Increasing Compliance Through Nurse Education on the Bundle

Zachary Harrison-Evans

University of San Francisco, zkharrisonevans@dons.usfca.edu

Follow this and additional works at: https://repository.usfca.edu/capstone

Part of the Nursing Commons

Recommended Citation
Harrison-Evans, Zachary, "Increasing Compliance Through Nurse Education on the Bundle" (2023).

Master's Projects and Capstones. 1517.
https://repository.usfca.edu/capstone/1517
Increasing Compliance Through Nurse Education on the Bundle

Zach Harrison-Evans

School of Nursing and Health Professions, University of San Francisco

NURS 653-32: Internship

Professor Scout Hebinck

May 5, 2023
Table of Contents

Abstract........................................................................................................................................... 4

Problem........................................................................................................................................... 4

Context........................................................................................................................................... 4

Intervention...................................................................................................................................... 4

Measures.......................................................................................................................................... 5

Results........................................................................................................................................... 5

Conclusions.................................................................................................................................... 5

Introduction.................................................................................................................................. 6-7

Statement of Problem & Problem Description............................................................................. 7-9

Project Overview............................................................................................................................ 9-11

Available Knowledge...................................................................................................................... 11

PICOT Question............................................................................................................................... 11

Literature Review............................................................................................................................. 11-15

Conceptual Framework..................................................................................................................... 15

Rationale.......................................................................................................................................... 15-20

Specific Project Aim......................................................................................................................... 20

Methods.......................................................................................................................................... 20

SWOT Analysis................................................................................................................................. 20-22

Context and Data Source.................................................................................................................. 22-23

Measures.......................................................................................................................................... 23-24
IMPROVING SEPSIS COMPLIANCE

Intervention.......................................................................................................................... 24-25

Study of Intervention............................................................................................................ 25-26

Expected Results.................................................................................................................. 26-27

Nursing Relevance............................................................................................................. 27-28

Clinical Nurse Role Relevance.......................................................................................... 28-30

Results................................................................................................................................. 30

Outcome Measure Results................................................................................................. 30

Summary.............................................................................................................................. 31-32

Conclusions......................................................................................................................... 32-33

References............................................................................................................................ 34-38

Appendix A. Evaluation Table............................................................................................ 39-41

Appendix B. Timeline......................................................................................................... 42-43

Appendix C. SWOT Analysis.............................................................................................. 44

Appendix D. PDSA Cycle.................................................................................................... 45

Appendix E. Pre-Survey Results......................................................................................... 46

Appendix F. Post-Survey Results....................................................................................... 47

Appendix G. Projects Mission and Vision Statement Goals.............................................. 48-49

Appendix H. Educational Implementations ....................................................................... 50
Abstract

In an effort to decrease complications and events connected to sepsis in the ED, there is room for improvement with relation to sepsis care and compliance rates. Timely sepsis management and gains in compliance/adherence rates are hindered by SEP-1 fallouts and requirements related to knowledge gaps concerning sepsis bundle procedures, nurses' attitudes about implementing the protocols, and disparities in nurse/physician order sets. It has been determined that the use of standardized protocols and order sets are not being utilized. This is a process gap and a critical area for improvement. Inadequate fluid and lactate documentation, a lack of education, and failure to implement are all thought to be obstacles that lower the hospital's rate of compliance with the SEP-1 rules and protocols.

Problem: Sepsis management and patient care outcomes can be improved by complying with and adhering to sepsis bundles. However, over time, the compliance rates at this medical center have fallen. Following the completion of a root cause analysis (RCA), it was found that non-compliance, educational gaps, all the disjointed communication, and a lack of prioritization may all have contributed to the drop.

Context: Following the completion of a microsystem assessment on the ED floor, it was discovered that a stronger emphasis on sepsis care management has the potential to improve patient outcomes while reducing hospital expenses, which will enhance hospital revenue by lowering overall expenditures.

Intervention: Small sepsis instructional cards and signage, as well as informational handouts and data sheets, were developed to fill in the gaps and deficiencies in sepsis teaching. To raise staff knowledge of the significance of sepsis prioritizing and to increase access to crucial sepsis information, these materials were dispersed across the hospital.
IMPROVING SEPSIS COMPLIANCE

**Measures:** The outcome metrics applied to ED sepsis patients who met the criteria for the CMS SEP-1 sepsis management bundles. Key metrics included adherence to bundles, knowledge and comprehension of sepsis improvement, sepsis awareness, staff satisfaction, and team dynamics.

**Results:** The sepsis coordinator stated that from February 2023 to May 2023, this Northern California hospital saw an increase in sepsis bundle compliance rates as a result of the education activities. Additionally, from the pre to post survey, the use of the RN order set increased from 42% to 69.6%. Between the pre- and post-survey periods, the use of the RN sepsis handoff smartphrase increased from 9.5% to 17.4%. However, the familiarity of the smartphrase decreased from 52.4% to 34.8% between before and after the survey. When asked about the education program's impact on their awareness of sepsis bundle procedures, the usage of sepsis order sets, and the use of handoff smartphrases, 95.7% of registered nurses who participated in the post-survey agreed.

**Conclusions:** This quality improvement performance project generated interventions that enabled the sepsis compliance rate at this Northern California Medical Center to significantly rise from an average of 41% to 71.4% as of March 2023. The project's specific objective was to increase CMS SEP-1 sepsis management bundle compliance levels above the existing ED sepsis adult patient population average of 41% by May 1, 2023, and this objective was achieved. During the four-month period (February–May 2023) there have been significant improvements in increasing sepsis bundle compliance rates, removing knowledge gaps and deficiencies, and increasing sepsis awareness and prioritizing. Within this medical center, the project contributions are anticipated to be used and included in ongoing initiatives to improve CMS compliance for the sepsis bundle.
Introduction

Sepsis kills more people each year than breast cancer, prostate cancer, and HIV/AIDS combined (Kempker et al., 2018). In fact, it accounts for more hospital mortality in the United States than either a heart attack or a stroke. More than a million Americans suffer from sepsis each year, and up to half of those cases end in mortality (Kempker et al., 2018). Sepsis, the body's overwhelming and occasionally fatal reaction to infection, can result in organ failure, tissue damage, and even death. Widespread inflammation brought on by immunological molecules produced in the blood to fight infection is what leads to blood clots and leaky arteries (Kempker et al., 2018). Less oxygen and nutrients are delivered to the body's organs as a result, which causes organ death. In severe circumstances, one or more organs fail. The patient's heart weakens, their blood pressure drops, and they enter septic shock in the severe cases, which causes several organs to fail quickly and culminates in death (Kempker et al., 2018).

Sepsis frequently results in death and can proceed quickly to multiorgan failure and shock. A high index of suspicion of sepsis, early detection, and prompt care are necessary for survival (Gyawali et al., 2019). Findings are frequently broad and related to the main infection. They consist of leukocytosis, altered mental status, tachypnea, tachycardia, and malaise (Gyawali et al., 2019). Patients who exhibit symptoms of sepsis, such as organ dysfunction, need to be evaluated in the hospital right away. If the patient is developing shock, empiric broad-spectrum antibiotic therapy (based on the most likely pathogens and site of infection) should be given as soon as feasible, ideally within the first hour (Gyawali et al., 2019).

