

Massive Transfusion Protocol (MTP) – ADULT

➤ 50 KG

University of Michigan 7/5/16 Rev 7

Appropriate Initial Interventions:

- Intravenous access – 2 large bore IVs and Central Venous Cath
- Labs: T&S, CBC, Plts, INR, PT, PTT, Fibrinogen, Electrolytes, BUN/Creatinine, ionized calcium, **ROTEM**
- Continual monitoring: VS, U/O, Acid-base status
- Aggressive re-warming
- Prevent / Reverse acidosis
- Correct hypocalcemia: CaGluconate or CaCl
- Target goal ionized calcium 1.2 – 1.3
- If use CaCl 1 gm, give slowly IV
- Repeat lab testing to evaluate coagulopathy
- Stop crystalloid - avoid dilutional coagulopathy

Other considerations:

- **Anticipate hypocalcemia and infuse 1g calcium gluconate per 1-2 units PRBC's transfused**
- Cell salvage: Anes Tech via front desk 93-64270 (Main & CVCOR)
- Heparin reversal: Protamine 1mg IV/100 U heparin
- Warfarin reversal: Vitamin K 10 mg IV; Consider Prothromin Comp 4 Factor PCC Kcentra INR 2-4 25units/kg, INR>4-6, 35 units/kg, INR>6, 50 units/kg; repeat doing not recommended
- Chronic Renal Failure + VW Factor; DDAVP 0.3 µg/kg IV x 1 dose
- Consider antifibrinolytics:
 - Tranexamic acid 1 gm bolus plus infusion 1 gm over 8 hrs
 - Amicar 5 gm IV bolus then 1 gm/hr IV infusion

Additional help

- Anesthesia: Page 8003; Trauma Chief (via web or operator)
- Rapid Response Team pager 90911 or call stat page 141

General Guidelines for Lab-based Blood Component Replacement in Adults:

Product	Consider for	Dose
RBCs	N/A	MD discretion
FFP	INR > 1.5	4 units FFP
Platelets	< 100,000	One 5-pack Plts
Cryoprecipitate	Fibrinogen < 100	Two 5-packs Cryo

Identify and Manage Bleeding

(Surgery, Angiographic Embolization, Endoscopy)

Adult: 4U RBCs in <4 hours and ongoing bleeding

Clinical Team Activates MTP & Designates Clinical Contact

Clinical Contact phones Blood Bank (BB) at 936-6888 and:

- Provides name of clinical contact person to Blood Bank (BB)
- Provides MR#, sex, name, location of patient
- Records name of BB contact, calls if location/contact information changes
- Sends person with **patient name and MRN** to pick up the cooler
- Ensures that MTP protocol electronic order is entered in CareLink

BB Prepares MTP Pack

MTP Pack: 5U RBCs; 5U FFP; One 5-pack Platelets or one apheresis platelet

This will result is an approximate 1:1:1 ratio

Hemostasis & resolution of coagulopathy?

NO

Clinical Contact calls BB at 6-6888 for another MTP pack
** MD can adjust pack based on labs PRN

YES

Stop MTP

- Notify BB & return any unused blood ASAP
- Resume standard orders
- D/C MTP Electronic order

Repeat Labs

- CBC, Platelets
- INR/PT, PTT
- Fibrinogen
- ABG (Ionized Calcium, Potassium, Lactate, Hematocrit)

WITH Orange Card

If persistent coagulopathy consider:

rFVIIa: 90 µ/kg dose

4 Factor PCC: Kcentra INR 2-4 25units/kg, INR>4-6, 35 units/kg, INR>6, 50 units/kg; repeat doing not recommended

Massive Transfusion Protocol (MTP) – Pediatric < 50 KG

University of Michigan 7/5/16 Rev 7

Appropriate Initial Interventions:

Intravenous access – by weight (kg):

- 1-5 kg: 22-24 gauge
- 6-10 kg: 20-24 gauge
- 11-25 kg: 18-22 gauge
- 25-50 kg: 16-20 gauge

Admission weight (kg)

Admission labs:

- T&S, CBC, INR/ PT, PTT, Fibrinogen, Electrolytes, BUN/Cr, ionized calcium, ABG, lactate
- Continual monitoring of vital signs
- Aggressive re-warming
- Prevent / Reverse acidosis
- Minimize crystalloid – avoid dilutional coagulopathy

Other considerations:

- **Anticipate hypocalcemia with CaGluconate or CaCl**
- 25units/kg, INR>4-6, 35 units/kg, INR>6, 50 units/kg; repeat doing not recommended
- Antifibrinolytic therapy:
Amicar 100 mg/kg bolus then 33.3 mg/kg/hour
- Cell salvage: Anes Tech via Mott OR Front Desk 76-32430
- **Additional help:**
 - Anesthesia: pager 1534
 - Pediatric Surgical Fellow – pager via web or operator
 - Rapid Response Team pager 90147 or call stat paging 141

General Guidelines for Lab-based Blood Component Replacement in Children with Massive Bleeding:

Product	Consider For	Dose
RBCs (360 ml/unit)	N/A	30 ml/kg
FFP (250 ml/unit)	INR > 1.5	20 ml/kg
Platelets (50 ml/bag)	< 100,000	20 ml/kg
Cryoprecipitate (15 ml/unit)	Fibrinogen < 100	0.2 units/kg

Identify and Manage Bleeding

(Surgery, Angiographic Embolization, Endoscopy)

≥ 30 mls/kg and ongoing uncontrolled bleeding

Clinical Team Activates MTP & Designates Clinical Contact

Clinical Contact phones Blood Bank (BB) at 936-6888 and:

- Provides name of clinical contact person to BB
- Provides MR#, sex, name, location and weight of patient
- Records name of BB contact, calls if location/contact information changes
- Sends person with patient name and MRN to pick up the cooler
- Ensures that MTP protocol electronic order is entered in CareLink

BB Prepares MTP Pack

MTP Pack: 5U RBCs; 5U FFP; 5 Random Platelets or one apheresis platelet
This will result is an approximate 1:1:1 ratio

Hemostasis &
resolution of
coagulopathy?

NO

Clinical Contact calls BB
at 6-6888 for another
Peds MTP pack
** MD can adjust pack
based on labs PRN

If persistent coagulopathy
consider :
rFVIIa 90 µ/kg dose

YES

Stop MTP

- Notify BB & return any unused blood ASAP
- Resume standard orders
- D/C MTP Electronic order

Repeat Labs

- CBC, Platelets
- INR/PT, PTT
- Fibrinogen
- ABG (Ionized Calcium, Potassium, Lactate, Hematocrit)

With Orange Card