Educating Medical-Surgical Nurses in a Large Hospital Organization on Sepsis Bundle Elements

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Educating Medical-Surgical Nurses
in a Large Hospital Organization
on Sepsis Bundle Elements

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Abstract

Sepsis is a deadly condition if not treated promptly and urgently. To help lower the mortality rate from Sepsis, education on Sepsis is essential for nurses at all levels and experience. Opportunity at a healthcare organization in Northern California arose when it was found through a survey that about 6 percent of Medical-Surgical nurses have "expert knowledge" of the sepsis bundle elements. Only about 35 percent of these nurses who reported having "expert knowledge" are confident in treating sepsis patients. A team of clinical nurse leader students implemented a quality improvement project. The project was designed to expand nurses' knowledge and confidence encompassing the care of sepsis patients in the hopes of better fighting sepsis and reducing sepsis mortality rates in the future. The quality improvement project provided an educational handout and oral presentation on Sepsis to a Medical-Surgical unit at Hospital A in Northern California consisting of 40 nurses.
Section II: Introduction

Introduction

Sepsis is a common illness but deadly and fatal to the human body. Sepsis is the complication of an infection in the body that threatens patient care and safety. Without timely intervention, the patient's blood pressure can reduce to a dangerous level. The consequences of delayed treatment of Sepsis can lessen perfusion in the body and lead to tissue injury, organ failure, and even death (Van der Poll, 2021). The mortality rates from Sepsis are estimated at around 50 million cases globally annually, making up 20 percent of deaths (Van der Poll, 2021). According to research statistics, one in three critical sepsis patients do not make it beyond the 30-day count in the hospital, and approximately one in six sepsis survivors do not survive the first year (Van der Poll, 2021). Furthermore, even if the sepsis patients survive, it is reported that approximately 50 percent of survivors are readmitted within a year (Van der Poll, 2021). These facts depict how deadly Sepsis is to the human body.

Problem Description

There are many ways to prevent and fight against untreated Sepsis from progressing into a life-threatening emergency. Early recognition and management of Sepsis can change unfortunate outcomes for patients and their families. Prompt treatments in the hospital save human lives. Sepsis bundle elements, which refer to a collection of tests and treatments to fight Sepsis, can also decrease patient mortality. The sepsis bundle elements include a three-hour bundle. The three-hour bundle provides the target fluid bolus based on actual or ideal weight. In addition, Non-Invasive Cardiac Output Monitor (NICOM), is used when needed. The sepsis bundle elements also include a six-hour bundle. The six-hour bundle repeats lactate if the initial
lactate is more significant than 1.9. Monitoring the blood pressure (BP) and mean arterial pressure (MAP) twice one-hour post fluids is also essential. If SBP is less than 100 or MAP is greater than 65, the protocols involve notifying the provider. Emergency Department or Intensive Care Unit (ICU) patients are ordered and given Vasopressors. Sepsis bundle elements is vital to nurses caring for sepsis patients.

The education of nurses in sepsis bundles holds an essential role in detecting and initiating treatment for Sepsis. According to a research study, sepsis education and training programs help nurses to feel more confident in their knowledge to care for sepsis patients (Chua et al., 2022). Understanding the nurses' knowledge of sepsis bundle elements can help identify improvement areas. This quality improvement project started with Dr. Theresa Mostasisa, a Quality Nurse Consultant (QNC) working on improving sepsis conditions and saving lives. The results from her study's survey of a Medical-Surgical unit in a large hospital organization in Northern California, referred to as Hospital A, indicated an opportunity to provide additional training to nurses about the sepsis bundle elements. The quality improvement project provided an educational handout and presentation on sepsis to medical-surgical nurses at Hospital A.

Available Knowledge and Literature Review

The Population, Intervention, Control, and Outcomes (PICO) research question used for a literature review to find available knowledge is as follows: In medical-surgical nurses of a large hospital organization at a Northern California hospital, what is the effect of additional education in the form of an informational sepsis handout on increasing nurse's knowledge and confidence in caring for sepsis patients compared with no intervention? The research used the following keywords: nurse education, Sepsis, acute care, education, confidence, knowledge, nursing,
management, recognition, registered nurse, survey, septic shock, severe Sepsis, and sepsis management.

The following keywords are defined as such: Nurse education stands for the necessary training for an individual to learn the technical aspect of the job and all the medical related knowledge for the job. Nursing is a profession where care is provided to others. Registered nurses are licensed to provide care to patients with various health conditions. Education is where learning takes place. Confidence means feeling certain without feeling arrogant. Knowledge consists of facts and information obtained through learning and education. Management is a process of leading, organizing, and planning. Recognition means an identification of someone’s achievement. Survey in research means a list of questions examined for extracting data. Acute care is where patients are treated for brief but severe episodes. Sepsis is an extreme response to an infection. Severe sepsis happens when organs are damaged from the infection. Septic shock is a life-threatening condition that is caused by severe infection. Sepsis management stands for managing a septic condition.