The systemic inflammatory response syndrome (SIRS) classification, which formerly categorized sepsis as two or more of the following in the setting of infection, was replaced by the 2018 consensus criteria. Acutely altered mental status, hyperglycemia (blood glucose >140
mg/dL (>7.7 mmol/L)) without diabetes mellitus, leukopenia (WBC count 4000/microliter), leukocytosis (WBC count >12,000/microliter), or a normal WBC count with more than 10% immature forms are all signs of tachycardia (Gyawali et al., 2019).

The expense of managing sepsis in American hospitals is the greatest compared to admissions for all illness states. For instance, sepsis accounted for more than $24 billion in hospital costs in 2013, which is 13% of all hospital costs in the United States, but only 3.6% of hospital stays (Paoli et al., 2018). Sepsis was the most expensive condition, costing $24 billion ($18,244 per hospitalization), greatly outpacing the second and third most expensive disorders, osteoarthritis ($17 billion, or $16,148 per hospitalization), and delivery ($13 billion, or $3,529 per hospitalization), respectively (Paoli et al., 2018). Sepsis now has hospital expenditures that are more than twice those of other diseases and are growing at a rate of three times that of other admissions (Paoli et al., 2018).

Overall, sepsis must be managed and controlled since it can lead to consequences that have unfavorable effects, such as high fatality rates and high healthcare costs. It is crucial to raise sepsis bundle compliance rates, improve staff education to fill in knowledge gaps and shortfalls, and raise staff awareness of the topic to make sepsis a higher priority.

Statement of Problem and Problem Description

In terms of the CMS SEP-1 rules and protocols, one medical center in Northern California's emergency department (ED) exhibits inconsistent adjustments. The Centers for Disease Control and Prevention (CDC) estimate that sepsis affects at least 1.7 million adults yearly and results in up to 270,000 fatalities in the United States (Hajj et al., 2018).

In an effort to decrease complications and events connected to sepsis, there is room for improvement with relation to sepsis care and compliance rates. Metrics in Northern California’s
emergency department during the past three months have shown that there have been varying patterns in compliance with the identification and treatment of sepsis. December had 76% compliance, January saw 51% compliance, and February saw 65% compliance with regard to the first crucial to lactic acid result within 60 minutes. Serum lactate is a significant indicator of the prognosis for septic patients. According to Zoppi (2018), mortality is associated with lactate levels above 4 mmol/L and declines dramatically as lactate levels rise. Antibiotic distribution within 60 minutes was met in 78% of cases in December, 81% of cases in January, and 87% of cases in February, according to lactic acid data. The final criterion evaluated compliance with the guideline that an antibiotic order must be administered within 35 minutes. Compliance rates in December were 70%, 78% in January, and 53% in February. These measures are crucial in developing a core foundation for providing adequate sepsis care with the ultimate goal of minimizing sepsis outcomes.

Evidence-based study shows that SEP-1 processes saw variable alterations, with lactate measurements showing the biggest increases and antibiotic administration rates showing the smallest increases (Barbash et al., 2021). Due to the incomplete sepsis screenings at the three and six hour intervals, this has an impact on the sepsis bundle compliance/adherence rates. Both sepsis management and long-term patient care outcomes would be significantly improved by doing screens on time and consequently increasing compliance rates.

Timely sepsis management and gains in compliance/adherence rates are hindered by SEP-1 fallouts and requirements related to knowledge gaps concerning sepsis bundle procedures, nurses' attitudes toward implementing the protocols, and variations in nurse/physician order sets. The utilization of order sets and defined protocols has been highlighted as a process gap and a critical area for development. The medical center's compliance with the SEP-1 guidelines and
regulations is thought to be hindered by the failure to implement, along with incorrect fluid and lactate recording.

Further evidence-based study shows that adherence to SEP-1 can reduce the frequency of preventable fatalities as well as overall mortality rates (Townsend et al., 2022). Furthermore, research conducted in emergency rooms has shown that standardizing the documentation process and improving the quality of education can substantially increase SEP-1 compliance rates (Wang et al., 2020). Consequently, it is suggestive that this medical center would experience increases in not only compliance/adherence rates but also in the area of patient care outcomes and quality metrics through proper instructional training and communication concerning SEP-1 bundle sets and protocols.

**Project Overview**

As sepsis bundle compliance has shown a variable downward trending pattern, patients are at a higher risk for sepsis and other sepsis-related problems, according to a project analysis utilizing line graphs that the sepsis manager let us analyze. This Northern California hospital reported declining trends in both initial vital to lactic acid results within 60 minutes and antibiotic order to administration within 35 minutes, according to the analysis over the course of three months, from December to January to February. The data from this institution also showed that over time, administrative changes caused sepsis compliance rates to fall from 82% to 56%. The hospital's current sepsis coordinator knows that this problem is multifactorial as well as there is a miscommunication between nurses to nurses, and believes that re-education and highlighting the significance of first lactates is a good place to start. Nurse hand-offs during shift changes could also be beneficial for raising compliance rates.
IMPROVING SEPSIS COMPLIANCE

The primary purpose of this study is to improve sepsis bundle compliance with the ultimate goal of lowering sepsis and consequences associated with sepsis. In a hospital in Northern California, the team's goal is to enhance patient care outcomes by putting a focus on sepsis bundle compliance. Finding the variables that conflict with long-term maintenance and compliance rates is the first step in the procedure. The process is completed by putting in place the appropriate interventions to deal with and separate those competing components. This includes educating nurses, influencing their attitudes toward the issue, filling in any knowledge gaps, and looking into nurse/physician order sets. By improving the process, it is believed that there will be an increase in 1) sepsis bundle compliance rates, 2) subject matter education, and 3) sepsis bundle compliance rates, and reduction of sepsis and problems associated with sepsis will improve patient care outcomes. Working on this is crucial since sepsis compliance rates are declining in the hospital setting, there are enormous knowledge gaps on sepsis bundles, and there is a lack of communication between nurses and doctors regarding sepsis procedures.

It was discovered that there is a need for education, follow-up, and an emphasis on coworker-to-coworker communication and understanding one another to correct and enhance sepsis bundle compliance rates. Hence, a quality improvement (QI) effort must be started in order to enhance future results to simultaneously observe increases in sepsis bundle compliance rates and decreases in sepsis and sepsis-related complications.

There are some obstacles that could alter the project's course, and these obstacles include disparities between nurses' and doctors' sepsis education, attitudes toward sepsis protocols, information/knowledge gaps, and variations between nurses' and doctors' order sets. These anticipated challenges can, however, be avoided and managed with adequate education and in-depth training as well as proper communication, which will subsequently assist this Northern
IMPROVING SEPSIS COMPLIANCE

California hospital in seeing increases in sepsis bundle compliance rates. Proper written and vocal communication skills help deliver accurate information to prevent medical errors and create understanding of one's position and duty. Nurses are expected to work cooperatively, therefore communication skills are essential for effective health care team function. Education has been shown to lead to more accurate health attitudes and information, resulting in healthier lifestyle choices, as well as improved abilities and self-advocacy. Education can also increase skills like literacy, promote good habits, and may improve cognitive abilities.

