Improving Early Sepsis Identification on Inpatient Units

Courtney Sumanqui
casumanqui@usfca.edu

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

Part of the Other Nursing Commons

Recommended Citation
Sumanqui, Courtney, "Improving Early Sepsis Identification on Inpatient Units" (2017). Master's Projects and Capstones. 700.
https://repository.usfca.edu/capstone/700
Improving Early Sepsis Identification on Inpatient Units

Courtney Sumanqui

Nursing 653: Clinical Nurse Leader Internship

University of San Francisco, Orange County
Abstract

Sepsis is a medical emergency that if left untreated can rapidly cause death for many patients due to effects that this systemic infection has on the human body. Millions of Americans nationwide are affected by sepsis on an annual basis. To reduce the number of patients who decline to sepsis in the hospital, efficient sepsis protocols must be effectively implemented throughout the hospital. Healthcare organizations must dedicate themselves to providing high quality patient care from the time of admission to discharge. This quality improvement project focused on improving early sepsis identification on inpatient units.

Nurse practices, knowledge, understanding related to sepsis was assessed, along with the hospital’s well-developed sepsis protocol. A microsystem assessment was performed on the inpatient units to identify the units' purpose, patient population, professionals, processes, and patterns (5 P's Assessment tool). The purpose included the “values-driven integrated healthcare delivery system in collaboration with those who share our values” (x). Patients involved adults of all ages over eighteen years old, a multidisciplinary approach was used when selecting professionals, patient processes included inpatient acute care patient care plans, and a multi-specialty approach of the microsystem was used to assess patterns.

A root cause analysis was conducted to assess if sepsis screenings were performed in a timely manner and to identify existing barriers to the hospital's current sepsis protocol. Furthermore, Clinical Nurse Leader students collaborated with the Director of Sepsis Committee and now Emergency Department to create a "Sepsis Screening Observation Checklist". A chart review audit was conducted using the "Sepsis Chart Screening Data" form, which allowed students to review electronic medical record (EMR) charts of 100 patients on five different
nursing units. In addition, students also provided nurses with surveys to assess their knowledge of sepsis and the hospital's sepsis policies and protocols.

Results indicated that vital signs were reported in a timely manner 50% of the time, the greatest contributor to delayed treatment of sepsis were labs, and only 38% of nurses felt that adequate educational resources were provided to them regarding sepsis. It was also learned that a nurse's knowledge and understanding of sepsis is crucial when identifying septic patterns and performing the necessary interventions that will keep his or her patients safe.
Introduction

Sepsis is a serious complication initiated by the body's extreme response to an infection. The systemic inflammatory response syndrome (SIRS) is characterized by two or more of the following: fever or hypothermia, tachycardia, tachypnea, and white blood cells. If not promptly and properly identified and treated early, sepsis can quickly lead to tissue damage, organ failure and death. Due to high morbidity and mortality rates in the United States, sepsis has become an area of focus within the healthcare setting because clinical signs are often subtle, nonspecific and overlooked. The focus must be shifted "to design a program that would be readily used by nurses and ensure early recognition of patients showing signs suspicious for sepsis" and implementation of prompt, evidence-based interventions to diagnose and treat sepsis (Jones et al., 2015).

A Literature review was conducted using the CINAHL Complete and PubMed databases. According to the Centers for Disease Control and Prevention (CDC), more than 1.5 million people in the United States suffer from sepsis annually, about one in every three patients who die in the hospital setting have sepsis, and at least 250,000 Americans die each year because of sepsis ("Data Reports | Sepsis | CDC," 2017). If detected early and treated aggressively early on, sepsis morbidity and mortality rates will decrease as improved patient outcomes are achieved (Novosad et al., 2016). Therefore, it is essential for this quality improvement project to assess the healthcare professional’s understanding and implementation of the sepsis protocol, as well as its effectiveness within the hospital setting.

