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

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 x 10⁹/L (excluding ITP, TTP/HUS and HIT where platelets are only transfused for life-threatening bleeding).

Suggested transfusion thresholds for platelets

<table>
<thead>
<tr>
<th>Platelet count (x 10⁹/L)</th>
<th>Clinical situation to trigger platelet transfusion</th>
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</thead>
<tbody>
<tr>
<td>&lt;10</td>
<td>Irrespective of signs of haemorrhage (excluding ITP, TTP/HUS, HIT)</td>
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<tr>
<td>&lt;20</td>
<td>Severe mucositis</td>
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<td></td>
<td>Sepsis</td>
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<td>Laboratory evidence of DIC in the absence of bleeding*</td>
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<td></td>
<td>Anticoagulant therapy</td>
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<td>Risk of bleeding due to a local tumour infiltration</td>
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<td>Insertion of a non-tunneled CVL</td>
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<tr>
<td>&lt;40</td>
<td>Prior to lumbar puncture**</td>
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<tr>
<td>&lt;50</td>
<td>Moderate haemorrhage (e.g. gastrointestinal bleeding) including bleeding in association with DIC</td>
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<tr>
<td></td>
<td>Surgery, unless minor (except at critical sites) – including tunnelled CVL insertion</td>
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<tr>
<td>&lt;75–100</td>
<td>Major haemorrhage or significant post-operative bleeding (e.g. post cardiac surgery)</td>
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<tr>
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<td>Surgery at critical sites: CNS including eyes</td>
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</tbody>
</table>

*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 x 10⁹/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.


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