

## Massive Transfusion Protocol (MTP) & Use of Low Titer Whole Blood

Blood product resuscitation is the standard of care for treatment of hemorrhagic shock. The majority of trauma patients that need blood transfusion do not require a massive transfusion (10 units of PRBC's in 24hrs). Multiple studies have looked at predictive indicators of massive transfusion and these MTP triggers should be utilized in the decision to activate MTP coolers. Recent data utilizing newly FDA approved low titer Whole Blood show a mortality benefit in traumatic shock over component therapy as well as decreased transfusion requirements.

The UAB ED lab contains 6 units of PRBCs and 6 units of plasma ready for emergent release. This blood and plasma will be released as an **"ED Quick Pack"** in a cooler containing **2 units of PRBCs** and **2 units of plasma** upon request. An "ED Quick Pack" can be requested when an unstable trauma patient is anticipated based on pre-arrival notification. This product can be returned if not used, as it will remain at appropriate temperature in the cooler.

UAB now carries O+ low titer Whole Blood (WB) to be utilized in the resuscitation of trauma patients. Only once a patient has arrived and been assessed in the trauma bay and deemed to meet MTP trigger points will the **Attending** request a MTP cooler of Whole Blood. The satellite blood bank maintains **3 coolers**, each containing **4 units** of WB. If a second MTP cooler is requested, the default for the blood bank will be to provide an MTP cooler of component therapy (6/6/1). The Trauma Attending has the authority to request continued use of Whole Blood coolers if needed and this request must be relayed to the blood bank in order to continue with Whole Blood coolers. The Trauma Attending must balance the needs of the individual patient with limited overall supply of WB (approx. 12 units delivered/week)

Whole Blood should be utilized on all trauma MTP activations with transition to component resuscitation if further whole blood either is not available or once surgical control of hemorrhage is achieved and as directed by the Trauma Attending.

When component MTP is utilized, **platelets should be delivered first. Early platelet administration is associated with improved hemostasis and reduced mortality.**

Whole Blood use is exclusive to use in Trauma patients at this time and can be delivered wherever the trauma patient is being resuscitated, i.e Trauma Bay, OR, TBICU.

### **Exclusion Criteria** for low titer Whole Blood:

Patient's < 16 years old

All patient's that receive WB transfusion's or component MTP's will have DAT (Coombs direct) testing performed on both initial blood samples and follow-up blood draws to evaluate for hemolysis.

When the decision is made to activate MTP, **2 grams of Tranexamic Acid (TXA)** should be given if the patient is within 3 hours of injury. Trials show improvement in survival from hemorrhagic shock with the early use of TXA, but only when given within 3 hours of injury.

***The following steps should be followed when the pre-arrival trauma activation patient information includes hemodynamic instability:***

**Step 1:**

- Request an 'ED Quick Pack' to be in the trauma bay prior to patient arrival.
- If the patient does indeed have hemorrhagic shock, utilize this ED Quick Pack product to begin resuscitation and assess response.

**Step 2:**

Once initial trauma evaluation and resuscitation has been initiated, assess for MTP triggers and response to transfusion of ED Quick Pack product.

**Request for a Whole Blood MTP Cooler requires one or more of the following and should only be made once the patient has arrived and been assessed in the Trauma Bay:**

**1. Assessment of Blood Consumption (ABC) Score of 2 or more:**

1. Penetrating Mechanism?
2. ED Systolic BP  $\leq$  90 mmHg?
3. ED HR  $\geq$  120?
4. Positive FAST Exam?

**2. Two or more of the following:**

1. INR  $>$  1.5
2. Base Deficit  $<$  -6
3. Hgb  $<$  11 g/dL
4. Platelets  $<$  200K/ $\mu$ L
5. Shock Index  $>$  1 (HR/SBP)