Improving early sepsis identification is three-fold. Nurse observations helped to get a realistic awareness as to if nurses were visiting their patients and actively performing their sepsis screening. Through utilization of surveys, clinical nurse practices were assessed and evaluated. Understanding nurse knowledge of sepsis identification and treatment helped identify gaps for
improvement that will help improve patient outcomes. A retrospective electronic medical record audit will gauge documentation adherence to current sepsis screening tools and to hospital protocols and procedures. The purpose of this project is to help enhance a well-developed, easy to use sepsis protocol that adheres with the international guidelines set by the Surviving Sepsis Campaign (SSC) for the management of sepsis and septic shock and the Centers for Medicare and Medicaid Services (CMS). Doing so will help to facilitate early identification and prompt early appropriate interventions as needed.

Methods

Microsystem Assessment

The site for this quality improvement project took place in a 384-bed acute care hospital dedicated to serving the healthcare needs of Southern California communities through the values of respect, caring, integrity, passion and stewardship. The hospital is categorized as a General Acute Care Hospital and has recently become affiliated with the Verity Health System. This hospital consists of eight floors and several units offering services including: Level II Trauma Center, emergency, oncology, cardiovascular, pediatrics, behavioral health, skilled nursing and obstetrics. Additionally, this hospital houses nine surgical operating rooms and three cardiac catheterization labs for both inpatient and outpatient services. The microsystem that was assessed for this project took place on five individual inpatient units (2E, 4, 5, 6, and 8). Emphasis for this project was focused on medical-surgical/telemetry unit (6th floor), where sepsis screening observations were done. Emergency, critical and intensive care units were excluded from the focus of this project due to already established and separate early sepsis identification protocols. Thus, majority of patients on these five units were stable and rarely required critical and intensive care.
Five P’s Assessment

Evaluation of the microsystem included identifying the units’ purpose, patient population, professionals, processes, and patterns (5 Ps). Understanding the microsystem informs the project structure, goals and implementation. The purpose of this hospital was its vision to be a "values-driven integrated health care delivery system in collaboration with those who share our values" (x). Typical patients seen and assessed on these units were of adult ages of 18 years old or older and in stable conditions upon entry into the units. Many patients served at this hospital are uninsured and rely on Medi-Cal for coverage of treatment and services. Approximately “60% of the Hospital’s inpatient payer mix consisted of Medi-Cal Managed Care (31%) and Medi-Cal Traditional (29%) patients” (x). The professional team was comprised of but not limited to registered nurses who work 12-hour shifts, physicians, nurse practitioners, licensed vocational nurses, nursing assistants and respiratory therapists. The numbers of staff per shift varied by unit. The processes of patient care involved patient stabilization and treatment personalized to fit every individual’s care plan. The pattern consisted of a multi-specialty team approach to provide high quality care that prioritized patient safety and satisfaction. The patient care delivery model for the inpatient unit is patient-family centered care model. This model not only focuses on the patient but encourages and incorporates participation of the patient’s family members in the delivery of high quality care. A patient’s family members contribute an important role in improving patient outcomes. They have the capacities to provide social, emotional and spiritual support that any other person cannot substitute. This model embodies safety, quality, service, communication and the hospital’s values.

Data Collection
Data collection had greatly contributed to an enhanced understanding of what the current situation surrounding sepsis was like at the hospital and what steps had to be addressed to better improve early sepsis identification on these five units. Many site visits were necessary for data collection purposes. All site visitations were thoroughly planned and arranged with the group's point-of-contact, the Director of Sepsis Committee and now Emergency Department. During site visitations, the group would initially gather and meet with the Director in the hospital's lobby to discuss goals for the visit. Afterwards, the group would disperse between the five inpatient units in efforts to reach the goals mentioned at the beginning and then the Director would be contacted at the end of shift for a quick post-conference to discuss pertinent findings. Methods of communication with the Director outside of the hospital involved use of e-mail, phone calls and texts. On a weekly basis, the group would touch base with the Director to discuss plans for the week as well as to arrange a time for visits that correlated well with both students and staff on-site. Given that these units schedule meetings, events, and surveys to occur on certain days at specific times, it was significant to touch base with the Director rather than to arrive unannounced.

