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Transporting Blood Components in a Cooler - Royal Oak

Document Type: Policy

I. PURPOSE AND OBJECTIVE:

The purpose of this document is to provide the Blood Bank staff with policies that apply to the transport of blood components in a cooler.

II. POLICY STATEMENT:

A. Coolers are used to transport red blood cells (RBCs) and thawed plasma (FFP) / liquid plasma when a transfusion is not anticipated to start immediately following dispense of the blood product. Coolers are most frequently issued for patients receiving a therapeutic apheresis procedure, or who require a massive transfusion.

B. Refrigerated blood products dispensed to a patient in surgical areas (OR) or interventional radiology (IR) must be issued in a cooler regardless of the number of products requested.

C. This policy applies to the use of Igloo and massive transfusion coolers that use wet ice as a coolant. For more information on using the Biofridge®, refer to Transfusion Medicine policy, Transporting Blood Components in a Biofridge® - Royal Oak.

III. DEFINITIONS:

A. **Designee**: A Blood Bank technical director or transfusion medicine fellow.

B. **Small Igloo cooler**: A temperature-monitored cooler used for inpatients that:

   1. Has been validated for the transport of blood components, and
   2. Is intended for the transport of 1 - 2 blood components which require refrigeration.

C. **Medium Igloo cooler**: A temperature-monitored cooler used for inpatients that:

1. Has been validated for the transport of blood components, and
2. Is intended for the transport of 1 - 6 blood components which require refrigeration.

D. **Massive transfusion cooler**: A large, temperature-monitored cooler that:

1. Is intended for use during the massive transfusion protocol for the transport of 6 RBCs and 6 FFP / liquid plasma, or
2. Is intended for transport of up to 14 FFP during a therapeutic plasma exchange, and
3. Has been validated for the transport of blood components, and
4. Is described in Transfusion Medicine policy, Providing Blood Components for Massive Transfusion - Royal Oak.

IV. POLICIES:

A. Coolers used to transport blood components that are dispensed for transfusion shall be qualified and the process validated for the appropriate transport temperature. Refer to Transfusion Medicine policy, *Cooler Validation*.

B. Transported RBCs and thawed plasma / liquid plasma shall be placed in a qualified container (cooler) having sufficient refrigeration capacity to cool the blood continuously in a temperature range of 1 - 10°C until it is returned back to the Blood Bank.

A. Appropriate Coolants / Packing the Coolers

1. Wet ice (1-3 scoops) packed in a plastic bag is used as the coolant depending on the size of the cooler. The ice is placed on the bottom of the cooler, and the units are placed on the sides of the ice along the edges of the cooler.
2. The wet ice should be replenished every four hours that the cooler remains outside of the Blood Bank; refer to the section *Ice Replenishment of Coolers after 4 Hours*.
3. A thermometer is placed in all coolers before dispense so that the temperature of the cooler may be monitored.
4. The coolers have been validated to maintain the temperatures of blood components for the length of time indicated in the table below.
5. Each cooler must be used to transport blood components for only a single patient. In emergency situations, multiple coolers may be used for the same patient, so that blood components will be available at all times during the emergency.
6. If autologous or directed blood components are packed in a cooler, refer to the *Appropriate Dispense Sequence / Transport* section of Transfusion Medicine policy, Autologous and Directed Donations - Blood Bank.

Type of Cooler	Number of Blood Components	Amount of Wet Ice	Transport Temperature	Validated Length of Time
Small Igloo cooler (Coolers 20-23)	1-2 units of RBC and/ or FFP / Liquid plasma in any combination	1 Scoop	1-10°C	7 hours

Medium Igloo cooler (Coolers1-12)	1 - 6 units of RBCs and/or FFP / liquid plasma in any combination	3 Scoops	1 - 10°C	7 hours
Massive transfusion cooler	1 - 14 units of RBCs and/or FFP / liquid plasma in any combination	3 Scoops in each bag, 2 bags total	1 - 10°C	7 hours

B. Training of the Blood Product Transporters

1. The Blood Bank will affix written instructions on Blood Bank coolers using the *Cooler Policy Label* to provide proper transport and prompt delivery. These written instructions will include information on:
    a. How long blood products may be stored in the designated transport device.
    b. The limitations for which blood products must be stored in the designated transport device, if applicable.
    c. Transport device-specific instructions, if applicable.
    d. Contact information for the Blood Bank should any questions arise.

