

UCONN HEALTH

UCONN JOHN DEMPSEY
HOSPITAL

SECTION: PATIENT CARE

NUMBER: 08-200

SUBJECT: MASSIVE TRANSFUSION PROTOCOL

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PURPOSE:

A standard approach to blood component resuscitation of patients with life-threatening hemorrhage by providing the approximate equivalent of whole blood provided in a "push" fashion best facilitates survival. A coordinated effort between health care providers, the Transfusion Medicine service, and laboratory personnel optimize therapy and may supersede and disrupt normal activities.

POPULATION:

Initiation of massive transfusion protocol (MTP) should be considered for a patient when ongoing replacement or excessively rapid blood loss has occurred or is anticipated despite vigorous intervention.

POLICY:

1. Activation of the MTP is the responsibility of the attending anesthesiologist, surgeon, emergency medicine physician, critical care intensivist, or obstetrician.

A resident, fellow, physician assistant or APRN may activate the MTP so long as they clearly indicate the attending physician they are representing.

2. The MTP may be activated when there is life-threatening hemorrhage of any etiology **and** the attending physician determines that resuscitation will require massive transfusion with the potential for shock or disseminated intravascular coagulopathy (DIC). Life-threatening hemorrhage is defined as > 1 liter in 15 mins or less or 4 units of PRBCs have been transfused.
3. The attending physician, or designee, is responsible for informing charge nurse / nurse manager / asst. nurse manager ("charge nurse") of the start and end of the MTP during weekday hours or the nursing supervisor on off-shifts and weekends.
4. The charge nurse, or designee, is the single point of contact with the Blood Bank for all MTP communications. The charge nurse / manager is responsible to:
 - a. Call for additional equipment at the bedside (e.g., cell saver, rapid fluid infuser, point of care testing, etc.)
 - b. Alert Blood Bank of MTP initiation and conclusion
 - c. Appoint a person solely dedicated to transporting blood components and laboratory specimens

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- d. Facilitate alerting other nursing units that an MTP is in progress and normal Blood Bank operations may be disrupted
 - e. Confirm postoperative ICU bed
5. The Nursing Supervisor may assist with providing additional nursing or ancillary staff support on off-shifts and weekends.
 6. The Blood Bank staff is responsible for informing Laboratory Medicine of the MTP and alerting UConn Health police about potential need to retrieve blood components from the American Red Cross.
 7. All products will be issued in plastic biohazard bags to a runner or other individual qualified to transport blood products. These are to be delivered immediately to the MTP team. **Platelets must be kept at room temperature.** All components should be kept in the patient's room. If the patient is transferred/moved (radiology, to or from the OR, etc.), any un-transfused products must travel with the patient.
 8. Two (2) ABO / Rh specimens must be on record in the Blood Bank computer system prior to release of cross-matched units.¹ If red cells are issued before an antibody screen is completed, the products will be designated as "uncrossmatched". It is understood that the attending responsible for initiating the MTP has determined that the urgent need to transfuse outweighs the potential risk of serologic incompatibility.
 9. If the antibody screen is positive or the patient has a history of an antibody to a potentially significant red cell antigen, each unit of PRBCs must be crossmatched and screened for the specific antigen(s). This may delay availability of MTP packs.
 10. The attending physician directly managing the patient is responsible for formally terminating the MTP. Upon termination, the charge nurse, or designee, will notify the Blood Bank and Nursing Supervisor; the Blood Bank staff will notify Core Lab, UConn Health Police, and the Pathologist on call.

¹ Please see the document [*Blood Products: Type and Screen and ABO / Rh Confirmation Specimens \(Routine\)*](#) in the Nursing Practice Manual.

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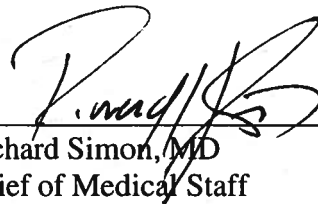
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11. All unused blood components will be returned to the Blood Bank for disposition.
12. Each MTP will be reviewed retrospectively by the Transfusion Committee for effectiveness of coordination of all services. Adherence to the MTP protocol will be reviewed and revisions made as necessary.



Andrew Agwunobi, MD, MBA
Chief Executive Officer



Richard Simon, MD
Chief of Medical Staff

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Date Reviewed:

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Appendix A – Laboratory Protocol for MTP Pack Preparation HAM Policy # 08-200

A pack will equate to approximately 3.0 liters of whole blood with a HCT of 30 to 35% and containing 80% of the stable coagulation factors. A single dose of platelets contains approximately 3.0×10^{11} platelets providing an equivalent count of $100,000/\text{mm}^3$ in the alternating MTP packs containing platelets.

The first MTP pack will consist of 4 units of PRBCs, 2 units of plasma and 1 dose of platelets, if immediately available. Subsequent packs will consist of 4 units of PRBCs and 4 units of plasma. Subsequent packs will also alternate between containing and not containing a single “dose” of platelets, defined as the equivalent of approximately 5 whole blood derived platelet units. Type specific platelets will be used if readily available but are not necessary. PRBCs and plasma will be type specific or type compatible if the patient’s type is known and has been confirmed, otherwise type “O” PRBCs and A plasma will be used¹. At the discretion of the ordering physician, the red cells in any pack may be issued prior to the plasma being available. The MTP packs are designed to expedite the availability of necessary products and prevent a dilutional coagulopathy. Irradiation of MTP blood products will increase the processing time by approximately 15 minutes for those patients requiring irradiated components. Giving non-irradiated products to patients that ordinarily require irradiation can lead to graft vs. host disease and the over-riding of the irradiation requirement should be done with caution and with the input of the attending pathologist.

As soon as the first MTP pack is dispensed to the dedicated runner, the next pack will be processed with the identification of type specific components, thawing of plasma and crossmatching of PRBCs. This automatic processing of an MTP pack will continue until the protocol is terminated by the attending physician. The next pack should only be requested when infusion of the previous pack is initiated, and continued need is confirmed. If the patient type and screen is not available or not confirmed, the blood bank will continue to issue type O red cells and thawed A plasma as deemed appropriate. However, it is imperative that the blood bank receive a specimen for typing as soon as possible in order to provide type specific or type compatible products. If the patient does not have a type documented from a previous specimen, a second specimen will also need to be submitted for confirmation of the patient’s ABO/Rh type.

¹ Only 3% of the general population are type AB and as a result the availability AB plasma is extremely limited. A number of clinical studies now support the use of type A plasma in cases of massive transfusion for un-typed recipients in order to maintain the AB inventory for known AB patients. Transfusion of incompatible plasma (A plasma to a patient who later turns out to be type AB or B) in the setting of massive transfusion is not associated with significant hemolysis or increased morbidity or mortality.

In order to prevent the wastage of significant amounts of plasma, the Blood Bank will only have 2 of the initial 4 units of plasma pre-thawed (A plasma) and therefore the first pack will contain 2 units of plasma. Thawing of 4 additional units of plasma will be initiated when the MTP is triggered. These units can be thawed within 30 minutes of MTP initiation. Plasma for subsequent MTP packs will be thawed as soon as the previous pack is dispensed.

In order to prevent significant wastage of platelets the UCHC blood bank does not have a standing in-house inventory of platelets. An order for 2 doses of platelets will be placed with the American Red Cross (ARC) upon MTP initiation. Additional orders for platelets will be placed after the release of each platelet containing MTP pack. Platelets can typically be obtained from the ARC within 45-60 minutes of MTP initiation. Depending on time of day and staffing in the blood bank and the ARC, this time may be shorter or longer. [MB1]