Available Knowledge

PICOT Question

Conducting a literature review based on studies linking compliance with sepsis bundles to evidence-based research was guided by the PICOT question below. In ED nurses treating patients (P) with complications from sepsis, 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

During the beginning of our semester my QI team and I conducted literature reviews, a thorough evaluation of the literature was carried out, examining the evidence-based studies that looked at sepsis management with adherence to bundle compliance. Peer-reviewed search articles from the years 2018 through 2023 were used to assemble the evidence, and the databases CINAHL Complete, PubMed, were also used. Key words and phrases like "sepsis," "complications of sepsis," "compliance with sepsis," "sepsis bundle,"and " improved bundle management," were used to search these databases. Limitations were used to filter out articles. Articles that were peer-reviewed, based on evidence-based research, systematic reviews,
randomized controlled trials (RCTs), and published no earlier than 2018 were considered to have limitations. A total of six articles were identified to help further strengthen the PICOT question and this QI project.

Liang et al. published a journal article concentrating on the particular issues of infection management and prevention in the emergency department (ED). This journal article underlined the importance of hand cleanliness in limiting the spread of infectious disease in health care settings. Transmission-based measures, environmental cleanliness, and adequate reprocessing of reusable medical devices provide additional layers of defense against infectious disease spread. Infections connected with health care (for example, catheter-related urinary tract infection, ventilator-associated pneumonia, central line-associated bloodstream infection) are frequently avoidable but necessitate system-wide approaches.

Uffen et al. published a study focusing on early intervention to help prevent sepsis. The journal's principal goals emphasized how sepsis is a major source of illness and mortality worldwide. Early detection and treatment of sepsis is linked to better results. The emergency department (ED) is where individuals with sepsis seek treatment. However, recognizing sepsis in the emergency department remains difficult. Various alarm and triage systems, screening scores, and intervention techniques have been created to aid clinicians in the early detection and management of sepsis. Because of the severity and poor prognosis of sepsis, as well as the frequency with which it shows in emergency departments, it determined that an organized, protocol-based approach to these patients is required, preferably as part of a therapeutic route.

Worapratya and Wuthisuthimethawee published a study on the early diagnosis and therapeutic issues for septic shock in the emergency department. This study emphasized the importance of precise triage, prompt detection, early resuscitation, early medications, and
Improving Sepsis Compliance

 eradication of the source of infection in providing optimal sepsis care. Evaluation of the patient's volume status, optimum hemodynamic resuscitation, and patient response are all critical components of sepsis therapy in the emergency department.

Vincent et al. published a study focusing on the comparison between the stratification of sepsis patients in the emergency department (ED) for ICU admission and mortality using the Predisposition, Infection, Response and Organ dysfunction (PIRO). This journal concluded how clinical judgment is a fast and reliable method to stratify between ICU and general ward admission in ED patients with sepsis. The PIRO and qSOFA scores do not add value to this stratification, but perform better on the prediction of mortality. In sepsis patients, therefore, the principle of ‘treat first what kills first’ can be supplemented with ‘judge first and calculate later. This article ultimately concluded how important it is to have a strong sepsis bundle protocol.

Warstadt et al. published a randomized control study to highlight how sepsis can be avoided with an improved sepsis procedure. According to this scientific publication, sepsis bundle compliance remains poor nationally due to the delay in detection and other impediments. The study hypothesized that a focused education intervention addressing the use of an electronic health record (EHR) tool for sepsis identification and management would result in greater EHR tool utilization and sepsis bundle compliance.

Lastly Agnello et al. published a study focusing on if the new sepsis index protocol they implemented in the study helped to decrease sepsis as well as increase sepsis bundle in the ED. Monocyte volumetric alterations, which are an early sign of sepsis, are picked up by MDW. Its great benefit is that it is simple to assess as part of the complete blood count (CBC). In earlier research, the study assessed how well MDW performed as a diagnostic tool in the emergency department (ED) and the intensive care unit (ICU). In a group of healthy blood donors, they also
created the MDW reference interval. Although MDW demonstrated high sensitivity and specificity for sepsis screening in there studies, they noticed that some patients, particularly in the ED, who were categorized by clinical data as belonging to the control, Systemic Inflammatory Response Syndrome (SIRS), and infection subgroups, had MDW values that ranged from the cut-off value of 23 to 26. In comparison to patients without sepsis, patients with sepsis had higher median Sepsis Index values. The area under the curves of MDW and Sepsis Index were similar at the receiver operating characteristic (ROC) curve analysis for the prediction of sepsis, with values of 0.966 (95%CI 0.947-0.984) and 0.964 (95%CI 0.942-0.985), respectively. When compared to MDW, the sepsis index had higher specificity (94.7 vs. 90.6%), but not lower sensitivity (92.0%). In addition, LR+ increased without significantly affecting LR- (correspondingly 0.09 vs. 0.08), rising from 9.8 (MDW) to 17.4 (Sepsis Index). PPV increased from 0.286 (MDW) to 0.420 (Sepsis Index), and then it climbed. After analyzing this data they concluded that sepsis index improves the diagnostic accuracy of MDW alone for sepsis screening.

In conclusion, the body of evidence-based research revealed that, despite the fact that sepsis bundle care incorporates a number of unrelated or variable aspects that affect the total care received and management, sepsis bundle adherence/compliance increases survivability and prevents complications. According to the evidence, strict sepsis management guidelines should be implemented into systems to enhance patient satisfaction and long-term health outcomes because sepsis-related problems raise questions about healthcare efficiency and effectiveness. All of the studies demonstrated how challenging it is to put sepsis bundle care into practice, but with the aid of guidelines our data about sepsis complications can be efficiently handled well in hospital settings through education.
**Conceptual Framework**

**Rationale**

The primary catalyst for raising awareness and igniting change in the ED was educational training, which was used to promote staff compliance with sepsis procedures. In order to make information easily accessible, our project concentrated especially on creating sepsis fact sheets and sepsis cards that would be put close to the nursing stations and other important areas such as the computers around the ED. Observations and conversations with hospital staff members during the evaluation of the ED as a clinical microsystem showed that there is a lack of sepsis knowledge/education and accessibility, as well as a breakdown in communication between various healthcare providers. Better patient outcomes are the result of nurses taking the time to listen to and understand the concerns of each of their patients as well as their coworkers, according to a journal study titled Communication in Nursing Practice. This is due to the fact that they are better prepared to deal with issues as they develop (Kourkouta & Papathanasiou, 2014). Nurses were observed to be unfamiliar with the hospital's sepsis protocols and confused of where to access these documents, especially those who were travel nurses. Consequently, it will be simpler for nurses and other healthcare personnel to follow and adhere to the information if sepsis fact sheets and sepsis cards are implemented and placed in key areas of the hospital. The end result is that by introducing educational training, this aids in closing the knowledge gap that is impeding the unit's requirements, particularly with regard to enhancing both sepsis compliance rates and patient-care results, which will ultimately lead to better patient care.

According to - Greek philosopher Heraclitus."The only constant is change."What held true more than 2,000 years ago still holds true in the present. "Business as usual" in our world means change. New projects, project-based work, technological advancements, and remaining
one step ahead of the competition all contribute to the constant changes in how we work. It's normal to feel uncomfortable and scared by the scope of the problem, regardless of whether it is a little adjustment to one or two processes or a system-wide change to an organization.

