# St Luke's –Roosevelt Hospital Center
## POLICY AND PROCEDURE MANUAL

| | |
|---|---|
| **POLICY NO. Trauma 12.0** | **Page 1 of 2** |
| **POLICY TITLE:** Massive Transfusion Protocol (MTP) | |
| **DISTRIBUTION:** Emergency Department Policy & Procedure | |

**Original Date of Issue: 10/17/2008**

| | | | | | | |
|---|---|---|---|---|---|---|
| **Reviewed** | 2/15/13 | | | | | |
| **Revised** | | | | | | |

## PURPOSE:
The rapid administration of large numbers of RBC, along with sufficient plasma and platelets to treat or prevent coagulopathy, is a complex process. The Massive Transfusion Protocol (MTP) facilitates the replacement of massive blood loss with appropriate blood products in a timely fashion. MTP should be initiated within 3 hours of injury.

## DEFINITIONS:
Massive Transfusion is defined as the transfusion of more than 10 units of packed red blood cells (PRBCs) within 24 hours.

## STANDARD MTP "PACK":
For adults and pediatric patients > 50kg (110lbs), the standard MTP "Pack", to be sent from the Blood Bank is:

- 5 units PRBC
- 5 units FFP
- 5 units platelets or 1 apheresis pack of platelets
- Tranexamic acid (TXA) should be administered to all patients receiving massive transfusion (1 g loading dose over 10 min, followed by IV infusion of 1 g over 8 h).

*Note: Factor VII may be considered in the event of ongoing coagulopathy after 2 MTP "packs". Recommended dose: 1.2-2.4mg initially.*
*PCC should be considered for rapid reversal in patients with known coagulopathy associated with warfarin use (25 units/kg initial dose).*

## PROCEDURE:
The following steps are to be followed to activate the Massive Transfusion Protocol (MTP):

1. The Attending Physician or Senior Resident gives the order to activate the MTP.

2. The responsible physician will notify the following departments of the MTP activation:
   - Blood Bank: To prepare and send the appropriate blood products.
   - Laboratory: To prepare for STAT studies.
   - Pharmacy: To prepare TXA.

3. Transfusion services will immediately process an MTP "Pack" and send to patient care area (OR, ED, SICU). Type specific blood will be provided for transfusion ASAP. Rh-negative units will be given to Rh-negative children and women of child-bearing age (<45).

   *Note: Un-cross-matched blood is to be used for immediate life-threatening hemorrhage until type-specific or fully cross-matched blood is available. Rh-negative utilization will be limited by supply constraints. The blood bank will consider switching to Rh-positive prior to full depletion of Rh-negative once it is recognized that demand may be greater than inventory and this switch may occur early in the event (i.e., after first pack issued) since it will not be of use in such cases to wait until the Rh-neg supply is completely exhausted.*

4. An MTP "Pack" will be issued every 20 minutes thereafter, or as requested by the team caring for the patient.

5. The Blood Bank will create MTP "Packs" and keep the "Packs" on hold until the protocol has been deactivated.

6. All blood products should be warmed prior to being administered.

*Note: Blood warmers are to be used in conformance with manufacturers' instructions and NYSDOH regulations.*

The following steps are to be followed to activate the Massive Transfusion Protocol (MTP):

7. Monitoring of the following laboratory tests will be done every 4 hours or after the standard MTP "Pack" is given.
   - CBC
   - PT/INR/PTT
   - Fibrinogen

   *Note: 10 units cryoprecipitate should be given for fibrinogen <100mg/dl*

8. When a patient's condition is determined to no longer require MTP status, the Blood Bank shall be notified to discontinue the protocol.

Laboratory studies should be monitored for at least 24 hours after discontinuing the protocol.

## REFERENCES:


**Morrison JJ, Dubose JJ, Rasmussen TE, Midwinter MJ. Arch Surg.** 2012 Feb;147(2):113-119. doi: 10.1001/archsurg.2011.287. Epub 2011 Oct 17. Military Application of Tranexamic Acid in Trauma Emergency Resuscitation (MATTERs) Study.

CRASH-2 trial collaborators* Lancet 2010; 376: 23–32. Effects of tranexamic acid on death, vascular occlusive events, and blood transfusion in trauma patients with significant haemorrhage (CRASH-2): a randomised, placebo-controlled trial

Repine, MD, T.B., Perkins, MD, J.G., Kauvar, MD, D.S., & Blackborne, MD, L., (2006). The Use of Fresh Whole Blood in Massive Transfusion. *J Trauma*, 60, S59-S69.

Link to reference: Massive Tranfusion Protocol-Iraq Fresh Whole Blood.pdf

O'Keeffe. MB, ChB, MSPH, T., Majed, MD, M., Tchorz, MD, K., Forestner, MD, J. E., & Sarode, MD, R., (2008). A Massive Transfusion to Decrease Blood Component Use and Costs. *Arch Surg*, 143 (7), 686-691.

Link to reference: Massive Tranfusion Protocol-Parkland protocol.pdf

Malone, MD, LTC USAF, SGRS, D.L., Hess, MD, MPH, J. R., & Fingerhut, MD, A., (2006). Massive Transfusion Practices Around the Globe and a Suggestion for Common Massive Transfusion Protocol. *J Trauma*, 60, S91-S96.

Link to reference: Massive Tranfusion Protocol-Univ. Maryland.pdf


**Approved By:** Trauma Committee, 10/17/2008
**Responsibility:** Trauma and Emergency Services
**Applicability:** All trauma and emergency service staff.