Through site visits, a variety methods of data collection were essential to gather information for this quality improvement project. A root cause analysis (RCA) was conducted to identify gaps in adherence to the hospital's current sepsis protocol. A systematic review was performed to distinguish any disparities and inconsistencies associated with the protocol. The hospital's sepsis process maps and Sepsis Protocol Administrative Manual in addition to the United States Centers for Medicare and Medicaid Services (CMS) Sepsis Core Measures were also thoroughly reviewed. Furthermore, sepsis screening observations, sepsis screening chart audits, and sepsis surveys were carried out to collect research data.
Sepsis screening observations were performed through personal student-nurse observations throughout both day and night shifts to determine nurses' adherence to performing the task in a timely manner. In collaboration with and approval from the Director of Sepsis Committee, the group of nursing students developed a form, referred to as the "Sepsis Screening Observation Checklist" (Appendix A), to evaluate the nurses during student-nurse observation visits. This form helped to observe if nurses were thoroughly screening their patients for sepsis and documenting findings accurately into the EMRs in a timely manner. The form included questions in compliance with the steps necessary for identifying early sepsis. Per Director approval, students were permitted to observe morning-shift nurses for purposes of completing the form. Additionally, nurses were notified by the Director that students were to observe solely for obtaining sepsis screening data and were not allowed to perform any direct patient care. Observation data was collected from 66 patients in total. The next step involved sepsis screening chart audits that were performed after being granted ARCIS electronic medical record (EMR) access to determine if “Sepsis Screening Chart Audits” (Graph C.1) had been conducted and accurately documented throughout the shift and at what times they were documented, if applicable. Chart audit qualifications specific to this project required the patient being of adult age (18-years-old or older) and on day two post-admission status. At least 100 patient EMRs were analyzed for this project. Finally, in accordance with the hospital's Sepsis Protocol Administrative Manual, a select-all-that-apply (SATA) Nursing Sepsis Survey (Appendix D) was created and administered to nurses working on the five inpatient units during both day at night shifts. Its purpose was to determine the nurses' baseline and operational knowledge surrounding sepsis, early identification, and hospital protocols. Out of the surveys administered, thirty-two forms were filled out and handed back from nurses working on the inpatient units.
Data collection permission to conduct personal student-nurse observations, sepsis screening chart audits, and SATA sepsis surveys for research purposes was properly obtained from the Director of the Sepsis Committee of the hospital.

Limitations that may have affected the accuracy of the group's data collection include lack of access to additional units, time allotted on the units for observation and audits, nurse survey participation. In addition, the fact that staff nurses had been notified prior to their shift that they were to be observed by students for sepsis screening data collection may have led to the disruption of the project's data integrity.

**Results**

At this hospital, it is expected that nurses follow and perform sepsis screenings on their patients within the first three hours of their shift. As mentioned in the Methodology section, three methods were utilized to obtain research data — sepsis screening observations, sepsis screening chart audits, and nursing sepsis surveys. During student-nurse observations, students shadowed nurses for the duration of the first three hours of the nursing shifts. The Sepsis Screening Observation Data (Graph B.1) revealed that out of the total 66 patients observed, 58% (38 patients) of sepsis screenings were not completed within the specified time frame, while 42% (28 patients) had been screened for sepsis by the patients’ corresponding nurses. This data came as a surprise given that the nurses were all well informed ahead of time that students were to be shadowing and observing for sepsis screening performance during a specific time frame. It was expected that more or all the nurses would have performed sepsis screenings on all their patients during that time. Sepsis Screening Data Based on the Completed Screenings (Graph B.2) correlated with the 42% of patients who had been screened for sepsis. Of the 42% (28 patients), data disclosed that 93% of the patients’ vital signs were taken and recorded between 5am-10am,
18% presented with two SIRS criteria and a suspected or confirmed infection, and 7% had the sepsis protocol initiated and carried out.

For Sepsis Screening Chart Audits (Graph C.1), ARCIS, the electronic medical record system, was utilized by students to research and gather additional data as to when sepsis screenings were performed throughout nursing shifts. Of the 199 total audited sepsis screenings, 72% were performed within the first three hours of the shift. Results showed that 3% of the 199 screenings showed positive sepsis screenings and 1% necessitated initiation of the sepsis bundle. This proved that a majority, but not all sepsis screenings were performed at the beginning of nursing shift. The expectation was that all nurses had to have this done within the first three hours of the shift.

