# 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 order sets alone
- A review of internal data suggests 90% of septic patients requiring hospitalization present to the ED

**Sepsis Bundle Components**

| 3 Hour | 6 Hour |
|---|---|
| ❑ Lactate Level | ❑ 2nd lactate if initial >2mmol/L |
| ❑ Blood cultures prior to antibiotics (24hrs. Prior or 3 hrs. after) | ❑ Volume/tissue perfusion assessment if hypotension persists after IV fluids |
| ❑ 30ml/kg crystalloid for hypotension or lactate >4mmol/L | ❑ Vasopressors if hypotension persists within the hour following completion of fluids |

## 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
- In 2012: National Quality Forum began endorsing sepsis measures
- In 2015: CMS initiated reporting requirements on sepsis metrics.
- Sepsis bundle metrics for pneumonia tied to reimbursement

## 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 hypo-perfusion
  - *Septic Shock:* Severe sepsis with refractory hypotension or lactate ≥4mmol/L
- This project was conduced 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

*5 Phases:*

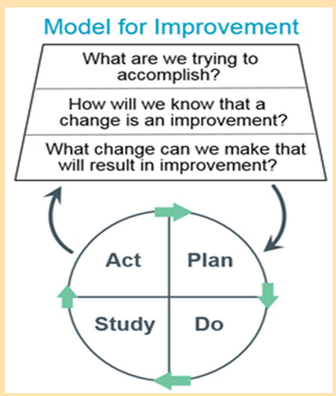
1)Project Team Development

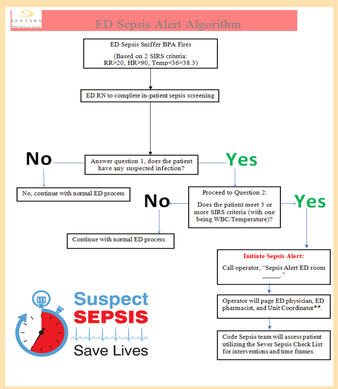
2) Process Mapping

3) Education

4) Implementation September 1, 2017

5) Evaluation




## Data Collection/Analysis

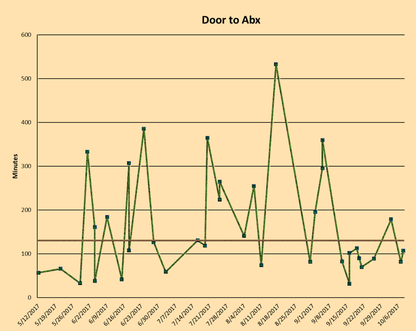
- This study was approved by the Institutional Review Board (IRB)
- Sepsis bundle data and demographics will be collected through manual chart abstraction
- Code sepsis paging information collected from switchboard reports
- Mortality data collected from Crimson, a billing and coding database
- All retrospective 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.

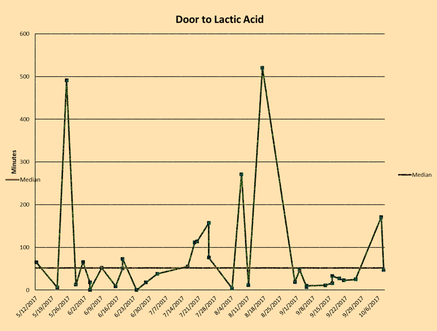
**Primary Data**

| | |
|---|---|
| | Demographics: Age, Gender |
| Yes/No | Code Sepsis Initiated |
| To be collected within 180 minutes from time sepsis criteria met | Time to Antibiotics |
| | Time to Initial Lactate |
| | Time to Blood Cultures |
| To be collected within 180 minutes from initial hypotension or lactate ≥4mmol/L | Fluid Resuscitation 30ml/kg |
| To be collected within 6 hours from time sepsis criteria met | 2nd Lactate (If initial lactate >2mmol/L) |
| | Mortality |

## Evaluation/Implications

- Post intervention data collection December 1-March 1, 2018
- Success of the project will be considered an overall improvement in sepsis bundle compliance and primary outcomes
- If a sepsis response team in the ED improves outcome measures, this process could be applied to other similar facilities




## References

References available upon request.

2010 Health Campus Drive Harrisonburg, VA 22801; 540-6891-1191