**ACH Pediatric Massive Transfusion Protocol (MTP)**

### Identify & Manage Bleeding

**Collect** Type & Screen, CBC and Coagulation Samples – Deliver STAT

- Tranexamic acid 15 mg/kg (max 1 gm) bolus over 10 minutes followed by 5 mg/kg/hr for 8 hours (max dose 1 gm over 8 hours)

**Anticipate replacement of 50% of blood volume (40 mL/kg) in 3 hours OR Estimated blood loss exceeding 0.5 mL/kg/min**

**MD ORDERS MTP ACTIVATION**

- ASSIGN a clinical team member to activate MTP (MUST be a Nurse – not a Unit Clerk)
- PHONE Transfusion Medicine (TM) at 52332
- PROVIDE Patient name and sex, RHRN, weight, location, ordering physician

**Standard MTP Pack**

- √ 3U RBCs
- √ 2U FFP
- √ 1 dose Platelets

**OR at clinician discretion**

**PACK IS TO FOLLOW PATIENT**

**Q30 Minutes**

- Hemostasis & resolution of coagulopathy?

- Yes

**Stop MTP**

- Notify TM & return any unused blood ASAP

- Resume standard ordering in SCM

- REPEAT CBC, INR, PTT & fibrinogen q1h

- STAT hand delivery of samples is best

- Repeat ABG, lyes, ionized Ca, serum magnesium and K+ q30 min

- Clinical Team member calls TM at 52332 for another MTP pack

- MD can ADJUST pack based on labs prn

### Other Considerations

- Heparin reversal → Protamine 1 mg IV/100U of unfractionated Heparin, 1 mg IV/1 mg enoxaparin, (max dose 50 mg)

- Warfarin reversal → Vitamin K 5 mg IV/IM → Prothrombin Complex as per TM protocol dosing for INR and weight

- CRF → DDAVP 0.3 mcg/kg IV over 20 min (max dose 20 mcg)

- Intraoperative cell salvage

- rFVIIa - Niastase RT® (40 mcg/kg) consult with TM physician on call @ 41367.

### General Pediatric Guidelines for Lab Based Blood Component Replacement

<table>
<thead>
<tr>
<th>PRODUCT</th>
<th>THRESHOLD</th>
<th>DOSE</th>
</tr>
</thead>
<tbody>
<tr>
<td>RBCs</td>
<td>Aim for Hgb ≥ 100 in bleeding coagulopathic patient</td>
<td>Hgb ≥ 70 is sufficient in most stable non-bleeding patients</td>
</tr>
<tr>
<td>FFP</td>
<td>If INR greater than 1.5</td>
<td>Give 10 - 15 mL/kg</td>
</tr>
<tr>
<td>Platelets Do NOT Cool</td>
<td>If less than 50 x 10^9/L or projected to be soon less than 50 x 10^9/L</td>
<td>Give 5 - 10 mL/kg Platelets should drip freely and not be transfused using a warmer or pressurized infuser.</td>
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<tr>
<td>Cryoprecipitate</td>
<td>Fibrinogen less than 1 g/L OR evidence of microvascular bleeding</td>
<td>Give 1 U/5 kg NOTE: 4 U FFP contains equivalent fibrinogen to 10 U cryo</td>
</tr>
</tbody>
</table>

**Appropriate Initial Interventions**

- Intravenous Access → 2 large bore IVs, IOs, CVC
- Crystalloid → Minimize crystalloid
- Labs → T&S, CBC, coagulation, lyes & ionized Ca, acid/base status – communicate urgency 5-7390
- Continuous monitoring → VS, acid/base, intake/output
- Aggressive re-warming – including warmed RBC’s & plasma
- Prevent/reverse acidosis
- Correct hypocalcemia → Ca gluconate 20-50 mg/kg/dose IV slowly (1 mL/min)
- Transfuse with unmatched RBCs on hand
- Give tranexamic acid as soon as possible, within 3 hours of injury, when giving blood products.

**Massive Transfusion Definitions**

- Replacement of
- Cool CRF
- Warm plasma
- Warfarin reversal → Vitamin K 5 mg IV/IM
- Protamine 1 mg IV/100U of unfractionated Heparin, 1 mg IV/1 mg enoxaparin
- ⟨rFVIIa - Niastase RT® (40 mcg/kg) consult with TM physician on call @ 41367.⟩

**Effects of tranexamic acid on death (9).**

- Trial collaborators

- Royal College of Paediatrics and Child Health Evidence Statement: Major trauma and the use of tranexamic acid in children, November 2012


**TSO 1304 R20180717 Rev. 4.00**