I. POLICY:

A. Informed consent will be obtained from all patients prior to transfusion except in life threatening emergencies.

B. Positive identification of patient and unit(s) of blood product(s) to be transfused must be performed at the bedside by two (2) qualified personnel (physicians and nurses).

C. Personnel who participate in the administration of blood and blood components have been trained and must demonstrate competency in transfusion procedures including recognition and management of adverse transfusion reactions.

II. RESPONSIBILITIES:

A. The Physician will:
   1. Write a complete transfusion order in the Electronic Medical Record (EMR.)
   2. Obtain informed consent for blood or blood component therapy. This consent form covers administration of blood and blood components for the duration of the patient's admission.
   3. Fill out and sign a “Blood Product Release” form, once every twenty four hours for multiple transfused patients.
   4. Treat all suspected transfusion reactions upon notification.

B. The Nurse will:
   1. Implement doctor's transfusion order.
   2. Monitor vital signs pre-, during, and post-transfusion.
   3. Complete the Patient Transfusion Record and Blood Release Form.
   4. Perform along with another qualified personnel, using two acceptable patient identifiers and by scanning positively patient ID and blood product at the bedside (see EPIC
workflow). Note: Scanning the blood product into EPIC does not check to ensure the blood product is the correct unit for patient. Scanning simply prevents you from having to manually key in the 13-digit unit number.

5. Notify physician of any suspected transfusion reactions.

C. The Blood Bank Technologist will:
   1. Perform all compatibility testing according to established procedures.
   2. Issue requested blood component(s) as requested after verification and inspection of each unit.
   3. Perform any transfusion reaction work-up upon request.

D. The Blood Bank Physician will:
   1. Be available for consultation 24-hour a day.
   2. Evaluate transfusion reaction work-up and provide written report to be filed in patient’s medical record.

III. PROCEDURE:

A. Informed Consent:
   1. To obtain informed consent, the physician
      a. Discusses the following with patient and/or significant other:
         • The need for transfusion
         • Risks, benefits, and alternatives to homologous (allogenic) transfusion, and
         • Consequences of not receiving the transfusion
      b. Allows patient to have the opportunity to ask questions regarding transfusion.
      c. Completes informed consent documentation in EPIC (see EPIC Workflow).
      d. Fills out, signs and dates the Blood Products Release form.

B. Doctor’s Transfusion Order:
   1. The physician places the complete transfusion order in the EMR which include:
      a. Name or type of blood component to be transfused,
      b. Number of units (volume),
      c. Rate of transfusion,
      d. When blood transfusion is to be administered, and
      e. Special instructions e.g., irradiated leuko-reduced blood, CMV negative etc.
   2. The nurse carries order by performing the following steps:
a. Verifies completeness and accuracy of order.
b. Acknowledges order in EPIC.
c. Verifies that physician has obtained and documented informed consent to transfuse patient in EPIC EMR.
d. Activate the release hyperlink for Blood Release to print requisition slip and bring to Blood Bank to pick up the requested blood/blood component.

C. Release and Transport of Blood and Blood Components:

1. Prior to requesting blood component from the Blood Bank, the nurse:
   a. Verifies physician's order to transfuse. If ordered, administer pre-transfusion medication.
   b. Obtains and records pre-transfusion vital signs (BP, Temperature, and Respiration) in Patient Transfusion Record.
   c. Verifies IV catheter gauge size and patency. Restart IV access if needed.
   d. Informs Blood Bank personnel if requesting more than one unit of blood component to be released at a time for the same patient.

2. Nurse and/or designee present a Requisition/Release Slip.
   **Note:** Any unit of Packed Red Blood Cell (PRBC) must be returned to Blood Bank if not transfused within 30 minutes of issuance unless it is stored in a Blood Bank cooler or monitored refrigerator. **Do not place PRBC in the refrigerator on the nursing unit,** as its temperature is not monitored for blood storage. PRBC must be transfused immediately upon arrival in the unit.

