

## **Concurrent Session B: Massive Hemorrhage Protocol – Pediatrics Additional Questions**

1. **What is the leading cause of MHP activation in paediatric patients?**
  - a. Trauma and elective surgeries (scoliosis, transplant, CHD etc.)
  
2. **A practical/bedside question: You said that everything from one cooler should be given before moving to the next cooler; in the example case the first dose of RBCs (cooler 1) is only 100mL but there was a 300mL bag of RBCs, should the bedside team pull 2 more doses from the first bag of RBCs (cooler 1) or is practice to pull one dose then discard the remaining volume?**
  - a. As long as the team continues to give RBC: FP in a 1:1 or 2:1 ratio, you can draw further doses from the RBCs in cooler #1. Good idea as blood/blood products are a finite resource but caution is needed, it may become difficult if the case is prolonged to keep track of what was given. Is the team maintaining the appropriate ratio, what cooler is the team on (i.e. still using RBCs from cooler 2 but cooler 4 has arrived with more RPBCs FP and fibrinogen, how do you keep track of that?).
  
3. **Is a process in place for bedside staff to remain competent in the practice of pulling RBC doses from a full RBC bag?**
  - a. At our hospital we review in ED RN skills days. PICU nurses tend to give blood more frequently in our post op cardiac cases but those instances are rarely as acute as a Massive Haemorrhage.
  
4. **If you ranked access selection for paediatric patients, would first choice be PIV (large as possible) followed by IO and would you ever use a CVL?**
  - a. PIV would be first, ideally AC, largest possible gauge no matter the site (hand, foot etc.). IO would be next only because it is quick to insert and start using right away. CVL take a bit more time for set up and insertion. Infusing RBCs through a CVL also potentiates haemolysis increasing the risk for hyperkalaemia
  
5. **Would we ever consider giving O+ to an uncrossmatched female peds patient then treat with rhogam? say if there was a O- blood shortage**
  - a. Yes, absolutely if that's the only product available. As well, Transfused O+ units may not be around long enough to cause a problem.
  
6. **For community hospitals, the recommendation is to prepare for transfer to a paediatric center ASAP. How do we deliver rapid+warmed transfusions? The fluid warmer isn't transportable**
  - a. It is safe to deliver blood for up to 4 hours after it's released. Let TM team know patient needs to be transferred, they can release blood and it can be taken out of a cooler to bring it up to room temperature.

**7. How do we maintain patient warmth (during transport)?**

- a. Some transport teams have fluid warmers. You can also keep the patient warm by using warm blankets or hospital grade hotpacks. If it's an infant and it's appropriate, putting a hat on their head helps prevent heat loss. Babies tend to lose a considerable amount of heat from their head.

**8. Do you use volumetric pump to transfuse and if yes, at what rate?**

- a. In a massive haemorrhage, at CHEO, we would use a rapid transfuser in an older child with a large IV. If the child is too young for a rapid infuser, we tend to just push the blood or blood products in the patient with a syringe, ensuring the products have been filtered and warmed. You can use a pump but for older children who need larger volumes, pump rates usually max out a 999ml/hr which probably won't infuse products fast enough. If you use a pump for smaller children, the pump will most likely alarm a lot due to the fast rate you're trying to infuse (over 5 min), the small PIV catheter and the viscosity of products. There is no specified rate to infuse in the tool kit because the premise is, get it into the patient the fastest way possible while keeping in mind the risk for TACO and hyperkalemia

**9. Do we use ideal body weight for an obese child or actual body weight?**

- a. Always use actual body weight for any peds patient if the information is available/you're able to weigh the patient. If not, using the Broselow tape to estimate weight, even if a child is overweight, is a good starting point until you can obtain an actual weight.