The University of Iowa Hospitals and Clinics

HOSPITAL ADVISORY COMMITTEE
TRANSFUSION SUBCOMMITTEE

SUBJECT:

Audit of Transfusion Practices at the University of Iowa Hospitals and Clinics.

PURPOSE

Improving patient safety through the systematic review of transfusion practices.

POLICY:

Medical records will be reviewed on a continuing basis using audit criteria developed by the Transfusion Subcommittee.

PROCEDURE:

Audit criteria are developed and updated by the Transfusion Subcommittee. The criteria reflect the *indications for blood transfusion* in electronic blood orders. Audit criteria are not transfusion practice recommendations. Each transfusion addresses a unique clinical problem that may or may not fall within audit criteria. The purpose of audits is to determine, in the judgment of clinical peers, whether a transfusion decision was justified by clinical circumstances.

Using the audit criteria and the electronic medical record, auditing staff examine transfusion episodes and the clinical documentation supporting the decision to transfuse. Questions that are addressed include:

- Did the selected indication accurately reflect the problem being addressed?
- Was the selected type of blood product(s) appropriate for the problem(s) being addressed?
- Was the quantity of blood product transfused appropriate to address the problem?
- Does the medical record provide support for the decision to transfuse?

Audit results are classified as follows:

a. Acceptable
    - Example: the selected indication and product quantity are clearly supported by the medical record
b. Questionable
    - Example: the product type or quantity is not clearly supported by the medical record
c. Unacceptable
    - Example: The selected indication is contradicted or not supported by the medical record

d. Needs committee review
    - Complex cases are reviewed by a member of the Transfusion Subcommittee who is a clinical peer of the responsible attending physician. The peer assessment, which may include additional information solicited from the responsible attending physician, is presented to the committee. Members vote on the appropriateness of the transfusion with a simple majority prevailing.

In all cases deemed questionable or unjustified, the responsible attending physician is notified and provided an opportunity to clarify the rationale for the transfusion.

Frequent or unusually serious unjustified transfusion practices are discussed by the subcommittee and may be referred to departmental heads and to appropriate Subcommittees of the Hospital Advisory Committee.

ELEMENTS OF TRANSFUSION PRACTICE AUDITS:

The Transfusion Subcommittee audits the entire scope of transfusion practice including the following elements:

1. Transfusion practice, including indications for transfusion, type, and quantity of blood product(s) ordered.

2. Blood Administration Documentation. The Joint Commission requires documentation in the medical record of the following:

    Patient identification and transfusion order is confirmed prior to the initiation of transfusion.

    Date and time of transfusion.

    Blood pressure, pulse, and temperature recorded pre, during and post transfusion.

3. Transfusion consent form. The Joint Commission requires that patients who receive a transfusion must have a signed consent with information about risks, benefits, and alternatives prior to initial transfusion or that the initial transfusion was deemed a medical emergency.

4. Transfusion reaction monitoring and intervention documentation

TRANSFUSION PRACTICE AUDIT CRITERIA

AUDIT CRITERIA FOR RED BLOOD CELL (RBC) TRANSFUSIONS

No further justification for RBC transfusion is required if one or more of the following can be found in the medical record:

Adult Indications:

- Hematocrit ≤ 21% or hemoglobin ≤ 7 g/dL
- Hematocrit ≤ 24% or hemoglobin ≤ 8g/dL in a bone marrow transplant/myelosuppressed patient, or a patient with congestive heart failure or ischemic heart disease
- Large volume blood loss (>1500-2000mL), GI bleed, not responding to appropriate volume resuscitation, or with ongoing blood loss
- Protocol (e.g., ECMO, liver transplant, pediatric cardiac, exchange transfusion)
- Sepsis: ScvO2 or SvO2 <70% and HCT <30% within the first 6 hours of goal directed therapy
- Tachycardia, hypotension not corrected by adequate volume replacement alone

Neonate/Infant Indications:

- Neonate/Infant: Hemoglobin < 15 g/dL, Ventilated with FiO2 ≥ 0.70 or on ECMO
- Neonate/Infant: Hemoglobin < 13 g/dL, Ventilated with FiO2 ≥ 0.40, w/sepsis or NEC
- Neonate/Infant: Hemoglobin < 11.5 g/dL, Ventilated with FiO2 < 0.40 or NPCPAP FiO2 ≥ 0.40
- Neonate/Infant: Hemoglobin < 10 g/dL, NPCPAP with FiO2 < .40 or NC FiO2 = 1.00
- Neonate/Infant: Hemoglobin < 10 g/dl before surgical procedure, even if not on O2
- Neonate/Infant: Hemoglobin < 7 g/dL without supplemental O2 & clinically well
- Neonate/Infant: Hemoglobin < 8 g/dL, NC FiO2 < 1.00 or without supplemental O2, but with clinical signs of anemia: excessive apnea, sustained tachycardia (>180) or tachypnea (>80), or poor growth
- Neonate/Infant: Per established protocol (e.g., ECMO, liver transplant, pediatric cardiac, exchange transfusion)

Pediatric Indictations:

- Pediatric: Hematocrit ≤ 21% or hemoglobin ≤ 7 g/dL
- Pediatric: Hematocrit ≤ 24% or hemoglobin ≤ 8 g/dL in a patient with post-chemotherapy nadir, bone marrow transplant or other red blood cell production failure
- Pediatric: Need for increased oxygen carrying capacity with tachycardia and/or hypotension not corrected by adequate isotonic fluid volume replacement in sepsis
- Pediatric: Need for increased oxygen carrying capacity with congenital heart disease with cyanosis or heart failure

- Pediatric: Need for increased oxygen carrying capacity with severe respiratory failure with mechanical ventilation and FiO2 ≥ 0.50 and SaO2 < 90%
- Pediatric: Per established protocol (e.g., ECMO, liver transplant, pediatric cardiac, exchange transfusion)
- Pediatric: Rapid blood loss of > 30-40% of estimated blood volume not responding to appropriate resuscitation, or with ongoing blood loss.

