

Created: February 2004  
Reviewed: July 2023  
Revised: July 2023

---

## Blood and Blood Product Transfusion

---

**Purpose:** To provide guidelines for the transfusion of blood and blood products in the trauma patient

**Guidelines:**

- A. Resuscitation in the ED will begin with lactated ringer's solution or normal saline infused through large-bore IV catheters of 1 liter and no more than 2 liters.
- B. Upon initiating resuscitation, send blood sample to the Blood Bank for immediate type and cross.
  - a. If blood requirements will be excessive, initiate the Massive Transfusion Protocol (P&P 40-55).
- C. O, Rho (D) negative blood is available immediately as emergency release.
  - a. Due to limited supply of O-negative blood, consider O, Rho (D) positive blood for males and sterile or post-menopausal females.
- D. Blood Bank will bring emergency release box of PRBCs to every Category I activation, which includes 4 units of O uncross-matched PRBCs (2 O-negative and 2 O-positive units) packed in transport cooler.
- E. Type and cross-matched: 4 units of type and crossed blood products are available in 45 minutes after sample has been received in the Blood Bank.
- F. FFP: available in approximately 30 minutes after sample has been received in the Blood Bank.
- G. Platelets: available in approximately 15 minutes after sample has been received in the Blood Bank
- H. Cryo: available 20 minutes after sample has been received in the Blood Bank.
  - a. Absolute indication: bleeding with fibrinogen < 100 mg/dL
- I. **Massive Transfusion Protocol (MTP)** is indicated when it is anticipated that a patient requires massive amounts of blood and blood products in order to gain control of bleeding. Blood Bank will keep a continuous supply of 4 units of thawed Type A plasma at Deaconess Midtown Hospital. (See Appendix A for algorithm)

