

SEPSIS SCREENING IN TRIAGE TO DECREASE DOOR-TO-ANTIBIOTIC TIME



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CE Earn Up to 7.5 Hours. See page 343.

Contribution to Emergency Nursing Practice

- The purpose of this practice improvement project was to identify and treat patients with sepsis more quickly to meet the Surviving Sepsis Campaign guideline recommendations of administering antibiotics within 60 minutes of arrival in the emergency department.
- This simple change in process made a significant difference in our door-to-antibiotic time with no cost involved and no delay in patient throughput.
- Key implications for emergency nursing practice based on this project are the importance of screening patients for potential sepsis in triage and that nurses can make simple process changes that have impact on the outcomes of patients with sepsis.

Abstract

Introduction: Identifying patients with sepsis at triage can lead to a decrease in door-to-antibiotic time. Our community hospital emergency department's mean door-to-antibiotic time was 105.3 minutes, falling short of the Surviving Sepsis Campaign guideline's benchmark goal of 60 minutes. One of the most common reasons for treatment delays was that patients with sepsis

were not identified upon entrance to the emergency department. A solution to the delay was to implement a practice improvement project by having the triage nurse screen all patients for sepsis upon entrance to the emergency department.

Methods: A sepsis-screening tool was used to identify patients with sepsis and was based on systemic inflammatory response syndrome (SIRS) criteria. Patients screening positive were prioritized for ED bed space. The change in process allowed more rapid ED physician evaluation and antibiotic administration. Manual chart abstraction was used to calculate door-to-antibiotic time and included 12 months of preintervention data and 2 months of postintervention data.

Results: Door-to-antibiotic time improved from a baseline of 105.3 minutes to 71.9 minutes.

Outcome: The simple change in patient throughput improved door-to-antibiotic time with minimal obstacles. The sepsis-screening tool implemented at triage decreased the door-to-antibiotic time by 33.4 minutes, without affecting triage time, and enhanced patient throughput of potentially septic patients.

Key words: Sepsis; Triage; Door-to-antibiotic time; Code sepsis; Sepsis bundles

Sepsis is the leading cause of death in hospitals, and as many as 80% of sepsis deaths could be prevented with rapid diagnosis and treatment.¹ For patients with sepsis, each hourly delay in receiving antibiotics increases the mortality rate by 8%.² Sepsis is a Centers for Medicare and Medicaid Services (CMS) core measure called SEP-1 that requires the use of 3- and 6-hour bundles on patients

presenting with sepsis.³ The bundles ensure early goal-directed therapy is delivered to patients but giving antibiotics as soon as possible is specifically what will result in better patient outcomes.¹ Blood cultures and lactate levels must be obtained, and antibiotics and fluids must be administered within 3 hours of presentation.⁴ A repeat lactate and re-evaluation of tissue perfusion must be completed within 6 hours of presentation.⁴ The 2016 Surviving Sepsis Campaign guidelines recommend use of the sepsis bundles and further recommend that antibiotics be given as soon as possible or within 1 hour of identification of suspected sepsis.⁴

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Background

Our community hospital implemented evidence-based procedures to meet the SEP-1 core measure including developing a screening tool to identify patients with sepsis and

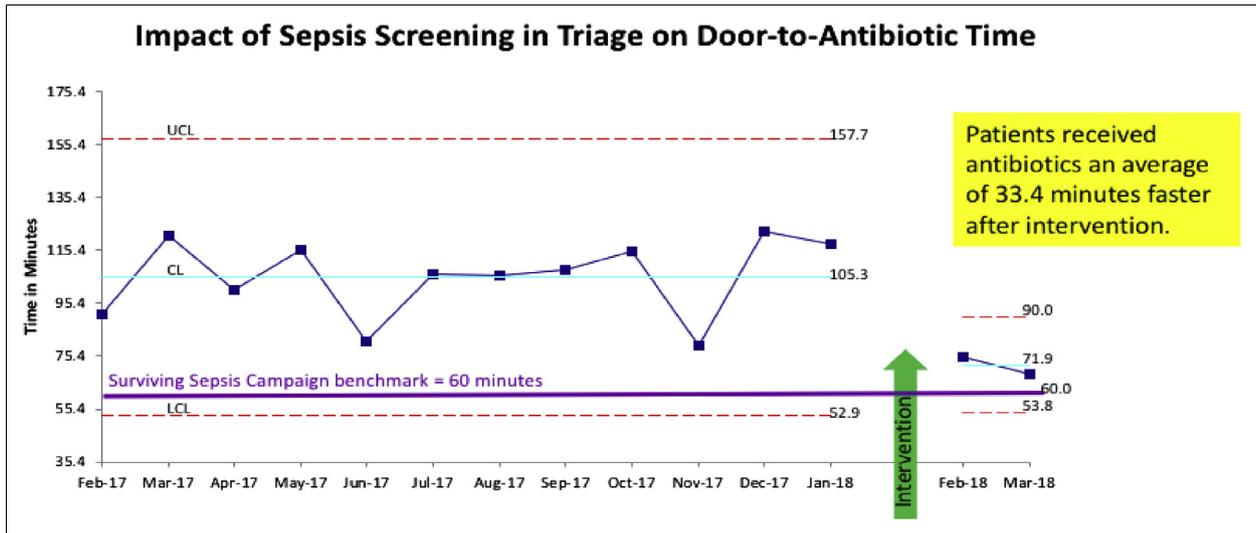


FIGURE 1

Analysis of results using a control chart.

