. Increased risk for transmission of infectious agents
B. Procurement of granulocytes usually requires advance notice and the coordination of multiple blood centers.
C. The use of granulocytes components requires consultation with the BB physician.
D. Dosage: Therapeutic doses are often not obtainable for adult populations.
E. Acceptable usage requires ALL of the following criteria:
1. Presence of a severe bacterial or fungal infection not controllable with appropriate antibiotic or antifungal therapy.
2. Transient severe neutropenia with an absolute neutrophil count less than 500/cumm
3. The patient is expected to recover from the neutropenia.

F. Notes:
1. All granulocyte products are irradiated to prevent GVHD
2. Granulocyte components cannot be leukoreduced, therefore CMV negative components should be ordered if the patient is CMV negative.
3. HLA matched components may reduce the risk of transfusion related acute lung injury.
4. Due to the emergent need for the product, the ordering physician must be aware that infectious disease testing is usually not done and must be waived. A release statement must be signed.

XXI. Whole Blood
A. Whole blood is not available. Component therapy is recommended.

XXII. References:
- HM1.01A Blood Administration - Adult
- MD 1.38 AP Blood Derivatives and Recombinant Blood Factors: Preparation, Dispensing and Administration
- Massive Transfusion Protocol
- Warfarin Reversal Guidelines: Factor IX Complex Concentrate (Profilnine)/Adult Trauma and Neurosurgical Emergent Warfaring Reversal Order Set, or Vit K Dosing Guidelines for Reversal of Warfarin-ADULT and PEDIATRIC

XXIII. Appendix:
Transfusion Administration Orders – Adult; CH-20442

XXIV. *Citations

Red Cell Transfusion Practice


Updated September 2012


Tinmouth AT, McIntyre LA, Fowler RA. Blood conservation strategies to reduce the need for red blood cell transfusion in critically ill patients. CMAJ 2008;178:49-57.


Platelet Transfusion Practice


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Granulocytes


Plasma and Plasma Concentrate Transfusion Practice


