

Riverside Transfusion Task Force

Final Guidelines

Packed Red Blood Cells (Note 1)

Hgb <7 g/dL

Hgb <8 g/dL with organ ischemia or hemodynamic instability

Hgb <8 g/dL with vascular disease or pulmonary insufficiency (Note 2)

Hgb < 8 g/dL, preop for procedure typically associated with >1L blood loss

Hemorrhage with Hgb <8 g/dL, hemodynamic instability or organ ischemia (Note 3)

Note 1

Expect an increase of about 1 g/dL hemoglobin and 3 hematocrit percentage points for each unit transfused. If the patient requires 1 unit to reach target, order 1 unit; there is no penalty for single unit transfusions. For routine transfusions to increase hemoglobin, RBCs should be ordered one at a time and the hemoglobin level should be checked after each unit is transfused.

Note 2

Vascular disease includes cardiovascular, cerebrovascular and peripheral vascular disease

Note 3

Replace empirically 1 RBC for every 500 ml blood loss.

Platelets (Note 5)

Count < 10K

Count < 30K with risk factors or microvascular bleeding (Note 6)

Count < 50K with bleeding

Count < 50K, invasive procedure or non-neurologic surgery

Count < 100K, neurosurgical procedure

Massive transfusion (Note 7)

Bleeding, urgent surgery or invasive procedure, on irreversible anti-platelet medications

Note 5

HIT and TTP are contraindications for platelet transfusion. Platelet transfusions usually don't work in ITP. Unselected platelets usually don't work in NAIT. Always check a platelet count within 4 hours post-transfusion to confirm a therapeutic effect.

Note 6

Risk factors are coagulation protein deficiency (long aPTT or PT), platelet function defect (e.g. antiplatelet medications or <24 hours post-cardiopulmonary bypass), fever, and sepsis. Bleeding due to platelet deficiency is slow and generalized (e.g. IV sites and surgical surfaces are oozing). Brisk bleeding from specific site(s) is not caused by a platelet deficiency and will not respond to platelet transfusion.

Note 7

Platelet transfusion as part of a massive transfusion protocol can prevent dilutional thrombocytopenia which can lead to the onset of diffuse microvascular bleeding. Massive transfusion is defined as 4 or more RBC transfusions within 60 minutes, 10 or more RBC transfusions within 24 hours or hemorrhage >30% total blood volume

Plasma (Note 8)

INR >1.6 on coumadin, emergency surgery or invasive procedure (Note 9)

INR >1.6, not on coumadin, surgery or invasive procedure

INR >1.6, bleeding

Massive transfusion (Note 10)

Thrombotic thrombocytopenic purpura

Correction of specific coagulation factor deficiency when there is no factor concentrate available (e.g. factor V or XI deficiency)

Note 8

Plasma should be given in a dose of ~30% of total blood volume, equivalent to 3 units for a patient between 50 and 80 kg, and 4 units for a patient >80 kg. Plasma transfusion will not ordinarily fully correct the INR.

Note 9

Plasma transfusion should not be used to correct over-coumadinization in a non-bleeding patient regardless of the INR value.

Note 10

Massive transfusion is defined as 4 or more RBC transfusions within 60 minutes, 10 or more RBC transfusions within 24 hours or hemorrhage >30% total blood volume

Cryoprecipitate (Note 11)

Fibrinogen <50 mg/dL

Fibrinogen <100 mg/dL with bleeding

Massive transfusion (Note 12)

Dysfibrinogenemia with bleeding, surgery or invasive procedure

Note 11

A pool of 5 units is the usual adult dose. Each dose provides about 1500 mg of fibrinogen, sufficient to increase the patient's level by about 50 mg/dL. For von Willebrand disease, use DDAVP or factor VIII concentrates that also contain von Willebrand factor (e.g. Humate-P)

Note 12

Massive transfusion is defined as 4 or more RBC transfusions within 60 minutes, 10 or more RBC transfusions within 24 hours or hemorrhage >30% total blood volume

TRANSFUSION GUIDELINES

Packed Red Blood Cells

Hemorrhage with

hemoglobin <8

hemodynamic instability

organ ischemia

Hgb <7 g/dL

Hgb <8 g/dL

with organ ischemia

with hemodynamic instability

with vascular disease

with pulmonary insufficiency

preop for procedure typically associated with >1L ml blood loss

Platelets

Count < 10K

Count < 30K with

risk factors

diffuse microvascular bleeding

Count < 50K

with bleeding

invasive procedure or non-neurologic surgery

Count < 100K, neurosurgical procedure

Massive transfusion

Bleeding, urgent surgery or invasive procedure on irreversible platelet function inhibitor

Plasma

INR >1.6

on coumadin, emergency surgery or invasive procedure

not on coumadin, surgery or invasive procedure

bleeding

Massive transfusion

Thrombotic thrombocytopenic purpura

Correction of specific coagulation factor deficiency when there is no factor concentrate available (e.g. factor V or XI deficiency)

Cryoprecipitate

Fibrinogen <50 mg/dL

Fibrinogen <150 mg/dL with bleeding

Massive transfusion

Dysfibrinogenemia, bleeding, surgery or invasive procedure