# SEPSIS ALERT: PATHWAY TO SEPSIS INNOVATION IN THE EMERGENCY DEPARTMENT

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## Background

Severe sepsis and septic shock have a high mortality rate. According to the CDC, about 250,000 Americans die from sepsis each year, and one in three patients who die in a hospital have sepsis. Positive patient outcomes rely on the Emergency Department (ED) to play a vital role in early identification and time-dependent interventions.

## Purpose

The goal for the ED Sepsis Alert Project was to facilitate early detection of patients who fit sepsis criteria, early initiation of the sepsis bundle, and decrease mortality rates for sepsis patients.

## Design

This workflow was a two-tiered system within the ED that begins in triage. It starts by identifying the patient that meets sepsis criteria (2 SIRS Criteria + source of infection), calling an alert to notify all staff/prioritizing care, immediately rooming the patient, and ensuring ED physician is at the bedside immediately (within 10 minutes) to assess the patient. The second component of the workflow involves physician assessment and determination of severity of illness/confirmation of identification of sepsis. The primary RN then carries out completion of sepsis bundle.

SIRS criteria include:
- Temperature > 101°F
- Heart rate > 90
- Respiratory rate > 20
- WBC > 12,000 or bands > 10%

## Setting

Project setting is at an urban, non-profit hospital in Orange County, in the city of Anaheim, California.

## Participants/Subjects

All ED staff participated in the sepsis process improvement. Change in workflow applied to adult patients 18 years of age or older that met designated criteria.

## Methods

Education for OCA ED Staff was completed using daily huddles with staff (day, night. and mid-shifts) for two weeks prior to initiation of workflow. Subsequently, an audit process was developed and utilized on a weekly basis.
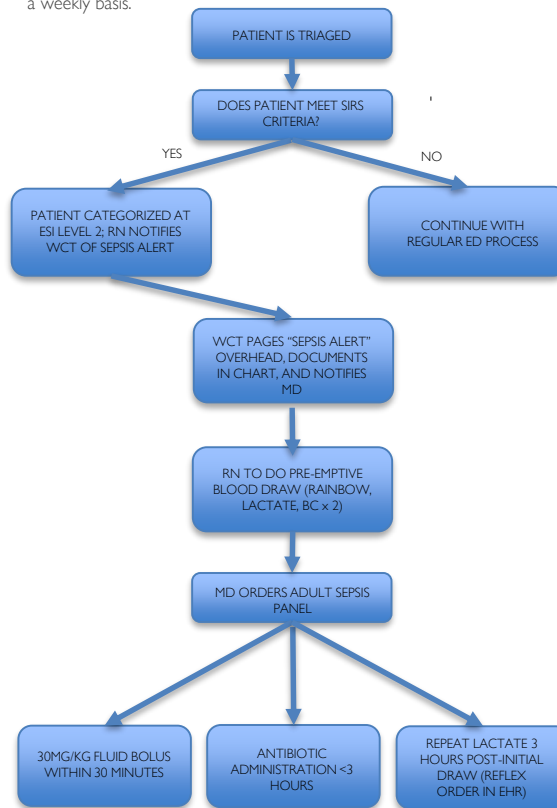


*Figure 1.* Sepsis Alert Tool/Workflow
NOTE: ED = Emergency Department, SIRS = Systemic Inflammatory Response Syndrome, ESI = Emergency Severity Index, RN = Registered Nurse, WCT = Ward Clerk Transcriber, BC = Blood Cultures, EHR = Electronic Health Record

## Results/Outcomes

The data used to evaluate progress included initiation and completion of the Early Management Bundle for Severe Sepsis/Septic Shock per The Joint Commission (TJC) Core Quality Measure. This includes lactate draw within 3 hours, repeat lactate within 6 hours, antibiotic administration within 3 hours, and fluid resuscitation at 30ml/kg. Inpatient mortality is also evaluated for this population. Our organization chose new goals that include lactate draw within 3 hours and repeat lactate within 6 hours; this was done to ensure earlier recognition and treatment and to ensure that the sepsis bundle is met.

Lactate draws within 1 hour prior to intervention (April 2016) was at 79% and increased post-intervention (July 2016) to 85%. Antibiotics within 2 hours prior to intervention (April 2016) was at 68% and increased post-intervention (July 2016) to 88%. Fluid bolus administration within 3 hours prior to intervention (April 2016) was at 56% and increased post-intervention (July 2016) to 73%.
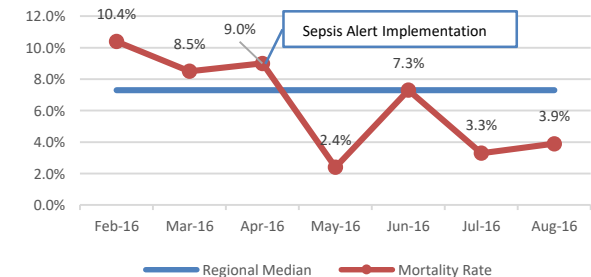


## Implications

Early recognition and management of severe sepsis/septic shock optimizes outcomes. Prioritization and timely care of patients presenting to the ED that meet sepsis criteria leads to a decrease in mortality. The utilization of the Sepsis Alert workflow facilitated early detection of patients who fit the sepsis criteria, early initiation of the sepsis bundle, and a decrease in mortality rates.

*Additional Resources/Education: Sepsis Alliance ● http://www.sepsis.org/ ● Centers for Disease Control and Prevention (CDC) ● https://www.cdc.gov/sepsis/basic/index.html*