John Kotter's change theory helps to lead our team in the right direction for our QI project. Kotters change theory is the best one for our sepsis QI project as it will lay the groundwork in the most efficient and simple way. The eight steps in John Kotter's change theory are intended to bring change to systems and systems design, including this hospital in Northern California. The eight steps consist of: establish a sense of urgency, create a strong alliance, establish a vision for change, communicate it, provide others the tools to help overcome hurdles, and create short-term victories. Build on the change that was laid out and finally institutionalize it by making it last.

This Northern California hospital can benefit from Kotter's theory's first stage of establishing a sense of urgency since it is critical to identify potential hazards that could arise in the near future if these adjustments are not made. To note, if sepsis compliance and overall sepsis management do not improve, more people will continue to encounter difficulties and unfavorable impacts, which could increase the risk of sepsis, infections and even fatalities. These difficulties could also lead to more financial burden on the hospital, which could then lead to not enough staff or proper equipment to help treat these patients. To gain the staff's attention it is important to facilitate conversations and provide persuading facts and data that will encourage individuals to start concentrating and thinking more deeply about sepsis management, it is essential to instill a sense of urgency. This will allow medical professionals and hospital workers to take action by making modifications that will stand the test of time and be helpful in lowering sepsis-related complications and unexpected deaths.
Furthermore, it is essential to show the sense of urgency to the healthcare workers on how beneficial it is to increase sepsis compliance rates. This can be done by showing facts about sepsis to get that sense of urgency in their eyes. This also can be accomplished by emphasizing how sepsis-related problems result in health difficulties, infections, and death using statistical and numerical data. Sepsis is a very real and dangerous problem in the hospital setting all around the world. Showing healthcare workers facts on how many fatalities occur a year regarding sepsis will help the nurses form urgency and ways to combat sepsis. In the end, this QI project hopes to instill a feeling of urgency, this way the hospital staff will be more motivated to implement the necessary modifications and changes to enhance patient-care results.

As stated earlier the first step in Kotter's methodology is to create urgency, and the second step is to develop a strong coalition. The proper definition of a coalition is, “a coalition is formed when two or more people or groups temporarily work together to achieve a common goal”. Our QI team is coming together to help this Northern California hospital. This coalition must also have unity with healthcare professionals, hospital workers, and change agents must all be involved and contribute in order to encourage change. Effective cooperation skills are deeply embedded in ensuring that no weaknesses exist inside the system of this Northern California hospital by identifying leaders from a variety of backgrounds, fields, and disciplines.

The team will build a vision for change by forming a powerful coalition, which is the third step in Kotter's change theory. This will be made possible by the donations of each coalition member. It will be easier to produce a summary that expresses their perspective on how this Northern California hospital will improve and look in the future if they choose which values are crucial to the transition. During the development of this vision, each member will be given a brief period of time to articulate their own personal vision of change; this will create context for
IMPROVING SEPSIS COMPLIANCE

them and allow the staff to analyze and examine other perspectives. Ultimately this strategy is important as it will help glue all of the team members ideas together, and form a strong coalition in which healthcare workers can share ideas and grow from one another.

Kotter's change theory's fourth phase is to present the vision for support. A staff meeting will be held to examine the various options and address issues in an open and honest manner once each member has created a vision board for change. The vision for change will be implemented during this conference in all areas of operations, including training, performance, and learning modules. It's crucial to connect the dots at this point and bring everything back to the initial vision statement. One aligned vision statement can help the group streamline their focus and concentration on the ideas that matter to better help with sepsis compliance.

This brings us to the fifth phase, which emphasizes the significance of empowering people to eliminate barriers. By praising and rewarding team members who start changes and inviting their opinion, empowerment may be reinforced. For healthcare professionals and hospital workers, team input will be crucial throughout the training and learning processes so they can use evidence-based research and concepts to improve sepsis and sepsis-related consequences. Check-ins are critical for identifying potential stumbling blocks or opposition to change. Check-ins are a type of communication, and it aims to improve communication within this Northern California ED's team. This will allow the members to act immediately to remove the hurdles while still upholding the hospital's goal and values. This will assist in identifying any systems that appear to be diverting from change and ensuring that they are in line with the vision for this Northern California hospital.

The sixth phase in Kotter's theory of change is to focus on producing quick successes. Quick success can have advantages as it can lead to people wanting to make a long term change.
Improving Sepsis Compliance

Long term change is the ultimate goal this QI project wants to see. This will happen, particularly during training and learning modules, in the initial few weeks of carrying out or implementing the change project. This quick success of gaining knowledge through education and modules will keep the members inspired as they work toward the ultimate, long-term objective of bringing about change to enhance patient care outcomes. Also, this will convince the members that their investment is worthwhile and help them picture how easily they may achieve their goal. Because modest, quick victories lead to larger, cumulative successes in this system, it is crucial to recognize those who assist in achieving the goals.

The seventh phase in Kotter's change theory is "building on the change." Setting goals is crucial to maintaining the momentum gained if the training/learning modules are judged to be successful. Greater, more significant changes will be made for this institution in terms of improving sepsis compliance and overall sepsis management by consistently improving and going beyond the minimal target. In the end, the members will continue to demonstrate interest in implementing additional changes to improve patient-care outcomes by keeping ideas new as new ideas can help build upon old ones further strengthening this project's goal of increasing sepsis compliance.

The final phase of Kotter's change theory states that if success has been attained, it is proper to institutionalize the change by making it stay. This indicates that the new approach, which will be necessary for new employees or professionals to follow in this Northern California hospital, will aim to improve sepsis compliance followed by improving patient-care outcomes utilizing evidence-based research and concepts. This hospital's foundation will be made up of this training/educational program and the philosophies it supports. It is crucial to discuss progress by offering words of encouragement and extra instruction in order to make system users
IMPROVING SEPSIS COMPLIANCE

feel encouraged and in the hopes of fostering increased compliance/adherence. The Relationship Between Academic Encouragement and Academic Self-Efficacy: A Moderated Mediation Model, a journal article, claims that "encouragement confirms and reaffirms that "doing the right thing" is what matters most, even in trying circumstances." Encouragement assists people in maintaining positive, moral, and productive work habits by reassuring them that they are on the correct track (Gong et al., 2022). In order for the change to be obvious, sepsis fact sheets and sepsis cards will be placed at nurse stations, strategic places, and lunch rooms in this step.

Overall, Kotter's change management theory can be successfully used to improve nursing practice's quality. The approach aids in ensuring change acceptance, which is one of the most important indicators of success. Thus, Kotter's approach would help to improve organizational culture and employee motivation in addition to increasing sepsis compliance of staff in the emergency department and raising overall unit care quality.

**Specific Project Aim**

By May 1, 2023, the project's particular goal is to boost CMS SEP-1 sepsis management bundle compliance over the current average of the adult sepsis patient group.

**Methods**

**SWOT Analysis**

This quality improvement project's strengths, weaknesses, opportunities, and threats (SWOT) study was finished before it was put into action to look at how outside influences might affect its course and results. The strengths of this QI project is that the sepsis coordinator is supportive in improving sepsis bundle compliance and patient-care outcome, the New interim manager helps facilitate changes and improve dynamics, gained approval of Sepsis fact sheet/cards, and a ability to observe in the ED when needed. The weaknesses of this QI project
are that there is a lack of education regarding the importance of prioritizing sepsis management, a lack of nurse order set usage prior to doing bundles, and the Microsystems are not consistent with sepsis management in regards to defined roles, communication (RN to physician), and usage/implementation of sepsis bundles. The opportunities of this QI project are that there is an increase attention/prioritization of sepsis care through performance improvement initiatives such as education and reinforcement, a way to improve multiple components of sepsis bundle care, increase staff awareness by making sepsis information easily accessible and inproximity, and finally improving RN to physician communication about overall sepsis management, increase in nurse order set usage prior to doing bundles. The threats of this QI project is that there is a 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, and a high census, provider shortage, and high turnover rates. With our QI team handing out sepsis fact sheets and sepsis awareness cards around the hospital, the ED leadership team has been incredibly helpful in assisting us in getting approval to adopt these changes. It's not easy to implement change especially as a student and not an employee, but throughout this our QI team has been persistent, and nurses have slowly been changing their attitudes.

