Trauma Center Practice Management Guideline

Iowa Methodist Medical Center —Des Moines/Blank

Massive Transfusion Protocol	
ADULT **Practice Management Guideline**	**Effective: 06/2014**
Contact: Trauma Center Medical Director	**Last Revised: 04/2017**

PURPOSE

This procedure provides instructions for obtaining blood and/or components for patients who have a massive bleed or have been massively transfused.

DEFINITION

Massive transfusion is defined as the acute administration approximating or exceeding the patient's blood volume (8-10 units of blood for average sized adult) within a 24-hour interval.

POLICY STATEMENT

The policy applies to all patients who, in the opinion of the physician, have an emergent need for large amounts of blood and blood products in order to maintain oxygen carrying capacity and hemostasis.

- Triggers for initiating Massive Transfusion

    A. Assessment of Blood Consumption (ABC) score of two or more (four variables, each assigned one point):
        - HR > 120
        - SBP<90
        - + FAST
        - Penetrating torso injury

    B. Persistent hemodynamic instability

    C. Active bleeding requiring operation or embolization

- In an emergency, the patient's physician must weigh the risk of transfusing uncrossmatched red blood cells against the hazard of waiting for completed compatibility tests.

    A. If the urgency of the situation warrants the release of red blood cells before the cross match is completed, the physician must accept the responsibility for any complications caused by an antigen-antibody reaction that would have been detected by compatibility testing. Such a release does not absolve the Blood Bank from its responsibility to issue properly grouped and labeled blood.

- The Massive Transfusion Protocol may be initiated in any patient care area.

A. Immediately following the administration of the blood/blood products, the physician will make an assessment as to the most appropriate area in which to continue care and management of the patient. (i.e. to keep the patient in a given location or to transfer to an area better suited to the needs of the patient).

- Although coagulopathy in massively transfused patients is often ascribed to simple dilution, the etiology is more commonly multi-factorial. Dilution of coagulation factors and platelets is a factor, but consumption (including DIC), hypothermia and hypocalcemia can also play a part. Ideally, coagulopathy is managed by close monitoring of the following coagulation parameters:

  A. Hemoglobin

  B. Platelet count

  C. Fibrinogen

  D. Prothrombin time (PT)

  E. Partial Thromboplastin time (PTT)

  F. INR

  G. Rotem

  *** Note: After transfusion of components, allow an interval of approximately 15 minutes for equilibration before follow-up coagulation tests are drawn.

- Due to the time interval needed to complete the above mentioned testing, it may not be feasible to perform such testing when the patient is bleeding profusely. In these situations, a formulaic approach is used. The following is an example:

  A. One apheresis platelet contains at least 3.0×10^{11} platelets. This is considered to be one dose of platelets which is equivalent to 4-6 random donor platelets.

- Emergency blood components will be prepared as follows:

  A. Adults ≥ 50 kilograms:
     - 8 units RBCs (will stay 6 ahead)

  B. Pediatrics 21-49 kilograms:
     - 4 units RBCs

  C. Pediatrics ≤ 20 kilograms:
     - 2 units RBCs

- Additional coolers will automatically be prepared as follows:

  A. Adults ≥ 50 kilograms:

     - 6 units RBCs (will stay 6 ahead)

- 6 units Plasma
- 1 Platelet dose (apheresis or 4-6 pack equivalent)

B. Pediatrics 21-49 kilograms:

- 4 units RBCs
- 4 units Plasma
- 1 Platelet dose (apheresis or 4-6 pack equivalent)

C. Pediatrics ≤ 20 kilograms:

- 2 units RBCs
- 2 units Plasma
- 1 Platelet dose (apheresis or 4-6 pack equivalent)

*** Note: In all cases cryoprecipitate will be thawed only upon request. Standard adult dose is 10 cryoprecipitate.

PROCEDURE

1. Physician evaluates the need for uncrossmatched red blood cells and other blood products.

2. Notify the Blood Bank immediately upon implementation **AND** upon termination of massive transfusion protocol. Notify when:

   A. Transfusion needs may be large.

   B. Patient is transported/transferred to another area.

3. Designate one person of the team to be the "communicator" with the Blood Bank staff so that all information travels accurately and there is not duplication. Notify the Blood Bank staff at 241-6856 of implementation by direct request from the Emergency Trauma Department, Surgical, Anesthesiology or Medical staff of massive transfusion protocol. The following information should be provided to the Blood Bank:

   A. Patient name

   B. Medical Record Number (MRN)

   C. Typenex number, if assigned

   D. Physician name requesting the uncrossmatched blood

   E. Reason for the need

   F. Weight of the patient in kilograms for pediatric patients. *** If no weight is communicated, the lab will assume this is an adult.

4. Immediately obtain a specimen for Type and Prepare according to proper protocol. The Type and Prepare specimen should be obtained before transfusion, if at all possible, in order to obtain an accurate patient type.

5. If blood is needed immediately (before any testing is completed), the Blood Bank will emergently release a traumatic pack (2 – O negative RBCs and 2 – AB plasma). The Blood Bank Emergency Request for Uncrossmatched Blood will accompany the uncrossmatched blood to the patient care area for the physician signature. This documentation can occur after the emergency is over, typically within 24 hours.

   A. Complete the Emergency Request for Uncrossmatched Blood form required for Blood Bank as soon as possible. Top copy to chart, bottom copy to lab.

6. Blood Bank will notify their supplier (LifeServe Blood Center) of the massive transfusion situation.

7. If the patient is transferred from the current location, the cooler of red blood cells and/or fresh frozen plasma should be transported with the patient. **** * Note**: Cryoprecipitate and platelets must be stored at room temperature. If not given, immediately return products (cryoprecipitate and platelets) to Blood Bank.

8. Communication that bleeding has subsided/stabilized or patient has expired, is imperative. The Blood Bank will then slow or stop the component preparation process.

9. Immediately return all unused blood components to the Blood Bank.

12. If there is any reason to suspect that transfusion aggravated the original problem or contributed to a death or complication, notify the Blood Bank pathologist and follow the Blood Transfusion Reaction protocol.

13. Consider administering Tranexamic acid TXA (1 g IV over 10 min, then 1 g IV over 8 hrs) if:

- Activation of massive transfusion protocol
- Adult trauma patient with severe hemorrhagic shock (SBP<75 mm Hg
- Known fibrinolysis by Rotem
- Only administer TXA if less than 3 hours from time of injury

References:

- ACS TQIP massive transfusion in trauma guidelines
- Napolitano LM, et al. Tranexamic acid in trauma: How should we use it?. *J Trauma Acute Care Surg*. Volume 74, Number 6