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Receiving Blood Components from an Outside Source into Inventory - Blood Bank

Document Type: Procedure

I. PURPOSE AND OBJECTIVE:

A. This document will provide policies and procedures that are applicable when receiving blood components from an outside source.

II. SCOPE:

A. This document applies to the receipt of blood components including platelets, plasma, red blood cells (RBCs), and cryoprecipitate. If applicable, refer to Transfusion Medicine policy, Granulocytes by Apheresis.

III. DEFINITIONS / ACRONYMS:

A. **Packing slip**: The sheets that are sent by the blood supplier in each shipment, listing each component in the shipment.

B. **CMV**: Cytomegalovirus

C. **BH**: Beaumont Health

D. **Designee**: Any Blood Bank Technical Director, or transfusion medicine fellow

IV. INTRODUCTION:

A. The process of receiving blood components from an outside source includes the following steps:

1. Signing the delivery record or giving your initials to the delivery personnel to accept

the shipment.

2. Opening and inspecting the shipment for proper storage conditions.
3. Visual inspection of each individual component.
4. Delivering the components into the Blood Bank computer system and comparing the scanned information with the packing slip and unit label.
5. Adding any component attributes in the Blood Bank computer system.
6. Confirmatory testing of liquid RBCs.
7. Saving segments from liquid RBCs.
8. Placing the components in the proper storage location.

V. POLICIES:

The receiving technologist should bring the components into inventory as soon as possible to maintain the required shipping temperature. Blood products should remain in the shipping box with the appropriate coolant until they are received into inventory. If the technologist is not able to process units in a timely manner, then the technologist should perform a general inspection as outlined below and remove the RBCs from the box and place the units on the shelves designated for unprocessed units in the refrigerator.

A. General Inspection of Shipment

1. A general inspection must be performed on each shipment of blood products that is received. Note that this inspection of the shipment is different than the visual inspection of each blood product. It includes verification of the packing list against contents, inspection of the shipping container, determination of the elapsed time from packing to receipt for platelet products, and temperature verification for at least one of the platelets, RBCs, or liquid plasma within the shipment. See procedure VI.B, *General Inspection of Shipment* .

B. Maximum Batch Size for Processing RBCs

1. The purpose of setting a maximum batch size is to prevent excessive exposure of the RBCs to room temperature during processing, taking into account possible interruptions. The box of RBCs should be brought to the workstation for processing; do not remove the wet ice.
2. The maximum number of RBC units in a batch for processing should not exceed 12 units at one time.

C. Blood Products that Accompany Transfer Patients

1. If blood products arrive alongside a transfer patient, the Blood Bank technologist will assess the blood products to determine whether they should be discarded or brought into the Blood Bank inventory. All situations where blood products arrive alongside a transfer patient should be documented on a Shift to Shift Communication Log or Communication board where appropriate to allow for review and follow up.
2. If blood products arrive from another hospital within the acceptable delivery requirements of

this document and are from a blood supplier that we have an account and/or contract with, they will be brought into Blood Bank's available inventory. Transfer paperwork will be submitted to the appropriate blood supplier to reflect the product transfer.

3. If blood products arrive from another hospital within the acceptable delivery requirements of this document and are from a blood supplier that we do not have an account and/or contract with, they will be brought into the Blood Bank computer system, but immediately put into quarantine status. The quarantined blood products will be reviewed to determine whether they should be put into available inventory or returned to the sending hospital.
4. If blood products arrive from another hospital and do not meet the acceptable delivery requirements of this document, the blood products should not be brought into the Blood Bank computer system. The technologist will call the sending hospital and notify them that we are discarding the product(s). The sending hospital will be responsible for documenting the discard in their computer system. The technologist will then document a variance with the following information:
    a. Date / time the blood products arrived in the Blood Bank.
    b. Unit number and product code of the discarded blood products.
    c. Reason for discarding the blood products (temperature, broken, etc.).
    d. The hospital that sent the blood products.
    e. The date / time and name of the employee that was notified at the sending hospital.
    f. Any other applicable information (patient name, product type, etc.).

D. Autologous and Directed Units

1. Autologous and directed units are received as described in this document. Additional policies apply to autologous and directed units as per Transfusion Medicine policy, Autologous and Directed Donations.
    a. These units are matched to the recipient in the computer as per procedure VI.H. below.
    b. When delivered in the computer correctly, a special message indicating that the patient has autologous or directed RBC units will automatically appear in the computer record and the units will be placed on hold for the intended recipient.
    c. Note that all directed donations (RBCs and platelets) must be irradiated or equivalent.

E. Product Job Aids

1. The following job aids have been developed to ensure that all of the required elements are performed. All policies listed in this document are applicable when using these job aids.
    a. Attachment 1 - Processing Frozen Blood Components (Plasma, Cryoprecipitate or Frozen RBCs) - Job Aid
    b. Attachment 2 - Processing Liquid Red Blood Cells - Job Aid
    c. Attachment 3 - Processing Platelets - Job Aid

VI. PROCEDURE:

A. Accept Shipment from Delivery Personnel

1. Delivery personnel are expected to deliver boxes of blood components directly to the Blood Bank and should be instructed to place the boxes of components in the pre-determined component delivery location in the Blood Bank.
2. The delivery personnel may ask for an employee's initials to accept the delivery. Any Blood Bank employee is eligible to give their initials.
3. Beaumont couriers deliver blood components directly to the Blood Bank and scan a bar code label assigned to the site/department to document the time of delivery.

B. General Inspection of Shipment

1. A general inspection must be performed on each shipment of blood products that is received. Note that this inspection of the shipment is different than the visual inspection of each blood product. The inspection of the shipment should include the following:
    a. Inspection of the packing slip, which includes verification that the destination on the box is the correct Beaumont Hospital and verification that the type of components in the box corresponds to the type of components listed on the packing slip. For example, if the packing slip indicates that platelets have been shipped, then verify that platelets were shipped.
    b. Inspection of the shipping container, condition of the coolant, and general appearance of the blood products. For example, verification that there is no obvious leakage that would indicate a component may be broken, or that frozen components have started to thaw.
    c. Verification that the components were shipped at the appropriate temperature. This is accomplished by verifying that the correct coolant was packed and that the condition of the coolant is satisfactory (not cracked, not leaking, etc.), as indicated in the table below. In addition, for platelets, liquid RBCs, and liquid plasma, the temperature of one of the products in the shipment is taken with the laser thermometer. This temperature is documented on the packing slip.

Type of Blood Component	Coolant	Shipping Temperature
Platelets	Gel pack preferred, but not required.	As close as possible to 20°C to 24° C.
Liquid RBC	Wet ice or ice pack	1°C to 10°C
Liquid plasma	Wet ice or ice pack	1°C to 10°C
Frozen RBC	Dry Ice	Maintain frozen state
Frozen plasma	Dry Ice	Maintain frozen state
Frozen cryoprecipitate	Dry Ice	Maintain frozen state

d. Verify platelet time without agitation is less than 30 hours. The packing time should be less than 30 hours from time of receipt. When verifying elapsed time make sure to use the time that order is filled/shipped and not the order placed/received time.

e. The employee who performs the inspection of the shipment should document the date/time (either manually or with a time stamp) and initial the packing slip.

C. Visual Inspection of Blood Products

1. Each individual blood product must be visually inspected as it is received and before placement into inventory. The visual inspection is performed when the products are delivered into the computer system as described in the Transfusion Medicine policy, Visual Inspection of Blood Products.
2. For platelets, an inspection for platelet swirling; the platelets must be swirling. If the platelets are not swirling, refer to Transfusion Medicine policy, Platelet Storage, for additional actions.
3. Under Batch Delivery, document the condition COND field with either OK (visual inspection passes), or NOT OK (not OK to place in stock/issue). If the visual inspection is unsatisfactory, selecting NOT OK will place the units in quarantine. Refer to Blood Bank CDM - Batch Delivery for additional information.
4. If the visual inspection of a received blood product is unsatisfactory, the sending facility should be notified. The sending facility may request that the blood product is returned to them for further evaluation.

D. Discard or Quarantine of Blood Components

1. Any blood component that is not suitable for transfusion or that has an unsatisfactory visual appearance, the sending facility must be notified to determine if the product is to be returned for evaluation or can be discarded. If a technologist has any concerns about whether a blood component is suitable for transfusion then the component should be placed into quarantine. An orange quarantine sticker should be affixed to the product. For additional information, refer to Transfusion Medicine policy, Blood Product - Quarantine or Discard.

E. Deliver Components into the Blood Bank Computer System

1. All components received at this facility must be delivered into the Blood Bank computer system for tracking purposes, even those that are discarded upon receipt.
2. Components are delivered into the computer system as described in the Blood Bank CDM - Batch Delivery.
    a. Information must be entered into the computer using bar code scanning whenever possible. The information scanned into the computer must match the information on the packing slip and unit label.
        i. This information includes the ABO/Rh, donor number, product, and expiration date.

b. Each component on the packing slip should be documented with a check mark to indicate that the information matches.

c. If any of the information does not match then additional investigation is required. For example, repeat the delivery into the computer system, contact the blood supplier, place the component into quarantine, etc.

d. The technologist must enter the expiration time of 23:59 on the first screen that displays under Batch Delivery. Also, on the second screen (where the components are bar code scanned), the technologist must TAB through to the next line when entering multiple components. If the expiration time is not entered on the first screen or if the mouse is used instead of TAB, then expiration dates may not display in the system properly.

e. The technologist must correct the defaulted volume for all red cell apheresis products to the actual volume specified on the product label.

f. Any units with confirmed attributes (CMV Neg, Confirmed Sickle Antigen negative) should have the appropriate attribute code added to the unit. Refer to Blood Bank CDM - Batch Delivery for detailed information on how to add attributes during batch delivery.

    i. Special attention must be made when entering attributes during the Batch Delivery function, as this process may be prone to error without specific attention and verification of the data entered. Attributes may also be entered in the Blood Bank computer using Inventory/ Edit /Attribute as described in Blood Bank CDM -Add/Delete/Edit/Display Unit Attributes.

    ii. CMV-negative attributes need to be added for RBCs and platelets only; it is not necessary to add the CMV-negative attribute for plasma or cryoprecipitate, even if indicated on the face label by the supplier.

g. If antigen results are provided by the blood supplier this information should be entered in the Blood Bank Computer using Inventory/Edit/Antigen as per Blood Bank CDM - Add/Delete/Edit/Display Unit Antigens.

    i. Confirmed Antigen Typing

        A. Antigen typing that is confirmed by the supplier will be documented as “official” results (not preliminary) under Inventory / Edit / Antigen.

        B. Confirmed antigen results may print on the reference lab unit face label or be labeled with a reference lab antigen label that is affixed to the unit.

        C. If the antigen results are printed directly on the unit face label, a BH *Unit Antigen Label* will also be documented and affixed to the unit.

    ii. Historical (Unconfirmed) Antigen Typing

        A. Antigen typing that is unconfirmed by the supplier will be documented as preliminary unless confirmed at Beaumont Health.

B. For unconfirmed antigens, the antigen results will not print on the reference lab unit face label.

C. A preliminary/historical reference lab antigen label may or may not be affixed to the unit. If a preliminary reference lab antigen label is not affixed to the unit, the unconfirmed results will be documented as preliminary results in the Blood Bank computer and a BH *Unit Antigen label* will be attached (unless the antigen testing was confirmed with testing at BH).

iii. Rare Antigen / Phenotypically Matched Units

A. If RBC units are ordered special for patient with a rare antibody, or if phenotypically matched RBCs that are very difficult to find are received, these RBCs should be placed on hold for the applicable patient.

B. If antigen testing is performed at the blood supplier using unlicensed anti-sera the antigen typing will be documented as preliminary.

C. If antigen testing is performed using molecular testing at the blood supplier the antigen typing will be documented as a confirmed antigen.

F. Storage of RBC Unit Segments

1. Segments from liquid RBC units are saved in case additional testing is required after a unit has been issued; for example for antigen testing or in the event of a transfusion reaction. Each segment should be labeled with a small donor number sticker from the back of the RBC (the large stickers should not be used; save these for Vision testing).

    a. For RBCs received from Versiti and other blood suppliers, a minimum of three (3) segments from each RBC should be pulled; two (2) of these will be saved and the remaining segment will be used for confirmatory typing.

    b. For RBCs received from another Beaumont site, two (2) segments from each RBC should be pulled and saved (confirmatory typing is not required if the sending site already performed the testing).

    c. Two (2) segments will be labeled with the donor number and will be saved in the designated refrigerator. These segments are placed in a plastic bag that is labeled appropriately for easy retrieval (i.e. date of confirmatory testing, week of receipt, etc). The segments are saved for a minimum of two months from product receipt. Refer to site specific Transfusion Medicine policy, *Storing and Disposing of Patient/ Donor Samples.*

    d. One (1) segment will be removed for confirmatory testing. This segment will be placed in a test tube that has been labeled with the donor number. The technologist who performs confirmatory testing should be the same technologist who obtains the segment for confirmatory testing.

G. Confirmatory Testing of Liquid RBCs

1. Confirmatory testing of RBCs must be performed by either the manual tube method or automated using the Ortho Vision.
2. Confirmatory testing must be performed before the ABO tag is affixed to the unit and before placement into available inventory.
3. When performing manual confirmatory testing, each unit must be scanned into the computer when building a worksheet in the computer.
    a. The quantity and donor numbers of the units on the worksheet must match the quantity and donor numbers of units for which the technologist is performing confirmatory testing.
    b. It is unacceptable to click “F5 - Mark All” when building the worksheet; each unit must be scanned onto the worksheet.
4. Label RBCs with ABO tags and place into available inventory.
    a. After delivery into the computer, satisfactory visual inspection, and completion of confirmatory typing, RBCs should be labeled with the ABO Confirmation tag.

H. Placement of Components on Hold for a Patient & Autologous / Directed Components

1. If applicable, place components on hold for a specific patient.
2. Components may be placed on hold under Patient / Edit / Hold or Inventory / Edit / Hold.
3. When components are placed on hold, a “Units on Hold” message will show up in the patient’s caution window (click on this message to display the donor numbers).

I. HLA Matched and Crossmatched Platelets

1. Upon receipt, HLA (human leukocyte antigen) matched and crossmatched platelets should be selected for the patient.
2. If the patient is not currently admitted, then the platelets should be placed on hold in the Blood Bank computer system under Patient/Edit/Hold or Inventory/Edit/Hold.
3. The patient’s caregivers should be notified of their arrival.

J. Irradiation Requirement

1. Royal Oak/Dearborn only: Irradiate all platelets that are not Pathogen Reduced (Psoralen Treated) or irradiated previously by the blood supplier.

K. Place Blood Components into Proper Storage

1. After blood components have been processed, they are moved to the appropriate storage location.

Blood Components	Storage Locations	Storage Temperature
RBCs (liquid)	Refrigerator: Stored on shelves based on ABO, Rh, expiration date, and antigens / attributes	1º to 6ºC
RBCs (frozen)	Royal Oak: Blood Processing Room Freezers # 4 and #5	-85ºC to -67ºC
RBCs (autologous or directed)	Refrigerator: Autologous/Directed Donor shelf/bin	1ºC to 6ºC
Plasma (frozen)	Freezer: Stored on shelves based on ABO,Rh, and expiration date	-18º C or lower
Plasma (liquid)	Refrigerator	1ºC to 6ºC
Cryoprecipitate (frozen)	Freezer	-18º C or lower
Platelets	Platelet rotator / incubator	20ºC to 24ºC

VII. SPECIAL NOTES:

A. Frozen RBCs

1. Frozen RBCs are generally received only at Royal Oak Blood Bank. These units are typically rare/antigen confirmed upon receipt. Note that ABO confirmatory testing is not required on frozen RBC units; this testing is performed once the unit is thawed and deglycerolized. Refer to Transfusion Medicine policy, *Freezing Red Blood Cells - Royal Oak* for additional information related to the organization of frozen units and paperwork.

B. RBC Transfers

1. Liquid RBCs that come from other hospitals within the Beaumont Health System do not require confirmatory testing again assuming confirmatory testing was performed by the other Beaumont Health System facility.

VIII. REFERENCES:

1. College of American Pathologists Transfusion Medicine Checklist, current edition.
2. AABB, *Standards for Blood Banks and Transfusion Services*, current edition.

Attachments

Processing Frozen Blood Components - Job Aid

Processing Liquid Red Blood Cells - Job Aid

Processing Platelets - Job Aid

Approval Signatures

Step Description	Approver	Date
	John Pui: Chief, Pathology	8/22/2022
	Ryan Johnson: OUWB Clinical Faculty	8/19/2022
	Muhammad Arshad: Physician	8/18/2022
	Jeremy Powers: Chief, Pathology	8/17/2022
	Ann Marie Blenc: System Med Dir, Hematopath	8/16/2022
	Vaishali Pansare: Chief, Pathology	8/16/2022
Policy and Forms Steering Committe (if needed)	Kelly Sartor: Supv, Laboratory	8/16/2022
Policy and Forms Steering Committe (if needed)	Gail Juleff: Project Mgr Policy	8/16/2022
	Kristen Lafond: Mgr Laboratory	8/16/2022
	Ashley Dingess: Mgr Laboratory	8/15/2022
	Rebecca Thompson: Medical Technologist Lead	8/15/2022
	Michael Rasmussen: Supv, Laboratory	8/8/2022
	Hilary Morey: Medical Technologist Lead	8/5/2022
	Katherine Persinger: Mgr Laboratory	8/4/2022
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