# BEEBE HEALTHCARE

Patient Care Manual

| Transfusion of Blood and Blood Components | Date: 10/25 |
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## 1. PURPOSE

The purpose of the policy is to detail best practice, to reduce the potential risk of transfusion errors, and to assist personnel with all aspects related to blood and blood component transfusion.

## 2. SCOPE

Patient Care and Blood Bank

## 3. POLICY

3.1. Blood and blood products are viewed as prescribed intravenous medication. It is the responsibility of all clinicians and care clinicians for the recipient or the potential recipient to understand the significance of the procedures related to the:

3.1.1. Explanation of a transfusion

3.1.2. Options of alternatives to transfusion

3.1.3. Ordering/requesting of the blood/blood product

3.1.4. Transfusion process

3.1.5. Collection of the Pre-transfusion blood sample

3.1.6. Outcome of the transfusion

3.2. All are responsible for maintaining and updating their knowledge.

3.3. Personnel who participate in the administration of blood components must be trained in the transfusion procedures and management of adverse events.

## 4. PROCEDURE

### 4.1. Recipient Consent

Prior to placing a request for a blood product, explain to the patient or designated decision maker the purpose, the benefits, and the risks of a blood transfusion, and the alternatives to transfusion of allogeneic blood components. The patient should have the opportunity to ask questions. The transfusionist will ensure there is a signed consent form (Form #10199) prior to initiating a transfusion.

### 4.2. Ordering the Product and Transfusing

A clinician or other licensed care clinician (Nurse Practitioner (NP) or Clinician Assistant (PA) is responsible for prescribing the order for the transfusion of blood and blood components. The order contains:

4.2.1. Name of the product

4.2.2. Number of units

4.2.3. Pre- or post-medication

4.2.3.1. Pre-medication, if requested, should be administered PRIOR to requesting the blood product being sent to the patient care area for the transfusion.

4.2.3.2. If the medication is given orally, the transfusionist should wait 30 to 60 minutes before initiating the transfusion. If the medication is given intravenously, a 10-minute wait time PRIOR to initiating the transfusion is adequate.

4.2.4. Reason for transfusion

4.2.5. A type and screen does not need to be requested when ordering blood products. If the patient does not have a current blood bank sample, the Laboratory Information System (LIS) will automatically generate a type and screen order. Similarly, a crossmatch does not need to be requested when red blood cells are ordered; if no current crossmatch exists, the LIS will add the necessary order.

4.3. **Specimen For Pre-Transfusion Testing (Pre-Analytical)**

Blood Bank samples expire at midnight three days from the date of collection. The day of collection is counted as day zero. Valid Alternative Patient Identification (API) samples for pre-op patients expire at midnight 14 days from the date of collection **or** 3 days after the patient has been admitted, whichever comes first.

4.4. **Emergency Release**

4.4.1. Uncrossmatched blood may be requested by a clinician in life-threatening situations. The blood bank will dispense uncrossmatched red blood cells upon receipt of a verbal request. The Emergency Transfusion Request must be signed by the requesting clinician .

**NOTE:** The requesting clinician will be notified immediately if historical data reveals previous compatibility issues (i.e. previous antibody identification).

4.4.2. If the ABO is unknown or not tested using a current sample, **O Negative or O Positive Red Blood Cells and group AB or Low Titer group A plasma will be dispensed. Historical ABO results are not valid in this situation.**

4.5. **Available Products and Typical Turn Around Times with Current Type and Screen, no antibodies**

4.5.1. Leukocyte-Reduced Red Blood Cells: Crossmatched within 15 minutes

4.5.2. Fresh Frozen Plasma (FFP): Approximate thaw and prep time is 25 minutes

4.5.3. Platelets, Pheresis; Single donor units: Dispensed within 10 minutes as long as available on-site

4.5.4. Cryoprecipitated, AHF (CRYO): 5-unit pools are available. Approximate thaw and prep time is 20 minutes

4.5.5. If the patient does **not** have a current type and screen, Blood Bank will be able to dispense crossmatched red blood cells and ABO compatible components within 45 minutes of receipt of a

properly labeled blood bank specimen as long as the antibody screen is negative and the patient has no history of exhibiting clinically significant antibodies.

4.5.6. Least incompatible red blood cells for patients exhibiting warm autoantibodies (or other conditions / medications that interfere with crossmatch procedures) will be available after the presence of underlying alloantibodies has been ruled out.

4.5.7. Products Available as Special Order

4.5.7.1. Cytomegalovirus (CMV) negative: generally available on-site, minimum of 3 hours required if the product must be ordered

4.5.7.2. Irradiated Red Blood Cells and Platelets: minimum of 3 hours

4.5.7.3. Human Leukocyte Antigen (HLA) matched: 1-3 days

4.5.7.4. Pathogen Reduced Platelets: minimum of 3 hours

4.5.8. Pre-Transfusion Planning: Autologous and Directed Donor Red Blood Cells

4.5.8.1. This program is managed by the Blood Bank of Delmarva, INC (BBD), Beebe Healthcare's blood product supplier. These products require special paperwork and detailed handling. Coordination among the ordering clinician, the patient and family, and BBD is necessary to ensure product is available when needed.

4.5.8.2. General information and instructions may be obtained from the BBD Program Coordinator at 302-737-8405 EXT 789 or 1-888-825-6638. Application forms may be obtained from the Beebe Healthcare Blood Bank.

4.5.8.3. There will be a processing fee charged even if the product is not transfused.

4.5.8.4. See "Circular of Information for the Use of Human Blood and Blood Components" for additional information (located in the online policy manual: Laboratory/Blood Bank)

4.5.8.5. For the general patient care areas, only 1 product is dispensed at one time per patient.

4.5.8.6. Special cooler storage arrangements are available for the Emergency Departments, ICU, Dialysis, Tunnell Cancer Center, South Coastal Cancer Center, and the main hospital Operating Suites for dispense of more than one product per patient.

4.6. **Obtaining the Product (All Beebe Healthcare Locations)**

4.6.1. Blood Bank Technologists will notify the patient care area electronically when the blood product is available or if there is a delay in providing the requested product.

4.6.2. Prior to requesting blood product be dispensed, nursing:

4.6.2.1. Verifies there is a signed blood consent form

4.6.2.2. Pre-medicates the patient, if applicable

4.6.2.3. Verifies appropriate vascular access device (VAD) is present & patent

4.6.2.3.1. Based on vein size and patient population, peripheral IV (PIV) 22 gauge and larger is appropriate for routine administration

4.6.2.3.2. Large bore (14-18 gauge) PIV is recommended for rapid transfusion

4.6.2.3.3. Central venous catheters (CVC)/PICCs/Midlines are appropriate devices for routine and rapid transfusions. PICCs & midlines- infusion may be slower based on catheter length & lumen size.

4.6.2.3.4. Intraosseous (IO) devices may be used for routine or rapid transfusion of blood products. Consider humeral head as optimal site for rapid IO transfusion. Always confirm patency prior to infusion.

4.6.3. Once pre-transfusion tasks are complete:

4.6.3.1. In Flowsheets, open the Blood flowsheet.

4.6.3.2. This tab appears automatically when a patient has a blood order. If the tab doesn't appear automatically:

4.6.3.2.1. Make sure the order is active. If the order is signed and held, you must release the order before it becomes active.

4.6.3.3. Click 'Add Col.'

4.6.3.4. Document vitals and complete the Pre-Transfusion Documentation rows.

4.6.3.5. When ready to release the blood products, click Transfusion Report above the table of contents.

4.6.3.6. In the Transfusion Report, click the Release link. A blood release form prints for the first unit of blood and flowsheet rows appear for you to document transfusing that unit.