AUDIT CRITERIA FOR PLASMA TRANSFUSIONS

No further justification for PLASMA transfusions is required if one or more of the following is found in the medical record:

Adult Indications:

- Emergent reversal of warfarin
- INR >1.8 and significant hemorrhage
- INR >2.0 and planned invasive procedure
- Protocol (e.g., ECMO, liver transplant, pediatric cardiac, exchange transfusion)
- Treatment of AT-III, Protein C or S deficiencies

Neonate/Infant Indications:

- Neonate/Infant: Bleeding or invasive procedure with abnormal coagulation studies or documented significant deficiency of a clotting factor
- Neonate/Infant: Per established protocol (e.g., ECMO, liver transplant, pediatric cardiac, exchange transfusion)
- Neonate/Infant: PTT > 150 seconds
- Neonate/Infant: Treatment of AT-III, Protein C or S deficiencies

Pediatric Indications:

- Pediatric: Abnormal coagulation studies and significant hemorrhage
- Pediatric: Emergent reversal of warfarin
- Pediatric: Invasive procedure with abnormal coagulation studies or documented significant deficiency of a clotting factor
- Pediatric: Per established protocol (e.g., ECMO, liver transplant, pediatric cardiac, exchange transfusion)
- Pediatric: PT/PTT > 1.5 times the mean of the reference range with active bleeding
- Pediatric: Treatment of AT-III, Protein C or S deficiencies

AUDIT CRITERIA FOR PLATELET TRANSFUSIONS

No further justification for PLATELET transfusions is required if one or more of the following is found in the medical record:

Adult Indications:

- Platelet count <10K/MM3 prophylactically in a patient with failure of platelet production
- Platelet count <20K/MM3 and signs of hemorrhagic diathesis (petechiae, mucosal bleeding)
- Platelet count <50K/MM3 in a patient with active hemorrhage. Consider MTP Protocol
- Platelet count <50K/MM3 in a patient with invasive procedure (recent, in-progress, planned)
- Platelet dysfunction as documented by (specify in comments)
- Protocol (e.g., ECMO, liver transplant, pediatric cardiac, exchange transfusion)

Neonate/Infant Indications:

- Neonate/Infant: Active hemorrhage
- Neonate/Infant: DIC or other active significant clotting abnormalities
- Neonate/Infant: Distressed premature infant
- Neonate/Infant: Invasive procedure (recent, in-progress, planned)
- Neonate/Infant: Per established protocol (e.g., ECMO, liver transplant, pediatric cardiac, exchange transfusion)
- Neonate/Infant: Platelet count ≤ 100 K/MM3 in a patient,< 32 weeks gestation or < 1500 grams birth weight and <7days of life
- Neonate/Infant: Platelet count ≤ 50 K/MM3 in term infants or premature infants> 40 weeks PMA:
- Neonate/Infant: Platelet count ≤ 100 K/MM3 in a patient being treated with indomethacin
- Neonate/Infant: Platelet count ≤ 75 K/MM3 in stable premature infant ≥ 32 weeks or ≥ 7 days of life)
- Neonate/Infant: Platelet dysfunction -- as documented

Pediatric Indications:

- Pediatric: Per established protocol (e.g., ECMO, liver transplant, pediatric cardiac, exchange transfusion, pediatric TPE)
- Pediatric: Platelet count < 10 K/MM3 prophylactically in a patient with failure of platelet production
- Pediatric: Platelet count < 15 K/MM3 in a bone marrow transplant/chemotherapy patient even if asymptomatic
- Pediatric: Platelet count < 20 K/MM3 and signs of hemorrhagic diatheses (petechiae, mucosal bleeding)
- Pediatric: Platelet count < 30 K/MM3 in a brain tumor patient
- Pediatric: Platelet count < 30 K/MM3 in a patient with on anticoagulation

- Pediatric: Platelet count < 50 K/MM3 in a patient with active hemorrhage
- Pediatric: Platelet count < 50 K/MM3 in a patient with invasive procedure (recent, in-progress, planned)
- Pediatric: Platelet count < 50 K/MM3 in a patient with platelet dysfunction as documented by (specify in comments)
- Pediatric: Platelet count < 100 K/MM3 in a patient on ECMO with bleeding
- Pediatric: Platelet dysfunction – as documented

AUDIT CRITERIA FOR CRYOPRECIPITATE TRANSFUSIONS

No further justification for CRYOPRECIPITATE transfusions is required if one or more of the following is found in the medical record.

Adult Indications:

- Fibrinogen <100 mg/dL
- Protocol (e.g., ECMO, liver transplant, pediatric cardiac, exchange transfusion)

Neonate/Infant Indications:

- Neonate/Infant: Bleeding or invasive procedure in a patient with documented significant deficiency of a clotting factor
- Neonate/Infant: Bleeding or invasive procedure with fibrinogen ≤150 mg/dL
- Neonate/Infant: Fibrinogen < 100 mg/dL
- Neonate/Infant: Per established protocol (e.g., ECMO, liver transplant, pediatric cardiac, exchange transfusion)

Pediatric Indications:

- Pediatric: Bleeding or invasive procedure in a patient with documented significant deficiency of a clotting factor
- Pediatric: Fibrinogen < 100 mg/dL before invasive procedures or if bleeding
- Pediatric: Fibrinogen < 150 mg/dL in patients on ECMO with bleeding
- Pediatric: Per established protocol (e.g., ECMO, liver transplant, pediatric cardiac, exchange transfusion)
- Pediatric: Platelet dysfunction – as documented