

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	Cooler 3	Cooler 4+
>40 Kg	4 U RBC*	4 U RBC 4 U FP	4 U RBC 2 U FP 4 g FBGN	4 U RBC 2 U FP
31-40 Kg	3U RBC*	3 U RBC 3 U FP	3 U RBC 2 U FP 2 g FBGN	3 U RBC 2 U FP
10-30 Kg	2 U RBC*	2 U RBC 2 U FP	2 U RBC 1 U FP 2 g FBGN	2 U RBC 1 U FP
<10 Kg	1 U RBC*	1 U RBC 1 U FP	1 U RBC 1 U FP 1 g FBGN	1 U RBC 1 U FP

- For Coolers 2+ adjust RBC: FP ratio 1-2:1 (weight-based dosing) as needed UNTIL lab directed dosing possible
- Transfuse PLATELETS (Plts) if < 50 x 10⁹/L
- *Administer O Negative for females, otherwise O Positive RBC
- Note: RBC=Red Blood Cell, FP=Frozen Plasma, FBGN=Fibrinogen

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

LABORATORY TRANSFUSION THRESHOLDS

Value	Transfuse
Hgb <80 g/L	RBC 20 ml/kg per dose
INR ≥ 1.8	Frozen plasma 10-20 ml/Kg per dose
Fibrinogen <1.5 g/L	Fibrinogen concentrate 50 mg/kg max 4 g (max 2 g if <30 kg)
Platelets <50 x10 ⁹ /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

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) and infusion of 10 mg/kg/hr IV/IO
4. Infuse all of "Cooler 1" RBCs (20 ml/Kg per dose) BEFORE "Cooler 2" products, UNLESS lab results direct otherwise
5. Limit use of crystalloids
6. Administer calcium chloride (CaCl₂) 20 mg/Kg (max 1 g) or calcium gluconate 60 mg/Kg IV (max 3 g)
7. Keep patient 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. CaCl₂ 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