E-CPR (Emergency – Clinical Performance Registry) Measure #40
Adopted from the Surviving Sepsis Campaign

Measure Title: Initiation of the Initial Sepsis Bundle

Inverse Measure: No

Measure Description: Percentage of Adult Emergency Department Patients Diagnosed with Severe Sepsis or Septic Shock That Have Initiation of the Initial Sepsis Bundle

National Quality Strategy Domain: Effective Clinical Care

Care Setting: Emergency Department and Services

Telehealth?: Yes

Type of Measure: Process

Meaningful Measure Area: Preventable Healthcare Harm

Current Clinical Guideline: This measure is derived from the CMS IQR SEP-1 measure and the Surviving Sepsis Campaign

Clinical Category: Sepsis

Number of Performance Rates: 1

Measure Scoring: Proportion

Risk Adjustment: No

Numerator: Emergency Department Patients Diagnosed with Severe Sepsis or Septic Shock Who Have Initiation of the Initial Sepsis Bundle

Definition of initiation of initial sepsis bundle: Provider order for (or protocol resulting in order for) ALL of the following:

- Lactate (venous or arterial)
- Blood cultures
- IV antibiotics
- IV fluid bolus

Numerator Options

- **Performance Met (VE253)**: Patients who did have initiation of initial sepsis bundle (must include all components)
- **Medical Performance Exclusion (Denominator Exception (VE254):** Patients who did not have initiation of the initial sepsis bundle for documented medical reason(s) (i.e. IV fluids not ordered given patient is in congestive heart failure, or other medical reason)
- **Patient Performance Exclusion (Denominator Exception) (VE255):** Patients who did not have initiation of the initial sepsis bundle for documented patient reason(s) (i.e. blood cultures not ordered because patient refused or other patient reason)

- **Performance Not Met (VE256)**: Patients who did not have initiation of the initial sepsis bundle, reason not given

Numerator Exclusions: None

Denominator:
- Any patient ≥ 18 years of age evaluated by the Eligible Professional in the Emergency Department (E/M Codes 99281-99285 & 99291-99292 AND Place of Service Indicator: 23) PLUS
- ED diagnosis of either of below:
  - Severe Sepsis:
    - **ICD-10**: A41.9 AND R65.20
  - Septic Shock:
    - **ICD-10**: A41.9 AND R65.21
- Transferred, eloped or AMA patients are excluded **(V0700)**
- Patients with Advanced Directives indicating preference for limited intervention are excluded **(V0701)**

Denominator Exclusions: None

Rationale:
There are more than 750,000 cases of severe sepsis and septic shock in the United States each year. Most patients who present with sepsis receive initial care in the emergency department, and the short-term mortality is 20% or more. In 2001, Rivers et al. reported that among patients with severe sepsis or septic shock, mortality was significantly lower among those who were treated according to a sepsis bundle with protocol than among those who were given standard therapy (30.5% vs. 46.5%). This premise predicates that usual care lacked aggressive, timely assessment and treatment. There have been many changes in the specific management of sepsis as to whether certain aspects of a protocol are necessary (e.g. blood transfusion parameters, vasoactive agent initiation, mandated central line placement). Overall, there is strong evidence that an initial order bundle involving IVF bolus, Blood cultures, IV antibiotics, and lactate to support its broad applicability.

In their 2017 submission to the National Quality Forum, Henry Ford Hospital presented a detailed analysis of Q4 2015 through Q2 2016 data on the SEP-1 measure from the first three quarters of SEP-1 measure implementation in the Inpatient Quality Reporting (IQR) program, highlighting performance gaps for each of the three hour bundle elements which align with those captured in the E-CPR sepsis measure. Specifically, that patients with severe sepsis failed to receive recommended treatment in 32.7% of eligible cases, and of those failures 48.5% failed to obtain an initial lactate level, 38.4% failed to receive broad spectrum antibiotics, 34.4% failed to have blood cultures drawn, and 45.5% failed to be administered fluids within the three hour time window, which is the time that patients are most likely to still be in the emergency department (Henry Ford 2017).

These results are consistent with performance gaps previously reported in the literature. For example, in a large-scale, multicenter study of compliance with the Surviving Sepsis Campaign guidelines, only 61% of patients had an initial lactate value measured in the first quarter of the study. In the final quarter, only 78.7% of patients had an initial lactate measurement. (Levy 2010) A prospective multi-center observational study found that compliance with the Surviving Sepsis Campaign 2012 guidelines recommendation to draw blood cultures before antibiotics

were administered was only in the range of 54.4 to 64.5%. (Bloos 2014, Angus 2001) Results from a multicenter observational study including 15,022 patients from 165 hospitals demonstrated that patients with septic shock were given broad spectrum antibiotics 60.4% in the first quarter of the study. At the final quarter, the increase of compliance on providing antibiotics only increased 7.5% to 67.9%. Clearly, the opportunity to provide comprehensive and timely care to septic shock patients exists. (Levy 2010) A multi-center randomized controlled trial of early sepsis resuscitation found mortality was significantly increased in patients who received initial antibiotics after septic shock recognition compared with before septic shock recognition. Only 59% of patients received the initial dose of antibiotics after recognition of septic shock. This demonstrates that delay to antibiotics is harmful and persists. (Puskarich 2011) A prospective observational study on over one hundred consecutive adult patients with severe sepsis or septic shock found that only 84% of patients with documented hypotension received immediate fluid administration (0.5L). (Gao 2005) The amount considered adequate in this study is lower than the threshold outlined in this measure (greater than or equal to 1 liter of crystalloids), which may indicate critically ill patients with septic shock receive appropriate fluids at an even lower rate.

Selected References:

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