

**ADULT PATIENTS, DEFINITIVE CARE AT HOSPITAL for educational purposes only, not for clinical use**

**EXAMPLE OF MASSIVE HEMORRHAGE**

**PROTOCOL (MHP) CHECKLIST (for educational purposes only, not for clinical use)**

TIME	ACTION	INITIALS
<b>ACTIVATION &amp; PACK 1 (date __/__/__ time __/__)</b>		
	MHP Lead RN: _____	
	Call to hospital locating (ext. - - - - ) to activate <b>CODE TRANSFUSION</b>	
	Provide patient number, name, sex, age, location, and information regarding patient use of antiplatelet or anticoagulants to blood bank at ext. - - - - Antiplatelets <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	
	<b>Tranexamic acid:</b> Administer 2 gram iv bolus in 100 mL over 20 minutes. <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>	
	<b>Hypothermia prevention:</b> <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	
	<b>Definitive hemorrhage control:</b> Notify if required: <input type="checkbox"/> Operating Room <input type="checkbox"/> Interventional Radiology <input type="checkbox"/> Gastroenterology	
	<b>Obtain 1st MHP pack (if not obtained before activation):</b> Pack arrival time ( _ / _ / _ ) <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> 4 units Red Cells (RBCs) <i>Use Rh-negative blood only for females under 45 years</i> <i>Avoid additional boluses or infusions of crystalloid except on physician order</i>	
	<input type="checkbox"/> <b>Platelets:</b> If platelet count below 50 x10 <sup>9</sup> /L or patient on an antiplatelet drug, transfuse 1 pool of platelets	
	<input type="checkbox"/> <b>Fibrinogen:</b> if fibrinogen less than 1.5 g/L, 4 grams of fibrinogen concentrate over 5 min by iv push	
	<input type="checkbox"/> <b>Calcium:</b> 1g Calcium Chloride or 3g Calcium Gluconate iv push after pack 1	
	<b>Anticoagulant reversal:</b> <input type="checkbox"/> If Warfarin: PCC 2000 IU iv over 10 minutes AND <input type="checkbox"/> Vitamin K 10 mg iv <input type="checkbox"/> If Xa inhibitors (e.g., apixaban, rivaroxaban): PCC 2000 IU iv over 10 minutes <input type="checkbox"/> If Dabigatran: Idarucizumab 5 grams iv over 10 minutes <input type="checkbox"/> If Heparins: consult Pharmacy for protamine dosing	
<b>PACK 2 (time __/__/__)</b>		
	<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 50x10 <sup>9</sup> /L	
	<input type="checkbox"/> Measure and document patient temperature <input type="checkbox"/> If patient temperature less than 36°C start active warming	
	<b>Obtain 2<sup>nd</sup> MHP pack (if needed):</b> Transfusions based on laboratory measures where feasible	

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<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> 4 units Red Blood Cells	
<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> 4 units of Frozen Plasma	
<input type="checkbox"/> <b>Platelets:</b> if platelet count below $50 \times 10^9/L$ , 1 pool of platelets	
<input type="checkbox"/> <b>Fibrinogen:</b> if fibrinogen less than 1.5 g/L, 4 grams of fibrinogen concentrate over 5 min	
<b>Anticoagulant reversal (only if ongoing hemorrhage):</b>	
<input type="checkbox"/> If Xa inhibitors (second dose): PCC 2000 IU iv over 10 minutes	
<input type="checkbox"/> <b>Calcium:</b> 1g Calcium Chloride or 3g Calcium Gluconate iv push after pack 2	
<b>PACK 3 (time __ / __)</b>	
<input type="checkbox"/> Obtain hour 2 blood work	
<input type="checkbox"/> Review last set of blood work to ensure at target	
<input type="checkbox"/> Measure and document patient temperature	
<input type="checkbox"/> If patient temperature less than $36^{\circ}C$ start active warming	
<b>Obtain 3<sup>rd</sup> MHP pack (if needed)</b>	
Transfusions based on laboratory measures where feasible	
<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> 4 Units Red Blood Cells	
<input type="checkbox"/> <input type="checkbox"/> 2 Units of Frozen Plasma	
<input type="checkbox"/> 4 grams of fibrinogen concentrate over 5 min	
<input type="checkbox"/> <b>Platelets:</b> if platelet count below $50 \times 10^9/L$ , 1 pool of platelets	
<input type="checkbox"/> <b>Calcium:</b> 1g Calcium Chloride or 3g Calcium Gluconate iv push after pack 3	
<b>PACK 4 (time __ / __)</b>	
<input type="checkbox"/> Obtain hour 3 blood work	
<input type="checkbox"/> Review last set of blood work to ensure at target	
<input type="checkbox"/> Measure and document patient temperature	
<input type="checkbox"/> If patient temperature less than $36^{\circ}C$ start active warming	
<b>Obtain 4<sup>th</sup> pack (if needed)</b>	
Transfusions based on laboratory measures where feasible	
<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> 4 units of Red Blood Cells	
<input type="checkbox"/> <input type="checkbox"/> 2 units of Frozen Plasma	
<input type="checkbox"/> <b>Platelets:</b> if platelet count below $50 \times 10^9/L$ , 1 pool of platelets	
<input type="checkbox"/> <b>Fibrinogen:</b> if fibrinogen less than 1.5 g/L, 4 grams of fibrinogen concentrate over 5 min	
<input type="checkbox"/> <b>Calcium:</b> 1g Calcium Chloride or 3g Calcium Gluconate iv push after pack 4	
<b>PACK 5 (time __ / __)</b>	
<input type="checkbox"/> Obtain hour 4 or greater blood work	
<input type="checkbox"/> Review last set of blood work to ensure at target	
<input type="checkbox"/> Measure and document patient temperature	
<input type="checkbox"/> If patient temperature less than $36^{\circ}C$ commence active warming	
<b>Obtain 5<sup>th</sup> (if needed)</b>	
Transfusions based on laboratory measures where feasible	
<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> 4 units of Red Blood Cells per pack (RBCs)	
<input type="checkbox"/> <input type="checkbox"/> 2 units of Frozen Plasma	
<input type="checkbox"/> <b>Platelets:</b> if platelet count below $50 \times 10^9/L$ , 1 pool of platelets	
<input type="checkbox"/> <b>Fibrinogen:</b> if fibrinogen less than 1.5 g/L, 4 grams of fibrinogen concentrate over 5 min	

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<input type="checkbox"/> <b>Calcium:</b> 1g Calcium Chloride or 3g Calcium Gluconate iv push after each pack	
<b>TERMINATION (time __/__/__)</b>	
<b>Once hemorrhage control is obtained and patient is hemodynamically stable call blood bank and the hematology laboratories to terminate the protocol</b>	
<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 \_\_/\_\_/\_\_)**

<b>S: SITUATION (Relay the following)</b>	HANDOVER NOTES
<input type="checkbox"/> Patient age, sex, weight	
<input type="checkbox"/> Context (trauma ± TBI, surgery, or other)	
<b>B: BACKGROUND (Relay the following)</b>	
<input type="checkbox"/> TXA administration _____ grams	
<input type="checkbox"/> Total numbers 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	
<input type="checkbox"/> IV 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)	
<b>A: ASSESSMENT (Relay the following)</b>	
<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 Hb _____ PLT _____ INR _____ fibrinogen _____ lactate _____ Calcium _____	
<input type="checkbox"/> Availability of blood products from blood bank/coolers at bedside	
<b>R: RECOMMENDATION (Consider the following)</b>	
<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	

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