4.6.3.6.1. When the subsequent blood products are needed, follow previous steps to release each unit.

4.6.4. Fill out required information on the Blood Product Release Form and send form to Blood Bank.

4.6.5. The Blood Bank Technologist issues the requested product to the patient care area. **Only Transfusion Service Personnel may remove a blood product from a Transfusion Service Storage Refrigerator, Freezer, or Platelet Incubator.**

4.6.6. During the process of issue, the following are verified per Blood Bank protocol:

4.6.6.1. product and patient identifiers

4.6.6.2. compatibility interpretation

4.6.6.3. special transfusion requirements

4.6.6.4. expiration date and time, as well as date and time of issue

4.6.6.5. labeling is complete and intact

4.6.6.6. Visual inspection of the product is performed

## 4.7. <u>METHODS OF TRANSPORT</u>

### 4.7.1. PNEUMATIC TUBE

4.7.1.1. The Blood Bank Technologist compares information on the *Blood Product Release Form* with that on the patient *Product ID Tag (PTAG)* and sends the product to the designated patient care location tube station.

4.7.1.2. Nursing acknowledges receipt of the blood product (correct patient and product requested) by completing the receipt section of the *Blood Product Release Form* and returns the form to the Blood Bank.

### 4.7.2. MANUAL TRANSPORT

4.7.2.1. The Transporter will present to the Blood Bank with the *Blood Product Transport Request* (Form # 10013) or will use the Transport Request form that is in Blood Bank (as the request form may already be in the Blood Bank).

4.7.2.2. Comparisons of information as in the Pneumatic Tube transport will occur.

4.7.2.3. The Transporter will be allowed to deliver for one patient per location.

The Blood Bank Technologist will ensure the hospital transporter understands to expedite the delivery to the patient care location.

4.7.2.4. The Transporter will sign the *Blood Product Transport Request.*

4.7.2.5. Nursing acknowledges receipt of the blood product (correct patient and product requested) by completing the receipt section of the *Blood Product Transport Request.*

4.7.2.5.1. White copy of the form is placed on the patient's chart to be scanned into the EMR and the yellow copy is returned to the Blood Bank.

4.8. **Receipt of Product at the Patient's Bedside**

4.8.1. Transfusions are to be initiated as soon as the product arrives in the patient care/infusion area. If there is going to be a delay that would result in the product not being transfused in the 4-hour time window, the product must be returned to the Blood Bank

4.8.2. Return of Product for Re-dispense

Blood Bank will inspect all returned products to verify the product meets re-issue criteria (temperature and appearance). If acceptable, the product will be placed in appropriate storage until re-issued or released. If the product is deemed unacceptable, the product will be wasted.

4.8.3. Any **spiked** product that will **not** be transfused within 4 hours of being dispensed from blood bank (or removed from a validated temporary storage cooler) is to be discarded in the patient care area unless there is an adverse transfusion reaction workup, in which case the product must be **manually** delivered to the blood bank. **DO NOT USE THE PNEUMATIC TUBE SYSTEM TO TRANSPORT SPIKED PRODUCT.**

4.9. **Initiating the Transfusion**

4.9.1. Equipment needed:

4.9.1.1. Y tube blood solution pump set with 170 to 260 micron filter

4.9.1.2. Infusion pump or Rapid Infuser

4.9.1.3. 0.9% saline solution bag

4.9.1.4. Fluid warmer (available from the Emergency Department, ICU, and Anesthesia) – used for rapid blood infusion and patients with clinically significant cold agglutinins.

4.9.2. Compatible Intravenous solution – No medications or solutions other than 0.9% sodium chloride injection (*USP) are to be administered simultaneously with blood products through the same tubing.

4.10. **Patient and Product Identification Checks**

**Most fatal transfusion events occur because oversights are made during the pre-transfusion positive identification verification checks.**

4.10.1. If possible, have the patient state their full name and date of birth and confirm the identification on the *Product ID Tag (PTAG)* attached to the blood bag.