Although the information would be easier to obtain if fact sheets and cards were available, some providers could feel overburdened because there would be more tasks to accomplish, which would ultimately alter their workload dynamics, responsibilities, and level of job satisfaction. Improvements in compliance rates, patient treatment outcomes, the prioritizing of sepsis, cost savings, and healthcare quality indicators are further potential that have been
I M P R O V I N G  S E P S I S  C O M P L I A N C E

recognized. Threats, on the other hand, have been identified include noncompliance with adjustments, nurse burnout, a high population, a provider shortage, and high turnover rates.

Context & Data Source

In the emergency department of one hospital in Northern California, this quality-improvement effort was put into practice. The facility contains several amenities like an upgraded emergency department, and renovated hospital rooms on all units and floors. In particular, the ED is made up of healthcare professionals who collaborate to enhance patient outcomes, including doctors, physicians assistants, nurse practitioners, and registered nurses, emergency department technicians, respiratory therapists, and EMT/fire coming into the building. This hospital is very up to date and wants to constantly build new momentum to better itself, the hospital has recently made new and improved adjustments and developments that have changed the healthcare environment in Northern California.

Efficiency, efficacy, and financial considerations were all taken into account before the initiative was put into action. The implementation of these changes would be done by MSN clinical nurse leader (CNL) students utilizing a cost-benefit analysis, it was highlighted. For quick access to important information, the CNL students prepared sepsis fact sheets and sepsis cards to be posted in or near strategic locations across the hospital. The Sepsis Coordinator as well as our QI professor have been a tremendous help and both have been a solid backbone for this project. They both have been in touch with the students, and they have both given advice on how to successfully implement these modifications. The Interim Sepsis Manager has also offered helpful insight and given her okay for these materials to be dispersed around this hospital in Northern California. The significance of sepsis compliance will therefore be emphasized for staff education in this quality improvement project by visual interpretations/representations, such as
those in the form of fact sheets, instructional cards, and posters. According to The American Association of Colleges of Nursing (AACN), having nurses with more education leads to improved patient outcomes, lower mortality, lower readmission rates, and shorter lengths of stay, according to reports (AACN, 2021). Education is very important for the direct quality of care for these patients and it has a very low financial cost to educate nurses.

This change project is advantageous because it is simple to implement and will ultimately result in bigger savings. Sepsis and its complications will be identified earlier and treated more successfully if sepsis compliance and adherence are improved. Because illness development will be stopped, complications and unpleasant effects will be addressed rapidly, and patient lengths of stay (LOS) will be decreased, the hospital will see financial savings. As noted earlier the second and third most expensive conditions were osteoarthritis ($17 billion, or $16,148 per hospitalization), and delivery ($13 billion, or $3,529 per hospitalization), respectively (Paoli et al., 2018). Sepsis was the most expensive condition, costing $24 billion ($18,244 per hospitalization), far exceeding the second and third most expensive disorders. Early detection will allow healthcare professionals to stop progression, which will reduce LOS and create more savings for this Northern California hospital. Savings is a very important aspect because with more money it can lead to better equipment, more staff, which will ultimately lead to better patient care which is what health care workers truly want to see.

**Measures**

The success or failure of this QI project will be determined by tracking bundle compliance and education. Several indicators will be used for this quality improvement project to determine whether the implementations were successful in leading to improvements in the ED. The compliance rate would be one crucial metric. Due to simple access to information provided
IMPROVING SEPSIS COMPLIANCE

through the distribution of sepsis fact sheets and information cards, it is anticipated that compliance would rise, closing the knowledge gap. Reduction and proper management of sepsis and its consequences, such as septic shock, would be another sign of improvement.

Furthermore, because of provider shortages and high turnover rates, crucial indicators such as staff satisfaction and work dynamics are very important to analyze. Introducing more requirements for nurses to follow and comply with can ultimately lead to fatigue and a sense of being overburdened and not being supported or motivated. It is very important to encourage nurses as this will help with compliance and better patient care. As stated earlier, monitoring the staff’s satisfaction is a huge indicator of whether or not this QI project succeeds or fails.

Intervention

The eight-step change theory developed by John Kotter states that every system or system design, including this hospital in Northern California, is amenable to change. A discussion about the problems with a low sepsis compliance rate that results in complications and sepsis-related mortality sparked the concept for the project. This original interaction's major objective was to raise awareness of the importance of using sepsis bundles for early sepsis identification, prevention, and treatment in order to improve patient-care outcomes. Literature reviews based on evidence-based research were given to the ED staff in an effort to fill the knowledge and educational gaps that are currently present.

Sepsis fact sheets and sepsis instructional cards were developed and distributed across the hospital to increase awareness and make information more readily available because it was shown that a lack of education was a major factor in restricting sepsis compliance. The foundation for this quality improvement effort was then discussed via email with the ED nurses, the sepsis manager, and the sepsis coordinator. They offered great comments, constructive
IMPROVING SEPSIS COMPLIANCE

criticism, and ideas that were integrated into the data sheets and information cards for our
group's QI project. Our Professor for this QI project also offered us great ideas and comments
that helped to further strengthen our QI project. Proper feedback is important in this QI project
because bouncing off ideas can help to strengthen communication which will ultimately lead to a
stronger sense of urgency and a stronger coalition.

Study of the Intervention

ED staff competency in terms of compliance rates and sepsis care was measured using a
pre-survey questionnaire in an effort to establish a baseline of the present knowledge/education
gaps. The responses from the preliminary survey helped create a baseline that would be used to
revise and adapt particular educational activities and goals. Following the pre-survey
administration, a meeting was set up with the sepsis coordinator to discuss the best ways to
increase knowledge of sepsis, facilitate access to crucial sepsis information, and ultimately
enhance sepsis bundle compliance rates and patient care results. In response to advice and ideas,
our QI team updated our interventions and changed strategies. It was emphasized that the
primary issues were related to educational shortcomings and a lack of understanding or care for
sepsis protocols. In an effort to understand and address these two challenges, it was ideal to build
visual representations and signage to make sepsis information more accessible and nearby.

Educational sepsis handouts, miniature sepsis instruction cards, and posters were created
to increase awareness of the problem and make it easier for ED staff to obtain crucial sepsis
data/information. These pamphlets and cards were dispersed at well-known, key areas that were
also close by, including next to the nursing stations. After educational pamphlets and information
sheets were introduced, the ED staff was given a post-survey to assess changes in sepsis in order
to examine and see if there was an increase in compliance and an overall increase in awareness with relation to the implementation our QI team implemented.

**Expected Results**

This quality improvement initiative was started with the primary objective of improving sepsis compliance management and patient care outcomes by concentrating on bundle compliance rates and giving instruction in a manner that would put emphasis on the subject. The primary goal of this project is to ensure that it satisfies the criteria of increasing sepsis compliance outlined above and continues to serve as a benchmark for enhancing the effectiveness and efficiency of healthcare delivery, particularly in the area of sepsis and complications connected to sepsis. Increasing compliance for sepsis is crucial in the emergency department setting as people every year all over the world die of sepsis complications that are not properly addressed or treated. As emphasized earlier, sepsis is more responsible for hospital mortality in the US than both heart attacks and strokes together (Kempker et al., 2018). Sepsis affects more than a million Americans annually, and up to half of those cases result in death (Kempker et al., 2018). Treating sepsis early increases the outcome of patient survival significantly. It is essential that nurses and staff are familiar with hospital procedures, fully comprehend sepsis, and are aware of how sepsis affects patient outcomes and mortality. The overarching goal of starting this quality improvement effort was to raise bundle compliance rates and decrease sepsis complications by educating people about sepsis and raising awareness of the condition.

This quality improvement initiative may lead to the conclusion that team dynamics and communication are crucial to improving bundle compliance rates and the capacity to communicate the significance of sepsis protocols. Team dynamics and communication are
IMPROVING SEPSIS COMPLIANCE

affected by indicators like sepsis awareness and understanding, information gaps and deficiencies, nurses' attitudes toward the condition, and mismatches in nurse and physician order sets. Communication is crucial in healthcare, and without proper communication and not knowing how to communicate properly information will get lost or not relayed properly which can ultimately hinder patient care and outcomes. Skillful communication enables healthcare personnel to create relationships with their patients, obtain critical health information, and collaborate effectively with all members of a care team and the general public.

Nursing Relevance

Because a large percentage of their work involves engagement, education, and advocacy to enhance patient-care outcomes, registered nurses (RNs) are crucial and are regarded as the foundation of the healthcare industry. Nurses are the supporting base of the hospital, they communicate directly with all types of healthcare workers, and do a lot of the “heavy lifting”. RNs are required for sepsis management because they can see the early warning signs and symptoms of the condition and keep an eye on patients who may develop sepsis or complications related to it. Nurses are crucial in identifying physiological abnormalities that can portend the beginning of sepsis. Additionally, a nurse is better able to comprehend how prompt action delays the onset of septic shock when they are familiar with the pathophysiology of sepsis. Additionally, it is well-established that using instruments for sepsis screening and clinical recommendations might assist lower patient mortality (Bleakley & Cole, 2020). If done effectively, the RN's capacity to identify and take appropriate steps to prevent sepsis is a key factor in determining the effectiveness and efficiency of healthcare. Though RNs are capable of managing sepsis in its entirety, there are particular protocols and requirements that are specific to each hospital or facility that must be followed. In order to standardize sepsis care and raise awareness of the
IMPROVING SEPSIS COMPLIANCE

issue, it is important to consider the time of care delivery and to be knowledgeable about protocols throughout multiple hospitals in the US, every hospital as there own unique way of doing sepsis protocols and what is best so it is very important to standardize and get information to make a sepsis protocol that is universal and safe. It is crucial for RNs to adhere to these guidelines in order to acquire the knowledge and skills required to identify, treat, and avoid sepsis and its sequelae. Additionally, to accomplish the following goals: surpass the average SEP-1 compliance rate, increase initial nurse order set utilization compliance, and lastly boost the use of the "nursesepsishandoff" smartphrase. RNs must have the fundamental training required for timely effectiveness and prompt sepsis management.

Education is utilized as an intervention to improve both knowledge and awareness of the topic because there is frequently a gap in information/knowledge or understanding the need of compliance to sepsis bundles. This can be accomplished using posters, handouts, or fact cards. Our quality improvement project focused on their handouts and fact cards and improved the information and message of them, as increased compliance and education throughout the emergency department of this Northern California hospital is the main goal of this QI project.

**CNL Relevance**

In addition to carrying out the ordinary activities and duties that a registered nurse (RN) is capable of carrying out, a clinical nurse leader (CNL) is a nurse who has successfully finished a comprehensive master's education program and completed all the requirements to obtain the CNL attachment to their RN license. The CNL acts as the microsystem's leader. The clinical nurse leader (CNL) promotes the use of evidence-based practices in patient care, aids in staff development, is accountable for clinical results within the microsystem, and offers clinical leadership for patient care. Even in times of crisis, the CNL has the abilities necessary to
IMPROVING SEPSIS COMPLIANCE

promote improvement science and direct care delivery reform in the ever-evolving field of health care (Van Orne and Branson, 2022). A CNL also serves as a mediator between various nursing specialties with the main objective of enhancing patient care outcomes through the use of an evidence-based strategy. A CNL's ability to negotiate various nursing practice components by implementing the proper evidence-based procedures for long-term success and stability is one of their key assets. CNLs have the capacity to analyze the total financial performance of a microsystem, taking into account assets, liabilities, revenues, and expenses while also taking patient-centered care into account, depending on their skill set and knowledge (AACN, 2007).

Furthermore, CNLs are able to spot patterns in statistical data sets and numerical trends. Therefore, CNLs can assist in integrating new strategies and/or adjustments to lower overall costs/waste and enhance healthcare efficiency/effectiveness.

Communication, collaboration, coordination, and evaluation are the four main facets of lateral integration. The requirement for lateral integration of care services was expressly addressed for the CNL role, and these aspects of lateral integration regarding the CNL will help to lay the groundwork for sepsis compliance. To increase compliance with the CMS SEP-1 sepsis bundles in order to obtain the best patient outcomes and a decrease in complications, the CNL will communicate with the RNs, nurse managers, doctors, and sepsis committees in relation to this initiative. Additionally, since the CNL collaborates, coordinates, and reviews sepsis healthcare delivery across many contexts, the core skill of Lateral Integration is also helpful in improving sepsis outcomes. In the end, this position enables patient-centered treatment that is effective and of high quality throughout the healthcare continuum. Last but not least, the CNL has the capacity to synthesize data from evidence-based research to enhance sepsis management and the efficiency of delivering patient-centered care, making the core skill of outcomes manager
applicable to the ED and this project. As a result of the CNL's ability to spot performance-related indicators and other chances for change, ultimately sepsis care can be provided more effectively and with higher quality thanks to the CNL’s ability to spot performance-related indicators regarding sepsis. Another key role of the CNL is being an educator which is a crucial core ability of the CNL that is important to sepsis management. Because they work at the microsystem level, this CNL role can be used in the emergency department (ED) environment to implement modifications. In conjunction with this project, the CNL is able to raise staff knowledge of sepsis screening and early detection by developing signage, posters, handouts, and instructional sepsis cards.

**Results**

**Outcome Measure Results**

The timeframe drawn up during the preliminary planning phases was followed in the implementation of this performance quality improvement (QI). The research revealed that the teaching initiatives at this Northern California hospital significantly enhanced long-term patient care outcomes and sepsis awareness and prioritizing in connection to overall sepsis treatment. According to a survey, compliance rates for sepsis bundles have been increasing after the introduction of instructional resources like sepsis handouts and laminated sepsis information cards. Additionally, there has been a 27.6% increase in the use of the RN order set from before to after the survey. Furthermore, it was discovered that from pre to post-survey, the RN sepsis handoff smartphrase was used more frequently. Nevertheless, from before to after the survey, the smartphrase's familiarity actually decreased. This decrease could be attributed to the pressure the nurse felt or could be attributed to the nurse not being properly trained beforehand in smartphrase.
IMPROVING SEPSIS COMPLIANCE

Summary

This performance quality improvement project met the project's particular goal by increasing compliance with the CMS SEP-1 sepsis management bundle to exceed the existing average in the ED sepsis adult patient group by May 1, 2023. Because all four project goals were accomplished, the implementation of the educational initiatives through signage, handouts, and information cards had a positive outcome. Through these educational interventions it showed a positive outcome from our intervention. Through this it illustrates the advantages of education in raising staff awareness and prioritizing, with a focus on bridging the gap and enhancing patient-care outcomes through efficient sepsis management.

Because educational training was discovered to be the primary driver in increasing staff competency and understanding of sepsis management, these interventional outcomes also strengthened the project's justification. Accessibility and availability of information improved by creating handouts and tiny sepsis information cards and putting them nearby nurses' stations and other important locations. This helped close knowledge gaps and deficiencies, which in turn increased compliance with sepsis guidelines. The achievement of the four targeted objectives and the success of this project were the results of a number of interrelated elements. In the early stages of the project, conducting a microsystems assessment was extremely helpful in identifying the hospital's shortcomings in sepsis prioritization and awareness, as well as a lack of attention being paid to this topic.

It was also noticed that some kind of incentive or reward system was required to boost staff enthusiasm and focus on the educational activities. It was discovered that offering some kind of reward stimulus served to enhance staff participation and engagement throughout both the pre- and post-survey collections. Rewarding staff makes them more motivated. When their
IMPROVING SEPSIS COMPLIANCE

company shows appreciation and rewards, they are prepared to deliver improved work performance. According to research, rewards and gratitude have a good impact on employees' performance at work (Manzoor et al., 2021). More replies were gathered when doughnuts and sweets were provided as incentives for completing the survey. Additionally, it was discovered that various delivery methods and instructional strategies had an effect on the participation and engagement of the staff. For example, additional responses were logged when the workers received tangible copies of the survey rather than just a single QR code to scan. This demonstrates that although technology has the potential to speed up and improve healthcare delivery, in this particular case, using pen and paper to fill out papers seems to be the most advantageous option. It is hoped that pen and paper also sticks in the nurses brains better. The act of writing activates the Reticular Activating System (RAS) and kinesthetic feedback in the brain. When physical acts are combined with learning and there is a higher level of brain involvement, everyone learns more effectively (Ilhara et al., 2021).

Furthermore, the project was successful in bringing about the desired changes through staff education and knowledge gaps closure, increased availability and accessibility to pertinent sepsis information, increased attention and focus on the topic, emphasis on prioritization, and the provision of incentives for survey completion along with multiple survey completion options.

Conclusions

As a result of the interventions and implementations, this performance quality improvement effort is seen as a success for this hospital in Northern California. The four primary goals of this QI study were improved upon in the following areas: 1) Increased use of the sepsis bundle, 2) Increased use of the RN order set, 3) Increased use of the sepsis handoff smartphrase, and 4) Increased staff education about the use of the sepsis bundle protocols, the sepsis order set,
IMPROVING SEPSIS COMPLIANCE

and the handoff smartphrase. (See appendix E and F) It became clear that there was room for improvement in a number of areas, including compliance rates, staff education levels, the necessity of prioritizing sepsis, and overall sepsis management, in order to enhance patient outcomes and lessen problems. This QI study demonstrated how strategic planning and the execution of educational campaigns to increase awareness and knowledge of the issue may result in change. It is anticipated that this Northern California hospital will continue to emphasize improving sepsis management outcomes and stress the relevance of education by emphasizing existing knowledge gaps/deficits with continued support for these quality improvement performance initiatives.

In the end, even if the four targeted objectives of this QI study were met, it is still crucial for this medical center to keep using and training the personnel about sepsis and minimizing consequences associated with it. Staff participation and engagement in advocating for successful sepsis care and long-term results will be crucial to the sustainability and longevity of this project. To maintain the change our QI team has implemented it is important to encourage the healthcare workers to be advocates and fight for the change. Continuous professional education has become more vital in ensuring that health care workers' competencies keep pace with current standards and in maintaining and improving the knowledge and skills required to stay up to date on the most recent evidence (Nilsen et al., 2020). Organizational changes in the health care business are more likely to be effective when health care professionals have the opportunity to influence the change, feel prepared for the change, and perceive its value, including the benefit to patients (Nilsen et al., 2020). Overall, this QI project wants nurses and healthcare workers to be more confident in their abilities, and it is expected that our QI project will develop into new and improved ideas for increasing sepsis compliance and preventing sepsis over time.
IMPROVING SEPSIS COMPLIANCE

References


Agnello L;Iacona A;Lo Sasso B;Scazzone C;Pantuso M;Giglio RV;Gambino CM;Ciaccio AM;Bivona G;Vidali M;Ciaccio M; (n.d.). *A new tool for sepsis screening in the emergency department*. Clinical chemistry and laboratory medicine. Retrieved February 27, 2023, from https://pubmed.ncbi.nlm.nih.gov/33851525/


IMPROVING SEPSIS COMPLIANCE

Departments of a Emergency Medicine b Critical Care c Pathology and Medical Biology. (n.d.). 


J.W. Uffen 1, 1, 2, 3, 4, & AbstractBackgroundSepsis is a major cause of morbidity and mortality worldwide. Early recognition and treatment of sepsis is associated with improved outcome. The emergency department (ED) is the department where patients with sepsis seek care. However. (2020, February 29). Interventions for rapid recognition and treatment of sepsis in the emergency department: A narrative review. Clinical Microbiology and Infection. Retrieved February 23, 2023, from https://www.sciencedirect.com/science/article/pii/S1198743X20301051


IMPROVING SEPSIS COMPLIANCE


## Appendix A

### Literature/Evaluation Table

<table>
<thead>
<tr>
<th>Authors</th>
<th>Country</th>
<th>Purpose</th>
<th>Title</th>
<th>Type of Resource</th>
<th>Summary Points</th>
</tr>
</thead>
<tbody>
<tr>
<td>Stephen Y. Liang, MD, MPHS,a,b,* Madison Riethman, MPH, CPH,c and Josephine Fox, MPH, RN, CICd</td>
<td>USA</td>
<td>To help prevent Sepsis in the ED</td>
<td>Infection Prevention for the Emergency Department</td>
<td>Journal</td>
<td>The emergency department (ED) presents unique challenges to infection control and prevention. Hand hygiene is a fundamental strategy for preventing the transmission of infectious disease in healthcare settings. Transmission-based precautions, environmental cleaning, and appropriate reprocessing of reusable medical devices provide added layers of protection to counter the spread of infectious disease. Health care–associated infections (eg, catheter-associated urinary tract infection, ventilator-associated pneumonia, central line–associated bloodstream infection) are often preventable but require systems-based strategies.</td>
</tr>
<tr>
<td>J.W. Uffen, J.J. Oosterheert, V.A. Schweitzer, K. Thursky,</td>
<td>USA</td>
<td>Early interventions to prevent Sepsis in the ED</td>
<td>Interventions for rapid recognition and treatment</td>
<td>Journal/study</td>
<td>Sepsis is a major cause of morbidity and mortality worldwide. Early recognition and treatment of sepsis is associated with improved outcome. The emergency department offers unique challenges to infection control and prevention.</td>
</tr>
<tr>
<td>Authors</td>
<td>Country</td>
<td>Title</td>
<td>Journal</td>
<td></td>
<td></td>
</tr>
<tr>
<td>---------</td>
<td>---------</td>
<td>-------</td>
<td>---------</td>
<td></td>
<td></td>
</tr>
<tr>
<td>H.A.H. Kaasjager, M.B. Ekkelkamp</td>
<td>USA</td>
<td>Improving sepsis compliance</td>
<td>Journal</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Panita Worapratya and Prasit Wuthisuthimethawee</td>
<td>USA</td>
<td>Early diagnostic and management challenges for septic shock in the ER</td>
<td>Journal</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Quinten, Vincent M.; van Meurs, Matijs; Wolffensperger, Anna E.; ter Maaten, Jan C.; Ligtenberg, Jack J.M.</td>
<td>Europe</td>
<td>Compare the stratification of sepsis patients in the emergency department (ED) for ICU admission and mortality using the Predisposition, Infection, Response and Organ dysfunction (PIRO) and quick Sequential Organ Failure Assessment</td>
<td>Journal</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Improving Sepsis Compliance**

