

Beaumont

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Providing Components for a Massive Transfusion - Dearborn

Document Type: Procedure

I. PURPOSE AND OBJECTIVE:

- A. This document will provide the Blood Bank staff with instructions for providing blood components for massive transfusion of all patients, regardless of age.

II. PRINCIPLE:

- A. A patient who is exsanguinating due to physical trauma, unexpected massive bleeding during a surgical procedure or delivery of an infant requires:
1. Fluid resuscitation,
 2. Red cell mass replacement to maintain tissue oxygenation, and
 3. Platelet and coagulation factor replacement to counteract depletion resulting from consumption and dilution.
- B. The massive transfusion protocol (MTP) provides red blood cells (RBCs), thawed plasma (FFP), and platelet components (PLTs) in pre-determined ratios with the intent to prevent or minimize the risk of dilutional coagulopathy in the massively bleeding patient. In this protocol, Pooled Cryoprecipitate components (PCR) are dispensed upon the caregiver's request.
- C. The Blood Bank must be prepared to support the patient's transfusion requirements, keeping in mind the blood supplier's ability to provide components, as well as the transport times between the blood supplier, the Blood Bank, and the patient. Blood components can be infused to the patient in less time than is required to dispense them from the Blood Bank as heated infusions systems are capable of infusing about one unit of RBCs per minute. The massive transfusion protocol is designed to allow the Blood Bank staff to rapidly prepare and dispense blood components for the massively bleeding patient.
- D. The Blood Bank will make every attempt to have one cooler of refrigerated components prepared and one platelet ready to be dispensed at all times after initiation of the massive transfusion protocol.

III. DEFINITIONS:

- A. Adult patient: For the massive transfusion protocol, a patient who is 12 years or older.

table below.

2. Requests from the Trauma department will also include an initial release of two RBC units in a Trauma Pack issued prior to release of first cooler of the protocol.

| Cooler Components & Ratios During Massive Transfusion | |
|---|--|
| Components will be dispensed in the following ratio: 6 RBCs/ 6 Plasma/ 1 Platelet | |
| Upon activation of the massive transfusion protocol, the cooler will likely be dispensed as described below to allow the Blood Bank time to thaw additional FFP | |
| *Cooler # 1 (MTP1) | 3 RBC/ 3 FFP/ 1 PLT |
| Cooler # 2 (MTP2) | 3 RBC/ 3 FFP |
| Cooler # 3 (MTP3) | 3 RBC/ 3 FFP/ 1 PLT |
| Cooler # 4 (MTP4) | 3 RBC/ 3 FFP |
| Cooler # 5 (MTP5) | 3 RBC/ 3 FFP/ 1 PLT |
| Replicate component sets of cooler 4 & 5 will automatically be prepared until the protocol is terminated by the patient's caregivers, after which time the caregivers may deviate from these pre-determined component ratios. | |
| *Trauma Pack (TPAK) | 2 RBCs issued prior to Cooler # 1 for Trauma Patient only. |

B. Persons Authorized to Activate the Massive Transfusion Protocol

Activation of this procedure can be requested by verbally with a phone call to the Blood Bank or by written order by any of the patient's clinicians (e.g., a surgeon, anesthesiologist, physician's assistant, certified registered nurse anesthetist, resident, fellow, etc). It should be followed up immediately with an order and collection of a patient specimen for Type and Screen as soon as possible (if not previously obtained).

Note: advance notice by phone is the preferred method of communication since it allows Blood Bank an opportunity to prepare and dispense the component(s) while the runner is en route to the Blood Bank.

C. Communication

1. The Blood Bank employee who takes a phone call indicating that the massive transfusion protocol is being activated shall:
 - a. Document the appropriate information on the attached Blood Bank Communication for Massive Transfusion or Emergency Issue Form, and
 - b. Inform other employees of the activation, and enlist supporting help to prepare components and coolers, and
 - c. Perform a patient history check to determine if there is a current sample available, the degree of compatibility testing that has been performed and any special transfusion requirements.
2. If a Medical Technologist becomes aware that six (6) or more RBCs have been dispensed from the Blood Bank on a given patient within one (1) hour, then the technologist should communicate with the patient's caregiver(s) the potential for activation of the massive transfusion protocol. This policy is meant to enhance awareness but is not intended to replace physician responsibility for activation of this protocol based upon the unique circumstances and condition of the patient.
3. The Medical Director should be notified immediately if availability of blood products is compromised or if it is necessary to modify the application of the massive transfusion protocol.

5. Pre-Thawed Plasma Inventory

In anticipation of an activation of the massive transfusion protocol or an emergency issue event, the Blood Bank will attempt to maintain the following minimum inventory of thawed plasma at all times: 3 group AB. Additional plasma units should be thawed immediately as described in Table 421: Cooler Components & Ratios during Massive Transfusion.

H. ABO and Rh of Components Dispensed Under the Massive Transfusion Protocol

1. If compatibility testing is complete, the appropriate ABO/Rh of the blood products dispensed under this massive transfusion protocol is described throughout the Transfusion Medicine Policies, *RBC Crossmatch Guidelines*, and *Newborn Testing Compatibility Guidelines*.
2. If compatibility testing is not complete, then the appropriate ABO and Rh blood products dispensed under this massive transfusion protocol is indicated in the Transfusion Medicine policy, [Emergency Issue of Blood Products](#).
3. If patient has a previous history but the blood type has not been confirmed on current admission then O RBC must be used. Rh Negative units must be used for women <50 years of age and males less than 18 years of age. If the sex of the patient is unknown Group O Negative blood must be used.

