

PEDIATRIC PATIENTS, DEFINITIVE CARE AT HOSPITAL

To be repeated on each page

MASSIVE HEMORRHAGE
 PROTOCOL (MHP) CHECKLIST

TIME & PACK	ACTION	<input type="checkbox"/> INITIALS
ACTIVATION & PACK 1 (date dd __ / mo __ / yr __ time __ / __)		
	MHP Lead RN: _____	
	Call to hospital locating (ext. - - - -) to activate CODE TRANSFUSION	<input type="checkbox"/>
	Provide patient number, name, sex, age, body weight in kg (if < 13 years of age), location, and information regarding patient use of antiplatelet or anticoagulants to blood bank at ext. - - - - Anti-platelets <input type="checkbox"/> Yes; Anticoagulant <input type="checkbox"/> Yes, drug name: _____	
	<input type="checkbox"/> Ensure identification band is affixed to patient	
	<input type="checkbox"/> Obtain group and screen sample	
	<input type="checkbox"/> Obtain baseline blood work	
	Tranexamic acid: Consider administering 30 mg/kg iv bolus tranexamic acid (maximum dose 2 g) over 20 minutes and an iv/io infusion of 10 mg/kg/hour <i>Hold if: more than 3 hours from injury/onset of hemorrhage or given pre-hospital or pre-activation or patient has a gastrointestinal hemorrhage</i>	<input type="checkbox"/>
	Hypothermia prevention: <input type="checkbox"/> Measure and document patient temperature <input type="checkbox"/> Obtain blood warmer for all infusions <input type="checkbox"/> If patient temperature less than 36°C start active warming	
	Definitive hemorrhage control: Notify if required: <input type="checkbox"/> Operating Room <input type="checkbox"/> Interventional Radiology <input type="checkbox"/> Gastroenterology	<input type="checkbox"/>
	Obtain 1st MHP pack (if not obtained before activation): Pack arrival time (_ / _ / _) <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> 1 - 4 units Red Cells (RBCs) [# units dependent on the patient's body weight (kg); 20 ml/Kg per dose, unless laboratory results direct otherwise]] <i>Use Rh-negative blood only for females</i> <i>Avoid additional boluses or infusions of crystalloid except on physician order</i>	<input type="checkbox"/>
	<input type="checkbox"/> Platelets: If platelet count below 50 x10 ⁹ /L or patient on an antiplatelet drug, transfuse 10 mL/kg of pooled platelets	<input type="checkbox"/>
	<input type="checkbox"/> Fibrinogen: if fibrinogen less than 1.5 g/L, administer 50 mg/kg fibrinogen concentrate (max dose 4 g if > 30 kg; max dose 2 g if < 30 kg) over 5 min by iv push	<input type="checkbox"/>
	<input type="checkbox"/> Calcium: 20 mg/kg (maximum 1 g) Calcium Chloride or 60 mg/kg (maximum 3 g) Calcium Gluconate iv push after pack 1 or ionized calcium <1.15 mmol/L	<input type="checkbox"/>
	Anticoagulant reversal: <input type="checkbox"/> If Warfarin: PCC 15 IU/kg (for INR <3 or if INR unknown) or PCC 30 IU/kg (for INR > 3) iv over 10 minutes AND Vitamin K 1- 10 mg (neonate to adolescent) iv over 10 min <input type="checkbox"/> If Xa inhibitors (e.g., apixaban, rivaroxaban), Dabigatran, or Heparins: consultation with hematologist recommended	<input type="checkbox"/> <input type="checkbox"/>

