

# RECOMMENDATIONS FOR STAFF INVOLVED WITH CHILDREN WITH ANAEMIA UNDERGOING SURGERY

Guidelines specific to the perioperative management of paediatric patients undergoing surgery at risk of bleeding and transfusion are available, as are specific paediatric blood management strategies.<sup>3,67,68,70</sup>

Specific perioperative recommendations:

- Preoperative Hb should be optimised by treating iron deficiency anaemia ([see Figure 13](#))
- Tranexamic acid should be considered in all children undergoing inpatient surgery, as per joint Royal College statement 2022. A bolus dose of at least 10mg/Kg (maximum 1g) and infusion 3–10mg/kg should be used if not contraindicated, ie seizures. Red cell salvage should be considered in all children at risk of significant bleeding undergoing surgery, children undergoing cardiac surgery with cardiopulmonary bypass (CPB) and where transfusion may be required
- A postoperative Hb transfusion threshold of 70g/L should be used in stable patients without major comorbidity or bleeding
- For surgery in neonates, use the same transfusion triggers used for non-surgical neonates, but adjust according to level of respiratory support and post-natal age ([see Figure 12](#))
- Transfusion volumes for non-bleeding infants and children should be calculated to take the post-transfusion Hb to no more than 20g/L above the transfusion threshold. The following calculation may be used:  
Volume to transfuse (mL) = [Desired Hb (g/L) – Actual Hb (g/L)] x Weight (kg) x 0.4  
  
This is reasonable calculation to avoid over-transfusion, but this should be assessed on an individual patient basis. 4ml/kg approximates to a one unit transfusion for a 70–80kg adult, typically giving an Hb increment of 10g/L<sup>69</sup>
- There is a risk of hyperkalaemia and hypothermia following large volume transfusions. It is recommended that red cells for large volume neonatal and infant transfusions are warmed and used before the end of Day 5 following donation (and within 24 hours of irradiation). Monitoring of serum electrolytes and core temperature should be undertaken
- When using a restrictive red blood cell transfusion threshold, consider a threshold of 70g/L and a haemoglobin concentration target of 70–90g/L after transfusion
- There is insufficient evidence to make a recommendation regarding an appropriate transfusion threshold during cardiopulmonary bypass (CPB) for non-cyanotic or cyanotic patients
- For stable children with non-cyanotic heart disease, a restrictive transfusion threshold of 70g/L following CPB is recommended. There is insufficient evidence to make a recommendation for children with cyanotic heart disease
- In neonates (both cyanotic and non-cyanotic) or actively bleeding or unstable children following CPB, a higher Hb threshold may be appropriate, and signs of inadequate oxygen delivery can provide additional information to support transfusion
- Patients should be reassessed clinically and Hb checked after each unit of red blood cell they receive unless they are bleeding
- Where Hb monitoring is feasible and available, via point of care sampling or non-invasively, this should be used to ensure the smallest necessary volume is transfused over three to four hours, although more rapid rates should be used in hypovolaemia
- It is recommended that recipients under one year of age be transfused with components with neonatal/infant specification, eg Paedipacks
- Hospitals should develop policies to minimise exposure of infants to multiple donors.