

MASSIVE TRANSFUSION PROTOCOL



**IF YOU ANTICIPATE EMERGENT NEED FOR
LARGE AMOUNTS OF BLOOD IN A SHORT
PERIOD OF TIME**

Call Blood Bank: 662-2121

**Tell them you have a patient who needs a
Massive Transfusion and activate the Massive
Transfusion order in EPIC**



YOU WILL BE ASKED:

**Patient's name or MRN, date of birth, gender,
current location, and name and number of
contact person**

SEND A RUNNER TO THE BLOOD BANK
**THE BLOOD BANK WILL PLACE PRODUCT,
INFUSION, AND LAB ORDERS**



***RE-IDENTIFY
CONTACT PERSON
IF YOU HAND OFF
PATIENT TO
ANOTHER
LOCATION!***

***(e.g. ED to OR, SCU
or other destination)***

***AND
Communicate to
Blood Bank!***

ROUND #1

**4 u uncrossmatched
RBC's (Type O Rh neg)
or crossmatched if
available.**

**Keep the Blood
Bank informed
during the entire
process including
the anticipated
end.**

SUBSEQUENT ROUNDS

1:1 RBC:FFP
**(or as close to that
ratio as possible)**
**4 u crossmatched
RBC's**
4 units plasma



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LABS AND OTHER RECOMMENDATIONS

LABS AFTER EACH ROUND OF BLOOD PRODUCTS

Blue and purple top tubes and slips will come up in green zip-lock bags in each green cooler from Blood Bank for the following studies:

1. Massive Transfusion Coag Panel (INR, PTT, Fibrinogen, Plat Ct),
2. CBC

Label the tubes and send them back to the lab in the green zip-lock bags. When they see the green bag they process the sample STAT.

PLATELETS

1 dose every 10 -12 units RBC in consultation with Blood Bank
(contingent upon platelet inventory and control of hemorrhage)

1. If **INR** >2.0: Give 3 additional units FFP
2. If **fibrinogen** < 150 mg/dL: give 10 units cryoprecipitate
3. **Calcium**: After the first 4 units RBC's give with each 1-2 units:
Calcium gluconate: 10 ml (~5meq)
Calcium chloride: 3 ml (~5 meq)
4. If **pH** <7: give NaHCO₃ 50 meq
5. **Permissive hypotension**
6. **Normosol R**: OK with blood products and is associated with less hyperchloremic acidosis than NS
7. **Recombinant Factor VIIa**:
See details on right
8. Consider use of **cell saver**
9. CMP, Mg, ionized Ca, ABG prn

Each cooler will come with green bags with proper tubes for labs to be drawn after each round of products.



Recombinant factor VIIa may be considered IF the patient has failed traditional transfusion support and continues to have life threatening bleeding AND meets all of the following **REQUIRED** criteria:

1. pH >7.2
2. Platelet count >50 K (preferably 100K)
3. Body Temp >33°C
4. Fibrinogen >100mg/dL

rFVIIa Dose = 20 mcg/kg, may be repeated once after 1 hour. Doses will be rounded by pharmacy to the nearest vial size.
Call Pharmacy STAT line: 662-3333 for factor VIIa.

MMC Massive Transfusion Protocol (MTP)

Responsibilities of the Patient Care Team

- Master EARLY recognition of the potential need for large volumes of blood.
- COMMUNICATE this potential need ASAP to the **Blood Bank (662-2121)**.
- The Blood Bank will request certain information. *Follow Blood Bank directions!*
- Identify a **TRANSFUSION POINT PERSON (TPP)** (see TRANSFUSION POINT PERSON ROLE below) and provide their name and phone number to the Blood Bank.
- TPP must make contact with the Blood Bank ASAP.
- All communication with the Blood Bank should be funneled through the TPP.
- Activate the Massive Transfusion Protocol in Epic
- *Blood Bank will place all orders for blood components and for a Massive Transfusion Coag Panel/CBC with each cooler of blood during the MTP.*
- DO NOT place orders for blood components or coag labs (unless instructed to do so by the Blood Bank) – otherwise, these will cause problems as “duplicate orders”.
- Send a “runner” to the Blood Bank WITH A PATIENT CHART LABEL (or other means of patient identification) to pick up the GREEN MTP cooler of blood.
- Upon opening a new cooler, find the GREEN bag, which contains two tubes (blue/purple top) and this document outlining the MTP.
- Fill the enclosed tubes with blood, label tubes appropriately, *PUT THE TUBES BACK IN THE GREEN BAG*, and send the bag to the lab (tube station #3). Blood Bank will place orders for the Massive Transfusion Coag panel (INR, PTT, Fibrinogen, Platelet count) and CBC.
- The first green MTP cooler will contain 4 units of RBCs. Most of the subsequent coolers will contain 4 units of RBCs and 4 units of plasma.
- DO NOT remove a blood component from the cooler until it is to be IMMEDIATELY hung.
- In addition to the usual patient identification checks, ALWAYS check the name on the blood component against the patient wristband prior to hanging the unit.
- The need for cryoprecipitate and platelets will be determined primarily by the Blood Bank, based on clinical findings and the results of the Massive Transfusion Coagulation panels.
- DO NOT put platelets in a cooler (they must be maintained at room temperature).
- Anticipate ongoing transfusion needs and communicate these through the TPP to the Blood Bank.

Responsibilities of the Transfusion Point Person (TPP)

- The TPP serves the role of managing **ALL** communication between the Patient Care Team and the Blood Bank.
- The TPP must be intimately aware of what is going on with the patient and his/her care, AND must be *readily available to both the patient care team and the Blood Bank*.
- The patient care team MUST assign a TPP as soon as the Massive Transfusion Protocol is initiated.
- As soon as this role is assigned, the TPP must make immediate contact with the Blood Bank.
- If the role of the TPP is “handed off”, this should be communicated to the Blood Bank ASAP (including new contact information).
- The TPP responsibilities may include the following activities
 - o Update Blood Bank on current rate of blood use, and the need for additional blood components.
 - o Receive coagulation test results from the lab.
 - o Manage the Blood Bank’s need for additional lab specimens, including overseeing the appropriate collection, labeling, and transportation of these specimens.
 - o The Blood Bank will work with the TPP (and anesthesiologist and surgeon) to decide when platelets and cryoprecipitate are indicated.
 - o Keep Blood Bank updated on changing patient location.
 - o The TPP informs the Blood Bank when the resuscitation has ended (efforts ceased or hemorrhage controlled).

Other Considerations

Hypocalcemia: *calcium gluconate* (30 mg/kg IV), or *calcium chloride* (10 mg/kg IV)

Hyperkalemia: Insulin 10 units regular IV with 1-2 amps D50W as needed

pH < 7.2 NaHCO₃ 1-2 mEq/kg slow IV push

Consider permissive hypotension

Use of rapid infuser (or pressure bags)

Keep patient warm

Consider use of cell saver

Normosol R may be infused with blood components and is associated with less hyperchloremic acidosis compared to normal saline

Recombinant Factor VIIa: may be considered if the patient has failed traditional transfusion support and continues to have life-threatening bleeding AND meets ALL of the following REQUIRED criteria:

1. pH > 7.2
2. Platelet count > 50K (preferably > 100K)
3. Body temp > 33 C
4. Fibrinogen > 100 mg/dL

rFVIIa Dose: 20 mcg/kg. May be repeated x1 after 1 hour. Doses will be rounded by the pharmacy to the nearest vial size. Call Pharmacy STAT line (662-3333) for rFVIIa.

Responsibilities of the Blood Bank

- When the MTP is being activated, use the *“Blood Bank Script for Massive Transfusion”* to provide direction.
- Maintain active communication with the Transfusion Point Person (TPP).

References:

MMC Intranet page: Transfusion Medicine, Massive Transfusion

MMC Massive Transfusion Policy

Massive transfusion in trauma guidelines. American College of Surgeons, Trauma Quality Improvement Program.

BrohiK, Singh J, Heron M, Coats T. Acute traumatic coagulopathy. J Trauma 2003; 54: 1127–30.

C ROURKE, N CURRY, S KHAN, R TAYLOR, I RAZA, R DAVENPORT, S STANWORTH and K BROHI. Fibrinogen levels during trauma hemorrhage, response to replacement therapy, and association with patient outcomes. J Thromb Haemost 2012; 10: 1342–51.

Blood Bank Script for Massive Transfusion

1. If Not Clear, Ask: “Do you want to activate the Massive Transfusion Protocol?”
2. Patient Information:

Name: _____ MRN: _____ age: _____ gender: _____
Current location: _____ Is this where the blood is going to be given? _____
Diagnosis: _____

3. Transfusion Point Person (TPP)

Name: _____ Phone # _____ Pager #: _____

Tell Transfusion Point Person:

1. Blood Bank will place blood product orders, Massive Transfusion Coag panel, and CBC orders.
2. The patient care team must send someone to the Blood Bank to pick-up the Green Massive Transfusion Cooler. *This person needs to bring a patient chart label.*
3. When the green cooler is received at patient location:
 - a. Open green bag and remove contents
 - b. *Review the enclosed paperwork (roles and responsibilities)*
 - c. Fill the lab tubes, label the tubes, *put filled tubes back into green bag* and tube to the lab, tube station #3.
 - d. Remove blood components from cooler ONLY when ready to immediately hang/transfuse
4. Remind the provider that a Massive Transfusion Activation Order needs to be placed in Epic (if it has not already been received by Blood Bank)
5. If we don't have a current T&S specimen ask for one to be collected and sent to BB (tube 19) stat.
6. If a 2nd specimen for ABORH confirmation is needed, asked for it to be collected and sent to blood bank, tube 19.

Next Steps:

1. Designate Blood Bank Point Person (BBPP) – will usually be the Stand Up person or 3rd shift tech scheduled in Blood Bank.
2. Prepare first cooler:
 - a. 4 RBC units
 - b. green bag must be on TOP of ice
 - c. Place tag on top of cooler (patient name, expiration time of cooler)
 - d. Issue units in SCC
3. Epic: Place orders using the “Massive Transfusion Order Set”, “Blood Bank Massive Transfusion-For Blood Bank Use only”.
 - a. Select “*Round 1*” for first cooler,
 - b. for all subsequent coolers select “*Subsequent rounds*”
4. If additional help is needed, notify Supervisor or onsite charge person in the Clin Lab
5. Call Medical Director: Tim Hayes: pager: 767-6777 (M-F, 8am to 5pm), cell: 653-3423 (all other times), home: 829-3362
6. Call Coag /Lab that MT protocol has been activated and specimens should be coming. Lab Phone # 662-2522, coag: 662-4029
7. Initiate MT Flowsheet
8. Stay one cooler ahead: all subsequent rounds will have 4 RBC units and 4 FFP units. Consider using type A plasma for both group O and A patients. Place orders in Epic, Issue units in SCC. Record actual cooler pick up time on MT Flowsheet.
9. Stay in touch with the TPP & Medical Director to assess/anticipate ongoing needs.
10. Track lab results and blood product usage on the MT Flowsheet
11. DELEGATE MT tasks to other available techs as needed. (get ice for coolers, handle other phone calls, call ARC for additional products, component prep/thawing/pooling/labeling, etc)
12. Assess blood component inventory issues.