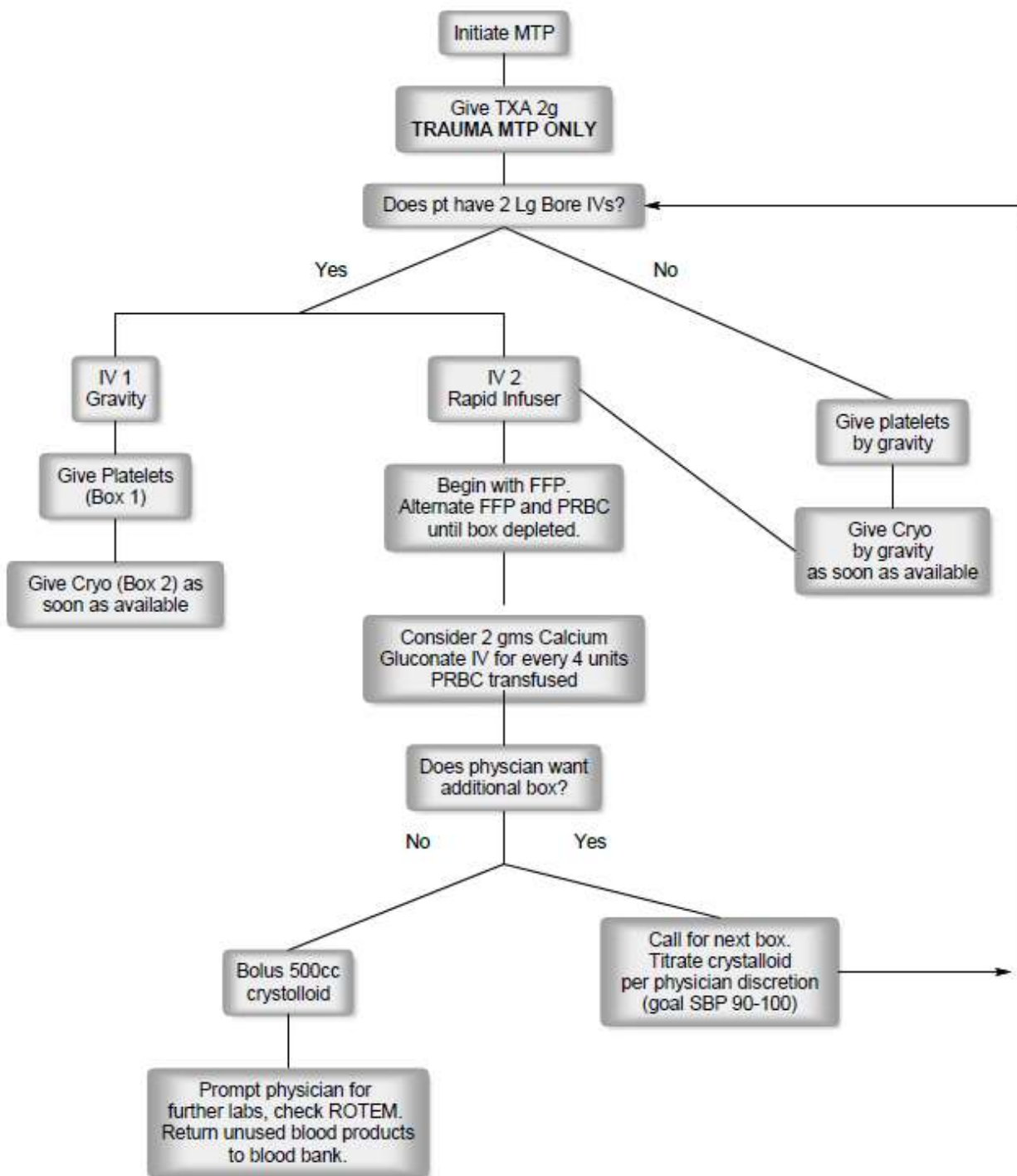
- a. Blood Bank should be notified via telephone call and EPIC Order that need for MTP exists.
    - i. This will trigger Blood Bank to send blood products for administration to the patient.
  - b. Blood Bank will call x3700 to activate MTP Coordinator page through the Call Center.
  - c. MTP Coordinator will call the Call Center back to advise that they received the page and will call Blood Bank to establish the line of communication.
    - i. MTP Coordinators are STCICU (Unit 4800) RNs and Assistant Director of Campus Operations (ADCOs)
    - ii. Coordinator will be responsible for ordering of products, communicating with Blood Bank, and documenting blood administration.
    - iii. Coordinator will organize products based on MTP algorithm. (See appendix A)
  - d. The first box of MTP will include 4 units of PRBCs and units of thawed plasma.
    - i. 1 platelet apheresis will accompany the cooler starting with round 1 and will continue every other round.
    - ii. 1 unit of Cryo will accompany the cooler starting with round 2 and will continue every to be sent with every other round.
  - e. Once a box of MTP leaves the Blood Bank, Blood Bank will continue to thaw the next round of FFP to keep up with the demand for thawed plasma.
  - f. Subsequent boxes will include 4 units of Plasma, 4 units of PRBCs, and 1 unit of Platelets and Cryo every other round.
  - g. Once the MTP ends, notify Blood Bank immediately to decrease waste.
  - h. If the Trauma MTP is initiated and/or the patient's bleeding immediately cannot be controlled surgically, the physician may consider use of the Prothrombin Complex Concentrate (PCC).
    - i. Reference EPIC order sets titled "Prothrombin Complex Concentrate (PCC) for acute Reversal of oral anticoagulation" (559) and "Tranexamic Acid Order Set" (538)
- J. If patient is requiring blood products and bleeding started less than 3 hours ago, consider administration of TXA with goal of 2 g total administration.
- K. Recommend infusing 2 g Calcium Gluconate for every 4 units of PRBCs transfused (i.e. after each box).
- a. Recommend drawing an ionized calcium level after the MTP is completed
- L. During MTP, PRBCs and FFP must be warmed using the warmer on a rapid infuser or an in-line warmer.
- a. Platelets and Cryo should not be warmed
- M. Any PRBCs, FFP and fluid boluses given in the first 12 hours of the trauma patient's admission should be warmed using the warmer on a rapid infuser on inline warmer.
- a. Platelets and Cryo should not be warmed

- N. Consider ordering rotational thromboelastometry (ROTEM) for any trauma patient who requires MTP.
- a. See ROTEM guideline

**References:**

- Deaconess Hospital Policy and Procedure Manual 40-55, Massive Transfusion Protocol
- Advanced Trauma Life Support, American College of Surgeons
- Ditzel Jr RM, Anderson JL, Eisenhart WJ, et al. A review of transfusion – and trauma-induced hypocalcemia: Is it time to change the lethal triad to the lethal diamond? *J Trauma Acute Care Surg.* 2020 Mar;88(3):434-439
- Elmer J, Wilcox SR, Raja AS. Massive transfusion in traumatic shock. *J Emerg Med.* 2013 Apr;44(4):829-38. Epub 2013 Jan 30.

## Massive Transfusion Protocol (MTP) Algorithm



Version 07-17-2023