3. The Blood Bank personnel documents the Date/time of issue, Blood component Unit Number, Group and Rh factor, Compatibility of blood/blood component issued. Nursing staff verifies with Blood Bank personnel the same information matches the slip with the blood/blood component issued.

   **Note:** Only one unit at a time will be released for a patient, unless the patient has two intravenous lines in place, allowing for two units of blood products to be transfused simultaneously. Multiple blood units, which must be transported in a cooler, will be released only to the Operating Room, Trauma Bay, and Hemodialysis Units.

D. Transfusion of Blood and Blood Components:

1. Immediately upon receipt, nurse inspects blood component for abnormal
appearance (discoloration, clots, leaks, etc). Consult with Blood Bank if there is any question.

2. At the bedside, an RN and a physician, or two (2) RNs must establish positive identification of patient and unit of blood component, and scans the 13-digit unit number on the bag before starting the transfusion as follows:
   a. Match the blood component unit number, blood type and Rh factor against the label on the bag of blood.
   b. Verifies the blood component as dated is not expired.
   c. The patient’s ID bracelet with his/her hospital number is the same as the Patient Transfusion Record data and the label/slip on the bag.
   d. The two personnel verifying the required information sign in the patient’s transfusion flowsheet in the EMR.

3. Attach one end of Y connector of blood transfusion set with a filter to normal saline IV bag. Prime transfusion set with minimal amount of normal saline. (Use of IV solutions other than normal saline will result in hemolysis.) Connect transfusion set directly into intracath. DO NOT PIGGY BACK transfusion line.

4. Mix the unit of blood thoroughly by repeated gentle inversion of the bag of blood.

5. Attach unit of blood component to the other Y connector end of Blood Transfusion set.

6. The nurse and/or physician who initiates the transfusion must record date and time the transfusion is started, type of component and unit number.

7. Document time transfusion began and pre-transfusion vital signs (BP, Pulse, Respiration, and Temperature) on Patient Transfusion Record.
8. During the first 15 minutes into the transfusion, establish a slow rate
e. g., 1-3 ml/minutes and observe patient closely. **Pediatric patients**
should be transfused at 3-5 ml/kg/hr.

9. Repeat vital signs after 15 minutes into transfusion and document in
Patient Transfusion Record.

10. At the time of completion of a unit of blood transfusion (See Workflow
Attachment):
   a. Record time of completion of each unit of blood in
      Patient Transfusion Record in EMR.
   b. Obtain and document post transfusion vital signs.
   c. Record volume transfused.

**E. Transfusion Rates:**
The Blood Transfusion Committee recommends the following rates:

**Note:** Orders for transfusion should include the rate of infusion and
should not be accepted and carried on until the order is written
completely. All blood components must be filtered during
administration. An add-on-filter such as leukocyte reduction filter may
be used and are issued by Blood Bank.

1. **Packed Red Blood Cells (PRBC’s):**
   Each unit (300 ml) should be infused over 60-90 minutes for the average
   adult, unless the clinical condition of the patient dictates otherwise (e.g.,
   acute bleeding, CHF, etc.) The initial rate of infusion (first 15 minutes)
   should be slow (e.g., 1-2 ml/min.) Pediatric patients should be transfused
   at 3-5 ml/kg/hour. The infusion should not exceed four (4) hours.

2. **Fresh Frozen Plasma/Solvent Detergent Plasma (FFP)** should be
   infused as rapidly as possible (within 30 minutes if volume does not exceed
   5-10 ml/kg).

3. **Platelet Concentrate (Plat. Conc.)** should be infused as rapidly as
   possible (within 30 minutes if volume does not exceed 5-10 ml/kg).

4. **Cryoprecipitate (Cryo)** should be infused as rapidly as possible (within 30
   minutes if volume does not exceed 5-10 ml/kg).
F. Suspected Transfusion Reactions:
1. Check for flushing of face, changes in pulse rate, urticaria, dyspnea, pain in the back, restlessness, anxiety, increase in temperature, and port wine urine. If any of the above mentioned is present, STOP TRANSFUSION IMMEDIATELY, but continue saline infusion. Notify physician and Blood Bank of transfusion reaction.