4.10.2. All identification attached to the blood bag must remain attached until the transfusion has been terminated.

4.10.3. Two staff members (nurses, anesthesia, or clinician) confirm the following information at the patient's bedside/chairside and document the checks in the EHR:

4.10.3.1. A consent for blood transfusion has been signed

4.10.3.2. Patient is wearing a completed hospital ID

4.10.3.3. Patient information (name, DOB, MR#, on identification band attached to the patient matches the information on the *Product ID Tag (PTAG)* attached to the product and the patient identification information in the EMR.

4.10.3.4. Product received matches the transfuse order (i.e. RBCs ordered, RBCs being transfused)

4.10.3.5. Expiration date

4.10.3.6. The compatibility interpretation, if performed

4.10.3.7. The blood bag shows no sign of damage that could compromise product quality

4.10.3.8. Color and appearance of the product is acceptable

4.10.3.9. No errors occur when scanning the donor blood bag label in BPAM. Any discrepancy or error must be addressed before proceeding with the transfusion.

4.10.4. If an error is generated during the scanning process, the transfusionist will:

Make note of the error and attempt to identify the source of the error.

Immediately provide blood bank (X3569) details regarding the error.

4.10.4.1. Blood Bank and the transfusionist will compare all patient identifiers as well as the product order, blood bank specimen label and Product ID Tag (PTAG).

4.10.4.2. Depending upon the nature of the discrepancy and the urgency of the transfusion, blood bank will either:

4.10.4.2.1. request the product be returned

4.10.4.2.2. provide a downtime paper transfusion record for nursing to use to document

4.10.4.2.3. provide a new blood bag tag

4.10.4.3. If an error other than a minor name discrepancy occurs in an emergent situation, blood bank will follow the emergency release process and dispense Uncrossmatched/ universal type product for transfusion.

**COMPATIBILITY CHART**

| **Patient ABO Group** | **Compatible RBC's** | **Compatible Plasma** |
|---|---|---|
| A | A, O | A, AB |
| B | B, O | B, AB, low titer A |
| AB | AB, A, B, O | AB, low titer A |
| O | O | O, A, B, AB |

**When transfusing CRYO and Platelet Products, all ABO Groups are acceptable.**

**Components compatible with the recipient's red blood cells are preferred.**

| Patient's Rh Type | RBC's Rh Type for Transfusion | Plasma Rh Type for Transfusion |
|---|---|---|
| Positive | Positive or Negative | Rh type not required for plasma |
| Negative | Negative ** | Rh type not required for plasma |
| **** In life-threatening situations and when Rh Negative RBCs are unavailable, Rh-Positive RBCs may be transfused to a Rh-Negative patient.** | | |

4.11. **Transfusion Procedure:**

4.11.1. Obtain baseline vital signs within 30 minutes before starting transfusion.

4.11.2. Invert red blood cell products gently to mix the cells.

4.11.3. **Prime the tubing and filter with the blood product.**

4.11.4. Unless otherwise ordered, start the infusion at 50 mL/hour for the first 15 minutes. Document the date time, and initial flow rate in the EHR.

4.11.5. Closely observe the patient for the first 15 minutes for adverse reactions listed below. If possible, it is recommended that the nurse stay in the room for the entire first 15 minutes of transfusion.