The literature reviews show that increased education will improve nurses’ ability to identify and take the appropriate actions to sepsis in a timely manner. The evidence supports that performance improvement programs such as educational programs are associated with increased compliance and better patient outcomes. For the purpose of this quality improvement project, six literature reviews were studied extensively.

The first study conducted by two researchers, Bleakly and Cole, involved a review of multiple studies in several hospital settings. Bleakly and Cole compiled a guideline using some existing sepsis screening tools. Their research aims to identify ways to reduce the sepsis patient
mortality rate. Three diagnostic steps evaluated in the study include the following: blood culture tests, lactate measurement, and urine output measurement (Bleakly & Cole, 2020). Three therapeutic steps reinforced in the study are oxygen saturation above 94 percent, fluid challenge, and IV antibiotics (Bleakly & Cole, 2020). Upon implementing the six steps within the first hour of suspected Sepsis, the mortality rate significantly dropped to about 46 percent (Bleakly & Cole, 2020). The implication for practice is to increase the nurses’ sepsis knowledge and care, leading to early recognition and intervention to prevent further sepsis-related health complications.

The second study conducted by Chua et al. surveyed 709 nurses across three different hospitals in another study and discovered the importance of sepsis education in increasing nurses’ confidence levels. This study examines nurses' confidence levels in handling sepsis patients and identifies any factors preventing them from providing efficient care. Researchers believe having a solid foundation in sepsis education is critical to increasing confidence in recognizing and managing Sepsis (Chua et al., 2022). The implication for practice is to examine and improve the current educational program and training on Sepsis to develop further nurses' confidence levels in handling sepsis scenarios.

A third study by Damiani et al. examined the importance of nurse education and Sepsis. Fifty observational studies selected by researcher Damiani et al. review how effective an educational bundle on Sepsis concerns the mortality rate from Sepsis. The research further entailed that a 6-hour sepsis education bundle can reduce sepsis death (Damiani et al., 2015). Patients with Sepsis have a higher chance of surviving when the care providers are required to participate in a performance improvement program (Damiani et al., 2015). The implication for practice here is to have a complete evaluation of the current educational program that aims at
Sepsis while ensuring nurses have complied with the training. Then this can lead to better patient outcomes.

The fourth literature review by Edwards and Jones was a discovery on the importance of sepsis education training. This study, conducted by two researchers, reviewed the effect of sepsis training and how it affects the attitude, knowledge, and skills of the nurses who received the training. The study selected sixteen acute surgical and medical units. The study invited registered nurses from these units to participate anonymously. Comparing the results of the nurses who received sepsis training and those who did not demonstrated a better outcome from nurses who received sepsis training (Edwards & Jones, 2021). Meanwhile, nurses who received the training also had a more positive attitude and confidence in managing sepsis patients (Edwards & Jones, 2021). Therefore, more sepsis training should be considered and eventually become mandatory in educating all the nurses who work at acute medical and surgical units.

A fifth study as part of the literature review was by Mahapatra, Heffner, and Atarthi-Dugan. This research team focused primarily on septic shocks and nursing education. As part of this research, the team put together an evidence-based literature review and practice on symptoms and treatment of septic shock. According to their study, providing information to nurses on the following: causes, risks, assessment, evaluation, medical management, and nursing management of Sepsis can become essential to nursing education (Mahapatra, Heffner, & Atarthi-Dugan, 2022).

The sixth study in the literature review by Yousefi et al. provided the importance of nurse education and sepsis training. This study looked at a quasi-experimental study that randomly selected 64 nurses with at least one year of ICU experience who were divided into test and
control groups (Yousefi et al., 2012). The research team collected scores on the participant's knowledge, attitude, and practice (Yousefi et al., 2012). The team was given a questionnaire before, during, and three weeks after the intervention workshop (Yousefi et al., 2012). The results from this study showed the test group participants' increase in mean scores on attitude, knowledge, and practice (Yousefi et al., 2012). These results further reinforced the positive correlation between training and education for nurses and the confidence in sepsis care nurses.

**Rationale**

Lewin's Theory of Planned Change is the conceptual framework to guide this quality improvement project and structure the organizational components for change. Lewin's theory consists of the unfreezing-change-refreezing model (Shirey, 2013). This model was developed by a well-known social psychologist named Kurt Lewin (Shirey, 2013). By modeling after this three-stage change model, steps to create successful change within this microsystem are made possible.