Lastly, 32 sepsis surveys were administered to nurses and later collected across all the inpatient units. Nursing Sepsis Survey Results (Graph E.1) revealed that 88% of nurses understood the definition of a positive sepsis screening, 95% could identify SIRS criteria, 44% were able to identify the incorrect nursing intervention for a positive sepsis screening, 31% were able to identify the criteria required for a code sepsis, and 97% were able to identify proper interventions to be performed within three hours of severe sepsis presentation amongst patients. In addition, some answers were not answered by the nurses and were therefore omitted, as listed in the results table. Given the results found, it appeared as if most nurses had a baseline and operational knowledge surrounding sepsis. Two significant data showed that only 44% of nurses could identify the incorrect nursing intervention for a positive sepsis screening from the options listed and that only 31% were familiar with code sepsis criteria. This identified a need of further education on what appropriate identification factors and interventions must occur.
Aside from the questions regarding sepsis screenings and interventions that were asked on the nursing sepsis survey, qualitative data was retrieved and analyzed. According to “Are Abnormal Vital Signs Reported to Nursing in a Timely Manner?”, significant findings found that only 50% of abnormal vital signs were reported to nurses in a timely manner (Graph F.1). From the “Greatest Contributor to Delays in Treatment of Sepsis” data, lab delays were the greatest contributor to delays in the treatment of sepsis (Graph F.2). Regarding data collected in “Are Adequate Educational Resources Regarding Sepsis Provided to Nursing?”, only 44% of adequate educational resources regarding sepsis were provided to nurses (Graph F.3). “Resources Utilized to Reference Nurse Driven Protocol for Sepsis” data showed that ARCIS was the most utilized resource to reference nurse-driven protocols for sepsis (Graph F.4).

**Implementation**

Currently, there is not much data to be reported due to unforeseen project delays. It was the goal of this quality improvement project to improve early sepsis identification on the inpatient units at this hospital. Only the ideas of implementation strategies had been communicated with the hospital staff. However, the following explains what would have been the intended plan if time had permitted.

The suggested focuses of implementation strategies would have been on staff education, randomized audits, and a revised sepsis process map. According to data retrieved from the Nursing Sepsis Surveys chart, most nurses appeared to have had a baseline idea of the definition of sepsis and how to identify it. However, there were still evident gaps in knowledge that need to be further addressed with reeducation. This may include but is not limited to conducting annual trainings for nurses to brush up on topics including pathophysiology, SIRS criteria, and importance of early and appropriate interventions. There would also be a need for staff education
to further improve compliance of SIRS assessment for each patient on all inpatient units to be completed within the first three hours of shift utilizing the most recent vital signs.

If feasible, it would be useful to apply an appointed "SIRS/Sepsis Champion" staff member, such as an intensive care unit nurse with experience, on every inpatient unit to help identify and treat patients with SIRS and/or septic patients. This nurse could also serve as a resource for other nurses to learn from and can further help in the identification of early sepsis. In addition to staff education, having designated staff to perform randomized routine audits of nurses and patient charts every six months would help to seek out potential problems with timely sepsis screenings as well as to measure nurse compliance and accountability.

After carefully analyzing data and resources utilized by staff at this hospital for references regarding sepsis, it was found that some of the information on the current sepsis process map was outdated and difficult to understand. Therefore, the Clinical Nurse Leader students recommended to the Director of the Sepsis Committee to improve the sepsis hospital policy. This could be done by enforcing a time frame when the sepsis checklist must be completed, such as between the first three hours of shift. In efforts to make the idea of sepsis more identifiable and user-friendly for nurses, research was conducted and the process map was revised along with the creation of new sepsis protocol badge cards for the convenience of nurses in accordance with the Severe Sepsis Campaign. The new badge cards and revised process map are found in Appendix G.

Cost Analysis

A 2016 brief from the Healthcare Cost and Utilization Project (HCUP) found sepsis to be the most expensive condition to treat in the United States. The average expense associated with sepsis is $18,000 per stay, while the expense per stay for other conditions averages around
$10,000 (Torio & Moore, 2016). For better clarification, the Intensive Care Unit (ICU) has on average 2-3 septic patients a week while the Emergency Department (ED) has on average 3-4 septic patients a day. On the contrary, regular inpatient units such as the units assessed for this project rarely see septic patients with about 1,176-1,584 septic patients in a year. This roughly estimates to $21-28 million in spending per year for the care of septic patients in this hospital. The Centers for Disease Control and Prevention reported that patients with sepsis had an average length of stay (LOS) of 8.5 days (Data Reports | Sepsis | CDC, 2017). The desired outcome for early recognition and treatment of sepsis is to reduce sepsis-related mortality and lower the average LOS. Reducing the length of stay by half a day can save this hospital $1.2-1.7 million a year, which is more than enough to cover project cost.

