VCMC/SANTA PAULA HOSPITAL CLINICAL PRACTICE GUIDELINE
Patient Blood Management – Adult Transfusion Guidelines

The contents of this clinical practice guideline are to be used as a guide. Healthcare professionals should use sound clinical judgment and individualize patient care. This CPG is not meant to be a replacement for training, experience, CME or studying the latest literature and drug information.

Introduction:

Transfusion Guidelines serve as a mechanism to encourage the use of evidence-based transfusion strategies. Guidelines also provide first-pass criteria to evaluate transfusion events for appropriateness. Although all clinical situations and products cannot be addressed, the guidelines should include the most commonly used products, their modifiers, dosage recommendations, and their common indications and contraindications for use. Guidelines should also give physicians the opportunity to assess their patient's clinical situation and the potential benefits of transfusion therapy.

Packed Red Blood Cells (PRBCs):

PRBCs are indicated to increase oxygen delivery for tissue oxygenation and to provide sufficient hematocrit for normal hemostasis. Contraindications are for volume replacement or asymptomatic anemia. In general, one should avoid transfusion orders for multiple units (2 or more) of PRBC's all at once. Best practice would be to consider transfusing 1 unit at a time with reassessment of clinical response with or without a repeat hemoglobin, prior to additional units. Each unit of PRBC's is expected to raise hemoglobin in a 70 kg patient by approximately 1 g/dL.

Criteria for transfusion include any of the following:

- Hematocrit ≤21% or Hemoglobin ≤7 g/dL
- Hematocrit ≤24% or Hemoglobin ≤8 g/dL in a patient with coronary artery disease and unstable angina/ myocardial infarction/ cardiogenic shock
- Rapid blood loss with >30-40% of estimated blood volume (>1500-2000 mL) not responding symptomatically to volume resuscitation.
- Ongoing blood loss, severity evidenced by:
  – not otherwise explained tachycardia
  – reduced systolic and/or diastolic pressures not responding to volume resuscitation
- Normovolemic patient with evidence to support the need for increased oxygen carrying capacity

Platelets:

Platelets are indicated to treat bleeding due to critically decreased circulating platelet counts or functionally abnormal platelets. Relative contraindications are for Heparin Induced Thrombocytopenia (HIT) and Thrombotic Thrombocytopenic Purpura (TTP). Do not give platelets to a patient with Immune Thrombocytopenic Purpura (ITP) unless there is significant bleeding (GI, CNS) no matter the platelet count. In general, one should avoid transfusion orders for multiple units (2 or more) of platelets all at once. Best practice would be to consider transfusing 1 unit at a time with reassessment of clinical response with or without a repeat platelet count, prior to additional units. One unit platelets expected to raise platelet count 30-50 x 10^3 /µL in an adult patient.

Criteria for transfusion include any of the following:

- Platelet count ≤ 10 x 10^3 /µL prophylactically in a patient with failure of platelet production.
- Platelet count ≤ 20 x 10^3 /µL and signs of fever or hemorrhagic diathesis (petechiae, mucosal bleeding)
- Platelet count ≤ 50 x 10^3 /µL in a patient with:
  – Active hemorrhage OR
  – Invasive procedure (recent, in-progress, planned)

- Documented platelet dysfunction
- Patient on platelet inhibitors (e.g. Plavix) for procedure with a potential for blood loss

Plasma, Fresh Frozen (FFP):

Plasma is indicated to reverse coagulopathy in the presence of bleeding or in the anticipation of significant bleeding. Plasma is contraindicated for volume replacement. Usual effective dose is 10-15mL/kg which for a ~70 kg adult would be 3-4 units (750-1000mL) as each plasma unit contains approximately 250mL.

Criteria for transfusion include any of the following:

- Abnormal coagulation studies and significant hemorrhage.
- Prophylactic use for PT/PTT > 2x mean of reference range or INR > 2 prior to procedure with a potential for blood loss.
- Emergent reversal of Warfarin if Kcentra not available or contraindicated (note: Kcentra – 4 factor prothrombin complex concentrate (PCC, inactivated) is preferred over FFP in Warfarin associated coagulopathy).
- TTP when therapeutic apheresis is unavailable
- Transfusion when factor concentrate is not available (e.g. Factor XI)

Cryoprecipitate:

Cryoprecipitate is indicated to treat hypofibrinogenemia in the presence of bleeding or in the anticipation of significant bleeding. Usual effective dose is 1-2 units of pooled cryoprecipitate (representing 5-10 single units of cryoprecipitate).

Criteria for transfusion include any of the following:

- Fibrinogen ≤100 mg/dL for prophylactic transfusion
- Fibrinogen ≤150 mg/dL with active hemorrhage

References:
1. Current circular of information (https://www.aabb.org/resources/bct/Pages/aabb_coi.aspx).
2. Variation in use of blood transfusion in coronary artery bypass surgery, JAMA. 2010 Oct 13;304(14):1568-75
3. Red Blood Cell Transfusions: A Clinical Practice Guideline from the AABB 2012
4. Society of Thoracic Surgeons and Society of Cardiovascular Anesthesiologists 2007, 2011
5. EU – Optimal Blood Use Project 2010
6. American Society of Anesthesiologists 1996, 2006
7. A Compendium of Transfusion Practice Guidelines, American Red Cross 2010
8. Sarode R, Milling TJ Jr, Refaai MA, et al. Efficacy and safety of a 4-factor prothrombin complex concentrate in patients on vitamin K antagonists presenting with major bleeding: a randomized, plasma-controlled, phase IIIb study. Circulation. 2013 Sep 10;128(11):1234-43.

Approvals:
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