

# NEED A MASSIVE HEMORRHAGE PROTOCOL? PEDIATRIC USE (AGE <13 YEARS OLD)



NO  
NOT YET

1. TRANSFUSE UP TO 20 ML/KG UNCROSSMATCHED RBC
2. REASSESS NEED FOR MHP

YES  
NEED IT NOW

1. POOR BP RESPONSE TO FLUIDS
2. OBVIOUS BLEEDING
3. HYPOTENSION

Or use local activation criteria

MHP COOLER DELIVERY SEQUENCE		
Weight	Cooler 1	Cooler 2+
>40 Kg	4 U RBC*	4 U RBC, 2000 IU PCC & 4g FBGN
31-40 Kg	3U RBC*	3 U RBC, 1000 IU PCC & 2g FBGN
10-30 Kg	2 U RBC*	2 U RBC, 1000 IU PCC & 2 FBGN
<10 Kg	1 U RBC*	1 U RBC, 500 IU PCC & 1g FBGN

• Transfuse PLATELETS (Plts) if < 50 x 10<sup>9</sup>/L  
 \*Administer O Negative for females, otherwise O Positive RBC  
 Note: U=unit, IU=international unit, RBC=Red Blood Cell, PCC= Prothrombin complex concentrate, FBGN=Fibrinogen concentrate

ANTICOAGULATION REVERSAL	
Warfarin	Vitamin K 1 to 10 mg (neonate to adolescent) IV over 10 min and PCC 15 IU/kg for INR < 3 and 30 IU/kg if INR > 3 (or unknown)
Thrombin/Factor Xa inhibitors or Heparins	Consult with hematologist and/or call pharmacy for dosing

CALL FOR EARLY TRANSFER TO PEDIATRIC TRAUMA CENTER

CALL XXXX:  
INITIATE CODE TRANSFUSION

1. Identify source and attempt local control of hemorrhage
2. Obtain IV/IO access
3. Consider tranexamic acid 30 mg/kg (max 2 g) IV/IO
4. Transfuse all of "Cooler 1" RBCs (20 ml/Kg per dose) BEFORE "Cooler 2" products
5. Limit use of crystalloids
6. Administer calcium chloride (CaCl<sub>2</sub>) 20 mg/Kg (max 1 g) or calcium gluconate 60 mg/Kg IV (max 3 g)
7. Keep patient's core temperature above 36°C
8. Collect blood samples including blood glucose
9. Reverse anticoagulation if applicable
10. Transfer for definitive bleeding control

EVERY 30-60 MINUTES REASSESS

1. **Can MHP be turned off?**  
**Can patient be switched to lab directed transfusion?**  
 Consider: bleeding controlled?  
 Hemodynamics stable?
2. Is patient's core temperature >36°C
3. Are blood samples collected q30-60 mins?  
 Transfusion of products adjusted?
4. CaCl<sub>2</sub> 20 mg/Kg (max 1 g) or gluconate 60 mg/Kg IV (max 3 g) after each RBC equivalent of one cooler transfused or ionized calcium <1.15 mmol/L
5. Monitor for complications (ex. hyperkalemia, hypothermia and volume overload)
6. Is resuscitation adequate? (ex. hemodynamics, lactate, base deficit, account for traumatic brain injury)
7. Switch to group specific blood products when able

LABORATORY TRANSFUSION THRESHOLDS

Value	Transfuse
Hgb <80 g/L	RBC 20 ml/kg per dose
INR ≥ 1.8	PCCs 25 IU/kg (rounded to closest 500 IU) max 2000 IU
Fibrinogen <1.5 g/L	Fibrinogen concentrate 50 mg/kg max 4 g (max 2 g if <30 kg)
Platelets <50 x10 <sup>9</sup> /L	Platelets 10 ml/kg per dose

- PATIENT NO LONGER NEEDS MHP

  1. Deactivate as per local policy
  2. Ensure coolers and unused MHP components returned to Transfusion Medicine Lab ASAP
  3. Complete documentation and hand-over