Measure Abbreviation: TRAN 01

Description: Percentage of cases with a blood transfusion that have a hemoglobin or hematocrit value documented prior to transfusion.

Measure Time Period: Up to 36 hours prior to the first transfusion during the case

Measure Type: Process

Measure Summary: Blood management protocols have been implemented to prevent unnecessary blood transfusions and therefore decrease the risk to patients and decrease resource utilization. This patient blood management measure evaluates the incidence of red blood cell transfusions that have a hemoglobin or hematocrit value documented prior to transfusion.

Rationale: The American Association of Blood Banks (AABB) recommends a transfusion threshold of hemoglobin concentration less than or equal to 8 g/dL or when patient is symptomatic (chest pain, orthostatic hypotension, tachycardia unresponsive to fluid resuscitation, or congestive heart failure). Furthermore, blood transfusions in non-cardiac surgery have been associated with increased risk of 30-day mortality and morbidity.

Although the literature is not conclusive on the exact hemoglobin concentration that requires transfusion, the evidence is clear that use of fewer RBC transfusions reduces cost and risk for adverse effects of transfusion, and that transfusion for hemoglobin values greater than 10 g/dL is usually not indicated.

TRAN 01 is a process measure focused on measuring hemoglobin or hematocrit prior to transfusion. The rationale for this measure is that the decision to transfuse should include knowledge of the hemoglobin value before administration of blood. Because the literature is not absolutely conclusive on a specific hemoglobin threshold for transfusion, TRAN 01 does not include the actual hemoglobin value as part of the measure.

Inclusions: All surgical patients receiving anesthetics who receive a transfusion of red blood cells.

Exclusions:
- Massive Transfusion: Transfusion of 4 or more units of blood. Note for sites that document transfusions in ml instead of units: ASPIRE will default to 350ml/unit.
- EBL ≥ 2000 ml
- Patients < 2 years of age
- Patients <12 years old undergoing a cardiac procedure (CPT: 00560, 00561, 00562, 00563, 00567, 00580).
- Patients <12 years old where either transfused PRBC or EBL was greater than 30cc/kg.
- Burn cases (CPT Codes 01951, 01952, 01953)
- ASA 5 & 6
- Obstetric Non-Operative Procedures (CPT: 01958, 01960, 01967)
- Obstetric Non-Operative Procedures with procedure text: “Labor Epidural”
• Exclude patients undergoing cesarean section (CPT: 01961, 01968, 01962, 01963, 01969) with an EBL > 1500cc.
• Exclude patients undergoing cesarean section (CPT: 01961, 01968, 01962, 01963, 01969) with a HR>110, SBP<85, DBP<45, or O2Sat <95%.
• Exclude postpartum hemorrhage cases (ICD-10 code: O72.0, O72.1, O72.2, O72.3).

MPOG Concept IDs Required:

<table>
<thead>
<tr>
<th>Blood Product MPOG Concept IDs</th>
<th>Point of Care Testing MPOG Concept IDs</th>
<th>Formal Lab MPOG Concept IDs</th>
<th>EBL MPOG Concept ID</th>
</tr>
</thead>
<tbody>
<tr>
<td>10490 Packed Red Blood Cells- Homologous</td>
<td>3435 POC-hematocrit spun</td>
<td>5006 Formal lab-Hematocrit</td>
<td></td>
</tr>
<tr>
<td>10492 Whole Blood-Homologous</td>
<td>3440 POC- Coulter counter-Hematocrit</td>
<td>5038 Formal lab-Blood gas- Hct measured</td>
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</tr>
<tr>
<td>10616 Packed Red Blood Cells- Unknown Type</td>
<td>3450 POC- Coulter counter-Hemoglobin</td>
<td>5080 Formal lab-Blood gas-Hemoglobin</td>
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<tr>
<td>10617 Whole Blood-Unknown Type</td>
<td>5081 POC- Blood gas-Hemoglobin</td>
<td></td>
<td></td>
</tr>
<tr>
<td>10618 Categorized Note-Blood Products</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Data Diagnostics Affected:
• Percentage of Inpatient Cases with Documented Blood Loss
• Percentage of Cases with Documented Blood Transfusions
• Percentage of Fluids with a Meaningful Fluid Mapping
• Percentage of Labs Mapped to a Meaningful Lab Mapping
• Percentage of Cases with a Lab Drawn During Anesthesia
• Percentage of Cases with Point of Care Hematocrit Labs
• Percentage of Cases with Point of Care Hemoglobin Labs
• Percentage of Cases with any Staff Tracking
• Percentage of Anesthesia Provider Sign-Ins that are Timed

Success:
• Documentation of hemoglobin and/or hematocrit prior to blood transfusion

Considerations:
For the first unit of transfusion, a hemoglobin or hematocrit of any value should be checked in a time period of 0 to 90 minutes before the transfusion, or the most recent documented hemoglobin or hematocrit of less than 8/24 should be within 36 hours of the transfusion.

