

UNIVERSITY HOSPITAL MONKLANDS

Paediatric Major Haemorrhage

Age 1 month - 15 years

Weight < 50 kg

Clinical Concern of Massive Blood Loss

OR

20% of blood loss in < 1 hour

OR

50% blood volume loss in <3 hours

Less than 1 year infant blood volume: 90ml/kg

1 year - 15 years child blood volume: 80ml/kg

Declare Paediatric Major Haemorrhage

- Call 2222
- State “Paediatric Major Haemorrhage” and patient location, switchboard will repeat back.
- Designate **Resuscitation Team Leader**
- Designate **Paediatric Major Haemorrhage Co-Ordinator**
- Issue Resuscitation Team Leader and Paediatric Major Haemorrhage Co-ordinator **Action Cards**

Simultaneously
(Delegate / Allocate)

- Consider **O-Negative Packed Red Cells: 20 ml / kg**
Available for immediate release from blood transfusion lab.
 - Continue **Packed Red Cells (PRCs)** as required: 20 ml / kg aliquots
 - **O-Negative PRCs** if ongoing immediate need.
 - Then use **Group Specific PRCs** (approx. 15 minutes to issue)
 - Aim for **Fully Cross-Matched PRCs** (approx. 35 minutes to issue)
 - **Fresh Frozen Plasma (FFP):** 20 ml / kg (approx. 30 minutes to issue)
 - **Platelets:** 15 - 20 ml / kg (order early - may have to come from another site)
 - **Cryoprecipitate:** 10 ml / kg (approx. 30 minutes to issue)
- Consider required **product ratios:** 1:1:1 (Trauma or Obstetric)
2:1:1 (All other major haemorrhage)

- **Control bleeding**
Direct compression, splinting, surgical control and/or interventional radiology.
- **Keep patient warm**
Remove wet / blood-soaked clothes, use air warming blanket, warmed fluids, warmed blood)
- **Obtain Intravenous (IV) access and/or Intraosseous (IO) access.**
Maximum of 2 attempts at IV before proceeding to IO
- Send **Cross-match, FBC, U&E, Calcium, Coagulation Screen** and perform **Blood Gas** (Venous or Arterial).
- Give **Tranexamic Acid:**
Loading dose 15 mg / kg (max 1 gram) over 15 minutes.
Then continuous infusion of 2 mg / kg / hr (max 125 mg / hr) for 8 hours.
- Consider **IV Calcium** if ionised Ca^{2+} < 1.0 mmol/L
Calcium Gluconate 10%: 0.5 ml / kg (maximum 20ml) over 10 mins

TARGET LABORATORY VALUES

- **Haemoglobin (Hb):** > 80 g/L
- **Platelets (Plt):** > 75 $\times 10^9$ /L
> 100 $\times 10^9$ /L if Major Trauma / HI
- **Fibrinogen (Fib):** > 1.5 g/L
> 2 g/L in Major Trauma / HI
- **PT:** < 17 secs (Ratio < 1.5)
- **APTT:** < 41 secs (Ratio < 1.5)

CONTACTS

Blood Bank: 401175 & 404665 (24/7)
Paediatrics: UHW 24/7 via Switchboard
Haematologist: 404666 (OOH via Switchboard)
Anaesthetics: 404653 (24/7)
Surgical Registrar: 404358 (24/7)
Theatre 7: 404155 (OOH via Switch)

CONSULTANT HAEMATOLOGIST WILL ADVISE:

- **Reversal of Anticoagulation** (Wafarin, Heparin, DOACs)
- **Patients with Bleeding Disorders**
- **Special Requirements** (Irradiated Blood, CMV-Negative)
- **Use of Recombinant Factor VIIa**

in an emergency, additional information can be found in the full Major Haemorrhage Protocol for Paediatric Patients document.
- available via Right Decisions Service (RDS) website and NHSL Guidelines app -

Cautions / Complications in Massive Transfusion

- **Adverse Transfusion Reaction** - Fever, Itch, Rashes (including Urticaria / Hives), Flushing / Vasodilation are unlikely to be seen as early responses to major trauma. See also Adverse Transfusion Reaction management document - available via FirstPort.
- **Hypothermia** - Resulting from prolonged patient exposure or infusion of cold blood components / fluids / drugs. Monitor temperature frequently, use warming blankets, warm blood and fluids.
- **Hyperkalaemia** - Blood components contain high levels of potassium or can contribute to cell lysis. Monitor potassium regularly, treat according to standard protocols.
- **Hypocalcaemia** - Calcium is consumed as part of the coagulation / haemostatic cascade and is diluted by large volumes of fluids / blood components which do not contain Calcium. Monitor regularly, replace according to standard protocols.

Stand-Down of Paediatric Major Haemorrhage Protocol

- Major Haemorrhage Co-Ordinator informs Blood Bank to stand down.
- Return Blue Traceability Labels to Blood Bank.
- Return un-used products to blood bank.
- Complete all transfusion documentation.