C. Use of Blood Product Storage Bags to Prevent Contamination with Infectious Material

1. The Blood Bank may use additional blood product storage bags to prevent contamination of blood products during instances of increased disease transmission risk (e.g. highly-infectious patients, pandemics). If a situation is determined by the Blood Bank Medical Director to be of an increased disease transmission risk, all blood products must be placed into a blood product storage bag and individually sealed prior to being placed into a Blood Bank cooler. Upon return to the Blood Bank, any unused blood products will have the blood product storage bag wiped down with an approved disinfectant (i.e. 70% isopropyl alcohol, Sparquat) prior to removing the blood product from the storage bag. If a blood product is returned to the Blood Bank and is not inside a sealed blood product storage bag when indicated, the blood product will be placed into quarantine to be reviewed by the Blood Bank Medical Director or designee.

D. Determination of Whether a Product Returned in a Cooler is Acceptable for Reissue

1. The cooler should be returned within the acceptable, validated length of time, as indicated in the table above.
2. The temperature of each RBC and plasma unit should be taken with the infrared thermometer. In addition, the temperature of the cooler should be taken (from the thermometer that was packed inside of the cooler at the time of issue). The temperature of each product and the temperature of the cooler must be within the acceptable transport temperature range of 1 - 10°C.
3. All units must be visually inspected upon return to the Blood Bank in a cooler. Refer to

Transfusion Medicine policy, Visual Inspection of Blood Products - Blood Bank.

4. The technologist returning the cooler must verify that the policy *Ice Replenishment of Coolers after 4 Hours* has been adhered to. For example, if a cooler has been returned after 6 hours, the returning technologist must verify that the ice was replenished after 4 hours.
5. The technologist returning the cooler must determine whether each of the products in the cooler is acceptable for reissue. This determination includes the following:
    a. Assessment of the length of time that the cooler was outside of the Blood Bank.
    b. Assessment of the blood product and cooler temperatures.
    c. The visual inspection.
    d. Verification that the product was not entered.
    e. Proper usage of cooler blood product storage bags, if indicated.
    f. For RBCs, verification that an integral segment remains attached.
    g. Verification that the ice was replenished.
        i. For additional information, refer to Transfusion Medicine policy, Return of Blood Products from Issue.
        ii. Blood products should be placed into quarantine or discarded, as appropriate, if any of these conditions have not been met.
6. Upon return of a cooler to the Blood Bank, the P-tag sticker should be removed, and the retained section of the P-tag should be documented with the following information:
    a. The date and time the blood product was returned to the Blood Bank (time stamp).
    b. The determination of whether the product is "OK to reissue".
    c. The returning technologist's initials.
    d. The temperature of the cooler (taken with the thermometer that was packed inside the cooler).
    e. The temperature of the product, including the decimal point (taken with the infrared thermometer).
    f. The reason that the blood product was returned.

E. Blood Products Dispensed in a Cooler must be Returned in a Cooler

1. Returned blood products that were dispensed in a cooler must be returned in a cooler. If a blood product is returned not in a cooler, quarantine or discard the blood product as described in the *Discard or Quarantine of Blood Products* section of this document.

F. Discard or Quarantine of Blood Products

1. Any blood product that is not suitable for transfusion or that has an unsatisfactory visual appearance must be discarded.

2. If a technologist has any concerns about whether a blood product is suitable for transfusion then the blood product should be placed into quarantine.
    a. For additional information, refer to Transfusion Medicine policy, Return of Blood Products from Issue and Transfusion Medicine policy, Blood Product - Quarantine or Discard.
3. If a blood product is dispensed in a cooler but returned outside of the cooler (but the product temperature is still acceptable), quarantine the product until it can be reviewed by a Medical Director.

