

Summary of Guidelines for the Use of Platelet Transfusions in a Platelet Shortage

British Society for Haematology Guideline (2016) Adults

British Society for Haematology Guideline (2016 & 2020 addendum) Children, Neonates

Platelet transfusion: principles, risks, alternatives and best practice

Platelet transfusions are an essential component in the management of selected patients with thrombocytopenia. However, they need to be used judiciously as they are a limited resource and are not risk free.

Prior to prescribing a platelet transfusion consider:

What is the indication for transfusion in this patient?

Can the procedure or intervention be delayed?

Are there any alternatives to platelet transfusion?

Is the patient aware of the benefits, harms and alternatives to a platelet transfusion?

Possible alternatives to platelet transfusion:

- Postpone any procedures or surgery that may require a platelet transfusion that are not urgent
- Can the procedure be changed to one with a low risk of bleeding e.g. from percutaneous to trans-jugular liver biopsy?
- Apply surface pressure after superficial procedures and correct surgical causes for bleeding
- Surgical patients expected to have at least a 500 ml blood loss (or >10% blood volume in children), use tranexamic acid (TXA) unless contraindicated
- Trauma patients who are bleeding or at risk of bleeding, early use of TXA
- Severe bleeding replace fibrinogen if plasma concentration less than 1.5 g/L
- Anti-platelet agents - discontinue or if urgent procedure/bleeding use TXA if risk/benefit would support
- Uraemia with bleeding or pre-procedure – dialyse, correct anaemia, consider desmopressin
- Inherited platelet function disorders - specialist haematology advice required. Consider desmopressin
- Chronic Bone Marrow Failure with bleeding – consider TXA

Indications for use of platelet transfusions in adults and children (**RED ALERT**)

Indication	Transfusion indicated (threshold)/ not indicated
Prophylactic use (No bleeding or WHO grade 1)	
• Any cause without additional risk factors for bleeding	NOT INDICATED
Prophylactic use in presence of risk factors for bleeding (e.g. sepsis, abnormalities of haemostasis)	
• Reversible or chronic bone marrow failure or critical care – consultant review required	10 to 20 x 10 ⁹ /L
• Abnormal platelet function, platelet consumption/destruction (e.g. TTP), immune thrombocytopenia	NOT INDICATED
Pre-procedure (Emergency or urgent procedures only)	
• Central venous catheter (CVC) tunnelled or untunnelled (excluding PICC line)	20 x 10 ⁹ /l
• Lumbar puncture*	40 x 10 ⁹ /l
• Percutaneous liver biopsy	50 x 10 ⁹ /l
• Major surgery	50 x 10 ⁹ /l
• Epidural anaesthesia, insertion & removal	80 x 10 ⁹ /l
• Neurosurgery or ophthalmic surgery involving the posterior segment of the eye	100 x 10 ⁹ /l
• Bone marrow aspirate or trephine biopsies, PICC line insertion, traction removal of central venous catheters (CVCs), cataract surgery, other procedures with low-risk of bleeding	NOT INDICATED
Therapeutic use (Bleeding WHO grade 2 or above)	
• Severe bleeding	50 x 10 ⁹ /L
• Multiple trauma, brain or eye injury, spontaneous intracerebral haemorrhage	100 x 10 ⁹ /L
• Bleeding (WHO grade >2) but not severe	30 x 10 ⁹ /L
• Bleeding in specific clinical conditions – see table next page for indications	

Indications for use of platelet transfusions in neonates (RED ALERT)

Indication	Transfusion indicated (threshold)/ not indicated
Prophylactic use (No bleeding or WHO grade 1)	
<ul style="list-style-type: none"> • Neonate (including very pre-term) • Neonate with NAIT (no family history of ICH) 	25 x 10 ⁹ /L 25 x 10 ⁹ /L
Prophylactic use in presence of risk factors for bleeding (e.g. sepsis)	
<ul style="list-style-type: none"> • Preterm neonate with sepsis • Neonate with NAIT (Family history of ICH) 	25 x 10 ⁹ /L 50 x 10 ⁹ /L
Pre-procedure (Emergency or urgent procedures only)	
<ul style="list-style-type: none"> • Lumbar puncture* • Major surgery • Neurosurgery 	40 x 10 ⁹ /l 100 x 10 ⁹ /l 100 x 10 ⁹ /l
<ul style="list-style-type: none"> • Procedures with low-risk of bleeding 	NOT INDICATED
Therapeutic use (Bleeding WHO grade 2 or above)	
<ul style="list-style-type: none"> • Severe bleeding 	100 x 10 ⁹ /L

Specific clinical conditions

Platelet function defect	
<ul style="list-style-type: none"> • <i>Congenital</i> – Pre-procedure or therapeutic use. When alternative therapy contraindicated or ineffective. Directed by specialist in haemostasis. • <i>Acquired</i> (anti-platelet agents, uraemia)- only indicated for severe bleeding 	Count Variable
Disseminated intravascular bleeding	
<ul style="list-style-type: none"> • Pre-procedure or therapeutic use. Consider threshold counts above but may not be achievable and individual case review required 	Use pre-procedure or therapeutic threshold as guide
Thrombotic thrombocytopenic purpura	
<ul style="list-style-type: none"> • Platelet transfusion contraindicated unless <i>life-threatening bleeding</i> 	
Immune thrombocytopenia (excluding NAIT)	
<ul style="list-style-type: none"> • (ITP, HIT, PTP). Pre-procedure when other therapy ineffective or procedure urgent or to treat severe bleeding. Consider threshold counts above but may be unachievable or unnecessary and individual case review required 	Use pre-procedure or therapeutic threshold as guide

Footnotes

*It is accepted that prior to lumbar puncture some clinicians will transfuse platelets at higher counts (e.g. 50 x 10⁹ /L) in clinically unstable children, non ALL patients, or for the first LP in newly-diagnosed ALL patients to avoid haemorrhage and cerebrospinal fluid contamination with blasts, or at lower counts (≤ 20 x 10⁹ /L) in stable patients with ALL, depending on the clinical situation. These practices emphasise the importance of considering the clinical setting and patient factors.

Abbreviations

ALL acute lymphocytic leukaemia; BMF bone marrow failure; DIC Disseminated intravascular coagulation; HIT heparin-induced thrombocytopenia; ICH intracranial haemorrhage; ITP primary immune thrombocytopenia; LP lumbar puncture; NAIT neonatal alloimmune thrombocytopenia; PICC peripherally inserted central catheter; PTP post-transfusion purpura; TTP thrombotic thrombocytopenic purpura: