

Using Blood Wisely: Guidelines



Red Cells – Adult Inpatient

Clinical Setting	Recommendation and Dose
Hb less than 70 g/L	Consider transfusion* Transfuse 1 unit and recheck patient symptoms and Hb before giving second unit.
Hb less than 80 g/L	Consider transfusion* in patients with pre-existing cardiovascular disease or evidence of impaired tissue oxygenation. Transfuse 1 unit and recheck patient symptoms and Hb before ordering second unit.
Hb 80 to 90 g/L	Likely inappropriate unless evidence of impaired tissue oxygenation.
Hb greater than 90 g/L	Likely inappropriate. If transfusion is ordered clearly document indication in patient's chart and discuss reason(s) with patient.
Bleeding patient	Maintain Hb greater than 70 g/L If pre-existing cardiovascular disease—maintain Hb greater than 80g/L

Hb=hemoglobin

- *Do not transfuse based on Hb value alone. Transfusion of RBC is indicated in the treatment of symptomatic anemia. Depending on etiology of anemia, alternative therapies (e.g. iron) may be more appropriate than transfusion.
- For non-bleeding patients: usual adult dose is 1 unit: transfuse 1 unit then check Hb and patient symptoms (dyspnea, chest pain, syncope) before ordering/transfusing a second unit.
- 1 unit usually raises the Hb by approximately 10 g/L.
- Premedication for allergic and febrile reactions is usually indicated only in patients with previous transfusion reactions.
- Consider premedication with furosemide in patients at risk for transfusion-associated circulatory overload. It is preferable to give furosemide before the transfusion if the patient is not hypovolemic and is hemodynamically stable.
- Whenever possible, **all** non-urgent transfusions should be completed during the day shift, for optimum patient safety.

In event of a national blood shortage advisory:

- Don't transfuse more than 1 red cell unit at a time in non-bleeding patients.
- Don't transfuse red blood cells in an asymptomatic, non-bleeding patient with Hb greater than 70 g/L.
- Don't transfuse blood if other therapies (e.g. iron) would be effective.
- In Amber or Red Phase advisory, follow guidelines as directed by the National Emergency Blood Management Plan and Committee.

Platelets – Adult Inpatient

Clinical Setting		Platelet Count x 10 ⁹ /L	Recommendation and Dose
Diagnosis/Indication			
Non-immune thrombocytopenia		Less than 10	1 dose
Procedures not associated with significant blood loss, including percutaneous procedures other than epidural anesthesia or lumbar puncture		Less than 20	1 dose
Therapeutic anticoagulation that cannot be stopped		Less than 30	1 dose, and consult thrombosis specialist
Epidural anesthesia or lumbar puncture Procedures with expected blood loss greater than 500ml Major non-neuraxial surgery Significant bleeding		Less than 50	1 dose, immediately before procedure and check platelet count before starting procedure
Neuraxial surgery Head trauma or CNS hemorrhage Life-threatening hemorrhage		Less than 100	1 dose and check platelet count
Platelet dysfunction and significant bleeding e.g. ASA, clopidogrel therapy, post cardiopulmonary bypass			
Exception: Transfusing platelets for intracranial hemorrhage not requiring surgical management in patients on antiplatelet agents with platelet count > 100 x 10 ⁹ /L leads to increased morbidity		Any	1 dose
Immune thrombocytopenia (ITP)		Case specific	1 dose, for life-threatening bleeding only and consult a hematologist

- Transfusion of platelets is indicated for prophylaxis against bleeding or for management of acute bleeding in patients with thrombocytopenia or platelet dysfunction.
- In general, 1 dose raises the platelet count by approximately 15-25 x 10⁹/L.
- 1 dose = 1 buffy coat pool or 1 apheresis unit.

In event of a national blood shortage advisory:

- Don't transfuse platelets in an asymptomatic, non-bleeding patient with platelet count greater than 10 x 10⁹/L. This includes patients with COVID-19 associated coagulopathy who are not bleeding.
- Consider the use of tranexamic acid.
- In Amber or Red Phase advisory, follow guidelines as directed by the National Emergency Blood Management Plan and Committee.

Plasma – Adult Inpatients

Clinical Setting		Recommendation and Dose
Diagnosis/Indication	INR	
<ul style="list-style-type: none"> Significant bleeding Liver disease with coagulopathy and invasive procedure planned (see Notes below) 	Greater than 1.7	3-4 units
<ul style="list-style-type: none"> Microvascular bleeding Massive transfusion 	Greater than 1.5 to 2.0 or unknown and cannot wait for result	3-4 units
<ul style="list-style-type: none"> Urgent warfarin reversal and <ul style="list-style-type: none"> o Serious bleeding; or o Urgent surgical procedure required within 6 hours 	Greater than 1.5	<p>Do not use plasma unless prothrombin complex concentrate (PCC) is not available or is contraindicated (e.g. history of heparin-induced thrombocytopenia).</p> <p>Administer 10 mg IV Vitamin K with the PCC or plasma.</p>
<ul style="list-style-type: none"> Congenital coagulation factor deficiency where a factor concentrate is not available and <ul style="list-style-type: none"> o Serious bleeding; or o Urgent surgical procedure required 	Any	Consult a hematologist

- The effectiveness of plasma in reversing an elevated INR is dependent upon the etiology of the coagulopathy.
- Dose is 15 mL/kg = 3-4 units (250 mL/unit).
- Allow time (15-30 min) for thawing.
- One dose raises coagulation factor levels by approximately 20% for about 6 hours.
- Pre-procedure plasma transfusion is not required for minor procedures regardless of the INR (e.g. arterial line, intravenous line, PICC line, bone marrow procedure, paracentesis, and thoracentesis).
- Consider premedication with furosemide in patients at risk for transfusion-associated circulatory overload. It is preferable to give furosemide before the transfusion if the patient is not hypovolemic and is hemodynamically stable.

In event of a national blood shortage advisory:

- Don't transfuse plasma in asymptomatic, non-bleeding patients. This includes patients with COVID-19 associated coagulopathy who are not bleeding.
- Consider the use of tranexamic acid.
- In Amber or Red Phase advisory, follow guidelines as directed by the National Emergency Blood Management Plan and Committee.

References

General (red cells, platelets and plasma)

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Plasma

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