

University of Alabama Division of Trauma

Massive Transfusion Protocol (MTP)

Purpose Statement: The purpose of this protocol is to provide clear guidance on the initiation and administration of Massive Transfusion Protocol (MTP) and the use of low-titer Whole Blood (WB) in trauma patients.

Background: Blood product resuscitation is the standard of care for hemorrhagic shock. While most trauma patients requiring transfusion do not need a massive transfusion, MTP is defined as administering 10 units of PRBCs within 24 hours. Predictive indicators, including the Assessment of Blood Consumption (ABC) score, should guide MTP activation.

Recent data show that FDA-approved low-titer Whole Blood (WB) improves survival in traumatic shock compared to component therapy and reduces overall transfusion requirements.

- UAB prioritizes O+ low-titer Whole Blood (WB) for trauma MTP activations.
- Transition to component therapy occurs when WB is unavailable.
- WB is exclusively for trauma patients and can be used in the Trauma Bay, OR, and TBICU.
- For component therapy, early platelet administration is critical for hemostasis and reduced mortality.

Blood Resources:

- The UAB Trauma Bay contains a Haemonetics Refrigerator for emergent access to Whole Blood and Component Blood therapy.
- Component Blood products are bundled as a 'Quick Pack,' with 1 unit of PRBCs and 1 unit of FFP released together.
- The refrigerator also contains O+ low-titer Whole Blood (WB) for immediate use.

In the event of technical issues with the refrigerator or if all blood supply from the refrigerator is depleted prior to resupply:

- The UAB ED Lab contains 6 units of PRBCs and 6 units of plasma ready for emergent release.
- These products are released as an "ED Quick Pack" in a cooler containing 2 units of PRBCs and 2 units of FFP upon request.
- Unused blood products can be returned if kept at appropriate temperature.

The satellite blood bank maintains 3 Whole Blood coolers. The Trauma Attending may request an MTP cooler of Whole Blood and has the authority to request continued use of Whole Blood coolers if needed. The Trauma Attending must balance the needs of the individual patient with the limited overall supply of WB (approximately 28 units delivered per week).

Indications for MTP:

- Severe blood loss (Class III/IV hemorrhagic shock with blood loss greater than 30-40% blood volume)
- Assessment of Blood Consumption (ABC) score of 2 or greater
 - o Penetrating Mechanism
 - o Systolic BP <90
 - o HR >120
 - o Positive FAST
- Two or more of the following:
 - o INR>1.5
 - o Base deficit<-6
 - o Hgb<11 g/dL
 - o Platelets <200 K/ μ L
- Persistent hemodynamic instability
- Attending Physician Assessment

Massive transfusion protocol should be activated for patients who receive more than two units of blood products

Massive Transfusion Processes

Step 1: Initial Resuscitation

- Preparation of Belmont Rapid Transfuser.
- If the patient has hemorrhagic shock on arrival, utilize Whole Blood (if available) via the Haemonetics Refrigerator.
- If Whole Blood is not available, utilize a 'Quick Pack' (1u PRBC / 1u FFP) from the Haemonetics Refrigerator.
- If the Haemonetics Refrigerator has technical issues or is empty, utilize an 'ED Quick Pack' (2u PRBC / 2u FFP) from the UED Lab.

Step 2: Transition to MTP Cooler if MTP triggers in place or requiring more than two units of blood products

- Whole Blood Coolers will contain 4u WB, Component-based coolers will contain 6u RBC/6u FFP/1u Platelet.
- Subsequent coolers will be delivered at 15-minute intervals until the MTP has been terminated.
- Blood Bank will stay at least one MTP cooler ahead for the duration of the MTP activation.
- MTP to be terminated by Trauma Attending

Ancillary:

- 2 grams of Tranexamic Acid (TXA) if the patient is within 3 hours of injury. TXA should be given in 100 ml of Normal Saline over 20 minutes.
- After 2 units of blood products have been administered, calcium should be given (e.g., 1g of Calcium Chloride or 2g of Calcium Gluconate) early in resuscitation to mitigate citrate toxicity and maintain hemostasis.



Apply label or handwrite:

Patient Name: _____

MRN: _____

Location: _____

MASSIVE TRANSFUSION PROTOCOL PHYSICIAN ACTIVATION

1. **CALL 6-8911 (Blood Bank MTP Line) IMMEDIATELY** to activate "Massive Transfusion Protocol"
2. Check applicable box(s) below:
 - Blood components:** 6 type O POSITIVE packed red blood cells, 6 type A plasma per cooler on an ongoing basis, and 1 A or AB platelet, until crossmatched units are ready or deactivation.
 - Whole blood:** 4 units type O POSITIVE (first cooler only with blood components in all additional coolers. Call the SBB (6-7979) to notify of MD order to continue WB beyond the 1st cooler). **THIS OPTION FOR TRAUMA USE ONLY.** Bring form to SBB on 7th floor for pick up.
 - Extensive bleeding:** stay ahead with thawing plasma- multiple coolers expected.
3. **CHECK** appropriate box to request coagulation factor if applicable: NovoSeven 2mg **or** Kcentra (PCC) 2000 IU
 thaw cryoprecipitate (1 adult dose, 10 units-20 minutes to thaw)
4. **BRING** this completed form to the blood bank to pick up MTP cooler(s).
5. **REPEAT** until deactivation. For all additional coolers, bring this form containing the patient's NAME AND MRN (add location if this has changed since activation) and the appropriate box above checked. **The physician signature at the bottom is only required on one form per MTP event- activation to deactivation.** (If a green service request card (SRC) is used to pick up MTP coolers, in cases where this form is not available, the form will be sent with the first cooler and must be returned to the BB with the physician signature).
6. **CONTACT** the BB to deactivate the MTP once the bleeding is under control. *Phone: 6-8911*

I understand that the "Massive Transfusion Protocol" may result in a fatal outcome due to the following:

- Some patients have unexpected significant antibodies to red cell antigens present in the plasma which are not compatible with random type O blood and may cause a fatal hemolytic transfusion reaction.
- Although rare, large quantities of type O blood, when given to a type A patient, can cause a hemolytic transfusion reaction. Conversion to type-specific blood ASAP will prevent a reaction.
- Some patients with immune deficiencies (such as hematopoietic stem cell transplant recipients) require irradiated blood and platelets to prevent transfusion-associated graft vs. host disease, which can be fatal. (Irradiation takes approx. 8 minutes.)
- Unwashed blood or platelets, when given to IgA-deficient patients, may produce a potentially fatal anaphylactic reaction.

"Massive Transfusion Protocol" units are uncrossmatched. Type-specific or crossmatched units will be provided in the coolers once a specimen is received and processed. I will ensure that Transfusion Services receives a blood specimen for compatibility testing as soon as possible. I take full responsibility for the infusion to my patient. This patient has a life-threatening hemorrhage so severe that delay of transfusion may result in death.

(Print) Ordering Physician: _____ Other Signing Physician: _____

Physician Signature

Time

Date

BRING THIS FORM TO BLOOD BANK TO PICK UP THE FIRST COOLER(S)