**Evaluation**

Evaluation of knowledge and adherence to protocols is important to sustain improvement in early sepsis identification on inpatient units. Currently, no data can be reported on the evaluation due to the before mentioned changes in timeline and unforeseen delay. Thus, implementation and evaluation could not be completed. The following provides what would have been the evaluation had the process been implemented.

The planned methods of evaluation included four tools derived from Bastable (2014) — Process, Content, Outcome, and Impact. Through the Process, the planned implementation will need to be frequently evaluated for necessary adjustments in learning materials, learning objectives, and educators. For Content, there needs to be determination as whether the nurses have attained the material taught during the staff education sessions. This can be evaluated through administration of nursing sepsis surveys immediately following the education sessions. Data from these surveys can be utilized to compare baseline knowledge data with the outcome
data post-implementation as well as assist educators in synthesizing potential deficits that must be addressed in lesson plans. For Outcome, there will be another nursing sepsis survey administered to nurses three months after staff education sessions have been completed. This will verify that learning material regarding sepsis has been retained and will note if any level of change has persisted and further education called for. Regarding Impact, chart review audits will continue to be performed six months after staff education sessions have been completed to discern whether the project concluded in long term impact. The newly acquired data from this evaluation plan will then be compared to baseline data achieved early in the process. This will evaluate if there had been any significant change in nursing knowledge and skill acquisition regarding early sepsis identification and appropriate treatment protocol adherence.

Discussion

In efforts to understand barriers to early sepsis identification, CNL students shadowed nurses on all the inpatient units to observe for completion of sepsis screenings within the first three hours of the nursing shift (10am and 10pm respectively). Throughout the auditing and research process, findings showed that there were quite a handful of nurses that did not complete the sepsis screenings when being observed. However, analyzing chart review data on ARCIS showed that data was not charted in real time. For example, some nurses had charted that they performed sepsis screenings within the first three hours of nursing shift, while observations showed that hardly any nurses did them within that time frame. Thus, the data found while observing nurses did not correlate with charted data on ARCIS, the electronic medical record.

From system level perspective, there were some aspects of this work that were complex required longer time to attend to. At first, it was difficult to gather nurses to participate in the nursing sepsis surveys that were being administered to the inpatient units. It came to the group’s
attention that it cannot be expected to have 100% nurse participation if the surveys were administered to a group. Only some nurses would fill the survey out or one nurse would fill it out for the whole group. Due to a lack of time and resources, this problem was overcome by having students personally hand out the surveys to the nurses one by one in person on the inpatient units and ensuring disclosure that they will return to pick the surveys up in five minutes. Taking into consideration the nature of nursing, it was understandable that nurses did not always have down time at the beginning of the shift. This created a smaller sample size of participation than initially anticipated. In the future, it would help that the survey be made part of the mandatory modules administered by the hospital to ensure full participation.

**Nursing Relevance**

Nurses play a significant role in identifying patients with sepsis through their constant patient interactions. During time of observation, it was noted that there are nurses who document sepsis screenings without physically looking at their patients or were delaying the screenings. According to this hospital’s protocol, it is within their task list that they perform these screenings early in the shift, preferably by 10am for the morning shift and 10pm for the evening shift. Thus, the significant contribution that improving early sepsis identification will make to the present understanding of the nursing role can potentially bring more awareness to nurses of the necessity to identify patients at the earliest signs and symptoms of sepsis — not just through comparison of lab values, but also through personal physical assessment. Since identification of SIRS, sepsis and septic shock is key to early recognition, performing sepsis screenings paired with timely interventions will help to prevent the spread of severe infection.

This hospital is committed to align their work with their values: “Respect, Caring, Integrity, Passion, Stewardship” (x). To align these values with improving early sepsis
identification, nurses must recognize that they are the forefront of providing high quality patient care. This involves taking responsibility for early sepsis identification and timely interventions to prevent spread of severe infection.

**Clinical Nurse Leader (CNL) Relevance**

Early sepsis identification paired with timely intervention treatment is crucial to further prevent the spread of infection and rapid patient decline. Clinical Nurse Leader (CNL) act as catalysts for changes aimed in creating a culture that is embedded in accountability, altruism, and coalition. The CNL competencies used for this quality improvement project call for synthesizing data, information, and knowledge on client outcomes and modifying interventions to improve healthcare outcomes (AACN, 2013).

The CNL competencies of Quality Improvement and Safety, Informatics and Healthcare Technologies, Health Policy and Advocacy and the Master’s Level in Nursing Practice would require a CNL to be involved throughout the project (AACN, 2013). Pertaining to the competency of Quality Improvement and Safety, a CNL would frontline and advocate for implementation of the Improving Early Sepsis Identification project. Regarding Informatics and Healthcare Technologies, the CNL would utilize information technology to audit charts via ARCIS and ensure sepsis screening are performed within the first three hours of a shift. In doing so, the goal would be to analyze and address any gaps and discontinuity in nursing performance accordingly. For Health Policy and Advocacy, the CNL would continually advocate for continuing staff education surrounding sepsis material as well as for increasing awareness of the impact that this project potentiates. The purpose would ensure nurse competency is maintained and patients remain safe. With a Master’s Level in Nursing Practice, the CNL could help modify and polish current nursing interventions with the aid of evidence-based research and practices to
accommodate for the changing needs of the microsystem. This would help to further improve healthcare outcomes as well as early identification of sepsis on inpatient units. Overall, a CNL would make a great contribution to this quality improvement project because they would be able to help compile all the data and report findings and collaborate effectively with appropriate staff members to help piggyback the change and educational process, which will in turn positively affect the resulting outcome.

**Future Directions**

**Clinical Nurse Leader Perspective**

As a CNL, it is essential to perpetuate a systematic and comprehensive approach to maintain effective collaboration that actively involves multidisciplinary healthcare members. Thus, the CNL can potentially act to help bridge gaps in communication between clinicians, nurses and students that further progress improvement opportunities. On the inpatient units, the CNL can delegate appointed nurses to become “SIRS/Sepsis Champions”. The nurses would become and act as experts and resources for other staff members and students on sepsis. The CNL could also help spearhead and provide staff education sessions on the Sepsis Screening protocol to staff.

**Sustainability Plan**

After numerous hours of thorough observations, data collection, and research, the group has concluded that there are a multitude of gaps to be addressed in the current Sepsis protocol and adherence of staff members. There needs to be a uniform tool utilized on all inpatient units that is clear cut and easy to understand. Once basic educational tools are implemented and the project were to progress, the Sepsis Screening tool will be able to provide a more user-friendly experience that will enhance patient outcomes. Unfortunately, unexpected delays complicated
the timeline. However, all necessary materials developed and utilized throughout this project process have been kept in a folder on Google Drive for future references and students who may wish to continue and fully implement this project in the future.

**Conclusion**

Although change is usually met with resistance, the student group was fortunate to have enough nurses who were willing to participate, engage and support this quality improvement project. Throughout this project, there was evidently much support and encouragement from the Director of Sepsis Committee and now Emergency Department. This Improving Early Sepsis Identification on Inpatient Units quality improvement project would not have been possible without the leadership and collaborations with this Director, the nursing staff on the inpatient units, and the university professors. As CNLs, it is important to take on the challenge to lead change and advocate for positive changes in healthcare as often as possible.
References


(X). The references that can identify the hospital were purposely omitted to protect the privacy of the institution where this work has been done.
Appendix A

Sepsis Screening Observation Checklist

1. Was the sepsis screening done?
   a. No
   b. If yes, then answer questions 2-6.

2. What time were the vital signs done that were used to complete the screening?
   a. Note: vital signs from 5am-10am can be used.

3. Did the nurse feel that the patient has a suspected or confirmed infection?
   a. No
   b. Yes. If so, why?

4. Do you think the patient has a suspected or confirmed infection?
   a. No
   b. Yes. If so, why?

5. Did the patient have 2 SIRS and a suspected/confirmed source of infection?
   a. No
   b. Yes

6. Was the sepsis protocol initiated?
   a. No
   b. Yes
Graph B.1

Results from the observations made by Clinical Nurse Leader (CNL) students, assessing RN completion of the sepsis screening.

Graph B.2

Graphs B.1-B.2: Results from the observations made by Clinical Nurse Leader (CNL) students, assessing RN completion of the sepsis screening.
Appendix C

Graph C.1

Sepsis Screening Chart Audits

- Total audited sepsis screenings: 199
- Sepsis screenings performed within the first 3 hours of the nursing shift: 144 (72%)
- Sepsis screenings performed after the first 3 hours of the nursing shift: 55 (28%)
- Number of positive sepsis screenings: 6 (3%)
- Number of positive sepsis screenings followed by initiation of the sepsis bundle: 2 (1%)
Appendix D

Nursing Sepsis Survey

Sepsis Survey

1. True or false. A positive sepsis screening is defined as 2 SIRS + a suspected or confirmed source of infection.

2. Which of the following is NOT considered SIRS criteria?
   a. Body temperature >38.3°C/100.9°F or body temperature <36°C/96.8°F
   b. Tachycardia
   c. WBC >12,000/mm3 or <4,000 or 10% bands
   d. Bradycardia

3. If patient presents with positive sepsis screening, which of the following is NOT nursing intervention(s) to be implemented?
   a. Call RRT
   b. Draw sepsis panel labs
   c. Call Code Sepsis
   d. Obtain urinalysis and culture/sensitivity

4. True or False (circle one): only call “code sepsis” if in the ED, ICU or if Severe Sepsis.

5. Which of the following must be performed within 3 hours of presentation of severe sepsis?
   a. Obtain blood cultures prior to administering antibiotics
   b. Measure lactate level
   c. Administer broad spectrum antibiotics
   d. Administer 30mL/kg crystalloid for hypotension or lactate >2mmol/dL
   e. All of the above

6. Do you feel that abnormal vital signs are reported to you in a timely fashion?
   a. Yes, almost always
   b. Sometimes
   c. No, hardly ever

7. In your experience, what is the greatest contributor to delays in treatment of sepsis in your department? (Select all that apply)
   a. Lack of recognition of potential sepsis in triage
   b. Delay in diagnosis of sepsis
   c. Knowledge deficit regarding appropriate management
   d. Nursing delays (time to completion of orders)
   e. Lab delays
   f. Lack of necessary equipment (Please explain.) ________________
   g. Other (Please explain.) ________________

8. Do you feel that this facility provides adequate educational resources regarding sepsis for nurses?
   a. Yes, almost always
   b. Sometimes
   c. No, hardly ever

9. When needed, what resource do you use to reference the Nurse Driven Protocol for sepsis?
   a. AREIS (electronic medical record)
   b. Policy and Procedure Manual
   c. Google

10. What additional resources/information would you like to have regarding sepsis? ________________________________
Appendix E

Graph E.1

Retrospective electronic medical record review results conducted by CNL students, assessing the completion of sepsis screenings
Appendix F

Graph F.1

Are Abnormal Vital Signs Reported to Nursing in a Timely Manner?

- Yes, almost always: 50%
- Sometimes: 41%
- No, hardly ever: 3%
- Omitted: 6%

Graph F.2

Are Adequate Educational Resources Regarding Sepsis Provided to Nursing?

- Yes, almost always: 38%
- Sometimes: 44%
- No, hardly ever: 12%
- Omitted: 6%

Graph F.3

Greatest Contributor to Delays in the Treatment of Sepsis

- Lack of recognition of potential sepsis in triage
- Delay in diagnosis of sepsis
- Knowledge deficit regarding appropriate treatment
- Nursing delays (Time for completion of order)
- Lab delays
- Lack of necessary equipment
- Other

Graph F.4

Resources Utilized to Reference Nurse Driven Protocol for Sepsis

- Arcis (electronic medical record)
- Policy and Procedure Manual
- Google

Chart F.1-F.4: Qualitative data resulting from the nursing sepsis survey
Appendix G

Appendix G.1 Sepsis Protocol Badge

Appendix G.2 Sepsis Screening Process Map