Increasing Sepsis Bundle Compliance Through Nurse Education

Parth S. Papaiya
University of San Francisco, ppapaiya@dons.usfca.edu

Follow this and additional works at: https://repository.usfca.edu/capstone
Part of the Critical Care Nursing Commons, and the Perioperative, Operating Room and Surgical Nursing Commons

Recommended Citation
https://repository.usfca.edu/capstone/1496
Increasing Sepsis Bundle Compliance Through Nurse Education

Parth Papaiya

School of Nursing and Health Professions, University of San Francisco

NURS 653-32: Internship

Scout Hebinck

May 7, 2023
## Table of Contents

Abstract ........................................................................................................................................... 4  
Problem ......................................................................................................................................... 4  
Context .......................................................................................................................................... 4  
Intervention .................................................................................................................................... 4  
Measures .......................................................................................................................................... 5  
Results ........................................................................................................................................... 5  
Conclusions ..................................................................................................................................... 5  
Introduction .................................................................................................................................... 6  
Statement of Problem & Problem Description .............................................................................. 7-8  
Project Overview ............................................................................................................................ 9  
Available Knowledge ..................................................................................................................... 10  
  PICOT Question .............................................................................................................................. 10  
  Literature Review ............................................................................................................................ 10-16  
Conceptual Framework .................................................................................................................. 16  
  Rationale ........................................................................................................................................ 16-20  
Specific Project Aim ....................................................................................................................... 20  
Methods .......................................................................................................................................... 20  
  Context & Data Source .................................................................................................................... 20-22  
  SWOT Analysis ............................................................................................................................... 22  
  Intervention .................................................................................................................................... 23
Abstract

There exists opportunities for improvement in regards to sepsis management and compliance rates in efforts to reduce sepsis-related complications and incidents in the ED. SEP-1 fallouts and requirements linked to education gaps about sepsis bundle protocols, nurses’ attitudes about implementation of the protocols, and differences in nurse/physician order sets present as deterrents for timely sepsis management and improvements in the rates of compliance/adherence. Denouncing the usage of standardized protocols/use of order sets have been identified as a process gap and a much needed opportunity for improvement. It is presumed that the failure to implement, in addition to improper documentation of fluids and lactates and a lack of education foundation, serve as barriers in decreasing the hospital’s compliance rate with the SEP-1 guidelines and protocols.

Problem: Compliance/adherence to sepsis bundles is integral in improving sepsis management and patient-care outcomes. However, this medical center has seen declines in compliance rates throughout the years. After performing a root cause analysis (RCA), it was revealed that non-compliance, educational gaps, and lack of prioritization may be contributing factors in the decline.

Context: A microsystem assessment was completed on the ED floor, where it was revealed that a deeper focus on sepsis care management has the ability to not only increase patient-care outcomes, but also to save hospital costs and therefore, generate more revenue as aggregate costs will be reduced.

Intervention: To close the gaps/deficits in sepsis education, visual representatives, such as informational handouts and facts sheets were created, along with small sepsis informational cards and signages. These materials were distributed throughout the hospital to increase
accessibility and availability of critical sepsis information, and to increase staff awareness about the importance of sepsis prioritization.

**Measures:** The outcome measures were relevant to sepsis patients within the ED that satisfied the requirements of the CMS SEP-1 sepsis management bundles. Key measures included: compliance/adherence to bundles, improvement in sepsis knowledge/understanding, increase in sepsis awareness/prioritization, as well staff satisfaction and team cohesion.

**Results:** It was reported by the sepsis coordinator that this Northern California hospital has experienced increases in sepsis bundle compliance rates from February 2023 to May 2023 as a result of the education initiatives (sepsis handouts and information cards). Also, the RN order set usage has increased from 42% to 69.6% from pre to post-survey. The usage of the RN sepsis handoff smartphrase has increased from 9.5% to 17.4% from pre to post-survey. However, familiarity of the smartphrase has actually decreased from 52.4% to 34.8% pre to post-survey. During the post-survey, 95.7% of RNs reported that they think the education initiative increased available information about sepsis bundle protocols, sepsis order set usage, and handoff smartphrase use.

**Conclusions:** Overall, this quality improvement performance project made interventions that significantly improved the sepsis compliance rate from February 2023 to March 2023 for this Northern California Medical Center. Since the specific project aim was to increase compliance with CMS SEP-1 sepsis management bundle to exceed the existing average in the ED sepsis adult patient population by May 1, 2023, this objective was satisfied. In the duration of the four months (February-May 2023), there have been significant improvements in terms of increasing sepsis bundle compliance rates, closing the education gaps/deficits, as well as increasing sepsis awareness/prioritization. It is expected that the project contributions be used and integrated
within this medical center for ongoing efforts to improve compliance with the CMS SEP-1 sepsis management bundle.

**Introduction**

Sepsis is a life-threatening organ dysfunction that is caused by an infection and is considered as a medical emergency, so it is imperative to take immediate actions (Gyawali et al., 2019). Sepsis and sepsis-related complications now affect more than 1.7 million patients in the United States annually, contributing to more than 11 million deaths each year (Centers for Disease Control and Prevention, 2022). In fact, it is the number cause of death for young infants and continues to impact more than 3 million newborns every year (Liang et al., 2018). Moreover, in addition to the high mortality rates associated with sepsis and sepsis-related costs, sepsis negatively impacts the econometrics of healthcare delivery and efficiency because of excessive costs and liabilities (Paoli et al., 2018). For instance, sepsis leads to a high burden of costs, as billions are spent each year to help mediate sepsis and its negative effects (Van den Berg et al., 2022). These statistical findings indicate that it is important to manage sepsis and sepsis-related complications in order to not only lower healthcare costs, but also to improve patient-care outcomes and improve healthcare delivery through effectiveness and efficiency.

For a provider to diagnose sepsis, there are a set of criteria that must be met. More specifically, two or more Systemic Inflammatory Response Syndrome (SIRS) criteria must be present. These include: Fever>38C, Heart rate (HR)>90, Respiratory rate (RR)>22, White Blood Cell count(WBCs) >12,000 or <4,000, Blood glucose>140 (if non-diabetic), Systolic blood pressure (SBP)<90, or Mean arterial pressure (MAP)<65 (Chakraborty & Burns, 2023).
There are many risk factors that increase the risk for sepsis and sepsis-related complications. A notable cause of sepsis occurs when the patient is hospitalized and develops an infection. This is referred to as nosocomial infections or reactions. Nosocomial infections arise due to: the usage of catheters, IVs, central lines, and wounds (Fathi et al., 2019). Other common risk factors include: chronic illnesses, comorbidities, invasive procedures, immunocompromised status & weakened immune systems, and old age (Fathi et al., 2019).

It is critical to consider clinical manifestations when assessing sepsis patients. Although signs and symptoms do not necessarily translate to being sepsis positive, it is still important to pinpoint and isolate common characteristics (Hunt, 2019). This includes: fevers/chills/shivers, altered mental status, shortness of breath and apnea, increased heart rate, low blood pressure, cyanotic/mottled skin, and cold extremities due to perfusion issues (Hunt, 2019).