The first stage of Lewin's theory is unfreezing. Unfreezing requires examining the organization to recognize the problem and the needed change. Several vital steps are necessary. The first step involves assessing the microsystem to determine the current organizational status. The unfreezing process involves the following: verbalizing the problem in this system, putting together the necessary materials like evidence-based details and facts to support the proposed change, and finding the key stakeholders to support the change project while helping them drive it as well (Shirey, 2013).

Change is the second stage of Lewin's theory. The second stage of change involves improving the current situation and deploying the desired change. Communication is crucial in
this stage. People are only sometimes open to change and typically want to avoid being caught off guard by changes. Through what may seem like excessive communication at times, the targeted audience will feel more informed and open to changes. Engagement with the staff is another equally important aspect of the change stage. The engagement will help gain perspective, insight, and reaction from those affected by the change. Having those two elements aligned among the staff would lead to a successful change phase (Shirey, 2013).

Refreezing is the third and last stage of Lewin's theory. Refreezing involves the desired change as standardized behavior and successful day-to-day practice (Shirey, 2013). Although this last stage may appear easy to execute, adopting new change comes with resistance and challenges. In order to have a smooth transition in assimilating to a new change, it is essential to offer support to those who would be primarily affected.

**Project Aim**

Our project aims to successfully deliver a valuable educational resource on sepsis for medical-surgical nurses at Hospital A, a large general hospital organization in Northern California. The educational resource is a sepsis handout and oral presentation on sepsis knowledge and inpatient sepsis bundle elements. By providing this educational resource, we aim to increase nurses' knowledge and confidence encompassing the care of sepsis patients.

**Section III: Method**

**Context: Microsystem Assessment**

In order to make changes and improve care, it is essential to do a microsystem assessment. The microsystem assessed is Hospital A, a large general hospital organization in
Northern California. The following assessment primarily focuses on a medical-surgical unit in this hospital and examines this microsystem's needs. For this quality improvement project's purpose, the microsystem assessment consists of the 5Ps framework, which has the following components: purpose, patients, professionals, processes, and patterns.

The first P in the 5Ps framework is purpose. The purpose of the microsystem is to deliver high-quality care to its patients with its mission's commitment to improving health in their community. The goal to enhance the knowledge and confidence level of nurses in this medical-surgical unit aligns with the purpose of the microsystem. When nurses' confidence and knowledge level increases on Sepsis, this can directly impact the quality of care provided to patients who have Sepsis or become septic. Higher quality of care in a timely fashion from increased knowledge falls directly under the overall vision of the microsystem.

The second P in the 5Ps framework is patients. The patients admitted to this microsystem range in all ages, from infancy to geriatric patients. In the medical-surgical unit, most patients are adults admitted for any possible disease, such as pneumonia, to complications arising from diabetes. An analysis of the medical-surgical unit indicated that patients could be diagnosed with Sepsis or become septic during their stay in the unit. Patients in this unit often need more awareness of when Sepsis is developing or how it developed in the first place. Therefore, patient education by nurses is necessary and crucial.

The third P in the 5Ps framework stands for professionals. This assessment component analyzes the professionals who work together in this microsystem. The professionals in this microsystem consist of a team of healthcare professionals such as the nurses on the unit, the nurse manager, QNC, and Clinical Nurse Leader (CNL). Together, this workforce provides
direct care to patients with Sepsis and patients admitted after surgery and strives to fight against Sepsis. Regardless of the position or title, every professional on the team plays an essential role in ensuring the goals to treat and prevent Sepsis are met.

The fourth P in the 5Ps framework stands for processes. As part of this analysis, the processes in the microsystem used to provide sepsis care and services are studied. In this microsystem, an inpatient handoff patient checklist was utilized to ensure nurses were competent in their knowledge of the sepsis bundle elements. For this project, a survey was conducted before implementing the intervention. The pre-survey helped establish a baseline for the knowledge and confidence level. According to the results from the pre-survey, one out of 17 nurses reported they have expert knowledge in their familiarity with the "inpatient sepsis bundle checklist." The results are approximately five percent of the nurses surveyed.

The fifth and final P of the 5Ps framework stands for patterns. Patterns exist everywhere in any microsystem, and the assessment of patterns studies the characteristics of the way the microsystem functions. During the analysis of pre-survey results, there were gaps in nurses' knowledge of Sepsis. This pattern presented an opportunity to provide additional training on sepsis bundle elements to nurses to care for patients.