department (ED) is the department where patients with sepsis seek care. However, recognition of sepsis in the ED remains difficult. Different alert and triage systems, screening scores and intervention strategies have been developed to assist clinicians in early recognition of sepsis and to optimize management.

Accurate triage, rapid recognition, early resuscitation, early antibiotics, and eradication of the source of infection are the key components in delivering quality sepsis care. Evaluation of the patient’s volume status, optimal hemodynamic resuscitation, and evaluation of patient response is crucial for sepsis management in the emergency department.

Clinical judgment is a fast and reliable method to stratify between ICU and general ward admission in ED patients with sepsis. The PIRO and qSOFA scores do not add value to this stratification, but perform better on the prediction of mortality. In sepsis patients, therefore, the principle of ’treat first what kills first’ can be supplemented with ‘judge first and calculate later’.
### Improving Sepsis Compliance

<table>
<thead>
<tr>
<th>Name</th>
<th>Location</th>
<th>Methodology</th>
<th>Study Design</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nicholus Michael</td>
<td>USA</td>
<td>Preventing sepsis through a better sepsis bundle</td>
<td>Randomized</td>
<td>Due to delay in recognition and other barriers, sepsis bundle compliance remains low nationally. The study hypothesized that a targeted education intervention regarding use of an electronic health record (EHR) tool for identification and management of sepsis would lead to increased EHR tool utilization and increased sepsis bundle compliance.</td>
</tr>
<tr>
<td>Warstadt, J Reed</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Caldwell, Nicole</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Tang Staci Mandola,</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Catherine Jamin,</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cassidy Dahn</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Luisa Agnello,</td>
<td>Europe</td>
<td>To see if the new Sepsis screening reduced chances of getting sepsis in the ED</td>
<td>Journal</td>
<td>The Sepsis Index is based on the combination of monocyte distribution width (MDW) and mean monocyte volume (MMV). Sepsis Index 1 was selected to define sepsis. They tested its diagnostic accuracy in an ED population stratified in four groups: controls, Systemic Inflammatory Response Syndrome (SIRS), infection, and sepsis, according to Sepsis-2 criteria.</td>
</tr>
<tr>
<td>Alessandro Iacona,</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Bruna Lo Sasso,</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Concetta Scasszone,</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Michele Pantuso,</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Rosaria Vincenza</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Giglio, Caterina</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Maria Gambino,</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Anna Maria Ciaccio,</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Giulia Bivona,</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Matteo Vidali,</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Marcello Ciaccio</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
## 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><strong>Project end: May 2023</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>- Microsystems assessment</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>- Literature Review conducted</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>- Meet with Kacey the Sepsis Coordinator</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>- Presented QI Initiatives to Kacey and to our QI professor</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>- Making visual representations (sepsis handouts, sepsis information cards)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>- Gain feedback from staff as well as Kacey</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>- Make revisions</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Action</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>----------------------------------------------------------------------</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>- Gain approval to distribute materials</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>- Staff Education to ED nurses and healthcare workers in the ED</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>- Students Conducted more observations</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>- Post-survey comparison</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>- Share results with Sepsis Coordinator and Interim Manager</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>- Share results with ED Staff to see if QI implementation was effective</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Appendix C

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 D

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 E

Pre-Survey Results
Appendix F

Post-Survey Results
Appendix G

Projects Mission and Vision Statement Goals

Mission Statement: All nurses must be proficient in sepsis and comply with the sepsis bundle.
Vision Statement: By teaching nurses the value of adhering to sepsis bundles and raising awareness of the prioritization of sepsis management, it is possible to enhance patient care outcomes.

Outcome Objective: Through the use of education for sepsis and sepsis bundle compliance, give all efforts structure, direction, and focus.

Goal: Reduce sepsis-related problems by increasing CMS SEP-1 bundle compliance through education, which will enhance patient care outcomes by lowering sepsis-related complications.

1. Create training modules that healthcare workers must complete
   a. These sessions will emphasize the proper administration, documentation, and charting of orders for IV fluids and antibiotics.

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 kills more people each year than breast cancer, prostate cancer, and HIV/AIDS combined (Kempker et al., 2018). In fact, it accounts for more hospital mortality in the United States than either a heart attack or a stroke. More than a million Americans suffer from sepsis each year, and up to half of those cases end in mortality (Kempker et al., 2018). Sepsis, the body's overwhelming and occasionally fatal reaction to infection, can result in organ failure, tissue damage, and even death. Widespread inflammation brought on by immunological molecules produced in the blood to fight infection is what leads to blood clots and leaky arteries (Kempker et al., 2018). Less oxygen and nutrients are delivered to the body's organs as a result, which causes organ death. In severe circumstances, one or more organs fail. The patient's heart weakens, their blood pressure drops, and they enter septic shock in the severe cases, which causes several organs to fail quickly and culminates in death (Kempker et al., 2018).

*Below is the Primary and secondary drivers as well as changes through education our QI team emphasized on*

Primary drivers:
1. Reduction in IV Fluid fallouts
IMPROVING SEPSIS COMPLIANCE

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

Educational Implementations
IMPROVING SEPSIS COMPLIANCE

STOP SEPSIS & PREVENT FALLOUTS

The clock begins when your patient receives a positive sepsis screen (time zero).
Broadcast to the ED with "Sepsis Alert, Room #".
Drop the RN 'Suspected Sepsis in Triage Procedures' order set to initiate the bundle.

3-HR BUNDLE

- Initial lactate – send to lab on ice
- Blood cultures – prior to antibiotics
- Antibiotics
- IVF bolus – 30 mL/kg in presence of
  - Hypotension (SBP<90 / MAP<65)
  - OR lactate ≥4.0
- Correct documentation of IVF bolus
  (fluid type, rate, start/end time, amount)

6-HR BUNDLE

- Repeat lactate – if initial lactate >2.0
- Vasopressors – for persistent hypotension in the hour after IVF bolus
- Reassessment of fluid status
- Correct documentation

When transferring a patient, use the smartphase nursingsepsishandoff.