Altogether, because sepsis and sepsis-related complications result in undesirable outcomes, such as high mortality rates and high healthcare costs, it is imperative to control and manage sepsis. To initiate this change, it is important to increase sepsis bundle compliance rates, improve staff education to close knowledge gaps/deficits, and increase staff awareness about the subject matter so that sepsis becomes more prioritized.

**Statement of Problem & Problem Description**

For one medical center located in Northern California, its emergency department presents with unsteady changes in terms of the CMS SEP-1 guidelines and protocols.

There exists opportunities for improvement in regards to sepsis management and compliance rates in efforts to reduce sepsis-related complications and incidents. Throughout the last three months, metrics have revealed that compliance with the identification and treatment of sepsis have experienced differing trends. In regards to the first vital to lactic acid result within 60
minutes, the month of December saw 76% compliance, January saw 51% compliance, and
February saw 65% compliance. In regards to lactic acid results for antibiotic administration
within 60 minutes, the month of December saw 78% compliance, January saw 81% compliance,
and February saw 87% compliance. The last metric focused on antibiotic order to administration
within 35 minutes, the month of December saw 70% compliance, January saw 78% compliance,
and February saw 53% compliance. These metrics are pivotal in developing a foundational
framework for providing adequate sepsis care with the ultimate goal of reducing sepsis
complications.

Evidence-based research reveals that there were variable changes in SEP-1 processes,
with the greatest increases seen in lactate measurements and minimal increases seen in antibiotic
administration rates (Barbash et al., 2021). This, in turn, impacts sepsis bundle
compliance/adherence rates because sepsis screenings were not completed in the three and six
hour interval periods. By doing timely screenings and thereby improving compliance rates, there
would be significant improvements in both sepsis management and long-term patient care
outcomes. Further evidence-based research reveals that compliance with SEP-1 has the ability to
decrease the incidence of avoidable deaths, as well as lower overall mortality rates (Townsend et
al., 2022). Moreover, in various studies done in the emergency departments, it was found that
education and creating a standardized process for documenting has the potential to greatly
improve SEP-1 compliance rates (Alexander et al., 2022). Therefore, it is indicative that through
proper educational training and communication about SEP-1 bundle sets and protocols, this
medical center will experience increases in not only compliance/adherence rates, but also in the
realm of patient care outcomes and quality metrics.
Project Overview

A project analysis using line graphs depicted that patients are at a greater risk for sepsis and other sepsis-related complications because there has been a varying pattern (mostly downwards trending) with sepsis bundle compliance. The analysis done during the course of three months, December-January-February, revealed that this Northern California hospital had downward trends in both first vital to lactic acid result within 60 minutes and antibiotic order to administration within 35 minutes. This hospital’s data also revealed that sepsis compliance rates have dropped from 82% to 56% with administrative changes throughout the years. The current sepsis coordinator at this hospital is not entirely sure on how to tackle this problem, but suggests that re-education and stressing importance of initial lactates is a start. Additionally, nurse hand-offs for shift change may also be helpful in increasing compliance rates.

The main goal of this project is to increase sepsis bundle compliance/adherence with the ultimate objective of reducing sepsis and sepsis-related complications. The aim as a team is to improve patient-care outcomes by placing an emphasis on sepsis bundle compliance in a hospital in Northern California. The process begins with identifying factors that are conflicting with compliance rates and maintenance over time. The process ends with implementing proper interventions to address and isolate those conflicting factors. This includes: providing education, changing nurses’ attitudes on the subject, eliminating information gaps, and investigating nurse/physician order sets. By working on the process, we expect 1). Increase in sepsis bundle compliance rates, 2). Increase education on subject matter, and 3). Improvement in patient-care outcomes by reducing sepsis and sepsis-related complications. It is important to work on this now because sepsis compliance rates are trending downwards, there are huge gaps in information
regarding sepsis bundles, and there exists a lack of communication between nurses/physicians on sepsis protocols.

To rectify and improve sepsis bundle compliance rates, it was found that there is a need for education, follow-up, and emphasis on peer-peer communication and understanding. Therefore, to see simultaneous improvements in sepsis bundle compliance rates and reductions in sepsis and sepsis-related complications, a quality improvement (QI) project must be initiated in order to improve future outcomes.

There exists some barriers that may potentiate the trajectory of the project. These barriers include: differences in sepsis education between nurses and physicians, differing attitudes about sepsis protocols, information/knowledge gaps and current updated findings, and differences in nurses/physicians order sets. However, through proper education and substantial training, these anticipated barriers can be prevented and mitigated, ultimately helping this Northern California hospital see increases in sepsis bundle compliance rates.

Available Knowledge

PICOT Question

The following PICOT question was used as a guide to construct a literature review using evidence-based research linked to sepsis bundle compliance: In ED nurses (P) treating patients at risk for sepsis and sepsis-related complications, how does nursing education (I) compared to no intervention (C) affect compliance rates with sepsis bundle protocols (O) from February to May 2023 (T)?

Literature Review

A comprehensive review of literature was conducted in February 2023 reviewing evidence-based research that examined sepsis management through adherence to bundle
IMPROVING SEPSIS MANAGEMENT

compliance. Evidence was gathered from peer reviewed search articles dating from 2018-2023 and the following databases were utilized: CINAHL Complete, PubMed, and Cochrane Database of Systematic Reviews. These databases were searched by using the following key terms and phrases such as: sepsis, sepsis complications, sepsis compliance, sepsis bundle, bundle management, sepsis management, and bundle fluids and antibiotics. Articles were filtered by limitations. Limitations accounted for articles that were only in English, were peer reviewed, evidence based research, systematic reviews, randomized controlled trials (RCTs), with publication dates no earlier than 2018. A total of eight articles were identified as applicable to the PICOT Question, and were evaluated using the Johns Hopkins Nursing Evidence-Based Practice guidelines (Johns Hopkins Evidence Level and Quality Guide, 2022). See Appendix A for Evaluation Table

Menchaca et al. published a longitudinal cross-sectional study in 2021 dissecting the level of impact early interventions have on reducing sepsis complications. Based on the Johns Hopkins Evidence Level and Quality Guide, this study is categorized as level 2B. This study revealed that early interventions serve as a catalyst in reducing sepsis related deaths, therefore, improving patient survivability and overall quality of life. A thorough analysis of the study showcased that changes made in the clinical settings were statistically significant because early bundle implementations led to improved sepsis management and prevented further spread of Staphylococcus aureus and Escherichia coli bacterias. Moreover, the implementation of early sepsis bundles led to increased compliance in hospital settings. Factors, such as rate of IV fluid administration, antibiotics, and lactate measurements, were all significant in determining the adherence to these bundles, and how well healthcare providers adjusted their way of practice in efforts of increasing compliance and prevention of sepsis (Menchaca et al., 2021). This specific
study highlights how early implementation of sepsis bundles improves sepsis management all while increasing compliance/adherence to these bundles.