**Context: SWOT Analysis**

A Strength, Weakness, Opportunity, and Threat (SWOT) analysis is an acronym that identifies the strengths, weaknesses, opportunities, and threats. For this study, a pre-survey collected at Hospital A by Dr. Mostasisa was examined to create the SWOT analysis. There were three strengths analyzed. The first strength is the confidence shown by the majority of nurses in explaining the definition, risk factors, and the cause of sepsis. Data analysis of the pre-survey
showed that 82 percent of nurses surveyed rated their confidence level as 4 out of 5 or higher (Mostasisa, 2023). The second strength is the placement of an inpatient sepsis bundle checklist in the medical-surgical unit. A third strength is the low cost of the education handout intervention. An educational handout on Sepsis presented at the nurses’ staff meeting is a cost-effective method to increase nurses’ knowledge and confidence encompassing the care of sepsis patients. If this takes place virtually, there are zero costs involved because there will be no utilization of printer papers or ink to convey the educational message on Sepsis. Even if the presentation involved physical handout prints, printing these resources in any hospital setting should be minimal and manageable for the organization's budget. Overall, the benefits will outweigh any of the minimal printing costs involved. In addition to the educational handout and presentation, the nurses on the medical-surgical unit will be presented with a QR code—the code links to the Sepsis Alliance's free continuing nurse education website. Further education utilizing Sepsis Alliance will ensure minimal costs associated with additional training on Sepsis. As long as a user registers with some information, the lessons on sepsis education are available without a cost. The hospital that employs these nurses can consider this free course and include it in its learning management program.

The biggest weakness is the lack of nurses who feel confident to teach sepsis and the lack of nurses who feel they have expert level knowledge with the “inpatient handoff sepsis bundle checklist.” When educating patients on sepsis, the nurses’ ability and confidence levels to teach patients are as important as their knowledge. The data revealed the following: 53 percent of nurses were confident in educating patients on sepsis, only 5 percent of nurses had expert-level knowledge of explaining the “inpatient sepsis bundle checklist,” and just 35 percent of nurses were confident in taking care of septic patients (Mostasisa, 2023).
These numbers analyzed indicate an opportunity to increase the nurses’ confidence and knowledge through education materials such as the education handout and oral presentation. The opportunities provided through the educational handout could supplement the sepsis bundle checklist and benefit nurses with more education and increased confidence levels.

The threats foreseen by this project is the possibility of nurses not actively participating in this project. Another threat to this study is the possibility that nurses may not rate their knowledge and confidence level truthfully or because there can be unseen biases in their self-assessment.

**Intervention**

The intervention focused on educating medical-surgical nurses on sepsis in Hospital A through a sepsis education handout and oral presentation. Multiple steps were taken in the intervention process to improve performance and facilitate change for this project. The actions completed within the timeframe given to conduct the quality improvement project included the analysis of the pre-survey, implementation of the sepsis education handout, and a sepsis education presentation.

The intervention of the sepsis education handout outlined the following educational information: sepsis definition, sepsis bundle elements of the 3-hour bundle and the 6-hour bundle, sepsis risk factors, and the acronym "TIME" to highlight the importance of time in Sepsis. The intervention attempted to identify what could make improvements in the sepsis care protocols of medical-surgical nurses in a large hospital organization. The team firmly believes that education on Sepsis is essential to increase confidence and knowledge of sepsis care. The rise in confidence and knowledge of septic care can ultimately reduce patient mortality.
Study of the Intervention

Dr. Theresa conducted a pre-test assessment titled "RN Sepsis Self-Assessment Survey." The sample of this study consisted of 17 nurses at Hospital A. The survey had six questions to collect both quantitative and qualitative data. The data was collected anonymously, with participants voluntarily agreeing to participate in the study. The baseline knowledge and confidence level data were analyzed through the self-administration of a pre-test survey.

The instructions asked the participants to rate five of the six questions using a Likert scale, with 0 indicating "do not have any knowledge" and 5 representing "expert knowledge." The five questions evaluated were for the following statements: "I can explain sepsis (definition, risk factors, and cause)," "I can recognize the difference between severe sepsis and septic shock," "I feel comfortable in caring for a sepsis patient," "I can teach sepsis," and "I am familiar with the 'inpatient handoff sepsis bundle checklist.'" The sixth question consisted of the case scenario of a patient, followed by a free-response question inquiring about the nursing actions that will take place.