If the last hemoglobin or hematocrit drawn before the first transfusion is ≤ 5/16, a second unit could be administered without rechecking hemoglobin/hematocrit.

If multiple units are administered, documentation of a hemoglobin or hematocrit value must be present within 90 minutes before each administration.

For pediatric cases (patients < 12 years old): Pre-transfusion hemoglobin/hematocrit required before the first unit and an additional recheck after 15cc/kg of PRBCs have been administered.

For cardiopulmonary bypass cases, all transfusions administered between cardiopulmonary bypass start and end will not be included for determining measure results for the case.

Cardiopulmonary bypass (CPB) start/end times defined as follows:

- Measure will first determine CPB start and end times using the first time associated with one of the following notes and the last time associated with one of the following notes:
  - Perfusion – Retrograde Arterial Prime/Venous Antegrade Prime Performed (Yes/No)
  - Cardiopulmonary bypass -- aortic clamp on/off note
  - Cardiopulmonary bypass vent on - note
  - Cardiopulmonary bypass vent off - note
  - Cardiopulmonary bypass vent on detail
  - Cardiopulmonary bypass vent off detail
  - Cardiopulmonary bypass rewarm - note
  - Cardiopulmonary bypass systemic cooling initiated
  - Cardiopulmonary bypass (full/partial/left-heart) terminated
  - Cardiopulmonary bypass initiated (full/partial/left-heart)
  - Cardiopulmonary bypass -- ventilator turned off
  - Cardiopulmonary bypass -- perfusion start
  - Cardiopulmonary bypass -- perfusion end
  - Cardiopulmonary bypass -- aortic crossclamp off
  - Cardiopulmonary bypass -- crossclamp and circulatory arrest time totals
  - Cardiopulmonary bypass -- Access cannula removed note
  - Cardiopulmonary bypass -- Aortic crossclamp removal requiring therapy
  - Cardiopulmonary bypass -- Isoflurane vaporizer turned on
  - Cardiopulmonary bypass -- Arterial cannula inserted note
  - Cardiopulmonary bypass -- Arterial cannula insertion site detail
  - Cardiopulmonary bypass -- Blood pressure lowered note
  - Cardiopulmonary bypass -- Blood pressure lowered therapy detail
  - Cardiopulmonary bypass -- Ice off head
  - Cardiopulmonary bypass -- Ice on head
  - Cardiopulmonary bypass - cardioplegia start
  - Cardiopulmonary bypass - cardioplegia stop
  - Cardiopulmonary bypass - Aprotinin test dose performed
  - Cardiopulmonary bypass - Full/partial/left-heart bypass start / stop event
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50766  Cardiopulmonary bypass -- Circulatory arrest start
50767  Cardiopulmonary bypass -- Circulatory arrest stop

Finally, if there are no intraoperative notes available, the measure will review physiologic data mapped to the following variables to determine start and end times as follows:

- At least one of these two cardiac indicators are met:
  o Systolic Blood Pressure (MPOG Concept: 3030) - Diastolic Blood Pressure (MPOG Concept: 3035) < 20 or
  o Pulse (MPOG Concept: 3005) ≤ 5

- At least one of these two pulmonary indicators are met:
  o Respiratory Rate (MPOG Concept: 3580) ≤ 2 or
  o End Tidal CO2 (MPOG Concepts: 3235, 3236) ≤ 5

- Transfusion is defined as:
  ▪ Packed Red Blood Cells-Autologous, Homologous, Unknown Type
  ▪ Whole Blood-Homologous, Unknown Type
  ▪ Categorized Note- Blood Products

- Hematocrit/hemoglobin are defined as:
  ▪ POC - Blood gas-Hct measured, Hemoglobin
  ▪ POC – Hematocrit spun
  ▪ POC – Coulter counter – Hematocrit, Hemoglobin
  ▪ Formal lab – Hematocrit, Hemoglobin
  ▪ Formal lab - Blood gas - Hct measured, Hemoglobin

Threshold: 90%.

Responsible Provider: Provider(s) who administered blood product.

Risk Adjustment (for outcome measures):
Not applicable.

References: