WHAT YOU SHOULD BE DOING WITH BLOOD

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Update On The 2001 National Health & Medical Research Council "Clinical Practice Guidelines for the use of Blood Components."

The National Health and Medical Research Council (NHMRC), Australia New Zealand Society of Blood Transfusion (ANZSBT) and the National Blood Authority – Australia (NBA) are currently undertaking a comprehensive review and update of the 2001 Clinical Practice Guidelines for the use of Blood Components (www.nhmrc.gov.au/publications/synopses/cp77syn.htm).

Six separate, more "user friendly" and inclusive modules will be published. The six guidelines composing of peri-operative (elective surgery), critical bleeding / massive transfusion, intensive care, medical, obstetric and paediatric / neonatal populations, will have a clinical as opposed to a product focus.

An Expert Working Group defined the scope of the new guidelines and constructed the six generic questions, listed below, to be applied to each population –

1. Is anaemia an independent risk factor for adverse outcomes?
2. What is the effect of red blood cell transfusion on patient outcomes?
3. What is the effect of interventions to increase haemoglobin concentration on morbidity, mortality and the need for red blood cell transfusion?
4. What is the effect of rFVIIa (prophylaxis or treatment) on morbidity, mortality and transfusion rate?
5. What is the effect of fresh frozen plasma, cryoprecipitate, fibrinogen concentrate, and / or platelet transfusion on patient outcome?
6. At what INR (or PT / APPT) for fresh frozen plasma, fibrinogen level for cryoprecipitate, and platelet count for platelet concentrates, should patients be transfused to avoid risks of significant adverse events?

Specific questions for each population are being addressed, along with a number of background topics. For example, for peri-operative – whether the choice of anaesthetic agent or technique reduces blood loss and need for transfusion.

To answer the six generic questions and additional specific questions, comprehensive systematic reviews of the relevant literature are being undertaken. The results, pertinent to each area, are being synthesised by contracted systematic reviewers and a Clinical Reference Group (CRG) in order to produce a series of Evidence Statements and Evidence-Based Recommendations to be included in the guidelines. Practice Points are being developed in areas where good quality evidence is lacking. In addition, the CRG are developing Practice Tips based on non-systematic review (background research) and expert opinion. An NHMRC Guidelines Assessment Register expert ensures the systematic review and processes comply with NHMRC standards.

Critical Bleeding / Massive Transfusion Module and Peri-operative Module

Number	Recommendation
1	It is recommended that institutions develop an MTP that includes the dose, timing and ratio of blood component therapy for use in trauma patients with, or at risk of, critical bleeding requiring massive transfusion (Grade C).4-5
2	The routine use of rFVIIa in trauma patients with critical bleeding requiring massive transfusion is not recommended because of its lack of effect on mortality (Grade B)6 and variable effect on morbidity (Grade C).6

Number	Practice Point
1	In patients with critical bleeding requiring massive transfusion, the following parameters should be measured early and frequently – ▪ Temperature ▪ Acid–base status ▪ Ionised calcium ▪ Haemoglobin ▪ Platelet count ▪ PT / INR ▪ APTT ▪ Fibrinogen level With successful treatment, values should trend towards normal.
2	Values indicative of critical physiologic derangement include – ▪ Temperature < 35°C ▪ pH < 7.2, base excess > –6, lactate > 4 mmol/L ▪ Ionised calcium < 1.1 mmol/L ▪ Platelet count < 50 × 109/L ▪ PT > 1.5 × normal ▪ INR > 1.5 ▪ APTT > 1.5 × normal ▪ Fibrinogen level < 1.0 g/L
3	In critically bleeding patients requiring, or anticipated to require, massive transfusion an MTP[a] should be used. A template MTP is provided within this module.[b] a) The use of the word 'protocol' in 'massive transfusion protocol' throughout this report is not strictly prescriptive. b) The template MTP is intended for local adaptation.
4	In patients with critical bleeding requiring massive transfusion, insufficient evidence was identified to support or refute the use of specific ratios of RBCs to blood components.
5	In patients with critical bleeding requiring massive transfusion, haemoglobin concentration should be interpreted in the context of haemodynamic status, organ perfusion and tissue oxygenation.
6	In patients with critical bleeding requiring massive transfusion, the use of RBC and other blood components may be life saving. However, transfusion of increased volumes of RBC and other blood components may be independently associated with increased mortality and ARDS.
7	In patients with critical bleeding requiring massive transfusion, the use of an MTP to facilitate timely and appropriate use of RBC and other blood components may reduce the risk of mortality and ARDS.
8	An MTP should include advice on the administration of rFVIIa when conventional measures – including surgical haemostasis and component therapy – have failed to control critical bleeding.
9	When rFVIIa is administered to patients with critical bleeding requiring massive transfusion, an initial dose of 90 µg/kg is reasonable.
10	In patients with critical bleeding requiring massive transfusion, suggested doses of blood components are –[a] ▪ FFP: 15 mL/kg ▪ Platelets: 1 adult therapeutic dose ▪ Cryoprecipitate: 3–4 g a) Or as directed by the haematologist / transfusion specialist in specific clinical situations, such as obstetrics.
11	In trauma patients with, or at risk of, significant haemorrhage, tranexamic acid (loading dose 1g over 10 minutes, followed by infusion of 1g over 8 hours) should be considered.

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