

Transfusion of Blood Components for Infants and Children

This summary guidance should be used in conjunction with the 2016 BSH Guidelines (and 2020 Addendum).[†]

Red cells

Acute paediatrics

Studies support restrictive transfusion thresholds

- Use Hb threshold of 70 g/L in stable non-cyanotic patients.
- In non-bleeding infants and children, generally aim for a post-transfusion Hb of no more than 20 g/L above the threshold.
- Minimise blood sampling and use near patient testing where possible.

Surgery (non-cardiac)

- Treat pre-op iron deficiency anaemia.
- Use a peri-op Hb threshold of 70 g/L in stable patients without major comorbidity or bleeding.
- Consider tranexamic acid in all children undergoing surgery at risk of significant bleeding.
- Consider cell salvage in all children at risk of significant bleeding where transfusion may be required.

Transfusion volume calculation and prescribing

$$\text{Volume to transfuse (mL)} = \frac{[\text{desired Hb (g/L)} - \text{actual Hb (g/L)}] \times \text{weight (kg)} \times 4}{10}$$

The formula provides a guide to the likely rise in Hb following transfusion for non-bleeding patients.

- Prescription should be in millilitres not units.
 - Normal maximum volume for red cell top-up transfusion is 1 unit.
- Transfusion rate: 5 mL/kg/hr (usual max rate 150 mL/hr).

Fresh frozen plasma and cryoprecipitate

Correction of minor acquired abnormalities in non-bleeding patients (excluding DIC)

- FFP should not be administered to non-bleeding children with minor prolongation of the PT/APTT (including prior to surgery unless to critical sites).
- Cryo should not be routinely administered to non-bleeding children with decreased fibrinogen (including pre-op unless fibrinogen <1.0 g/L for surgery at risk of significant bleeding or to critical sites).

Disseminated intravascular coagulation

- FFP may be beneficial in children with DIC who have a significant coagulopathy (PT/APTT >1.5 times midpoint of normal range or fibrinogen <1.0 g/L) associated with clinically significant bleeding or prior to invasive procedures.
- Cryo may be given if the fibrinogen is <1.0 g/L despite FFP, or in conjunction with FFP for very low or rapidly falling fibrinogen.

Make sure that patients are vitamin K replete.

Typical transfusion volumes: FFP 15-20 mL/kg, cryo 5-10 mL/kg; rate 10-20 mL/kg/hr.

Platelets

- For most stable children, transfuse prophylactic platelets when platelet count $<10 \times 10^9/L$ (excluding ITP, TTP/HUS and HIT where platelets are only transfused for life-threatening bleeding).

Suggested transfusion thresholds for platelets

Platelet count ($\times 10^9/L$)	Clinical situation to trigger platelet transfusion
<10	Irrespective of signs of haemorrhage (excluding ITP, TTP/HUS, HIT)
<20	Severe mucositis Sepsis Laboratory evidence of DIC in the absence of bleeding* Anticoagulant therapy Risk of bleeding due to a local tumour infiltration Insertion of a non-tunnelled CVL
<40	Prior to lumbar puncture**
<50	Moderate haemorrhage (e.g. gastrointestinal bleeding) including bleeding in association with DIC Surgery, unless minor (except at critical sites) – including tunnelled CVL insertion
$<75-100$	Major haemorrhage or significant post-operative bleeding (e.g. post cardiac surgery) Surgery at critical sites: CNS including eyes

*Avoid routine coagulation screening without clinical indication;

**Prior to lumbar puncture some clinicians will transfuse platelets at higher or lower counts (e.g. $20-50 \times 10^9/L$) depending on the clinical situation.

Typical transfusion volume 10-20 mL/kg (single pack for children ≥ 15 kg, normal maximum 1 pack); rate 10-20 mL/kg/hr.

[†]Guidelines on transfusion for fetuses, neonates and older children.
<http://www.b-s-h.org.uk/guidelines/guidelines/transfusion-for-fetuses-neonates-and-older-children>

Further information will be available on hospital intranet sites or from the blood transfusion laboratory.

Further supplies of this bookmark can be ordered by accessing <https://hospital.nhsbtleaflets.co.uk>