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PACK 2 (Arrival time __/__/__)		
<input type="checkbox"/>	Obtain hour one blood work	
<input type="checkbox"/>	Review last set of blood work to ensure at target: Hemoglobin greater than 80 g/L, INR less than 1.8, fibrinogen greater than 1.5 g/L, platelets greater than $50 \times 10^9/L$, blood glucose > 4 mmol/L, ionized calcium ≥ 1.15 mmol/L & potassium < 5.8 mmol/L	<input type="checkbox"/>
<input type="checkbox"/>	Measure and document patient temperature	
<input type="checkbox"/>	If patient temperature less than 36°C start active warming	
<input type="checkbox"/>	Obtain 2nd MHP pack (if needed): Transfusions based on laboratory measures where feasible	
<input type="checkbox"/>	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> 1 - 4 units Red Cells (RBCs) [# units dependent on the patient's body weight (kg); 20 ml/Kg per dose, unless laboratory results direct otherwise]]	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> 1 - 4 units Frozen plasma [# units dependent on the patient's body weight (kg); 10-20 ml/Kg per dose, unless laboratory results direct otherwise]]	<input type="checkbox"/>
<input type="checkbox"/>	Platelets: if platelet count below $50 \times 10^9/L$, 10 mL/kg of pooled platelets	<input type="checkbox"/>
<input type="checkbox"/>	Fibrinogen: if fibrinogen less than 1.5 g/L, administer 50 mg/kg fibrinogen concentrate (max dose 4 g if > 30 kg else max 2 g if < 30 kg) over 5 min by iv push	<input type="checkbox"/>
<input type="checkbox"/>	Anticoagulant reversal (only if ongoing hemorrhage):	<input type="checkbox"/>
<input type="checkbox"/>	If Xa inhibitors (second dose): consultation with hematologist recommended	
<input type="checkbox"/>	Calcium: 20 mg/kg (max 1 g) Calcium Chloride or 60 mg/kg (max 3 g) Calcium Gluconate iv push after pack 2 or ionized calcium <1.15 mmol/L	<input type="checkbox"/>
PACK 3 (Arrival time __/__/__)		
<input type="checkbox"/>	Obtain hour 2 blood work	
<input type="checkbox"/>	Review last set of blood work to ensure at target including blood glucose > 4 mmol/L, ionized calcium ≥ 1.15 mmol/L & potassium < 5.8 mmol/L	<input type="checkbox"/>
<input type="checkbox"/>	Measure and document patient temperature	
<input type="checkbox"/>	If patient temperature less than 36°C start active warming	
<input type="checkbox"/>	Obtain 3rd MHP pack (if needed) Transfusions based on laboratory measures where feasible	
<input type="checkbox"/>	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> 1 - 4 units Red Cells (RBCs) [# units dependent on the patient's body weight (kg); 20 ml/Kg per dose, unless laboratory results direct otherwise]]	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/> <input type="checkbox"/> 1 - 2 units Frozen plasma [# units dependent on the patient's body weight (kg); 10 ml/Kg per dose, unless laboratory results direct otherwise]]	<input type="checkbox"/>
<input type="checkbox"/>	50 mg/kg fibrinogen concentrate (max dose 4 g if > 30 kg; max 2 g if < 30 kg) over 5 min by iv push	<input type="checkbox"/>
<input type="checkbox"/>	Platelets: if platelet count below $50 \times 10^9/L$, 10 mL/kg of pooled platelets	<input type="checkbox"/>
<input type="checkbox"/>	Calcium: 20 mg/kg (max 1 g) Calcium Chloride or 60 mg/kg (max 3 g) Calcium Gluconate iv push after pack 3 or ionized calcium <1.15 mmol/L	<input type="checkbox"/>