A retrospective cohort study published by Hu et al. evaluated the impact of the timeline of sepsis bundle completion in managing clinical outcomes for patients with septic shock. Based on the Johns Hopkins Evidence Level and Quality Guide, this study is categorized as level 2B. Results from the study highlighted that there was a statistically significant reduction in deaths when bundle completions occurred within three hours, as opposed to exceeding the three hour interval period. It was found that timely completion of sepsis bundle components leads to septic shock reversal and a lower mortality rate (Hu et al., 2020). After the implementation of sepsis bundles, there was an increased compliance in IV fluid administration and antibiotics among patients experiencing septic shock outcomes. This specific study highlights how the implementation of sepsis bundles within a specific time frame leads to increased adherence and compliance to fluid administration/antibiotics, ultimately reducing deaths.

A systematic review published by Pepper et al. evaluated sepsis bundle performance by analyzing the timing of antibiotics, rate of IV fluid administration, and frequency of lactate measurements on sepsis management. Based on the Johns Hopkins Evidence Level and Quality Guide, this study is categorized as level 2B. Results from the study highlighted that antibiotics and IV fluid administration did improve sepsis outcomes by improving survivability and lowering the mortality death. However, there was no statistically significant relationship because the specific timing of antibiotics, rate of IV fluid administration, and frequency of lactate measurements did not reveal benefits when it comes to sepsis outcomes (Pepper et al., 2019). This specific study highlights how antibiotics and IV fluids improve sepsis outcomes by increasing survivability, but stronger evidence is still needed to establish specific parameters
IMPROVING SEPSIS MANAGEMENT

(timing of antibiotics, rate of IV fluids, and frequency of lactate measurements) on overall sepsis management.

A retrospective cohort study published by Baghdadi et al. compared the compliance of sepsis bundles in hospital onset sepsis and community onset sepsis. Based on the Johns Hopkins Evidence Level and Quality Guide, this study is categorized as level 2B. Findings from the study suggested that sepsis bundle compliance differs between the two settings. This is because extraneous factors and variables impact how sepsis is handled and managed in different settings. It was found that patients in the hospital setting were less likely to comply with the sepsis bundles when compared to patients in the community setting (Baghdadi et al. 2020). This study highlights how specific system-level factors impact how sepsis management is approached and vary depending on the setting. This creates a variation in the care received, leading to differences in sepsis bundle compliance/adherence.

A retrospective observational cohort study published by Milano et al. examined whether the implementation and adherence to sepsis bundles has an impact on mortality rates. Based on the Johns Hopkins Evidence Level and Quality Guide, this study is categorized as level 2B. Results from the study highlighted that there was a statistically significant relationship in terms of survivability and adherence to sepsis bundles. Bundle adherence was an important factor in alleviating severe sepsis complications and helping septic shock management (Milano et al., 2018). However, although survivability was improved, adherence did not automatically lead to lower mortality rates. This study highlights how complying with sepsis bundles has the ability to improve patient complications and achieve survivability, but does not necessarily translate to lower mortality rates. Sepsis survivability is increased with adherence to bundles, but because sepsis presents with other comorbidities, the comorbidities may have an overwhelming effect
which would not lead to a reduction in overall mortality. This study is useful in isolating factors, those related to sepsis and unrelated to sepsis, and its aggregational impact on future health outcomes.

A systematic review published by Choy et al. focused on optimal ways to reduce sepsis burdens by describing how it leads to healthcare inefficiencies and ineffectiveness. Based on the Johns Hopkins Evidence Level and Quality Guide, this study is categorized as level 1B. The authors identified educational training to be a critical component in early identification, as well as management of sepsis in the long-term (Choy et al., 2022). Results from the study highlighted that there was a statistically significant relationship in terms of providing education to the staff and improving patient-care outcomes. Supplementing the educational intervention with sepsis bundle compliance protocols has an augmentative effect in reducing the burdens of sepsis (Choy et al., 2022). Altogether, this study highlights the benefits that can be derived from staff educational training. Being aware and having a thorough understanding of sepsis protocols has the ability to significantly improve patient-care outcomes, enhance the provider-patient relationship, and generate cost savings.

Yousefi et al. created a quasi-experimental study in 2021 to investigate deficits/gaps in sepsis knowledge and its long-term impacts on sepsis management. Based on the Johns Hopkins Evidence Level and Quality Guide, this study is categorized as level 2B. The authors administered a pre-survey questionnaire to assess and create a baseline to measure the nurses’ existing knowledge on sepsis protocols. After education was provided for three weeks, the authors administered a post-survey questionnaire to measure improvements in sepsis knowledge/understanding. It was identified that education has the ability to elevate and enhance the level of care provided. For instance, aspects relating to knowledge, attitude, and practices
performed improved significantly, and served to improve patient-care outcomes/sepsis management (Yousefi et al., 2021). This study highlights that nurses need to continue to educate and immerse themselves in training modules/seminars to improve and fully exercise their full scope of practice when providing care.

A cross-sectional study published by Chua et al. examined the importance of educational interventions and the nurses’ ability to provide care to sepsis patients. Based on the Johns Hopkins Evidence Level and Quality Guide, this study is categorized as level 3B. The authors noted that the level of sepsis care being provided corresponds directly to the level of knowledge/education the specific nurse has attained (Chua et al., 2023). This means that nurses with higher level experiences and more education tend to provide more effective sepsis care than their counterparts. It was identified that sepsis education and training programs help expand both confidence and knowledge of the nurse, which translates to more effective and efficient care being delivered to improve patient-care outcomes (Chua et al., 2023). Ultimately, this study sheds light on how existing knowledge gaps/deficits can lead to adverse outcomes and degrade the level/quality of care being provided.

In summary, the collection of evidence-based research disclosed that although sepsis bundle care involves many extraneous or variable factors that impact overall care received and management, sepsis bundle adherence/compliance leads to improved survivability and prevention of complications. Since sepsis related issues pose concerns for healthcare efficiency and effectiveness, especially when it comes to the financial realm, the evidence suggests that strict sepsis management guidelines are needed and be implemented into systems to improve both patient satisfaction and long-term health outcomes. All of the studies demonstrated the intricacies associated with sepsis bundle care implementation, but through evidence-based
research and proper guidelines, sepsis complications can be greatly reduced and managed in healthcare facilities.

**Conceptual Framework**

**Rationale**

In order to implement change in the ED to improve staff compliance to sepsis protocols, educational training was the priority catalyst in raising awareness and driving change. This project focused specifically on developing sepsis fact sheets and sepsis cards that would be placed near the nursing stations and other key areas to make information easily accessible. From assessing the ED as a clinical microsystem, observations and discussions with the hospital staff revealed that there exists a deficit in sepsis knowledge/education and accessibility, as well as a lack of communication between different healthcare providers. It was noted that nurses, especially travelers, were unaware of the hospital’s sepsis protocols and did not know where to locate these sepsis forms. Therefore, by implementing and posting the sepsis fact sheets and sepsis cards throughout key areas of the hospital, accessing information will become a more seamless process for nurses and other providers to follow and adhere to. Ultimately, by implementing educational training, this helps to eliminate the information gap that is interfering with the unit’s specific needs, especially as it pertains to improving both sepsis compliance rates and patient-care outcomes.

John Kotter’s change theory consists of eight different steps that serve to bring change to systems and systems design, including to this Northern California hospital. The eight steps include: 1). Create a sense of urgency, 2). Form a powerful coalition, 3). Create vision for change, 4). Communicate vision, 5). Empower others to remove obstacles, 6). Create short term
wins, 7). Build on the change, and 8). Institutionalize the change by making it stick (Kotter, 2012).

The first step of Kotter’s theory involves creating a sense of urgency and this is applicable to this Northern California hospital because it is crucial to identify potential threats that could develop in the immediate future if these changes are not put into place. For instance, if there are no improvements in sepsis compliance and overall sepsis management, then more people will continue to experience complications and adverse effects, which could lead to a rise in nosocomial infections and deaths. It is inherent to create a sense of urgency in order to facilitate discussions and give convincing facts/statistics to enable people to start focusing and thinking about sepsis management at a deeper level. By doing this, healthcare professionals and the hospital staff will be able to intervene by implementing changes that will withstand time and prove to be effective in reducing sepsis-related complications and sudden deaths. Moreover, for the sense of urgency to be attention grabbing, it is important to implement persuasive and marketing strategies to serve as catalysts in gaining attraction. This can be done by incorporating statistical and numerical data to highlight how sepsis-related issues lead to health complications, infections, and death. Ultimately, by creating a sense of urgency, healthcare professionals and the hospital staff will become more engaged in bringing about the necessary changes and revisions to improve patient-care outcomes.

The second step of Kotter’s theory involves forming a powerful coalition and this aligns perfectly with the first step of creating an urgency. Healthcare professionals, hospital staff, and change leaders must all be involved and make contributions in order to drive change. By identifying leaders from various different backgrounds, fields, and disciplines, effective collaboration skills are deeply rooted in ensuring that there are no weaknesses within the system.
of this Northern California hospital. With team building comes emotional commitment, which are great indicators of steering this hospital in the right direction to implement change and improve overall sepsis management.

By forming a powerful coalition, the team will create a vision for change, which is the third step in Kotter’s change theory. This will be possible by the contributions made by each of the members in the coalition. By determining which values are central to the change, it will be less difficult to develop a summary that captures their viewpoint of how this Northern California hospital will progress and look in the future. During the creation of this vision, each member will have a short amount of time allocated to describe their own personal vision of change; this will provide them with context and enable the staff to evaluate and consider different perspectives. Utilizing this strategy is important because it will cohesively provide a holistic perspective combining ideologies of each of the members.

The fourth step in Kotter’s change theory is communicating vision for buy-in. Once each member has developed a vision board for change, a staff meeting will be conducted to discuss the various plans, as well as address concerns in an open and honest manner. During the course of this meeting, vision for change will be applied to all aspects of operations, including training, performance, and learning modules. At this point, it is important to piece together and tie everything back to the original vision statement.

This leads to the fifth step, which stresses the need to empower others to remove obstacles. Empowering can be strengthened by recognizing and rewarding members for initiating change(s) and allowing for team input. Team input will be important for healthcare professionals and hospital staff throughout the training/learning processes so that they are able to improve sepsis and sepsis-related complications by using evidence-based research and principles. This
ensures that systems within this Northern California hospital are in line with the vision, and will also help in identifying those that seem to deviate from change (resistance). Ultimately, check-ins are important in identifying resistance to change or any other barriers that may transpire. This will allow the members to take action to quickly remove the barriers, all while staying aligned with the vision and values of this hospital.

Kotter’s theory of change now transitions onto creating short-term wins, which is the sixth step. This will occur during the first few weeks of carrying out or implementing the change project, especially during training and learning modules. Small wins will keep the members motivated in striving for the ultimate, long-term goal of making change to improve patient-care outcomes. This will also provide justification to the members that this investment is worthy and allow them to visualize the attainability of the target. Within this system, it becomes important to reward the people who are helpful in meeting the goals because small, short-term wins lead to long, aggregational achievements.

Building on the change is the next and seventh step of Kotter’s change theory. If the training/learning modules deem to be successful, then it is imperative to set goals to continue building on the momentum that has been achieved. The idea of continuously improving and exceeding the minimum goal will result in greater, more effective changes for this hospital in terms of improving sepsis compliance and overall sepsis management. Ultimately, by keeping ideas fresh, the members will continue to show enthusiasm in implementing further changes to improve patient-care outcomes.

Lastly, if success has been achieved, it is appropriate to institutionalize the change by making it stick, according to the last step in Kotter’s change theory. This means that improving sepsis compliance, and then improving patient-care outcomes using evidence-based research and
principles will be the new protocol, and mandatory for new hires or professionals to follow in this Northern California hospital. This training/educational program and its associated ideologies will become the core of this hospital. In order to make members of the system feel supported, and in hopes of continuing to increase compliance/adherence, it is important to talk about progress by providing words of encouragement and additional education. During this step, in order for the change to be seen, sepsis fact sheets and sepsis cards will be placed at the nursing stations, key areas, and lunch rooms to provide easy access to information.

**Specific Project Aim**

The specific aim of this project is to increase compliance with CMS SEP-1 sepsis management bundle to exceed the current existing average of the ED sepsis adult patient population by May 1, 2023. It is the project’s goal that nursing education will maintain or exceed the organization's current goal of 80% CMS SEP-1 bundle compliance, increase usage of the RN ‘Suspected Sepsis’ in triage procedures’ order set, and increase awareness and usage of the “.nursingsepsishandoff” smartphrase when transferring care of a patient. Through nursing education, satisfying these three objectives will significantly improve patient-care outcomes as sepsis management will become more prioritized.

**Methods**

**Context & Data Source**

This quality improvement project was implemented in the ED for one medical center located in Northern California. The facility has 274 licensed beds and has many features such as an expanded ED, thirteen operating rooms, and a complex labor-and-delivery department. In particular, the ED consists of healthcare providers such as physicians, physicians assistants, nurse practitioners, and registered nurses, that all work collaboratively to improve patient-care
outcomes in the ED. With recent developments and changes, this hospital continues to transform the landscape of healthcare in Northern California.

