

NEED A MASSIVE HEMORRHAGE PROTOCOL?



**YES
NEED IT NOW**

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

**NO
NOT YET**

1. TRANSFUSE UP TO 20 ML/KG UNCROSSMATCHED RBC
(Call Blood Bank ext 206208 for UNXM blood)
2. RE-ASSESS NEED FOR MHP

CALL 205555: INITIATE CODE TRANSFUSION
Will be transferred to BLOOD BANK (BB) ext 206208
 *Provide MRN, Patient Name, Wt (kg)
 *Identify 1 Blood Bank contact per clinical area

1. Rapidly control hemorrhage (direct pressure, staples, tourniquet etc.)
2. Obtain IV/IO access
3. Tranexamic acid (TXA) 15-30 mg/kg (max 2g). Administer over 10min (20 min if giving 30 mg/kg) followed by infusion of 5-10 mg/kg/hr IV/IO
4. Infuse all "PACK 1" RBCs (20 ml/kg per dose) BEFORE "PACK 2" products, UNLESS lab results direct otherwise
5. Limit use of crystalloids (20mL/kg then move to RBC)
6. Administer calcium gluconate 60 mg/kg IV (max 3g) or calcium chloride 20 mg/kg (max 1g)
7. Keep patient core temperature above 36°C
8. Collect MHP/trauma labs including iStat
9. Reverse anticoagulation if applicable
10. Transfer for definitive bleeding control

MHP PACK DELIVERY SEQUENCE				
Weight	PACK 1	PACK 2	PACK 3	PACK 4+
>40 Kg	4 U RBC	4 U RBC 4 U FP 4 g FBGN	4 U RBC 2 U FP 1 U PLT	4 U RBC 2 U FP
31-40 Kg	3U RBC	3 U RBC 3 U FP 2 g FBGN	3 U RBC 2 U FP 1 U PLT	3 U RBC 2 U FP
10-30 Kg*	2 U RBC	2 U RBC 2 U FP 2 g FBGN	2 U RBC 1 U FP 1 U PLT	2 U RBC 1 U FP
<10 Kg*	1 U RBC	1 U RBC 1 U FP 1 g FBGN	1 U RBC 1 U FP 1 U PLT	1 U RBC 1 U FP

*Under 30 Kg: Infuse **no more** than 10-20 mL/kg at one time.

RBC=Red Blood Cell, FP=Frozen Plasma, FBGN=Fibrinogen, PLT=Platelet

- PACKs 2+ adjust RBC:FP ratio 1-2:1 (wt-based dosing)
- Transfuse PLT 10ml/kg if < 50 x 10⁹/L
- If on antiplatelet drugs or trauma patient and level is unknown, administer PLT 10 ml/kg with PACK 3

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. Calcium gluconate 60 mg/kg (max 3 g) or calcium chloride 20 mg/kg (max 1 g) IV after each RBC equivalent of one pack transfused, or for ionized calcium <1.15 mmol/L
5. Monitor for complications (eg. hyperkalemia, hypothermia and volume overload)
6. Is resuscitation adequate? (eg. hemodynamics, lactate, base deficit, account for TBI)
7. Switch to group specific blood products when able

ANTICOAGULATION REVERSAL	
Warfarin	Vitamin K 1- 10 mg (neonate/infant 1mg, child 2-5mg, adolescent 10mg) IV over 10 min & Prothrombin Complex Concentrate (PCC) 15 IU/ kg for INR < 3 & 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 (FP) 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. Call Locating (x205555) to turn off MHP/Code Transfusion
 2. Return packs & unused products to Blood Bank ASAP
 3. Complete documentation and hand-over
 4. Inform parent/guardian of child that they needed the MHP