

## Patient Blood Management Guidelines. Module 4. Critical Care

### 1. In critically ill patients, what is the effect of RBC transfusion (allogeneic) on patient outcomes?

RBC transfusion may be independently associated with:

- Ventilator-associated pneumonia
- Infection
- ARDS or ALI

RBC transfusion has uncertain effect on:

- Mortality
- Organ failure

Liberal and Restrictive RBC transfusion strategies have similar effects on:

- Mortality
- Organ failure and dysfunction
- Pneumonia and ARDS
- Infection

Therefore a restrictive transfusion strategy should be employed.

Hb g/L	Transfusion	Rationale
<70	Yes	Likely to be appropriate; however, transfusion may not be required in well-compensated patients or where other specific therapy is available.
70-90	Maybe	RBC transfusion is not associated with reduced mortality. The decision to transfuse patients should be based on the need to relieve clinical signs and symptoms of anaemia.
>90	No	RBC transfusion is generally unnecessary

For patients with ACS see guidelines from Module 3 – Medical.

### 2. In critically ill patients, what is the effect of non-transfusion interventions to increase haemoglobin concentration on morbidity, mortality and need for RBC blood transfusion?

Effect of ESA (erythropoietin stimulating agents)	Heterogeneous population of critically ill patients	Trauma patients who are critically ill.
Effect on mortality	No effect	Decrease
Incidence of RBC transfusion	No effect	No effect
Risk of thromboembolic events	Increase	
ESAs should not be routinely used in critically ill anaemic patients		

Iron has uncertain effect on mortality and on incidence of RBC transfusion.

### 3. In critically ill patients, what is the effect of FFP, cryoprecipitate, fibrinogen concentrate, and/or platelet transfusion on patient outcomes?

FFP:

	Trauma	Non Trauma	Elderly patients
FFP Mortality	Uncertain		Uncertain
Transfusion related ADRS		Associated	Yes – ARDS and ALI
The routine use of FFP in critically ill patients with coagulopathy is not advised.			
Cryo Mortality	Uncertain		
Transfusion	Uncertain	Uncertain	

related ADRS			
The routine use of cryoprecipitate and fibrinogen concentrate in critically ill patients with coagulopathy is not advised.			
Plts Mortality	Uncertain		
Transfusion related ADRS	Uncertain		Uncertain
Platelet count <20 give platelets. Platelet count >50 generally can undergo invasive procedures in ICU without any serious bleeding.			

### 4. In critically ill patients, what is the effect of strategies that minimise blood loss on morbidity, mortality and blood transfusion?

	Mortality	Allogeneic transfusion	Other
Cell saver:			
Trauma	No effect	Reduces	
Surgery for ruptured AAA	Uncertain	Reduces	
In critically ill trauma patients +patients for emergency AAA surgery, use of cell salvage may be considered.			
Tranexamic Acid			
Acutely bleeding critically ill trauma patients	Within 3 hours reduces mortality	No effect	No effect on risk of stroke. PE. DVT. Reduces risk of MI.
Upper GI bleed	Reduces risk	No effect	Thromboembolic effect is uncertain.
In these two circumstances TXA should be used. Use of TXA 3 hours after injury may be harmful.			

The suggested dose of TXA administered is a 1 g bolus followed by a 1 g infusion

Tissue plasminogen activator is a major enzyme responsible for conversion of plasminogen into active plasmin, which in turn is responsible for fibrinolysis or the breakdown of thrombus. Tranexamic acid (TXA) is an antifibrinolytic that inhibits both plasminogen activation and plasmin activity, thereby preventing thrombus lysis.

TXA is registered for the reduction of peri and post-operative blood loss and the need for blood transfusion in:

- Adults
  - cardiac surgery
  - total knee arthroplasty
  - total hip arthroplasty
- Children - cardiac surgery