Prior to making implementations of the project, factors such as efficiency, effectiveness, and finances were taken into consideration. It was noted that ME-MSN clinical nurse leader (CNL) students were to make these implementations using a cost-benefit analysis. The CNL students created sepsis fact sheets and sepsis cards to be placed throughout key areas of the hospital or in proximity for easy access to pertinent information. The students have been in communication with the Sepsis Coordinator, and have received suggestions on how to implement these changes successfully. Additionally, the Interim Sepsis Manager has provided constructive feedback and approval for these materials to be distributed throughout this Northern California hospital. Therefore, staff education for this quality improvement project will be done by highlighting the importance of sepsis compliance through visual interpretations/representations, such as those in the form of fact sheets, informational cards, and posters. Because the students are facilitating this endeavor and creating these representations using materials/supplies that they already have, educating the staff will not lead to additional costs or financial burdens. Moreover, using the cost-benefit analysis tool reveals that implementation of these changes will result in huge savings in the future. This change project is beneficial in that it is inexpensive to implement, but also leads to greater savings in the future. By improving sepsis compliance/adherence, sepsis and sepsis-related complications will be detected earlier and treated more efficiently. This means that the hospital will save costs because disease progression will be halted, complications and adverse effects will be treated quickly, and patient length of stays (LOS) will be reduced. Overall, evidence-based research showcases that sepsis care causes financial loads and burdens on hospitals because of disease progression. By early detection,
healthcare providers will be able to prevent progression, which, in turn, will shorten LOS and generate more savings for the hospitals.

SWOT Analysis

A strengths, weaknesses, opportunities, and threats (SWOT) analysis was completed prior to implementation of this quality improvement project to examine how extraneous factors can impact the trajectory and outcomes of this initiative. Some noted strengths include: sepsis coordinator who is supportive in improving sepsis bundle compliance and patient-care outcomes, new interim manager willing to help facilitate changes and improve dynamics, and simplicity of the nature of the change. These strengths are important because it helps to streamline the focus in a busy ED all while being relatively inexpensive to implement and carry out. The ED leadership team has been very supportive in helping us gain approval to implement these changes by distributing sepsis fact sheets and sepsis information cards throughout the hospital. On the other hand, some noted weaknesses include: lack of nurse order set usage prior to doing bundles, microsystems inconsistent with sepsis management in regards to defined roles, and resistance to change. Although the availability of fact sheets and cards would make the information more accessible, some providers may feel overwhelmed as it would add more tasks to complete, ultimately changing their workflow dynamics, responsibilities, and work satisfaction. Moreover, noted opportunities include: improvement in compliance rates, improvement in patient-care outcomes, increase in sepsis prioritization, increase in cost savings, and improved healthcare quality indicators. In contrast, noted threats include: nonadherence to changes, nursing burnout, high census, provider shortage, and high turnover rates.
Intervention

John Kotter’s change theory consists of eight different steps that serve to bring change to systems and systems design, including to this Northern California hospital. The project initiative started by meeting with the ED Sepsis Coordinator to address concerns regarding a low sepsis compliance rate, which results in sepsis-related complications and deaths. The main purpose of this initial interaction was to highlight the need to improve patient-care outcomes by using sepsis bundles for early detection, prevention, and treatment of sepsis through nursing education and campaigning for sepsis. Literature reviews using evidence-based research were presented to the ED staff to eliminate the existing knowledge/educational gaps as well as campaign for sepsis. Because a lack of education and campaigning were found to be the main catalysts in controlling sepsis compliance, sepsis fact sheets and sepsis informational cards were created to be distributed throughout the hospital to raise awareness and make information more easily accessible. The basis behind this quality improvement project was then discussed with the Sepsis Coordinator and Interim Sepsis Manager, as well as the ED nurses. They provided constructive feedback and suggestions to be incorporated within the fact sheets and information cards. In turn, the project was revised to accommodate their responses. The project revisions were emailed back to them, and approval was gained.

Study of the Intervention

In efforts to obtain a baseline of the current gaps in knowledge/education, a pre-survey questionnaire was administered to measure ED staff competency in terms of compliance rates and sepsis management. The answers generated by the pre-survey helped establish a baseline that would be utilized in order to amend and modify specific educational interventions and goals.
After the administration of the pre-survey, a meeting was held between the sepsis coordinator to discuss optimal ways in increasing sepsis awareness, accessibility and availability of critical sepsis information, and in turn, improving sepsis bundle compliance rates and patient-care outcomes. Suggestions and recommendations were made, and our interventions and change strategies were revised accordingly.

It was noted that the primary issues were related to gaps in education, as well as lack of awareness/concern about sepsis protocols. In efforts to capture and alleviate these two issues, it was ideal to create visual representatives and signages to make sepsis information more easily accessible and in proximity.

Educational sepsis handouts, small sepsis informational cards, and posters were created to help bring awareness on the subject matter, as well as make it easier for the ED staff to access critical sepsis data/information. These handouts and cards were placed in key, important areas and in proximity, such as near the nursing stations.

After the implementation of educational handouts and fact sheets, a post-survey was administered to the ED staff to analyze improvements in sepsis education, compliance, and awareness.

**Measures**

For this quality improvement project, many indicators are to be utilized to capture whether the implementations were successful in causing improvements in the ED. One important indicator would be the compliance rate. By distributing sepsis fact sheets and information cards, it is expected for compliance to increase because of easy accessibility to information as well as through visual representations and management; this helps to eliminate the educational gaps by achieving accessibility all while establishing visual means and management. Another indicator of
improvement would be reduction and appropriate treatment of sepsis and sepsis-related complications, such as septic shock. Finally, staff satisfaction and work dynamics are important indicators due to high census, provider shortages, & high turnover rates. Adding in additional tasks for nurses to follow and adhere to may result in burnout and a feeling of overwhelmedness. Therefore, monitoring staff satisfaction is an important indicator to examine whether this implementation is a success or failure.

Expected Results

The primary goal in initiating this quality improvement project was to improve sepsis management and improve patient-care outcomes by focusing on bundle compliance rates and providing education accordingly to place emphasis on the subject matter, as well as eliminating the disconnect and disempowerment between RNs/MDs in regards bundle communication. The main expectation is that this project will meet the standards described above and continue to serve as a model for improving healthcare delivery and efficiency, especially in the realm of sepsis and sepsis-related complications. It is imperative that nurses and staff know hospital protocols, understand sepsis thoroughly, and know its critical role in patient mortality and health outcomes. Therefore, by initiating this quality improvement project, it was expected that providing education and increasing awareness about sepsis would, in response, increase bundle compliance rates, reduce sepsis-complications, and increase bundle communication between RNs/MDs.

A conclusion that may emerge from this quality improvement project is that team dynamics and communication play a significant role in determining success to improve bundle compliance rates and ability to disseminate the importance of sepsis protocols. Indicators, such as level of awareness/knowledge about sepsis, existing information gaps/deficits, nurses’
attitudes on the subject matter, and mismatch in nurse/physician order sets serve to alter both team dynamics and communication. It was expected that by ameliorating the indicators described above, sepsis care would become more prioritized for improving patient-care outcomes and overall sepsis management.