2. Document in the patient's transfusion documentation flowsheet in the EMR.

3. If an adverse transfusion reaction occurs, **follow list of actions to be taken for each class of transfusion reaction as follows:**

   a. **Class I Reaction: Urticaria only.**
      - Stop transfusion (keep IV open with slow saline drip).
      - Give antihistamine.
      - If no response to above, follow instructions for Class II Reactions.
      - Complete a Transfusion Reaction Investigation Form and send to Blood Bank.

   b. **Class II Reactions: Fever, Chills, Dyspnea, Cyanosis, Backache, Nausea/Vomiting**
      - Stop transfusion (keep IV open with slow saline drip).
      - Send blood (red top tube) and urine sample to the Blood Bank.
      - Treat with antipyretics and sedatives.
      - With positive laboratory tests, start prophylactic treatment for Class III Reactions.
      - Complete a Transfusion Reaction Investigation Form and send it to Blood Bank.

   c. **Class III Reactions: Shock, Oliguria, Hemoglobinuria, and Bleeding**
      - Stop transfusion (keep IV open with slow saline drip).
      - Send blood (red top tube and lavender top tube) and urine sample to the Blood Bank.
      - Maintain Blood Pressure (BP).
      - Monitor urinary output.
      - Complete Transfusion Reaction Investigation form and send to the Blood Bank.
d. **For Class II and III Reactions:**

   a. Obtain CBC and Serum Bilirubin upon recognition of adverse transfusion reaction.
   
   b. Repeat Serum Bilirubin 12-18 hours after.
   
   c. Collect urine sample two (2) hours after reaction.
   
   d. Send specimens to appropriate lab.

   e. **Return unfinished unit of blood product to the Blood Bank with the IV solution attached if applicable.**

G. **Equipment and Supplies:**

1. **Filters:** All blood products must be transfused using a blood transfusion set with a filter. Leukocyte removal filters are issued by the Blood Bank to reduce the number of white cells in the blood component in order to:

   a. Reduce the incidence and severity of febrile reactions.
   
   b. Reduce the likelihood of alloimmunization to leukocyte antigens.
   
   c. Reduce the risk of transmission of CMV immunocompromised patients.

   Because of the large number of filters available, the instructions for use on the package or on the product insert should be read to determine the priming instructions and the maximum number of units that may be administered using the filter.

2. **Intravenous Solutions:** Only isotonic solution 0.9% is recommended for use with blood components.

3. **Blood Warmers:** Fluid warmer devices at Jamaica Hospital Medical Center are equipped with a temperature alarm and a visible thermometer. **Temperature of these units must not exceed 42°C.**

   **Note:** **DO NOT USE** blood warmer if the alarm sounds and/or temperature is greater than 42°C. Blood warmer devices are most appropriate for massive and rapid blood replacement. Blood warmers are available in the Emergency Department, Operating Room and the Labor and Delivery Room. A copy of their maintenance record is submitted to the Blood Bank on a monthly basis. All blood warmers must have current Biomedical Engineering tag. Do not use equipment if tag is not current and/or does not have a tag.
4. **Pressure Infusion Cuffs:** Do not use pressure infusion cuff with platelet leukoreduction filters or with many permanent indwelling venous catheters. Follow the filter, port or catheter manufacturer's instructions regarding the use of pressure devices.

H. **Patient Education:**

1. **In-Patient:** The nurse and/or physician assess transfusion education needs of patient and documents teaching plan in the **Patient Education Form** prior to transfusion. Patient education is initiated and continued until patient's needs are met. Information given includes but not limited to the following:
   a. Risks, benefits, alternatives and possible consequences of not receiving transfusion.
   b. Signs and symptoms of transfusion reactions.
   c. Procedures and equipment used.

2. Patients who are leaving the hospital within one week of transfusion should be given written instructions regarding delayed transfusion reactions.