I. Use of Group A Liquid Plasma

Group A liquid plasma should be used prior to thawed plasma for the following situations:

1. If the MTP is emergency issue because there is no current/valid blood type on the patient, the patient should be receiving group A liquid plasma in the massive packs.
2. If the MTP is non-emergency issue, the patient's blood type is group A or O, and the liquid plasma expires within the next 5 days, the patient should be receiving group A liquid plasma in the massive packs.
3. No more than 6 liquid plasma should be given to a patient within a 24 hour period, unless directed by the Blood Bank Medical Director.
4. If directed by the Blood Bank Medical Director, group A liquid plasma may be used in situations outside of the above examples.

J. The Use of Coolers

1. Refrigerated components will be dispensed from the Blood Bank in a cooler. These coolers have been validated to maintain the required transport temperature.
2. All technologists who dispense components under the Massive Transfusion Protocol must also comply with the Transfusion Medicine policy, *Transporting Blood Components in a Cooler*.

K. Policies Relating to Preparation and Dispense of Components

1. The massive transfusion protocol is intended to prevent or minimize the risk of dilutional coagulopathy and is designed to allow the Blood Bank staff to rapidly prepare and dispense blood components. If the patient's caregivers wish to deviate from the pre-determined component ratios, the result may be an increase in the time required to prepare and dispense components.
2. During a massive transfusion protocol, the Blood Bank will make every effort to have one cooler of refrigerated components and a room temperature platelet prepared and ready to be dispensed at all times.
3. The preparation of replicate sets of blood components must be continued until the patient's caregivers request termination of the massive transfusion protocol.

VI. EQUIPMENT / SUPPLIES:

- A. Standard cooler
- B. Frozen Transport Packs
- C. Refrigerated Transport Packs
- D. Biohazard /Plastic Bags
- E. Urgent Request for Blood Product, F-1565
- F. Blood Product Dispense Form, F-1564
- G. Record of Transfusion Form , F-1566
- H. Blood Bank Communication Form for Massive Transfusion or Emergency Issue

VII. QUALITY CONTROL (QC):

- A. Activation of this procedure is evaluated by the Medical Director or designee for appropriateness of the activation, adequacy of response, and outcome.
- B. Inappropriate activations are reported to the Chiefs of the Trauma Team and Anesthesiology Department.

VIII. PROCEDURE:

A. Preparation and Dispense of Blood Components during a Massive Transfusion Event

Follow the steps below to prepare and dispense blood components under the massive transfusion protocol. These steps may be repeated as necessary to provide replicate coolers. This procedure is intended only to provide a framework for the massive transfusion protocol, minor modifications may be required.

1. Upon notification that an authorized person has activated the massive transfusion protocol, document the Communication for Massive Transfusion or Emergency Issue Form and immediately alert your co-workers.
2. Immediately perform a history check to determine if a there is a current admission specimen and patient blood type available.
3. Immediately thaw FFP as needed.
 - a. Refer to the policy, *Use of Liquid A*
 - b. Refer to the policy above, *Inventory/Prethawed Plasma*
 - c. Refer to table, *Components during Massive Transfusion*
 - d. Refer to procedure, *Thawing Plasma and Cryoprecipitate*
4. Place orders in Blood Bank Computer
 - a. EIR for RBCs
 - b. EIF for Liquid or Thawed Plasma
 - c. EIP for Platelets
 - d. MTP; test code used to document the date /time that MTP was initiated.

Refer to Blood Bank CDM, *Massive Transfusion* for additional detail.

4. Document "MTP+cooler number used in the protocol" in the Soft "Receiver ID" field and/or on the Record of Transfusion Form, F-1566, if using downtime dispense procedures to track the distribution in the protocols. i.e. MTP1, MTP2, MTP3 etc. Note: TPAK should be entered when dispensing the initial 2 RBC for trauma patients.
5. Complete the Cooler dispense form (attached) with the patient's name, MRN and wristband #. A patient chart label may be used for this purpose.
6. Staple the dispense copies of the Record of Transfusion Forms together and place in the handle of the cooler.
7. When the transport runner arrives, obtain the product dispense form.
 - a. If the runner does not have any documentation have them complete the appropriate Blood Product Dispense form with the patient's name and medical record number and the name of the requesting physician.
 - i. If products are being issued uncrossmatched use Form-1565 Urgent Request for Blood Form.
 - ii. If products are being issued are crossmatched use Form-1564 Downtime Blood Product Dispense Form.
8. Verify agreement between the patient's name and MRN, as it appears on the dispense form and the Record of Transfusion forms.
9. Verify agreement between the wristband number as it appears on the dispense form and the wristband number as printed on the Record of Transfusion forms (if available at time of predispense).
10. Document the employee ID# and actual time of dispense of the transport runner is physically dispensed on the dispense form and/or cooler log.
11. Attach the dispense form to the dispense copies of the transfusion forms and retain for Blood Bank records.
- I. After cooler # 1 has been picked up, immediately notify the department if no current patient sample is available. Document this notification on Blood Bank Communication For Massive Transfusion or Emergency Issue Form.
- J. Continue to prepare and dispense components for replicate sets by repeating these steps, until the patient's caregivers terminate the massive transfusion protocol.
- K. When necessary physicians may request products in addition to standard cooler contents based on the patient's needs (i.e. Pooled Cryoprecipitate). These requests will be accommodated and filled as they are made based on available inventory.
- L. Document the notification to cease the protocol on Blood Bank Communication For Massive Transfusion or Emergency Issue Form.
- M. Result the MTP test code with the date and time that the Massive Transfusion was initiated. Refer to the Blood Bank CDM, *Ordering and Resulting the Massive Transfusion Initiated Test* for further instruction.
- N. Perform Post-Issue Crossmatches if required. Refer to Post Issue Crossmatch in the Transfusion Medicine Policies, [Emergency Issue of Blood Products](#) and *Serological Crossmatching of Red Blood Cells*.