Data was collected and potential gaps and patterns in the knowledge of sepsis was identified. As discussed earlier, the analysis revealed an opportunity to fill this identified gap through the unfreezing process of Lewis's theory. Literature reviews showed evidence to support our thesis that increased education will help nurses’ ability to recognize and respond to sepsis with confidence in caring for patients. The key stakeholders involved that could support this initiative were identified as: Northern California Hospital Executives, Chief Nursing Officer, CNL, Director of Nursing, and the data analysts. A timeline to find an opportunity to implement the change project and intervention in practice was identified as shown by Appendix C.
The education intervention will help nurses with their knowledge and confidence. Registered nurses can feel supported in their ability and knowledge of Sepsis through different avenues. Additional education, resources, or training names a few of these forms of support. One study recommends organizing seminars and educational workshops to increase confidence in healthcare professionals (Yousefi et al., 2012). According to the research conducted by Chua et Al. on 709 nurses, Sepsis education and implementing additional training enhanced nurses’ confidence and knowledge (Chua et Al., 2022). The review of the effect of education on nurses’ knowledge and attitude after education workshops also showed significant increases in the mean scores of knowledge and attitude according to another study (Yousefi et al., 2012). To translate this stage into reality in the context of this project, the team envisioned including a copy of the handout in all inpatient unit binders and bulletin boards. Ideally, if that change were to execute, a follow-up evaluation would be performed to help reflect on what worked effectively and what needs further improvement moving forward. For this study, our team made a handout and presentation for the medical-surgical nurses of Hospital A we studied.

Approximately 40 nurses were present during the nurse huddle when we presented our sepsis handout and education presentation. The presentation also included a poster with all the evidence-based information researched and collected organized effectively to present the analysis and recommendations and answer any further questions. Implementing the education component given through the nurse huddle, informational session, or presentation would promote desired change and support our project's objective to increase knowledge and confidence about Sepsis among nursing staff.

Measures
For any quality improvement project, the clinical nurse leader must establish a method that looks at the outcome measures, process measures, and balancing measures of the project. One of the measurement methods for this study would be the data collection of a post-survey following the pre-survey. The post-survey would be identical to the pre-survey given to the nurses initially. The post-survey analysis and comparison of the post-survey to the pre-survey would be a reliable measure for the intervention study.

The limitations of the project were time. Due to the time constraints, this project concluded on a note where the post-survey still needs to be collected. Another way to measure the success of this project is by measuring the number of nurses utilizing the QR code to Sepsis Alliance’s free continuing nurse education website. In the presentation, our team presented the QR Code. The Sepsis Alliance's free continuing nurse education website is linked to the QR Code. Our team recommended that the unit post this handout with the QR Code in several high-traffic areas of the medical-surgical unit. Locations providing nurses with excellent access to this handout include the bulletin board and break room. If there is an uptick in traffic in the QR code's utilization, this could indicate more nurses deciding to visit the site to learn more about Sepsis. These observations also indicate that the handout was valuable and practical. Limitations in these observations could include the inability to track the number of nurses following through to complete the training. A correlation can be drawn by comparing whether the presentation positively or neutrally impacted website visits to Sepsis Alliance.

Ethical considerations must be addressed and observed when implementing any quality improvement project. Two ethical principles considered when implementing this project are beneficence and nonmaleficence. Beneficence is defined as promoting good (ANA, 2023). Nonmaleficence refers to not harming another (ANA, 2023). Ethically, every healthcare
professional acts in good faith for another, referring to beneficence (ANA, 2023). Healthcare professionals also work on not harming anyone, referring to nonmaleficence (ANA, 2023). The project’s goal upholds both ethical principles by further educating and reinforcing knowledge on Sepsis to save lives. When nurses are well-trained and have more knowledge on the early recognition and speedy care for Sepsis, nurses will be able to provide quality care for all patients and uphold these ethics.

Section IV: Results

The study must continue to understand the full beneficial effect of the educational component on improving sepsis bundle knowledge. Due to the limitations and time constraints in completing this study, a post-survey will be taking place by future cohorts as a follow-up to our initial research findings. Specific outcome measures in a further study need to be evaluated to analyze the actual increase in confidence level of medical-surgical nurses at Hospital A. A future post-survey will provide valuable insight and data on whether the education handout and presentation could be successful in increasing the nurses’ knowledge and confidence about sepsis bundles. The team estimates that the increased knowledge and confidence level through an education intervention could be by at least 25 percent. But more time and further research is needed to evaluate the data and results.

Section V: Discussion

Summary

This quality improvement project aims to improve sepsis care by utilizing education to increase nurses’ knowledge and confidence about sepsis nursing care. We focused on education
and training to increase nurses’ confidence and knowledge. Literature reviews were conducted and many articles and research indicated a strong correlation with education on sepsis and the quality of sepsis care. The 5 P’s framework representing: purpose, patients, professionals, processes, and patterns were studied. A SWOT analysis was also created. Kurt Lewin's change methodology of unfreeze, change and refreeze process was executed. The team created an educational handout as an intervention and a presentation was provided for the 40 nurses at Hospital A.

