3.) Measure # ACSTrauma6
Optimal Ratio of Blood Product Transfusion

National Quality Strategy (NQS) Domain: Patient Safety

Measure Type (Process/Outcome): Process

**DESCRIPTION:**
Percentage of patients presenting with traumatic hemorrhagic shock who receive plasma and packed red blood cells (pRBC’s) in a ratio higher or equal to 1 unit of plasma for every 2 units of pRBCs over the first four hours after arrival to the emergency department.

**INSTRUCTIONS:**
This measure is to be reported each time a patient with traumatic hemorrhagic shock receives ≥ 4 units of packed red blood cell transfusion in the first 4 hours after emergency department arrival.

**Measure Reporting via Registry:**
Medical record information are used to identify patients who are included in the measure’s denominator. The listed numerator options are used to report the numerator of the measure.

**DENOMINATOR:**
Patients meeting all of the following criteria:
- a) Trauma patient inclusion criteria (see appendix 1)
- b) First or lowest systolic blood pressure in the emergency department < 90 mmHg
- c) Receive ≥ 4 units of packed red blood cells within 4 hours of emergency department arrival
- d) Survive ≥ 4 hours from the time of emergency department arrival

**NUMERATOR:**
Patients meeting all of the following criteria:
- a) Trauma patient inclusion criteria (see appendix 1)
- b) First or lowest systolic blood pressure in the emergency department <90 mmHg
- c) Receive ≥ 4 units of packed red blood cells within 4 hours of emergency department arrival
- d) Survive ≥ 4 hours from the time of emergency department arrival
- e) Received units of blood products in a ratio equal to or higher than 1 unit of plasma for every 2 units of pRBC’s over the first four hours after arrival to the emergency department

**Numerator Quality-Data Coding Options for Reporting Satisfactorily**
Evidence in medical record of a ratio of transfused blood products equal to or higher than 1 unit of plasma for every 2 units of pRBC’s within the first 4 hours of emergency department arrival

**Performance Met:**
Documentation in medical record of transfusion of plasma and pRBC products in a ratio equal to or greater than a ratio of 1:2. For partial units and/or where ratios do not yield integers, any ratio higher than 1:1.5 will have met performance criteria.

OR
Performance Not Met: Documentation in medical record of transfusion of plasma and pRBC products in a ratio of less than 1:1.5

RATIONALE:
Hemorrhagic shock is the most common cause of preventable death in the seriously injured patient population.1,2 Many patients who present in hemorrhagic shock are also coagulopathic and require the directed repletion of coagulation factors.2 Plasma transfusion replaces depleted coagulation factors and promotes systemic vascular stability in coagulopathic patients in hemorrhagic shock.3 This strategy was first discovered when survival among military personnel injured in the war in Iraq was found to be inversely correlated with the ratio of units of plasma to units of RBCs.4 Further studies among seriously injured civilian patients have shown improved survival when a higher plasma to RBC ratio transfusion strategy is deployed for resuscitation in hemorrhagic shock.4-12

REFERENCES: