A Multidisciplinary Code Sepsis Team to Improve Sepsis Bundle Compliance in the Emergency Department

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Project /Purpose

- The purpose of this quality improvement project is to develop and implement a multidisciplinary team to address early initiation of evidence-based sepsis bundles in the emergency department (ED).
- The aim of the project is to determine the effect of a multidisciplinary team on outcome measures and sepsis bundle compliance compared to use of an electronic alert system, nurse-initiated protocols (NIPs) and standardized bundle compliance.
- A review of internal data suggests 90% of septic patients requiring hospitalization present to the ED.

Background/Available Knowledge

- Sepsis is one of the leading causes of mortality, with over 700,000 hospitalizations and 200,000 deaths annually.
- The Society of Critical Care Medicine (SCCM) released the Surviving sepsis campaign (SCCM) which outlines 3 and 6 hour bundles to guide identification and early goal-directed therapy (EGDT).
- Although various tools exist to aid in sepsis bundle compliance, mortality for severe sepsis and septic shock is near 50% (Schub & Schub, 2013).
- In 3 studies utilizing a specialty trained team activated by a sepsis alert, sepsis bundle compliance was significantly higher (p<.01) in the post-intervention groups (Hayden et al., 2015; LaRosa et al., 2012; Umscheid et al., 2015).

Methods

- Framework: Rapid cycle quality improvement model. This model will be used in the first two months after implementation.
- Definitions:
  - Sepsis: Suspected or confirmed infection plus two or more symptoms of systemic inflammatory response syndrome (SIRS).
  - Severe sepsis: Sepsis with organ dysfunction or hypoperfusion
  - Septic Shock: Severe sepsis with refractory hypotension or lactate >4mmol/L
- This project will be conducted in a 52-bed ED at Sentara RMH Medical Center, a 238 bed not-for-profit organization.
- All patients over 18 years of age presenting to the emergency department with clinical indications of sepsis, severe sepsis, or septic shock will be included in the study.
- Hospice patients will be excluded.
- 3 months baseline data/3 months post intervention data will be collected and compared.

Implementation

4 Phases:
1) Project Team Development: Sepsis Project Lead, ED CNS, ED Pharmacist, ED Nurse Director, ED Nurse Champion, ICU Medical Director, Sepsis Quality Coordinator, Switchboard, Respiratory Therapy Manager, Laboratory Lead, Satellite Lab Representative
2) Process Mapping
3) Education
4) Implementation September 4, 2017

Data Collection/Analysis

- This study was approved by the Institutional Review Board (IRB).
- Sepsis bundle data and demographics will be collected through manual chart abstraction.
- Code sepsis paging information collected from switchboard reports.
- Mortality data collected from Crimson, a billing and coding database.
- All retrospective data will be stored in a spreadsheet on a private computer drive.
- All data will be entered into SPSS and analyzed using a chi-square or independent sample t-test.

<table>
<thead>
<tr>
<th>Sepsis Bundle Components</th>
<th>3 Hour</th>
<th>6 Hour</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lactate Level</td>
<td>Q</td>
<td>2nd lactate if initial &gt;2mmol/L</td>
</tr>
<tr>
<td>Blood cultures prior to antibiotics (24hrs. Prior or 3 hrs. after)</td>
<td>Q</td>
<td>Volume/tissue perfusion assessment if hypotension persists after IV fluids</td>
</tr>
<tr>
<td>30ml/kg crystalloid for hypotension or lactate &gt;4mmol/L</td>
<td>Q</td>
<td>Vasopressors if hypotension persists within the hour following completion of fluids</td>
</tr>
</tbody>
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In 2012: National Quality Forum began endorsing sepsis measures
In 2015: CMS initiated reporting requirements on sepsis metrics.
Sepsis bundle metrics are not yet tied to reimbursement

References

References available upon request.