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Area	Laboratory-Blood Bank
Applicability	All Beaumont Hospitals

Thawing Fresh Frozen Plasma and Cryoprecipitate - Blood Bank

Document Type: Procedure

I. PURPOSE AND OBJECTIVE:

The purpose of this document is to provide the Blood Bank staff with instructions for thawing plasma and cryoprecipitate.

II. INDICATIONS:

A. Plasma is a source of clotting factors. Indications for plasma transfusion include massive transfusion, reversal of warfarin anticoagulation in patients with intracranial hemorrhage, and plasmapheresis for partial or complete replacement of the removed volume of patient plasma.

B. Cryoprecipitate is predominantly used as a source of fibrinogen. Indications for cryoprecipitate transfusion can include massive transfusion, liver transplantation, postpartum hemorrhage, and Disseminated Intravascular Coagulopathy (DIC) with bleeding.

III. POLICIES:

A. Compatibility Testing

1. The patient must have a complete ABO/Rh type performed on a properly labeled sample that was collected during the current admission in order to select plasma or cryoprecipitate. If antibody screening is also ordered, it is not necessary to wait for the antibody screen results if ordered before selecting or dispensing plasma, and cryoprecipitate.
2. If the ordering physician cannot wait for the blood type to be resulted, then plasma should be

issued in accordance to Transfusion Medicine policies, Emergency Issue of Blood Products and *Providing Blood Components For Massive Transfusion.*

B. ABO/Rh Selection

1. Refer to the Transfusion Medicine policies, *Selection of Platelets, Plasma, and Cryoprecipitate for Patients Greater Than Four Months Old*, and *Policies For The Selection Of Blood Components For Neonatal Transfusion.*

C. Personal Protective Equipment

1. Gloves must be worn when handling products during or after thawing until it is established that no breakage has occurred.

D. Computer Documentation

1. All thawed plasma and cryoprecipitate products are modified in the computer immediately after thawing in accordance with Transfusion Medicine policy, SafeTrace Blood Bank Application, within a maximum of one hour of the thaw start time in accordance with Transfusion Medicine policy, Safetrace (Blood Bank) Application.
    a. To modify and relabel as 5-day thawed plasma, use the THAW modification.
    b. To modify plasma used for aliquoting and/or selection for neonates and relabel as 24 hr expiration use the THAW24 modification.
2. If the technologist is unable to immediately modify the product in the computer
    a. thawed plasma product shall be placed on the processing shelf in the refrigerator and will be modified when system is available/ time permits.
    b. Thawed cryoprecipitate product shall be placed on the counter in the triage. A note needs to be attached to the product indicating the actual time and date at the end of the thawing process.
    c. A downtime modification form indicating the actual time and date at the end of the thawing process needs to be attached to the product so this can be recouped and modified in the BBIS when system is available/time permits.

       Refer to site specific Transfusion Medicine *Computer Downtime/Manual Operation* procedures.

E. Label Verification

1. If a component is modified and new labels are applied, the labeling process shall include a method to ensure the accuracy of all labels including the donor identification number, ABO/Rh, expiration date, product description, and blood product code.
2. Label verification is a validated process in the Blood Bank Information system (BBIS) where each bar code quadrant of the component label is scanned and compared to the electronic record of the laboratory computer system.

3. In the case of a BBIS downtime, if possible, 2 technologists will verify that the appropriate label(s) have been updated. Refer to site specific Transfusion Medicine *Computer Downtime/ Manual Operations* procedures.
4. Refer to Transfusion Medicine policy, *Labeling Blood Products* for additional information.

F. Product Expiration and Storage

1. Refer to the table below for thawed product expiration date/time and storage temperature. Thawed expiration date / time must not exceed the original product expiration date / time.

Thawed Product	Expiration Date / Time	Storage temperature
Thawed Plasma	5 days at 23:59 day of thawing = day zero	1°C - 6°C
Thawed 24 Plasma	24 hours from time of thaw	1°C - 6°C
Cryoprecipitate, Single	6 hours after thawing	Room temperature
Cryoprecipitate, Pre-pooled*	6 hours after thawing	Room temperature

**Pooled by the blood supplier in a sterile closed system.*

IV. DEFINITIONS / ACRONYMS:

A. **FFP**: Plasma prepared from a whole blood or apheresis collection and placed at less than -18°C within the time frame required for the anticoagulant or collection process. When frozen, the unit expires within 12 months.

B. **PF24**: Plasma prepared from a whole blood or apheresis collection and placed at less than -18°C within 24 hours of collection. Clinically, it is the equivalent of FFP; however, there is a decrease in the labile clotting factors (Factors V and VIII). It has the same expiration dates as FFP.

C. **PF24RT24**: Plasma prepared from a whole blood or apheresis collection that is held for up to 24 hours after collection at room temperature and then stored at less than -18°C. Clinically, it is the equivalent of FFP; however, there is a decrease in the labile clotting factors (Factors V and VIII). It has the same expiration dates as FFP.

D. **Thawed Plasma**: Plasma (FFP, PF24 or PF24RT24) product that is thawed, relabeled as thawed plasma and stored at 1°C - 6°C for up to 5 days from the original thaw date (day zero being the day it is thawed). All frozen plasma products at Corewell Health are modified and relabeled as thawed plasma prior to issue.