**3. Persistent hemodynamic instability**

**4. Attending Physician Assessment**

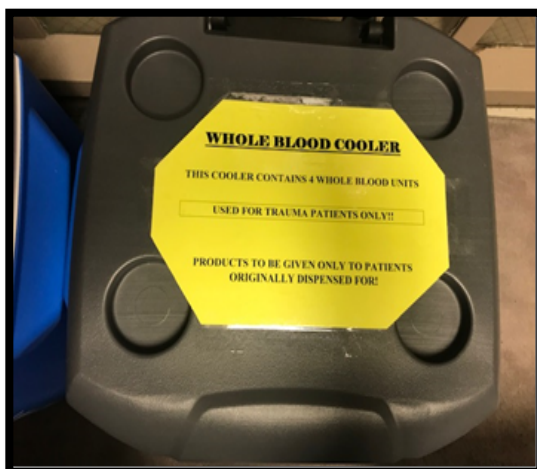
**Step 3:**

1. If the patient is within 3 hours of injury, give 2 grams of TXA via IV or IO. This is given in 100 ml of Normal Saline over 20 minutes.

ED Quick Pack



"ED Quick Pack" cooler (A, B, and C) to be kept in the Trauma Bay and taken to UED lab to request 2 units of PRBCs and 2 units plasma per cooler.



## MTP Physician Activation Request Form:

<p><b>UAB MEDICINE</b> University Hospital Transfusion Services Birmingham, Alabama</p>	<p>Apply label or handwritten:</p> <p>Patient Name: _____</p> <p>MRN: _____</p> <p>Location: _____</p>
<p><b><u>MASSIVE TRANSFUSION PROTOCOL PHYSICIAN ACTIVATION</u></b></p>	
<ol style="list-style-type: none"> <li>1. <b>CALL 6-8911 (Blood Bank MTP Line) IMMEDIATELY</b> to activate "Massive Transfusion Protocol"</li> <li>2. Check applicable box(es) below:             <ul style="list-style-type: none"> <li><input type="checkbox"/> <b>Blood components:</b> 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.</li> <li><input type="checkbox"/> <b>Whole blood:</b> 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 1<sup>st</sup> cooler). <b>THIS OPTION FOR TRAUMA USE ONLY. Bring form to SBB on 7<sup>th</sup> floor for pick up.</b></li> <li><input type="checkbox"/> <b>Extensive bleeding:</b> stay ahead with thawing plasma- multiple coolers expected.</li> </ul> </li> <li>3. <b>CHECK</b> appropriate box to request coagulation factor if applicable: <input type="checkbox"/> NovoSeven 2mg <b>or</b> <input type="checkbox"/> Kcentra (PCC) 2000 IU  <input type="checkbox"/> thaw cryoprecipitate (1 adult dose, 10 units-20 minutes to thaw)</li> <li>4. <b>BRING</b> this completed form to the blood bank to pick up MTP cooler(s).</li> <li>5. <b>REPEAT</b> until deactivation. For all additional coolers, bring this form containing the patient's <b>NAME AND MRN</b> (add location if this has changed since activation) and the appropriate box above checked. <b>The physician signature at the bottom is only required on one form per MTP event- activation to deactivation.</b> (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).</li> <li>6. <b>CONTACT</b> the BB to deactivate the MTP once the bleeding is under control. <b>Phone: 6-8911</b></li> </ol>	
<p>I understand that the "Massive Transfusion Protocol" may result in a fatal outcome due to the following:</p> <ul style="list-style-type: none"> <li>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.</li> <li>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.</li> <li>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.)</li> <li>Unwashed blood or platelets, when given to IgA-deficient patients, may produce a potentially fatal anaphylactic reaction.</li> </ul> <p>"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.</p> <p>(Print) Ordering Physician: _____ Other Signing Physician: _____</p> <p>Physician Signature _____ Time _____ Date _____</p> <p style="text-align: center;"><b>BRING THIS FORM TO BLOOD BANK TO PICK UP THE FIRST COOLER(S)</b></p>	