

Reducing Antibiotic Administration Delay in Emergency Department Sepsis Patients

Melissa Felder MSN, AP-RN; Lisa Dykes PharmD; Nichole Brown RN, MSN; Jailan Osman MD; Hugh Welch LSSBB; Bernard Dekoning MD; Ruth Mustard RN, MSN; Sterling Bird MHA, David Omura DPT, MHA, MS

For additional information contact: 2020ColaVAHCSPosters@va.gov

Background

In the United States, it is estimated that sepsis is associated with more than 250,000 deaths annually (Rhee, et al., 2019). Each hour of delay in antibiotic administration for patients with septic shock increases their risk of death by 7.6% per hour (Kumal, et al. 2006), culminating in an in-hospital mortality rate ranging from 20% - 50% of afflicted patients and an annual medical expenditure exceeding \$24 billion (Ahiawodzi, et al., 2018). The 2018 Society of Critical Care Medicine Surviving Sepsis Campaign recommends administration of IV antibiotics within one hour of sepsis recognition. The Columbia VA Health Care System recognized this opportunity for improvement and through our Continuous Process Improvement model, made improvements that significantly improved our antibiotic administration time, and further improved strong performance when assessing our mortality data across the health care system. Through the use of this multi-pronged approach to addressing sepsis, other health care systems can reduce length of stay, reduce readmission rates, and decrease the incidence of sepsis-related mortality.

Objectives

- Create a standardized sepsis screening tool to increase inter-rater reliability in identification of sepsis
- Elevate clinical awareness of recent advancements in sepsis identification and treatment recommendations
- Improve sepsis patient triage prioritization
- Reduce median antibiotic administration times to within one hour of patient presentation to emergency department.

Planning Methods

Record audits were conducted for all Columbia VA Healthcare System patients with an inpatient diagnosis of sepsis from September 2018 through February 2019 (n = 160). These records were further reviewed to identify patients who met sepsis criteria at presentation to the emergency department (n=59) to create a dataset comprised of the following variables: date & time of emergency department presentation, date & time of first antibiotic administration, suspected illness, sepsis trigger alert, presence of blood cultures, fluid administration, lactic acid lab results, patient mortality, & emergency severity index. A group of subject matter experts then analyzed the resultant dataset for antibiotic administration time distributions and staff accuracy in early identification and prioritization of potentially septic patients.

Implementation

An interdisciplinary team of physicians, mid-level providers, nurses, pharmacists, & clinical application coordinators developed a two-part triage screen using modified qSOFA methodology to assess heart rate, temperature, blood pressure, respiratory rate, mental status, white blood cell count, blood glucose, & chills/rigor to achieve a balance of sensitivity and specificity. Patients meeting two or more criteria are then evaluated for potential sources of infection. This screening tool was hardwired into the electronic medical record to ensure screening is completed on 100% of patients presenting to the emergency department, as well as ensuring that all potential sepsis patients are immediately identified and prioritized appropriately. Extensive education was provided to all emergency department clinical personnel who serve as the first encounter point of contact for arriving patients. Education focused on sepsis identification, sepsis prioritization, and treatment recommendations based on current identified best practices.

Results

- Median antibiotic administration times were reduced by 55.7% from 150 minutes to 66.5 minutes.
- Percent of septic patients identified and treated within one hour of arrival at Emergency Department increased from 8.5% to 35%.
- Accurate identification of sepsis in triage increased from 44.1% to 80.0%.
- Appropriate triage prioritization increased from 50.9% to 90.0%