Conclusions

The team delivered the sepsis educational handout to the medical-surgical nurse unit at Hospital A. The nurses had access to a QR code on the handout. Once scanned, the QR code would redirect anyone to the Sepsis Alliance's free continuing nurse education website to allow anyone interested in further education and learning opportunities on Sepsis. The hope is to have this QR code placed in high visibility and high-traffic areas such as the unit bulletin board and break room. The handout is a simple and easy way for anyone in the hospital to have an educational opportunity on Sepsis. This hospital's mission outlines a priority for treating devastating Sepsis. The group felt that this project aligned with this hospital A’s goal and believed the sepsis educational handout fit perfectly into their mission to provide high-quality care for patients. In conclusion, this project laid a strong foundation for future cohorts and students to continue improving sepsis education and management in the hospital setting. With more resources, this project can positively impact a grander scale and scope of future sepsis care education and research.
Section VI: References

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## Section VII: Appendices

### Appendix A: Literature Synthesis Table

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<th>Author(s)</th>
<th>Objective</th>
<th>Design</th>
<th>Sample Setting</th>
<th>Results</th>
<th>Conclusion</th>
<th>Implications for Practice</th>
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<tbody>
<tr>
<td>Bleakly &amp; Cole (2020)</td>
<td>The knowledge, as well as the use of clinical guidelines and sepsis screening tools, are effective in reducing patient mortality.</td>
<td>The three diagnostic steps are the following: blood cultures, measure lactate, and measure urine output. The three therapeutic steps are the following: give oxygen to keep sats above 94 percent, provide a fluid challenge, and give IV abx</td>
<td>This article aligns with multiple studies conducted in several hospital settings.</td>
<td>The delivery of Sepsis six within one hour of suspected sepsis results in saving lives (the rates are as follows: reduced rate of death by 46.6 percent)</td>
<td>Sepsis is a critical healthcare challenge. Sepsis causes an economic burden. Understanding the pathophysiology of Sepsis can give nurses the knowledge and tools needed for early intervention to take place and save lives.</td>
<td>With increased knowledge in nurses comes the ability to have early intervention. By increasing nurses' knowledge of Sepsis, nurses will be better prepared to use clinical guidelines and make timely interventions.</td>
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<td>Chua et al. (2022)</td>
<td>Nurses’ knowledge and confidence were examined to evaluate their effectiveness at handling sepsis patients. Workplace factors were also reviewed.</td>
<td>Three hospitals’ inpatient and ED units were given an online survey. Closed-end responses were analyzed statistically, while open-ended feedback was analyzed by its content.</td>
<td>This is a multi-site and cross-sectional survey.</td>
<td>There were total of 709 nurses that participated in the survey. The knowledge and confidence levels in recognizing and responding to patients suffering from Sepsis were evaluated as moderate.</td>
<td>A stronger foundation in sepsis education and training programs is needed. The implementation of sepsis screening tools and care bundles are also needed. These will enhance nurses' knowledge and confidence in recognizing and managing patients suffering from Sepsis.</td>
<td>Increased education for nurses has been found as a beneficial tool to boost nurses' ability to recognize and respond to Sepsis promptly.</td>
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<td>Study</td>
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<td>Damiani et al. (2015)</td>
<td>To ensure staff complied with a sepsis campaign, a performance improvement program was reviewed to evaluate its effectiveness. Two authors provided the data for the studies. For data analysis, random-effect models were used. Patients who had Sepsis or sepsis shock were the subject of this study.</td>
<td>The improvement program reduced the mortality rate from Sepsis from the fifty observational studies. The strong correlation between improvement programs and the mortality rate reduction from Sepsis.</td>
<td>Better patient outcomes were the result of more compliance in training and education.</td>
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<td>Edwards &amp; Jones (2021)</td>
<td>Nurses’ skills, knowledge, and attitude were examined through sepsis training. A survey was given out to RNs from sixteen different units. Nurses from sixteen acute surgical and medical units Additional sepsis training significantly improved nurses' skills, knowledge, and attitude. SIRS and score for national early warning for Sepsis were scored higher by those with more training.</td>
<td>Sepsis training for RNs can improve a patient's overall well-being because nurses become more proficient at handling Sepsis. More training and education can elevate nurses' knowledge and confidence to care for sepsis patients.</td>
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<td>Authors (Year)</td>
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<td>Mahapatra, S., Heffner, A. C. et al. (2022)</td>
<td>To teach nurses everything related to Sepsis. This includes causes, treatments, and care management.</td>
<td>Evidence-based practice and literature created a comprehensive guide on septic shock and its treatment.</td>
<td>Data were collected from sources on septic causes, risk factors, assessment, and evaluation from patients who suffered septic shock.</td>
<td>Sepsis education is essential. The more information the healthcare providers have on Sepsis, the better.</td>
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<td>Yousefi et al. (2012)</td>
<td>ICU nurses in a hospital in Iran were evaluated after attending a training program.</td>
<td>Subjects were randomly selected and divided into test and control groups. A quasi-experimental study was used.</td>
<td>Sixty-four nurses with at least one year of ICU experience.</td>
<td>The mean scores of all study indicators increased for the test groups.</td>
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- This can be included in training and educational programs in any setting to treat Sepsis and septic shock.
### Appendix B: SWOT Analysis

