Clinical Practice Guideline

Trauma-based massive hemorrhage Algorithm

Pre-hospital notification suggestive of massive hemorrhage

Trauma Bay Preparation

Equipment

- · Rapid transfusion device
- Auto-transfusion chest tube
- Warming device
- Compression; tourniquet; pelvic binder

Personnel

- Notify Trauma Team of potential MHP (assemble team in trauma bay)
 & pre-register patient
- Ensure dedicated phone line with blood bank and clinical
- Notify consult services prior to patient arrival if pre-hospital information warrants

Trauma Bay Management

- Ensure appropriate consulting services and the OR have been notified
- Minimize crystalloids to <1L
- Temperature: Avoid hypothermia, maintain target T >35C
- TXA: 2G bolus ASAP; if not given pre-hospital
- Start >2:1 transfusion [pRBCs, plasma] with platelets as needed then goal directed transfusion (Table 1)
- Targets:
 - Hb 70-90, INR <1.8
 - Plts >50
 - Fibrinogen >1.5
 - iCa >1.15
- Reverse/treat anticoagulants (Table 2)
- Monitor for complications: TRALI/TACO
- Monitor Ca++, K+

Blood

- Initiate Massive Hemorrhage Protocol/ "Code Transfusion"
- Blood products
- Group & Screen
- Test every 30-60 minutes:
 - CBC
 - INR, PTT, Fibrinogen
 - · Ca, Lytes, lactate
 - serum Cr
 - ABG
 - ROTEM/TEG if available
- Contact transfusion medicine for laboratory guided transfusion if available

Continue Massive

Hemorrhage Protocol

Terminate Massive Hemorrhage Protocol

Yes

Resuscitation targets achieved

- Hemorrhage control
- Hb >70-90
- INR < 1.8
- plt >50
- Fibrinogen >1.5
- iCa >1.15 targeted

Goal Directed Transfusion — Table 1

Value	Transfuse
Hb <80	pRBC 2 units
INR >1.8	Plasma 4 units
Fibrinogen <1.5* (or <2 for post-partum)	Fibrinogen concentrate 4g
Platelets <50	1 unit platelets
Ionized CA <1.15	CaCl 1g

Anticoagulation Reversal — Table 2	
Drug	Reversal
Warfarin	PCC 2000U IV over 10 min Vit K 10mg IV over 10min
Apixaban (Eliquis) Rivaroxaban (Xarelto) Edoxaban (Lixiana)	PCC 2000U IV over 10min Repeat in 1 hour if bleeding continues
Heparin / LMWH	Protamine — contact Pharmacy for dosing

No

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