

# **Madigan Army Medical Center Clinical Practice Guidelines**

## **Transfusion of Red Blood Cell and Non-Red Blood Cell Products in Adult and Pediatric Patients**

Madigan Army Medical Center  
Maintained by Quality Services Division  
Clinical Practice and Referral Guidelines Administrator

Last Review for this Guideline: **May 2010**  
Clinical Guidelines require review every three years

**Core Document**

**TITLE:** Madigan Army Medical Center Clinical Standards for Transfusion of Red Blood Cell and Non-red Blood Cell Products in the Adult Patient

**INDICATIONS FOR THE CLINICAL STANDARD:** Both red blood cell and non-red cell blood products are transfused on a frequent basis at Madigan Army Medical Center. Due to the potential risks to the patient from transfusion, as well as the cost and the difficulty in obtaining some blood products, transfusions need to be limited to those patients who meet the clinical indications. Most transfusions, other than for emergent conditions, should be guided almost exclusively by a combination of clinical assessment and laboratory tests. This Clinical Standard represents a shift away from empiric transfusion therapy to one that is directed by clinical assessment and supported by current pertinent laboratory tests. This standard provides the clinician with a plan to determine when transfusion is appropriate in the non emergent setting.

**METRICS:** THE KEY ELEMENTS OF THE CLINICAL STANDARD THAT WILL BE USED TO MONITOR PROVIDER ADHERENCE TO THE CLINICAL STANDARD.

Is the hemoglobin below 6 mg/dl (Adults), or below 7.5 g/dl (Children) in those patients receiving red cell transfusions? ([PRBC Algorithm](#))

Is the platelet count below 50,000 in those receiving platelet transfusions ? ([Platelets Algorithm](#))

Does the patient meet one of the five criteria set for significant coagulopathy? ([Cryo/FFP Algorithm](#)) (revised Feb 2008)

**DATE:** Published: May 2000, Revised: April 2010, January 2005

**AUTHORS:**

Please contact the administrator for information regarding the authors of this clinical standard.

**AREAS OF DISAGREEMENT:** None

**PUBLISHED STANDARDS OF CARE AND OTHER REFERENCES UPON WHICH THE CLINICAL STANDARD IS BASED:**

Practice Parameters for the Use of Fresh-Frozen Plasma, Cryoprecipitate, and Platelets, The Journal of the American Medical Association. March 9, 1994, pp 777-781.

Practice Parameters for the Use of Red Blood Cells, Archives in Pathology and Laboratory Medicine, 1998; 122 pp130-138.

**CLINICAL PRACTICE RECOMMENDATIONS:** Please refer to attached Algorithms on Transfusion (Algorithms see above), to be used as the standard of care

**KEY POINTS:** There are no key points for this clinical standard.

**IMPACT STATEMENT TO INSTITUTION:** This standard of care will impact all providers who transfuse blood products: all primary care providers who care for inpatients, providers who perform transfusions on an outpatient basis, surgeons, anesthesiologists, and emergency physicians.

**LINKS WITHIN THE MAMC INTRANET:** The Clinical Standards for Transfusion of Red Cell and Non-red Cell Blood Products will be published on the MAMC Intranet on the Clinical Standards Webpage. It will be hypertexted to the related Referral Guidelines on the Intranet and referenced on the CHCS bulletin board within the appropriate Referral Guidelines. Electronic notice of the approved Clinical Standard will be sent to all providers using current electronic mail systems on CHCS and Microsoft Outlook.

**METHODS OF PROVIDER EDUCATION:** Department Chiefs will notify their departments of the standard and emphasize the use of the guideline. The Algorithms will be listed on the MAMC intranet site. Copies of the practice recommendation will be made available at appropriate patient care sites. Publish the practice recommendations to providers at our Regional care facilities for reference.

**METHODS OF PATIENT EDUCATION:** There are no patient education materials for this clinical standard.

**REVISION FREQUENCY:** This Standard of Care for Transfusion of Red Cell and Non-red Cell Blood Products will be reviewed by the Clinical Standards Committee annually. In addition, it will be reviewed on an annual basis by the Blood Utilization Committee and revised as deemed necessary. Any revisions will be forwarded to the Clinical Standards Committee for approval on an annual basis.

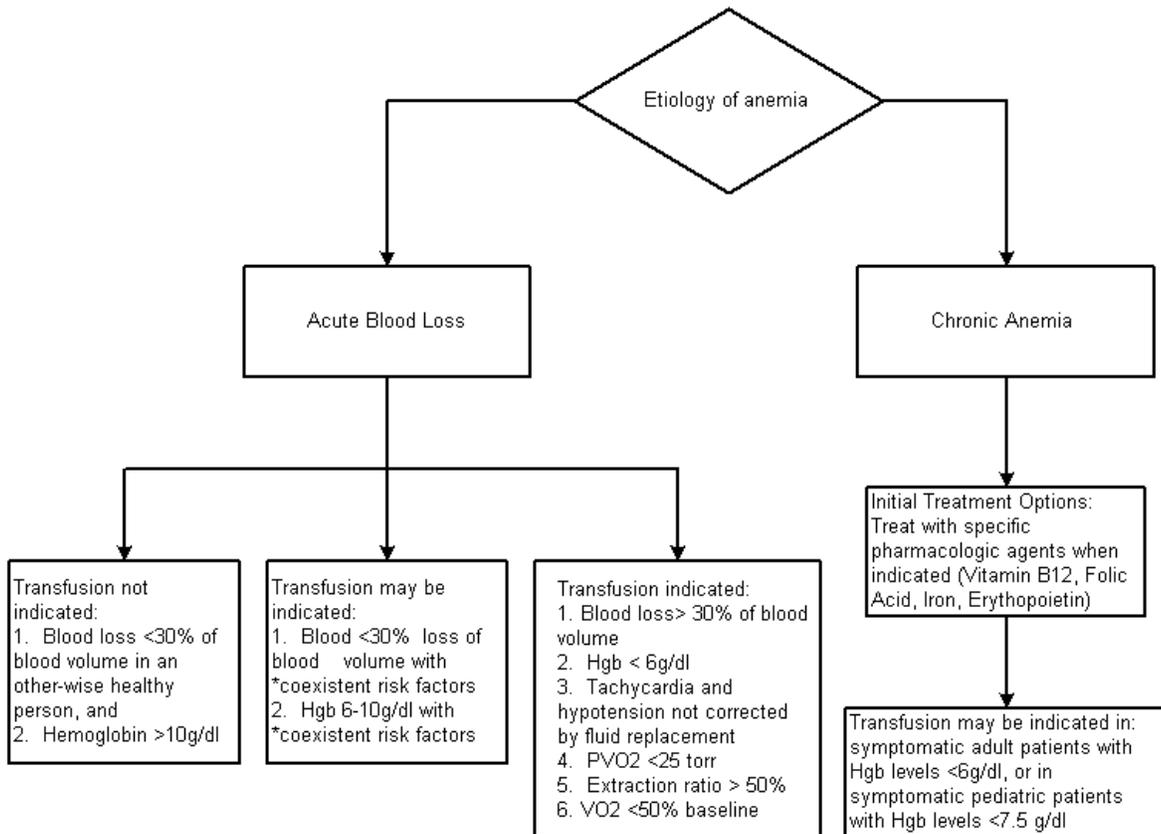
**REFERENCES:**

1. Practice Parameters for the Use of Red Blood Cells, Archives in Pathology and Laboratory Medicine, 1998; 122 pp130-138.
2. Principles and Practice of Pediatric Oncology, 3rd Edition. Pizzo, Philip and Poplack, David, eds. Lippincott-Raven, Philadelphia, 1997.
3. Management of Thrombocytopenia in Neonates, British Journal of Hematology, 1999; 105(4): 864-870.
4. The Rational Use of Platelet Transfusion in Children, 1998; 24(6): 567-575.

## Clinical Guidelines

### Patients Receiving Red Cell Transfusions (PRCB)

#### Clinical Standard for Transfusion of PRBC's in Adults and Children

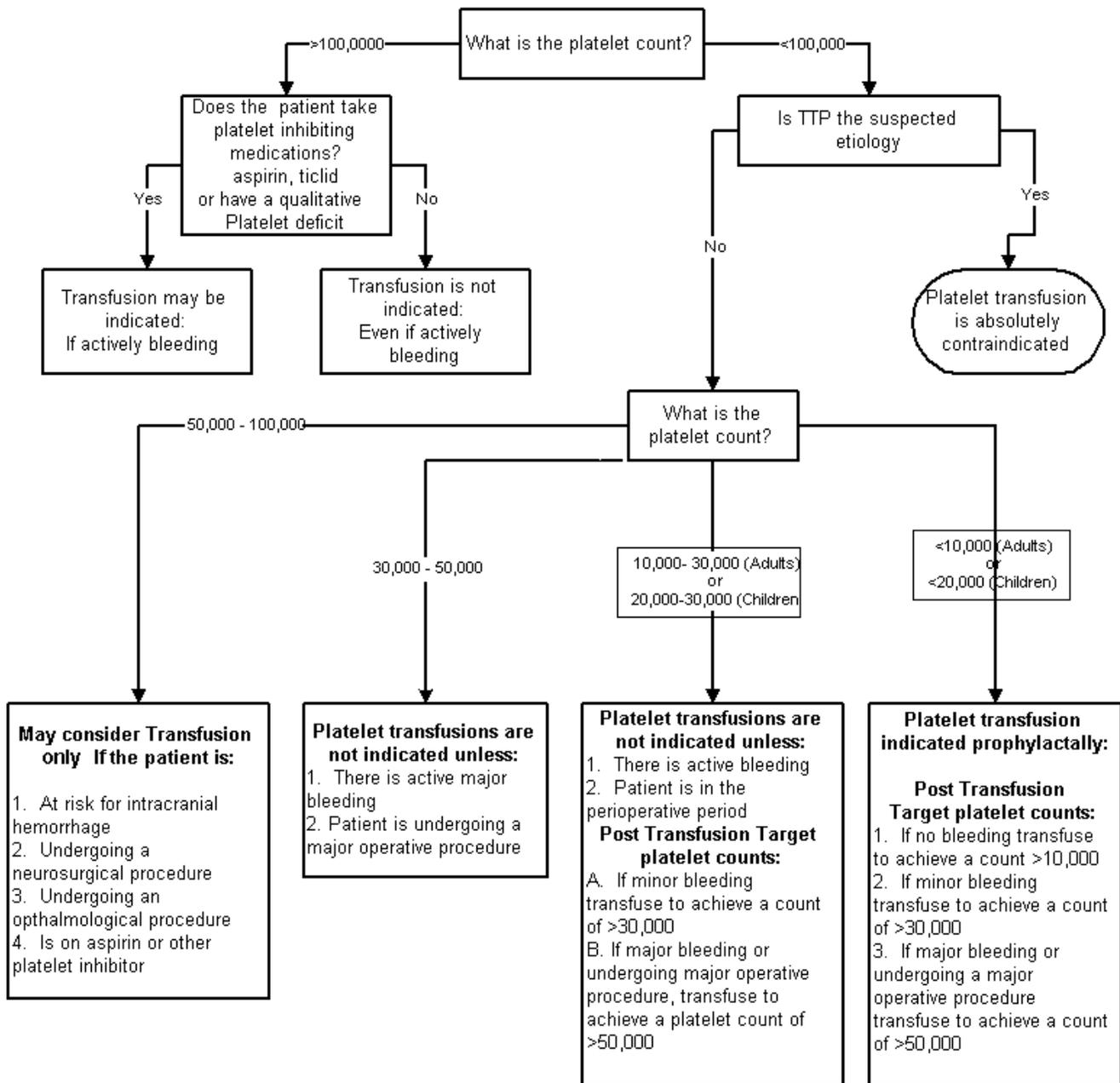


\*COEXISTENT RISK FACTORS: e.g.  
1. Atherosclerotic coronary vascular disease.  
2. Cyanotic heart disease

### Patients Receiving Platelet Transfusions

Last Review for this Guideline: May 2010  
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Clinical Standard for Determining when to Transfuse Platelets in Adults and Children



**Clinical Standard for use of Fresh Frozen Plasma/Thawed Plasma and/or cryoprecipitate in adults**  
(Revised February 2008)

\*A clinically significant coagulopathy is defined as any of the following:

1. PT > 1.5X midrange of normal.
2. PTT > 1.5X upper limits of normal.
3. INR > 1.5
4. Factor assay < 25%
5. Fibrinogen < 100mg/dl

Does the patient have a clinically significant DOCUMENTED coagulopathy\* AND evidence of one or more of the following:

1. Active bleeding
- Or
2. Perioperative period

YES

NO

What is the documented coagulopathy?

Transfusion with FFP/Thawed Plasma & Cryo are usually not indicated.

Prolonged PT/PTT/INR or Documented coagulation factor assay <25%

**TREAT WITH FFP/THAWED PLASMA**

1. Give 1 unit per 25kg body weight and recheck coags.

OR

2. Give 2-4 units and recheck coags.

**TRANSFUSE UNTIL:**

1. Bleeding stops or patient is out of perioperative period (regardless of follow-up coags).
2. Follow up coags do not meet above criteria (regardless of bleeding or in perioperative period).

**Hypofibrinogenemia**

**TREAT WITH CRYOPRECIPITATE**

1. 1 unit per 5kg body weight
- OR
2. 10 units empirically and recheck fibrinogen level after transfusion

**TRANSFUSE UNTIL:**

1. Bleeding stops (even if fibrinogen < 100 mg/dl on follow-up fibrinogen level)
- OR
2. Patient is out of perioperative period (even if fibrinogen level <100 mg/dl)
- OR
3. Fibrinogen level > 100 mg/dl on follow-up (even if continued bleeding).

**Exceptions include**

**For FFP/THAWED PLASMA:**

1. Reversal of coumadin.
2. In the operative setting with microvascular or uncontrolled bleeding & unable to wait for laboratory tests.
3. Treatment of Thrombotic thrombocytopenic Purpura.
4. Treatment of antithrombin deficiency (when concentrates not available) in the appropriate clinical setting).
5. Treatment of Protein C, Protein S, or Heparin Cofactor II deficiency in the appropriate clinical setting.

**For CRYOPRECIPITATE:**

1. Fibrin glue.
2. Treatment of Von Willebrand's Disease when concentrate not available.
3. Treatment of Factor VII deficiency when concentrate not available.

**Metrics**

1. **PRBC's:** Is the hemoglobin below 6 g/dl (Adults) or below 7.5 g/dl (Children)? ([PRBC Algorithm](#))
2. **Platelets:** Is the platelet count below 50,000 in those receiving platelet transfusions? ([Platelets Algorithm](#))
3. **Cryoprecipitate/FFP:** Does the patient meet one of the five criteria set for significant coagulopathy? ([Cryo/FFP Algorithm](#))
- 4.