<table>
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<th>Strength</th>
<th>Weakness</th>
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<td>● The majority of nurses feel they can explain the definition, risk factors, and cause of Sepsis (82 percent rate themselves 4/5 or higher)</td>
<td>● Only 53 percent of nurses feel they could confidently teach Sepsis.</td>
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<td>● The sepsis bundle checklist is already in place in the medical-surgical unit.</td>
<td>● Only 5 percent of nurses felt they had expert-level knowledge of the “Inpatient handoff sepsis bundle checklist.”</td>
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<td></td>
<td>● 35 percent of nurses feel they have a high confidence level in taking care of septic patients</td>
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<tr>
<td><strong>Opportunity</strong></td>
<td><strong>Threat</strong></td>
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<tr>
<td>● Opportunity to increase confidence and knowledge through educational material (i.e., handouts and videos).</td>
<td>● The possible unwillingness of nurses to participate in the education project</td>
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<tr>
<td>● The handout will supplement the existing sepsis education framework and sepsis bundle checklist.</td>
<td>● Nurses not truthfully rating their knowledge and confidence level on the pre/post-survey</td>
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<tr>
<td>● The education project is low-cost, with a high potential increase in confidence and knowledge.</td>
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</table>
Appendix C: Timeline/Gantt Chart

<table>
<thead>
<tr>
<th>Status</th>
<th>Task/Deliverable</th>
<th>Resp. Party</th>
<th>Feb</th>
<th>Mar</th>
<th>Apr</th>
<th>May</th>
<th>Jun</th>
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<th>Sep</th>
<th>Oct</th>
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<th>Dec</th>
<th>Jan</th>
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<tbody>
<tr>
<td>Microsystem assessment</td>
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<td>CNL</td>
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<tr>
<td>Survey nursing staff</td>
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<td>CNL &amp; Team</td>
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<tr>
<td>Analyze survey data &amp; research initiatives</td>
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<td>CNL &amp; Team</td>
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<tr>
<td>Define topic and aim statement</td>
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<td>CNL</td>
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<tr>
<td>Identify sponsor &amp; key stakeholders</td>
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<td>CNL</td>
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<tr>
<td>Create educational sepsis training</td>
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<td>CNL &amp; Team</td>
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<tr>
<td>Produce training materials</td>
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<td>CNL &amp; Team</td>
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<td>Initiate sepsis training with staff</td>
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<td>CNL</td>
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<td>Retrieve staff feedback</td>
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<td>CNL</td>
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<td>Analyze training feedback &amp; data</td>
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<td>CNL &amp; Team</td>
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<td>Update stakeholders</td>
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<tr>
<td>Implement changes to educational tools and training</td>
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<td>Evaluate further sepsis training</td>
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<td>Post survey nursing staff</td>
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<td>CNL</td>
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<tr>
<td>Analyze survey data</td>
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<tr>
<td>Present findings to stakeholders</td>
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<td>CNL</td>
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<tr>
<td>Execute sepsis training throughout facility</td>
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<td>CNL &amp; Team</td>
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<tr>
<td>Analyze sepsis data</td>
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<td>CNL &amp; Team</td>
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Stakeholders: Northern California Hospital's executives, clinical nurse leader (CNL), director of nursing, nurse manager, and the data analysts CNL & Team; CNL, data analysts/student nurses
Training: Sepsis Handout and Videos
Note: Training will be continued by other student nurses after its initial execution.
# Appendix D: RN Sepsis Self-Assessment Survey

## RN SEPSIS SELF-ASSESSMENT SURVEY

**Date:**

**Department:**

**Purpose:** This *volunteer/anonymous* RN SEPSIS SELF-ASSESSMENT SURVEY will provide qualitative/quantitative data to capture existing RN SEPSIS KNOWLEDGE and CONFIDENCE in recognizing and managing patients with sepsis.