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PACK 4 (Arrival time __/__/__)		
<input type="checkbox"/>	Obtain hour 3 blood work	
<input type="checkbox"/>	Review last set of blood work to ensure at target including blood glucose > 4 mmol/L ionized calcium ≥ 1.15 mmol/L, potassium < 5.8 mmol/L & magnesium ≥ 0.70 mmol/L	<input type="checkbox"/>
<input type="checkbox"/>	Measure and document patient temperature	
<input type="checkbox"/>	If patient temperature less than 36°C start active warming	
Obtain 4th pack (if needed)		
Transfusions based on laboratory measures where feasible		
<input type="checkbox"/>	1 - 4 units Red Cells (RBCs) [# units dependent on the patient's body weight (kg); 20 ml/Kg per dose, unless laboratory results direct otherwise]]	<input type="checkbox"/>
<input type="checkbox"/>	1 - 2 units Frozen plasma [# units dependent on the patient's body weight (kg); 10 ml/Kg per dose, unless laboratory results direct otherwise]]	<input type="checkbox"/>
<input type="checkbox"/>	Platelets: if platelet count below 50 x10 ⁹ /L, 10 mL/kg of pooled platelets	<input type="checkbox"/>
<input type="checkbox"/>	Fibrinogen: if fibrinogen less than 1.5 g/L, administer 50 mg/kg fibrinogen concentrate (max dose 4 g if > 30 kg; max 2 g if < 30 kg) over 5 min by iv push	<input type="checkbox"/>
<input type="checkbox"/>	Calcium: 20 mg/kg (max 1 g) Calcium Chloride or 60 mg/kg (max 3 g) Calcium Gluconate iv push after pack 4 or ionized calcium <1.15 mmol/L	<input type="checkbox"/>
PACK 5 (Arrival time __/__/__)		
<input type="checkbox"/>	Obtain hour 4 or greater blood work	
<input type="checkbox"/>	Review last set of blood work to ensure at target including blood glucose > 4 mmol/L ionized calcium ≥ 1.15 mmol/L, potassium < 5.8 mmol/L & magnesium ≥ 0.70 mmol/L	<input type="checkbox"/>
<input type="checkbox"/>	Measure and document patient temperature	
<input type="checkbox"/>	If patient temperature less than 36°C commence active warming	
Obtain 5th (if needed)		
Transfusions based on laboratory measures where feasible		
<input type="checkbox"/>	1 - 4 units Red Cells (RBCs) [# units dependent on the patient's body weight (kg); 20 ml/Kg per dose, unless laboratory results direct otherwise]]	<input type="checkbox"/>
<input type="checkbox"/>	1 - 2 units Frozen plasma [# units dependent on the patient's body weight (kg); 10 ml/Kg per dose, unless laboratory results direct otherwise]]	<input type="checkbox"/>
<input type="checkbox"/>	Platelets: if platelet count below 50 x10 ⁹ /L, 10 mL/kg of pooled platelets	<input type="checkbox"/>
<input type="checkbox"/>	Fibrinogen: if fibrinogen less than 1.5 g/L, administer 50 mg/kg fibrinogen concentrate (max dose 4 g if > 30 kg; max 2 g if < 30 kg) over 5 min by iv push	<input type="checkbox"/>
<input type="checkbox"/>	Calcium: 20 mg/kg (max 1 g) Calcium Chloride or 60 mg/kg (max 3 g) Calcium Gluconate iv push after each pack or ionized calcium <1.15 mmol/L	<input type="checkbox"/>
TERMINATION (time __/__/__)		
<input type="checkbox"/>	Once hemorrhage control is obtained and patient is hemodynamically stable call blood bank and the hematology laboratories to terminate the protocol	<input type="checkbox"/>
<input type="checkbox"/>	Measure and document patient temperature	
<input type="checkbox"/>	Return all unused blood products in appropriate storage containers	
<input type="checkbox"/>	Complete this form and place in patient chart	
<input type="checkbox"/>	Complete handover SBAR tool below with receiving team	

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HANDOVER SBAR TOOL FOR HANDOVER TO THE CRITICAL CARE TEAM

(Time __/__/__)

S: SITUATION (Relay the following)	HANDOVER NOTES
<input type="checkbox"/> Patient age, sex, weight <input type="checkbox"/> Patient estimated blood volume (70 ml/kg) _____ L <input type="checkbox"/> Context (trauma ± TBI, surgery, or other)	
B: BACKGROUND (Relay the following)	
<input type="checkbox"/> TXA administration _____ g	
<input type="checkbox"/> Total volume (mL-unless specified) of blood products _____ RBC _____ Plasma _____ PLTs _____ g Fibrinogen _____ IU PCC	
<input type="checkbox"/> Total (L) crystalloid and/or colloid and urine output _____ L of non-blood product fluid; _____ L of urine output	
<input type="checkbox"/> IV / IO access and need for vasopressors	
<input type="checkbox"/> For trauma, external/internal bleeding ± TBI management	
<input type="checkbox"/> Consultant(s) involved (e.g., surgery, radiology or gastroenterology)	
<input type="checkbox"/> Complications (hypothermia, coagulopathy, acidosis or arrhythmias)	
A: ASSESSMENT (Relay the following)	
<input type="checkbox"/> Hemodynamic status (stable or unstable, vitals and temperature)	
<input type="checkbox"/> Definitive hemorrhage control achieved? YES / NO	
<input type="checkbox"/> Critical labs (specify) and latest blood work results Hgb _____ PLT _____ INR _____ Fibrinogen _____ Lactate _____ Calcium _____	
<input type="checkbox"/> Availability of blood products from blood bank/coolers at bedside	
R: RECOMMENDATION (Consider the following)	
<input type="checkbox"/> Consider need for additional blood products since last set of labs	
<input type="checkbox"/> Consider need for further consultation, tests and drug re-dosing	