implementing a Code Sepsis for rapid completion of the sepsis bundles in our 25-bed emergency department. After these processes were in place, the mean door-to-antibiotic time was 105.3 minutes for walk-in patients who did not arrive via ambulance, which still did not meet the recommendation to administer antibiotics within 60 minutes of presentation. In addition, 11 of 120 (9%) reviewed charts failed to meet the 3-hour bundle requirement because of high door-to-antibiotic time. A common reason for outliers was that patients were not recognized as having sepsis quickly enough after arriving in the emergency department. The patients arriving via ambulance were not affected because they were immediately placed in an ED bed, where the sepsis-screening tool was used by the nurse during the initial assessment. Our walk-in patients were seen by a nurse in triage, assigned a triage category, and placed on a bed space waiting list, according to the severity of their triage category. Our patients were not screened for sepsis in the triage area, resulting in some patients who met the criteria of having sepsis being left in the waiting room to wait their turn for available bed space, lengthening the time it took to be seen by a provider and receive treatment.

Methods

PROCESS CHANGE

This practice improvement project proposed that the sepsis-screening tool already used by ED nurses would be given to triage nurses to more quickly identify patients who met the criteria for sepsis. Patients screening positive would be prioritized for ED bed space, which would allow them to receive

physician evaluation and antibiotics more rapidly. The goal was to determine if screening patients with sepsis earlier would result in a decreased door-to-antibiotic time. Our correction was only for walk-in patients because they were not screened previously at triage.

SEPSIS SCREENING TOOL

Sepsis-1 and Sepsis-2 definitions described sepsis as an infectious source plus 2 or more SIRS criteria.⁵ In 2016, the Third International Sepsis Consensus Definitions Task Force released Sepsis-3 definitions, which no longer recognize SIRS criteria.⁵ Instead, the diagnosis of sepsis is made from an infection and an increase of 2 or more points on the quick Sepsis-Related Organ Failure Assessment (qSOFA).⁶ The qSOFA score is based only on blood pressure, respiratory rate, and altered mental status, which means it is more specific but less sensitive than SIRS criteria.¹ The screening tool used for this project is based on SIRS criteria for a more sensitive indicator that can identify more potentially septic patients.

The screening tool used criteria based on systemic inflammatory response syndrome (SIRS) criteria and included a heart rate greater than 90, respiratory rate greater than 20, temperature greater than 38 or less than 36 degrees Celsius, systolic blood pressure less than 100, mean arterial pressure (MAP) less than 65, and also added new onset of altered mental status.⁵ A suspected infection in addition to meeting at least 2 of the criteria meant that the patient screened positive because this met the definition of sepsis according to the former Sepsis-2 guidelines.⁵

DATA COLLECTION

Results were evaluated through a manual chart abstraction to calculate the door-to-antibiotic time. The door-time was defined as the time the patient was seen at triage, and the antibiotic time was defined as the time listed by the nurse on the patient's chart stating the antibiotic was started. Charts were excluded if the patient was brought in by ambulance or if the chart had incomplete data. The preintervention data were collected by reviewing 10 charts per month from February 2017, through January 2018. Postintervention data were obtained by reviewing 10 charts per month in February 2018 and March 2018, after the screening tool was implemented. Results were analyzed using a control chart that depicted how the mean door-to-antibiotic time changed over the course of 14 months (Fig 1).

Results

The initial 2 months of postintervention data showed an immediate impact. Postintervention data with a mean of 71.9 minutes outperformed the mean baseline data with a mean of 105.3 minutes. Although the postintervention data did not outperform the benchmark goal of 60 minutes, this project was successful because patients received antibiotics 33.4 minutes faster on average when the triage nurse screened for sepsis. In addition, there was no change in the length of time required for triaging patients, so there was no negative impact on ED throughput.

Discussion

No significant obstacles were faced in the implementation of this practice improvement project. The triage process was already in place, so no additional staff was required. The 33.4-minute decrease in door-to-antibiotic time was a huge accomplishment for the emergency department, especially when no new resources were needed to implement the change.

The SEP-1 core measure is not part of the value-based purchasing program.⁷ Hospital payments are not affected by compliance with the measure at this point, but that is likely to change.⁷ Being prepared for when sepsis outcomes become tied to payments will likely yield additional cost savings in the future.

Implications for Emergency Nursing

This practice improvement project showed that a simple process change could have a giant impact. A simple change helped patients get the emergency treatment they need

without affecting budget or throughput. Door-to-antibiotic time was measured, but further analyzing outcome data of patients with sepsis could reveal its impact on morbidity and mortality of this patient population. Earlier identification of septic patients, door-to-doctor time, and time from antibiotics being ordered until administered are aspects of this multistep process that will be examined for potential process changes.

Conclusions

The improvement in door-to-antibiotic time was a great achievement that brought the emergency department much closer to the Surviving Sepsis Campaign guideline recommendation of 60 minutes. This project is sustainable as a long-term process change and will continue because it was a cost-effective change that has already resulted in a 33.4-minute decrease in door-to-antibiotic time for septic patients. The screening tool was easily added to the triage process without adding significant burden to nurses.

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