**Instructions:** Please answer questions #1 through #5 using the Likert Scale (0 = *do not have any knowledge to 5 = have expert knowledge*). For question #5, please write in your answer.

1. I can explain Sepsis (definition, risk factors, and cause).
   
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2. I can recognize the difference between Severe Sepsis and Septic Shock.
   
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3. I feel comfortable in caring for a Sepsis patient.
   
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4. I can teach Sepsis.
   
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5. I am familiar with the “Inpatient Handoff Sepsis Bundle Checklist”.
   
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**Case Scenario:** Mr. Charles Brown was admitted to your unit at 1200 noon (came from the ED). TZ (Time Zero) was established at 0700 in ED. Initial Lactic Acid result 2.0 at 0800. Currently infusing is IV LR at 125 ml/hr. What are your nursing actions?

---

Thank you for your participation!

KP/RWC/Quality/Sepsis PI/ Feb 2023/Mostaisa/Staff Meeting – RN SEPSIS SELF ASSESSMENT SURVEY
Appendix E: Sepsis Poster

Educating Medical-Surgical Nurses in a Large Hospital Organization on Sepsis Bundle Elements

01. Introduction
- Sepsis is extremely common with roughly 10 million cases globally per year and represents nearly 5% of all deaths worldwide.
- When sepsis patients require admission to critical care units, one in three patients do not survive four days.
- Additionally, among sepsis survivors, roughly 15-20% will be re-admitted within a year and one of the biggest barriers to survival is treatment failure due to under-recognition, confusion in diagnosis, and inadequate monitoring.
- Despite advances in research and randomized controlled trials, treatment of sepsis remains largely supportive with measures such as timely interventions, resuscitation, early and supportive care for organ dysfunction.

02. Objective
To increase the knowledge and confidence about sepsis among nursing staff on the medical surgical unit by 20%. By providing an educational handbook at the bundle survery, we will accomplish this goal in the end of three months with post-education surveys reflecting improvement.

03. Proposed Methodology and Gantt Chart Timeline
- A modifiedadopted ICU-specific educational intervention, and post-survey at the HIP (Healthcare Improvement Project) baseline.
- Nurse managers and the interprofessional team will conduct a pre-survey.
- The survey includes six closed question that are based on a survey instrument designed to capture both knowledge and confidence in recognizing sepsis.
- The post-survey is designed to capture knowledge and confidence in recognizing sepsis.

04. PICO Research Questions
In nurses on the medical surgical unit at a Northern California hospital, what is the effect of additional educational interventions on nurses’ knowledge and confidence in cared for sepsis patients compared with no intervention?

05. Implications for Nursing Practice
From the summary of evidence below, it is shown that increased education will help nurses improve in recognition and response to sepsis.

06. SWOT Analysis
Strengths
- Ability of nurses to recognize and respond to sepsis.
- Education on sepsis.

Weaknesses
- Lack of resources.
- Time constraints.

Opportunities
- Increased awareness and training.

Threats
- Resource constraints.
- Time constraints.

07. Recommendations
- Educate nurses on the importance of recognizing and responding to sepsis.
- Provide ongoing education and support for nurses.
- Increase awareness of sepsis among healthcare providers.

08. References
Appendix F: Sepsis Educational Handout

**SEPSIS EDUCATION**
April 2023

---

**Sepsis Definitions**

- **Sepsis** is a dysregulated host response to infection, most often originating in the lung, urinary, skin, or GI tract [1]

- **Severe sepsis** occurs when one or more organs are damaged, causing symptoms such as little to no urine output, difficulty breathing, and an abnormal heartbeat [3]

- **Septic shock** is when blood pressure drops in addition to organ damage [3]

---

**Sepsis Bundle Elements** [2]

- **3-Hour Bundle:**
  - Complete target fluid bolus (actual or ideal weight based)
  - Use NICOM (non-invasive cardiac output monitor) if indicated

- **6-Hour Bundle:**
  - Repeat lactate if initial lactate > 1.9
  - Check BP/MAP twice 1-hour post fluids
  - Provider notified for persistent hypotension (if SBP < 100 or MAP > 65)
  - Vasopressor ordered/given (ED/ICU only)

---

**Risk Factors** [1]

- Adults 65 years or older
- People with chronic medical conditions
- People with weakened immune systems
- People who survived sepsis
- People with recent severe illness
- Children younger than one year old

---

**REFERENCES**


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**WANT TO LEARN MORE?**

Sepsis Alliance has a free course for nurses to learn about sepsis!

2.30 RN CE contact hours, scan the QR Code: