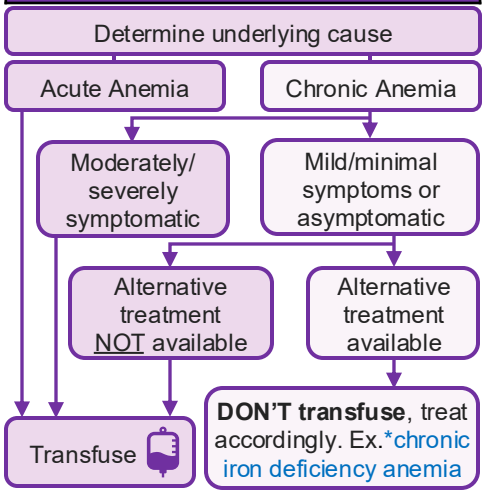
# RBC Transfusions: Age >4 months

There is **NO** definitive hemoglobin threshold mandating transfusion. **Clinical assessment** should guide decision making. Goal is to prevent or relieve symptoms/signs of poor tissue oxygen delivery while addressing underlying cause.

| Age | Sex | Normal Hb Concentration (g/L) [mean (-2 SD)] | Total Blood Volume |
|---|---|---|---|
| 0.5 – 2 years | Both | 120 (105) | 75 – 80 mL/kg |
| 2 – 6 years | Both | 125 (115) | 70 – 75 mL/kg |
| 6 – 12 years | Both | 135 (115) | 70 – 75 mL/kg |
| 12 – 18 years | Female | 140 (120) | 65 mL/kg |
| | Male | 145 (130) | 70 mL/kg |

| Hemoglobin | Transfusion Indication | ★ Special Considerations ★ |
|---|---|---|
| <70 g/L | ❑ Symptomatic<br>❑ **Note: Lower threshold appropriate if no clinical features present and other therapy available** | **Transfusion at higher thresholds for specific situations*<br>❑ Hemoglobinopathies/congenital anemias<br>❑ Chronic transfusion programs<br>❑ Acute brain injury<br>❑ Cyanotic congenital heart disease<br>❑ Extracorporeal membrane oxygenation (ECMO)<br>❑ Malignancy<br>❑ Perioperative anemia |
| 70 – 90 g/L | ❑ Indicated depending on clinical context<br>❑ Acuity (>15% total blood volume loss)<br>❑ Hemodynamic instability<br>❑ Degree of Symptoms<br>❑ Ongoing blood loss (ex. trauma)<br>❑ *Special considerations* | |
| >90 g/L | ❑ Often not indicated; Consider clinical context | |

## Transfusion Decision Pathway




***Iron Deficiency Anemia**
Majority present chronically and stable. Rarely an indication for transfusion. First line management is oral/IV iron therapy.

## Transfusion Steps

**Step 1: Consider alternative treatment** (ex. iron, vit B12, erythropoietin) while monitoring patient before transfusing **if clinically stable**

**Step 2: Receive informed consent**

**Step 3:** Pre-transfusion testing (Type and Screen; Crossmatch)

**Step 4:** Select appropriate type of pRBCs

| | |
|---|---|
| **Step 5:** Order Transfusion Volume | **<20kg: 10-15 mL/kg (ordered in mL)**<br>>20kg: 1 Unit = 280-300 mL<br>Expect increase in Hb by 10-20 g/L |

| | | |
|---|---|---|
| **Step 6:** Transfusion rate | First 15 mins | • **Start at 1 mL/kg/hr (max. 50 mL/hr)** |
| | After 15 mins | • Increase as tolerated<br>• **Usually 5 mL/kg/hr (max. 150 mL/hr)** |

**Step 7:** Monitor for **complications: Transfusion reactions can be FATAL**
Present with fever, chills, rash/hives, hypotension, respiratory distress.
Types of reactions: hemolytic transfusion reactions, transfusion related acute lung injury, transfusion associated circulatory overload, iron overload, metabolic toxicity, infection, anaphylaxis → **STOP TRANSFUSION**

**September 2025**
Janko Vong (Medical Student, University of Alberta) and Dr. Karen Forbes (Professor of Pediatrics, University of Alberta) for www.pedscases.com