E. **THAW24**: Plasma product that is thawed, relabeled as thawed plasma and will expire in 24 hours. To be used for aliquots. Refer to Aliquot job aid for additional information.

V. SPECIMEN COLLECTION AND HANDLING:

A. The patient must have an ABO/Rh or a Type /Screen ordered from the current admission, refer to the Transfusion Medicine policy, Triaging and Identifying Acceptable Samples for Testing.

VI. EQUIPMENT AND SUPPLIES:

A. Helmer Plasma Thawing System

B. Precision Circulating Water Bath

C. Helmer Plastic Overwraps

D. Gloves

VII. QUALITY CONTROL (QC):

A. Daily, weekly, and yearly quality control is performed and recorded according to site specific QC and maintenance procedures for the applicable thawing system.

B. The temperature of each water bath is maintained at 36°C ± 1°C, results are recorded on site specific daily temperature quality control records. During thawing the temperature of the water bath remains between 30°C and 37°C. If the temperature falls out of this range an alarm will sound and the arms of the plasma bath will rise, removing the product from the bath.

VIII. PROCEDURE:

A. Thawing Products using the Helmer Water Bath

1. Check the water temperature by visually observing the digital read out of the independent thermometer. The temperature must be 36°C ± 1°C at the start of the thawing process.
2. Remove the plastic cover from the bath and press the LIFT OUT button (up arrow) to raise the basket assembly.
3. Place the frozen product in an overwrap and hang it on the basket assembly.
4. Press the CYCLE TIME button to advance through the pre-programmed cycles to reach the desired cycle time:
   typically, 30 - 40 minutes for plasma ; or 10 - 15 minutes for cryoprecipitate.
5. Press the CYCLE START button (curved arrow) to start the agitation, the basket will lower to the appropriate level in the water bath. When the cycle is complete, the basket will rise and a tone will sound. If Hi-alarm (>37°C) sounds, then notify the Blood Bank leadership. Move the products to an alternative plasma bath that is within the correct temperature range.
6. Inspect the product for thawing. If the product is not thawed repeat steps 4-6 in 5 minute increments.
7. Remove the thawed unit from water bath and dry the ports.
8. Inspect the unit for any breakage or damage and ensure that thawing is complete.
    a. If there is no breakage or damage and thawing is complete, then modify the product in the computer and label the product to reflect thawing.
9. Press the LIFT OUT button (down arrow) and replace the plastic cover.

B. Thawing Products using the Precision Circulating

Water Bath - Royal Oak Only

1. Check the water temperature by visually observing the digital read out. The temperature must be 36°C ± 1°C.
2. Place frozen product in overwrap.
3. Place frozen product upright in the water bath until thawed, approximately 20 minutes for plasma and 5 minutes for cryoprecipitate.
4. Manipulate the bag contents to ensure even thawing, while manipulation is occurring, keep the product in an upright position and do not allow the ports to be submerged in the water bath.
5. Inspect the product for thawing. If the product is not thawed repeat steps 3 – 5 in 5 minute increments.
6. Remove thawed unit from bath and dry ports.
7. Inspect the unit for any breakage or damage. Discard any unit that shows signs of damage or leakage.

C. Thawing Plasma for Therapeutic Plasmapheresis

1. When the Blood Bank receives an order for therapeutic apheresis, the following steps should be performed:
    a. Call the patient's nurse.
    b. Ask for the date and time the procedure will begin, and what volume of plasma will be used. Remind them to place orders in EPIC for the plasma.
    c. Verify that the patient's wristband number matches the sample from the current admission.
    d. After considering the time the procedure will begin and the desired volume of plasma, prepare (thaw / select / tag) the appropriate number of plasma units. Typically, the caregiver will place orders for a certain number of plasma units, but it is more important for the Blood Bank to thaw the desired volume of plasma than to thaw the number of units that were ordered. Note that it is unlikely that the total volume of thawed plasma will exactly match the desired volume; it is better to reach a thawed volume greater than the desired volume (as opposed to a thawed volume less than the requested volume).
        i. For example: The floor places an order for 14 units of plasma in EPIC. The Blood Bank calls the unit to determine the desired volume of plasma. They indicate that a volume of 3 L (3000 mL) will be used. The technologist determines that the sum for the individual volumes of 12 plasma units is 3082 mL. The technologist thaws these 12 plasma units to meet the desired volume (does not thaw 14 units as were ordered).
2. Plasmapheresis cases require communication between the Blood Bank and the patient's caregivers. It is important to determine the volume of plasma that is needed, for how many days the patient may require treatment, as well as the date and time treatment is needed. This communication may be documented on the communication log or on the communication

board.

3. Note that the nurses may be unable to scan the plasma units to document the transfusions in EPIC. When fielding phone calls, instruct the nurses to use their downtime process and to document the transfusions on X20801 *Blood Product Administration Form.*

IX. REFERENCES:

1. *AABB Technical Manual*, current edition.
2. *AABB, Standards for Blood Banks and Transfusion Services*, current edition.
3. Helmer Plasma Thawing System Operation manual.

Attachments

THAW24 codes (rev 06/19/2024)

Approval Signatures

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