G. Tracking of Coolers

1. The Blood Bank should be able to track each cooler. The location to where every cooler is issued should be determined. For example, when coolers are dispensed to the operating room the Operating Room (OR) number is documented on the retained section of the P-Tag. In addition, all Blood Bank coolers are numbered. When a cooler is issued, the cooler number is documented on the retained section of the P-Tag . The paper work is then placed in the slot of the hanging tray with the timer corresponding to the cooler number, located at Triage.
2. Coolers should not be transported with a patient as the patient is transported to a new location in the hospital, except due to medical necessity. For example:
    a. A cooler is issued to a patient in the emergency center. The patient is then admitted to the hospital and is transferred to a room on the floor. When the patient leaves the emergency center, the cooler should be returned to the Blood Bank. A new cooler can then be sent to the room if needed.
    b. A cooler is issued to the emergency center for a trauma patient who is bleeding profusely. The patient is then taken to the OR. The cooler may be transported with the patient due to medical necessity.

H. Ice Replenishment of Coolers after 4 Hours

1. The wet ice should be replenished every 4 hours that the cooler remains outside of the Blood Bank. Note that there is a label on all Blood Bank coolers stating this policy. Follow the steps below each time a Igloo or massive transfusion cooler is issued from the Blood Bank.
    a. As the cooler is issued, set the correspondingly numbered timer for 4 hours. Staple the dispense form and the retained section of the P-Tags, and place these papers in a slot on the hanging rack with the corresponding time.
    b. If the timer sounds indicating that 4 hours have elapsed since the cooler was dispensed, call the patient's caregivers and document the *Ice Replenishment Sticker*. This sticker will be affixed to the dispense form.
    c. If / when the cooler is returned for ice replenishment, take the temperature of the cooler and document it on the *Ice Replenishment Sticker.*
        i. If the cooler temperature is in the acceptable range of 1 - 10°C, remove the ice and replace with a freshly prepared bag of ice. Return the cooler to the runner. The timer should be reset to start a new 4 hour time period.

ii. If the cooler temperature is not in the acceptable range of 1 - 10°C:

A. Take the temperature of each returned blood product and document on the retained section of the P-Tag.

B. Submit a variance and quarantine the returned blood products.

C. Pack a brand new cooler (different cooler number) with a different thermometer, freshly prepared bagged ice, and new blood products.

D. Notify the caregivers that the products have been replaced. This step is very important, especially for those surgical cases in which the blood donor information may have been previously documented.

d. Multiple ice replenishments may occur on the same cooler, as long as it is performed every 4 hours as described in this policy. If the traceability / trackability of the cooler is in question, the Blood Bank may request the cooler be returned, and reissue a new cooler with new blood products.

e. Note that if a cooler was not returned after 4 hours, despite the Blood Bank's request to do so, the blood products are not automatically discarded; refer to the policy *Determination of Whether a Product Returned in a Cooler is Acceptable for Reissue*. When the cooler is returned to the Blood Bank for the final time, proceed as described in that policy.

V. EQUIPMENT AND SUPPLIES:

A. Igloo small coolers

B. Igloo medium coolers

C. Massive transfusion coolers

D. Cooler blood product storage bags

E. Thermometer (stored inside the cooler)

F. Infrared thermometers (to take temperature of each returned components, stored in labeled drawers at Triage and near the irradiator)

G. Ice

H. Ice scoop

I. Plastic bags to hold ice

J. Timers

VI. NOTES:

A. Platelets should not be placed in a cooler.

B. Alternative locations for ice include dietary services and Antepartum.

VII. REFERENCES:

1. AABB, *Standards for Blood Banks and Transfusion Services*, current edition
2. AABB, *Technical Manual*, current edition

Attachments

Ice Replenishment Sticker

Approval Signatures

Step Description	Approver	Date
	Ann Marie Blenc: System Med Dir, Hematopath	10/10/2024
	Kristina Davis: Staff Physician	9/30/2024
Policy and Forms Steering Committe (if needed)	Kelly Sartor: Mgr, Division Laboratory	9/16/2024
	Kelly Sartor: Mgr, Division Laboratory	9/16/2024
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