**Nursing Relevance**

Registered nurses (RNs) are essential and considered the backbone of healthcare because a significant portion of their work relates to interaction, education, and advocacy in order to improve patient-care outcomes. In relevance with the topic of this project, RNs are needed for sepsis management because they are able to identify early signs and symptoms associated with sepsis and monitor those who are at risk for sepsis or sepsis-related complications. The RNs ability to recognize and take appropriate actions to prevent sepsis is a huge determinant of health care efficiency and effectiveness if done correctly. Although RNs have the scope of practice in overall sepsis management, there are specific protocols and guidelines unique to each hospital/facility that must be followed and adhered to. The timing of delivery of care, as well as being knowledgeable about protocols, play a significant role in standardizing sepsis care and increasing awareness of the topic. For instance, it is important for RNs to follow these protocols in order to gain the necessary skills and information needed to recognize, prevent, and treat sepsis and sepsis-related complications. Moreover, in order to achieve the following objectives: 1). Exceed current SEP-1 compliance average, 2). Improve compliance with initial nurse order set usage, and 3). Increase usage of “.nursesepsishandoff” smartphrase, RNs must possess the foundational education needed for timely effectiveness and prompt sepsis management. Because there often exists a gap in information/knowledge or understanding the importance of compliance to sepsis bundles, education is used as an intervention to improve both knowledge
and awareness of the topic. This can be done through signage, posters, handouts, or informational fact cards.

**Clinical Nurse Role Relevance**

A Clinical Nurse Leader (CNL) is a nurse who has completed a comprehensive master’s education program and acts as a leader within a microsystem, in addition to performing regular tasks/duties that a registered nurse (RN) is able to do. A CNL acts as a liaison between multiple fields of nursing with the primary goal of improving patient-care outcomes using an evidence-based approach. One of the main strengths of a CNL is being able to circumnavigate multiple components of nursing practice by applying appropriate evidence-based practices for long-term success and stability. Based on their skill set and knowledge, CNLs have the ability to dissect the overall fiscal performance of a microsystem, including assets, liabilities, revenues, and expenses while also considering patient-centered care (AACN, 2007). Additionally, CNLs can recognize patterns relating to numerical trends and analytical data sets. Consequently, CNLs can help integrate new plans of action and/or changes to decrease aggregate costs/wastes and improve healthcare efficiency/effectiveness.

A core competency of the CNL that is relevant to sepsis management is being an *Educator*. This CNL role can be applied to the emergency department (ED) setting in order to implement changes because they practice at the microsystem level. CNLs are able to apply evidence-based practice to obtain quality knowledge, safety indicators, and other statistical processes needed to improve patient-care outcomes and reduce complications (AACN, 2007). In conjunction with this project, the CNL is able to educate by creating signage, posters, handouts, and informational sepsis cards to increase staff awareness about sepsis screening and early identification. Furthermore, the core competency of *Lateral Integration* is also applicable in
improving sepsis outcomes because the CNL communicates, collaborates, coordinates, and evaluates sepsis healthcare delivery across different settings. In relevance with this project, the CNL will interact with the RNs, nurse managers, physicians, and sepsis committees to improve compliance to the CMS SEP-1 sepsis bundles to achieve optimal patient-care outcomes and a reduction in complications. Ultimately, this role allows for patient-centered care that is of quality and effectiveness across the healthcare continuum. Lastly, the core competency of Outcomes Manager is relevant to the ED and this project because the CNL has the ability to synthesize evidence-based research in order to improve sepsis management and effectiveness of delivery of patient-centered care. This role allows for quality improvement and safety as the CNL is able to identify indicators leading to inadequate performance and other opportunities to implement changes to increase sepsis care delivery and efficiency.

Results

Outcome Measure Results

This performance quality improvement (QI) was implemented according to the timeline created during the initial stages of planning (see Appendix B). The results revealed that the education initiatives were quite effective in helping this Northern California hospital improve sepsis awareness and prioritization in regards to overall sepsis management and improving long-term patient care outcomes. It was reported that since the education implementations, such as the sepsis handouts and laminated sepsis information cards, the sepsis bundle compliance rates have been increasing. The RN order set usage has also increased by 27.6% from pre to post-survey. Moreover, it was found that the usage of the RN sepsis handoff smartphrase increased from pre to post-survey. However, the familiarity of the smartphrase actually decreased from pre to post-survey. This is an unexpected finding and can be attributed to the RNs now
being pressured to use the smartphrase on a normality basis even without knowing its intended purpose or use. Lastly, there was a significant increase in the availability & accessibility to sepsis information, sepsis bundle protocols, sepsis order set usage, and handoff smart phrase usage as a result of the education initiative.

**Summary**

This performance quality improvement project achieved the specific project aim because it increased compliance with CMS SEP-1 sepsis management bundle to exceed the existing average in the ED sepsis adult patient population by May 1, 2023. The implementation of the educational initiatives through signages, handouts, and information cards had a positive outcome because all four project goals were achieved. For example, the implementation served to increase sepsis bundle compliance rates, increase RN order set usage, increase RN sepsis handoff smartphrase usage, and increase availability & accessibility to relevant sepsis information/statistics all while encouraging nurse empowerment when it comes to speaking up about sepsis bundles. This showcases the positive impacts of nursing education in increasing staff awareness, prioritization, and nurse empowerment with an emphasis on closing the gap and improving patient-care outcomes through effective sepsis management.

These interventional outcomes also strengthened the project rationale because educational training was found to be the main catalyst in increasing staff competency, staff empowerment, and understanding of sepsis management. By developing handouts and small sepsis information cards and placing them near the nurses’ stations and in other key areas, accessibility and availability to information became a more smoother and seamless process. This, in turn, contributed to increases in sepsis compliance and helped to eliminate existing knowledge gaps/deficits.
There are a culmination of factors that contributed to the success of this project and achieving the four targeted objectives. Performing a microsystems assessment during the initial stages of the project served great benefits in identifying the hospital’s deficiencies in sepsis prioritization and awareness, as well as a lack of attention being directed to this subject matter. Identifying such information was crucial in establishing and guiding the main mission and focus of the project.

During hospital observations and interactions, it was evident that there was a lack of communication, especially between RNs and physicians. In a busy ED setting like that of this Northern California hospital, it is very important for the sepsis coordinator to keep staff members engaged and in line with the organizational goals and initiatives. Through proper leadership support, advocacy groups, and student nurse leaders, educational interventions served to improve sepsis outcomes for this hospital.

It was also noted that in order to increase staff motivation and attention towards the educational interventions, some form of reward system or incentives were needed. During both the pre and post-survey collections, it was found that providing some type of reward stimulus served to increase staff participation and engagement. When doughnuts and candy were offered as a result of completing the survey, more responses were recorded. Moreover, it was also found that different types of delivery modes and teaching approaches served to impact staff engagement and participation. For instance, when the staff were presented with physical copies of the survey rather than a solo QR code to scan, more responses were recorded. This shows that although technology has the ability to drive healthcare efficiency and speed, resorting to old-fashioned ways of filling out forms by pen and paper seemed to be most beneficial in this specific situation.
Overall, the successful changes of this project were achieved through staff education and closing knowledge gaps, increasing availability & accessibility to pertinent sepsis information, increasing attention and diverting focus on the subject matter, placing emphasis on prioritization, as well as offering incentives for completing the surveys in conjunction with offering multiple ways of completing the surveys (electronically and on paper).

**Conclusions**

In conclusion, this performance quality improvement initiative is considered a success because the interventions and implementations significantly improved outcomes for this Northern California hospital. This QI project addressed the following four main objectives with improvements in regards to: 1). Increase in sepsis bundle compliance, 2). Increase in RN order set usage, 3). Increase in sepsis handoff smartphrase, and 4). Increase in information about sepsis bundle protocols, sepsis order set usage, and handoff smartphrase through staff education.

During the initial planning phase of this project, it was indicative that the ED within this medical center experienced unsteady changes and inconsistencies when it came to the CMS SEP-1 guidelines and protocols. It was evident that there existed opportunities to improve multiple aspects including compliance rates, increasing staff education, need for sepsis prioritization, and overall sepsis management to improve patient-care outcomes and reduce complications. This QI project exhibited that change is possible through strategic planning and implementation of educational initiatives to raise awareness and understanding on the subject matter. With continued support for these quality improvement performance initiatives, it is expected that this Northern California hospital will continue to place emphasis on improving sepsis management outcomes in the future and stress the relevance of education by identifying existing knowledge gaps/deficits.
Ultimately, although this QI project is deemed a success in terms of satisfying the four targeted objectives, it is still important for this medical center to continue to use and educate the staff about the importance of sepsis and reducing sepsis-related complications. The sustainability and longevity of this project will be depended upon staff engagement and participation to advocate for effective sepsis management and long-term outcomes. This can be achieved by forming some type of sepsis committee(s) or advocacy group, combined with sepsis champions, to further isolate and optimize early sepsis management and achieve long term success.
References


## Appendix A

### Evaluation Table

<table>
<thead>
<tr>
<th>Study</th>
<th>Design</th>
<th>Sample</th>
<th>Outcome/Feasibility</th>
<th>Evidence Rating</th>
</tr>
</thead>
<tbody>
<tr>
<td>Baghdadi, J. D., Wong, M. D., Uslan, D. Z., Bell, D., Cunningham, W. E., Needleman, J., Kerbel, R., &amp; Brook, R. (2020). Adherence to the SEP-1 sepsis bundle in hospital-onset v. community-onset sepsis: A multicenter retrospective cohort study. <em>Journal of General Internal Medicine, 35</em>(4), 1153–1160. <a href="https://doi.org/10.1007/s11606-020-05653-0">https://doi.org/10.1007/s11606-020-05653-0</a></td>
<td>Retrospective cohort study</td>
<td>Participants: 4658 inpatients age 18 or older from four university hospitals in California</td>
<td>Patients experiencing hospital onset sepsis were less likely to comply with the sepsis bundle compared to those with community onset sepsis. This study highlights how specific system-level factors impact how sepsis management is approached and vary depending on the setting. This explains the variation in the care received, leading to differences in sepsis bundle compliance/adherence</td>
<td>2B</td>
</tr>
<tr>
<td>Choy, C. L., Liaw, S. Y., Goh, E. L., See, K. C., &amp; Chua, W. L. (2022). Impact of sepsis education for healthcare professionals and students on learning and patient outcomes: A systematic review. <em>The Journal of Hospital Infection, 122</em>, 84–95. <a href="https://doi.org/10.1016/j.jhin.2022.01.004">https://doi.org/10.1016/j.jhin.2022.01.004</a></td>
<td>Systematic review</td>
<td>Criteria: Included studies from six different databases that emphasized sepsis education/train ing to nursing students and HCPs</td>
<td>Results from the study highlighted that there was a statistically significant relationship in terms of providing education to the staff and improving patient-care outcomes. Supplementing the educational intervention with sepsis bundle compliance protocols has an augmentative effect in reducing the burdens of sepsis</td>
<td>1B</td>
</tr>
<tr>
<td>Chua, W. L., Teh, C. S., Basri, M. A. B. A., Ong, S. T., Phang, N. Q. Q., &amp; Goh, E. L. (2023).</td>
<td>Cross sectional study</td>
<td>Participants: RNs working in inpatient</td>
<td>The authors noted that the level of sepsis care being provided corresponds directly to the level of</td>
<td>3B</td>
</tr>
<tr>
<td>wards and/or EDs from three major hospitals in Singapore</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>knowledge/education the specific nurse has attained. This means that nurses with higher level experiences and more education tend to provide more effective sepsis care than their counterparts. It was identified that sepsis education and training programs help expand both confidence and knowledge of the nurse, which translates to more effective and efficient care being delivered to improve patient-care outcomes</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Retrospective cohort study</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Participants: 1052 septic shock patients, 8% allocated to group 1, 26% to group 3, the remaining to group 3.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>It was found that timely completion of sepsis bundle components leads to septic shock reversal and a lower mortality rate. The study shows how the implementation of sepsis bundles within a specific time frame leads to increased adherence and compliance to fluid administration/antibiotics</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Longitudinal cross-sectional study</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Participants: 100,000+ participants; 50% tracked over a period of time, 50% tracked at a specific point in time</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Factors, such as rate of IV fluid administration, antibiotics, and lactate measurements, were all significant in determining the adherence to these bundles, and how well healthcare providers adjusted their way of practice in efforts of increasing compliance and prevention of sepsis</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>This study highlights how early implementation of sepsis bundles improves sepsis management all while increasing compliance/adherence to these bundles.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Retrospective observational cohort study</td>
<td>Participants: 4582 patients from Los Angeles County Department of Health Services from January 2012 to December 2014</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>This study highlights how complying with sepsis bundles has the ability to improve patient complications and achieve survivability, but does not necessarily translate to lower mortality rates. Sepsis survivability is increased with adherence to bundles, but because sepsis presents with other comorbidities, the comorbidities may have an overwhelming effect which would not lead to a reduction in overall mortality.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2B</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

| Systematic review | Participants: 11303 control subjects and 4977 subjects that received the bundle (antibiotic and fluids with and without vasopressors) |
| The study highlighted that antibiotics and IV fluid administration did improve sepsis outcomes by improving survivability and lowering the mortality death. However, there was no statistically significant relationship because the specific timing of antibiotics, rate of IV fluid administration, and frequency of lactate measurements did not reveal benefits when it comes to sepsis outcomes. |
| 2B |

| Yousefi, H., Nahidian, M., & Sabouhi, F. (2012). Reviewing the effects of an educational program about sepsis care on |
| Quasi-experimental study | Participants: 64 nurses with at least 1 yr experience in |
| It was identified that education has the ability to elevate and enhance the level of care |
knowledge, attitude, and practice of nurses in intensive care units. *Iranian Journal of Nursing and Midwifery Research, 17*(2 Suppl 1), S91–S95.

| the ICU provided. For instance, aspects relating to knowledge, attitude, and practices performed improved significantly, and served to improve patient-care outcomes/sepsis management | 2B |
## Appendix B

### Timeline

<table>
<thead>
<tr>
<th>Project start: February 2023</th>
<th>February 2023</th>
<th>March 2023</th>
<th>April 2023</th>
<th>May 2023</th>
</tr>
</thead>
<tbody>
<tr>
<td>Project end: May 2023</td>
<td>--------------</td>
<td>-----------</td>
<td>------------</td>
<td>----------</td>
</tr>
</tbody>
</table>

- Microsystems assessment
- Literature Review part 1 
 & 2
- Meet with Sepsis Coordinator
- Present QI Initiatives
- Making visual representations (sepsis handouts, sepsis information cards)
- Gain feedback
- Make revisions
- Gain approval to distribute materials
- Staff Education
- Observations
- Post-survey comparison
- Share results with Sepsis Coordinator and Interim Manager
- Share results with ED Staff
Appendix C

Pre-Survey Results
Appendix D

Post-Survey Results
Appendix E

SWOT Analysis

**STRENGTHS**
- New interim manager to help facilitate changes and improve dynamics
- Approval of Sepsis fact sheet/cards
- Ability to observe in the ED when needed

**WEAKNESSES**
- Lack of education regarding the importance of prioritizing sepsis management
- Lack of nurse order set usage prior to doing bundles
- Microsystems are not consistent with sepsis management in regards to defined roles, communication (RN to physician), and usage/implementation of sepsis bundles

**OPPORTUNITIES**
- Increase attention/prioritization of sepsis care through performance improvement initiatives such as education and reinforcement
- Increase staff awareness by making sepsis information easily accessible and in proximity
- Improving RN to physician communication about overall sepsis management
- Increase in nurse order set usage prior to doing bundles

**THREATS**
- Lack of education and compliance to bundles
- Lack of motivation to participate and take initiative in sepsis management
- Staff feeling overwhelmed and burnt out
- Miscommunication and disagreements between staff about sepsis care protocols
- High census, provider shortage, & high turnover rates
Appendix F

PDSA Cycle

**Act**
Survey on sepsis bundle compliance to monitor compliance and obtain data on improvement.

**Plan**
Improve communication and compliance by placing sepsis handouts and cards throughout the ED and on the computers. Empower staff to be patient advocates by monitoring everyone to help follow the sepsis guidelines thoroughly.

**Study**
Baseline data was collected on survey results, compare pre and post surveys after implementation has been completed.

**Do**
Develop pre and post survey on sepsis compliance and analyze the data.
Appendix G
Project Charter

Mission Statement: Competency in sepsis and sepsis bundle compliance for all nurses

Vision Statement: To improve patient-care outcomes by educating nurses about the importance of compliance/adherence to sepsis bundles and bring awareness about the prioritization about sepsis management

Outcome Objective: Provide the structure, direction, and focus for all efforts through the utilization of education for sepsis and sepsis bundle compliance

Goal: Use education to improve compliance with CMS SEP-1 bundles, and therefore, reduce sepsis-related complications and in turn improve patient-care outcomes.

1. Create training modules that healthcare workers must complete
   a. These modules will focus on antibiotic and IV fluid orders (proper administration, documentation, and charting)

2. Implementation of huddle messages
   a. RNs, MDs

3. RCA (root cause analysis)
   a. Review fallouts, Sepsis champions

4. Implement and utilize sepsis reports and real time audit tools/applications
   a. Adopt better technologies to facilitate patient-care outcomes

5. Monthly staff meetings for education and updates
   a. RNs partner with Physician sepsis champions

Background: Sepsis is a life-threatening organ dysfunction that is caused by an infection and is considered as a medical emergency, so it is imperative to take immediate actions (Gyawali et al., 2019). Sepsis and sepsis-related complications now affect more than 1.7 million patients in the United States annually, contributing to more than 11 million deaths each year (Centers for Disease Control and Prevention, 2022). In fact, it is the number cause of death for young infants and continues to impact more than 3 million newborns every year (Liang et al., 2018). Moreover, in addition to the high mortality rates associated with sepsis and sepsis-related costs, sepsis negatively impacts the econometrics of healthcare delivery and efficiency because of excessive costs and liabilities (Paoli et al., 2018). For instance, sepsis leads to a high burden of costs, as billions are spent each year to help mediate sepsis and its negative effects (Van den Berg et al.,
IMPROVING SEPSIS MANAGEMENT

2022). These statistical findings indicate that it is important to manage sepsis and sepsis-related complications in order to not only lower healthcare costs, but also to improve patient-care outcomes and improve healthcare delivery through effectiveness and efficiency.

**Primary drivers:**
1. Reduction in IV Fluid fallouts
2. Reduction in Lactate fallouts
3. Reduction in Antibiotic fallouts

**Secondary drivers:**
1. Communication with physicians, labs
2. Accurate documentation
3. Timing of getting the blood cultures
4. Improve compliance with sepsis order sets by MD

**Changes through Education:**
1. Adding hand-off tools that can be used by RNs
2. Huddle messages
3. Online Training Modules and compliance monitoring
4. Order set usage rates; update and educate at monthly meetings
5. Smart phrase education
6. Handouts and posters on bulletin boards for constant reminders
Appendix H

Clinical Nurse Leader Competencies Applied to QI

**Educator**
- Creation of signages, posters, handouts, and informational cards to increase availability and accessibility to pertinent sepsis information.
- Increase awareness of subject matter for prioritization

**Lateral Integrator**
- Communicates, collaborates, coordinates, and evaluates sepsis healthcare delivery across different settings and continuums

**Outcomes Manager**
- Synthesizes evidence-based research to improve sepsis management
- Promotes effective/efficient delivery of patient-centered care
Appendix I

Educational Interventions
Appendix J

Numerical Representations and Charts

RN Standardized Procedure Orderset Usage

- RN Standardized Procedure Orderset Usage May 2022 - April 2023
- RN Standardized Procedure Orderset Usage - CPMC VNC

Clinical Integration/Variation Reduction

Date Processed: April 11, 2023

<table>
<thead>
<tr>
<th>May 22</th>
<th>June 22</th>
<th>July 22</th>
<th>Aug 22</th>
<th>Sept 22</th>
<th>Oct 22</th>
<th>Nov 22</th>
<th>Dec 22</th>
<th>Jan 23</th>
<th>Feb 23</th>
<th>Mar 23</th>
</tr>
</thead>
<tbody>
<tr>
<td>31%</td>
<td>41%</td>
<td>34%</td>
<td>42%</td>
<td>54%</td>
<td>32%</td>
<td>37%</td>
<td>39%</td>
<td>43%</td>
<td>42%</td>
<td>23%</td>
</tr>
</tbody>
</table>

*Currently April 2023 is at 50%

CPMC CMS SEP-1 Bundle Compliance (all campuses)

Unable to view as VNC alone- this is combined for all campuses, and reflects the whole hospital not just ED.