4.11.5.1. Cyanosis

4.11.5.2. Shortness of breath

4.11.5.3. Itching

4.11.5.4. Rash

4.11.5.5. Chills

4.11.5.6. Hypotension

4.11.5.7. Tachycardia

4.11.5.8. Patient reported symptoms or discomforts

**If any symptoms are observed, stop the transfusion immediately and follow the procedure outlined in the policy *Adverse Transfusion Reaction*. Document the symptoms observed and actions taken in the EHR.**

4.11.6. Obtain the vital signs (TPBR) after 15 minutes and document in the EHR.

4.11.7. If there are no signs or symptoms of an adverse reaction, increase the infusion rate as ordered or to the recommended infusion rate of:

125 mL/hour or as rapidly as tolerated by the patient for Red Blood Cells

300 mL/hour or as rapidly as tolerated by the patient for Plasma and Platelets

CRYO may be infused as rapidly as tolerated by the patient after the first 15 minutes

4.11.8. In the absence of ongoing and rapid blood loss, the rate of transfusion for patients at high risk for Transfusion-Associated Circulatory Overload (TACO) should not exceed 120 mL/hour. Pre-transfusion diuretics should be administered and the patient's volume status should be assessed

between units if more than one unit is to be transfused. Risk factors for TACO include extreme age, left ventricular dysfunction, renal disease, a history of CHF, female gender, recent vasopressors and positive fluid balance.

4.11.9. Obtain vital signs every hour until the transfusion is complete and document in the EHR.

4.11.10. Exceptions for Dialysis Service

4.11.10.1. Start the infusion at 125 mL/hour for the first 10 minutes. If there are no noted adverse reactions, slowly increase the flow rate. During the dialysis, as long as the patient tolerates the administration of blood, the red blood cells may be infused over 30–45 minutes/unit.

4.11.10.2. The patient must be dialyzed at least 30 minutes after the transfusion to decrease the potential of "post-transfusion-hyperkalemia."

4.11.11. Exception for Tunnell and South Coastal Cancer Centers

4.11.11.1. Pre-medicate the patient as per the orders of the clinician.

4.11.11.2. If there is no adverse reaction after the first 15 minutes of the transfusion, the infusion rate will be increased to allow blood to run over 1. –2 hours, plasma products to run over 30–60 minutes or as ordered by the clinician.

4.11.11.3. Document the activities in the patient's EHR.

4.11.12. Exceptions for Operating Rooms

4.11.12.1. The transfusion process is managed by Anesthesia or Perfusion. Actual volumes and transfusion times are documented in the Anesthesia or Perfusion record.

**4.11.12.2. Two-person verification will be required for all blood products to be performed by a registered nurse, perfusionist, or another clinician.**

4.12. **Transfusion Completion**

4.12.1. Blood products must be transfused within 4 hours of being dispensed from blood bank. If necessary, the infusion rate may be increased during the last hour to meet the time limit.

4.12.2. When the transfusion is complete, flush tubing and extension set with 0.9% normal saline and disconnect

4.12.3. Document in the EHR:

4.12.3.1. Date and time of completion

4.12.3.2. Volume infused

4.12.3.3. Indicate if there were any adverse reactions

4.12.4. Obtain vital signs (TPBR) within 60 minutes post-transfusion and document in the EHR.

4.12.5. If a transfusion reaction is suspected, the product bag must be returned to the blood bank.

4.12.6. If the patient is being discharged after the blood product transfusion, provide them with Blood Transfusion After Care Patient Education Instructions or form M-1230 Instructions to Outpatients Following Transfusions.

## 5. REFERENCES

5.1. AABB Technical Manual. 21st Edition. Bethesda, MD. Association for the Advancement of Blood &

Biotherapies.

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5.3. Circular of Information for the use of Human Blood and Blood Components, June 2024.

5.4. INTERCEPT® Blood System for Platelets: Preparation of Pathogen-Reduced Apheresis Platelet Components. Package Insert, July 2018. Cerus Corporation. Concord, CA.

5.5. AABB Pathogen Inactivation Technology Review Work Group. Questions and Answers about Pathogen-Reduced Apheresis Platelet Components. AABB Guidance Document March 2017.

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5.7. DynamicHealth (2025). Administering red blood cells to adults. EBSCOResearch. Retrieved from https://www.dynahealth.com/nursing-skills/administering-red-blood-cells-to-adults