

Fall 12-15-2017

The Clinical Nurse Leader: Improving Early Sepsis Identification on Inpatient Units

Denise G. Lopez
nursedenise17@yahoo.com

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

 Part of the [Nursing Commons](#)

Recommended Citation

Lopez, Denise G., "The Clinical Nurse Leader: Improving Early Sepsis Identification on Inpatient Units" (2017). *Master's Projects and Capstones*. 702.
<https://repository.usfca.edu/capstone/702>

This Project/Capstone is brought to you for free and open access by the Theses, Dissertations, Capstones and Projects at USF Scholarship: a digital repository @ Gleeson Library | Geschke Center. It has been accepted for inclusion in Master's Projects and Capstones by an authorized administrator of USF Scholarship: a digital repository @ Gleeson Library | Geschke Center. For more information, please contact repository@usfca.edu.

The Clinical Nurse Leader: Improving Early Sepsis Identification on Inpatient Units.

Denise G. Lopez

University of San Francisco

Abstract

CNL students were invited to a large metropolitan hospital in an effort to create a quality improvement project related to sepsis in order to decrease cost, the length of stay, and improve patient outcomes. CNL students shadowed nurses in order to better understand the nursing culture and assess the microsystem. Chart audits were reviewed to determine whether nurses at the assigned units were completing sepsis screenings on time and used the appropriate vital signs and labs. Nurses' questionnaires were provided to assess sepsis knowledge and their understanding of sepsis. Results showed a lack in compliance in completing sepsis screenings on time through observation, but it was discovered in the chart audits that nurses were changing the time of completion. A sepsis badge was created and a sepsis process map was improved to better assist nurses with the identification of sepsis. A CNL and "Sepsis Champion" is recommended in order to implement sepsis screenings and improve patient outcomes.

Keywords: sepsis, shadowing, chart audits, screenings, knowledge, CNL

The Clinical Nurse Leader: Improving Early Sepsis Identification on Inpatient Units.

Sepsis is a preventable condition that affects 750,000 hospitalized patients in America annually according to the Centers for Disease Control (CDC) (Data Reports, 2017). In addition, sepsis was responsible for 44% to 55% of hospital deaths between 2010 and 2012 (Maclay, 2017). Sepsis is a systemic infection that can result due to the improper care of invasive lines such as IV's, central lines, PICC lines, and other tubing. The infection is considered a medical emergency that can quickly become fatal if left untreated, but in order to reduce the number of septic patients, efficient sepsis protocols need to be placed in hospitals. Nursing practices, knowledge, and the understanding of sepsis and interventions were assessed in a large metropolitan hospital, along with the hospital's well-developed sepsis protocol.

Sepsis is a very important condition to address due to the impact it has on patient safety, care, mortality rates, a patient's length of hospital stay, readmission rates, the financial impact on healthcare, and other contributing factors. The prevalence rate of sepsis is quite high, as a matter of fact, the CDC concluded that sepsis alone was responsible for up to 55% of hospital deaths between 2010 and 2012 (Maclay, 2017). The best possible solution for this current issue is early sepsis identification in order to reduce mortality rates by keeping the patient safe and providing high quality patient care.

Methods

The microsystem assessed was a licensed general acute care hospital, which serves the healthcare needs of specific communities in Southern California. The specific hospital assessed, manages a total of 384 licensed beds with eight floors involving several units like Telemetry, Obstetrics, Medical-Surgical, Oncology, Pediatrics, and many other functioning units. In addition, the hospital observed is a Level II Trauma Center and contains an additional nine

surgical operating rooms and three cardiac catheterization labs for both inpatient and outpatient services. The five inpatient floors observed in the microsystem for the project were 2E, 4th, 5th, 6th, and 8th floors. Literature review was collected using CINAHL Complete and PubMed Databases and by using phrases such as “sepsis identification,” “microsystem,” “inpatient units,” and “nursing care,” 54 relevant articles were obtained.

Furthermore, in order to assess the microsystem, the 5 P’s Assessment tool was used. Purpose, patients, professionals, process, and patterns are all included in the 5 P’s Assessment Tool. The purpose includes the “values-driven integrated healthcare delivery system in collaboration with those who share our values.” Patients included 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.

Furthermore, a root cause analysis (RCA) was conducted in order to identify barriers the sepsis screening possessed at this particular hospital. Other tools and screening conducted in order to assess the disparities and inconsistencies of the current sepsis screening and protocol were a systematic review of the inpatient unit’s sepsis process maps and protocol, the hospital’s Sepsis Protocol Administrative Manual, and the Sepsis CMS Core Measure. In addition, various data collecting methods like a Sepsis Screening Observation, Sepsis Screening Chart Audits, and Nursing Sepsis Survey were gathered in order to determine the nurses’ knowledge on sepsis and current hospital protocols and policies related to sepsis.

The MSN students worked and collaborated with the Director of the Sepsis Committee in order to organize an audit form called, “Sepsis Screening Observation Checklist.” This checklist

was created to evaluate the nurses' documentation of sepsis screening in the electronic medical record (EMR) and checked to see if the screening were all completed in a timely manner.

The form included questions related to the steps needed for early sepsis identification. In addition, once approved by the hospital's administration, the CNL students were only allowed to observe patient care on unit 4 from 7:00 AM to 10:00 AM. The CNL students shadowed their assigned morning-shift nurse and observed patient care as well as completed the checklist. Prior to observation, the Director of the Sepsis Committee informed the nurses that CNL students would be observing their sepsis screening. In the end, data was obtained from 66 of the hospital's patients.

Furthermore, a chart audit was conducted in order to further evaluate electronic nurse documentation of sepsis. By using the "Sepsis Chart Screening Data" form, the CNL students were able to review the charts of 100 patients in the EMR. The CNL students evaluated 199 sepsis screenings, both morning and night shifts for each patient. In order to qualify for chart audit, patients had to be 18 years or older and day 2 post-admission.

In addition, a "Nursing Sepsis Survey" was developed to help identify the nurses' knowledge on theory and early sepsis identification and specifics of hospital protocols by using the hospital's Sepsis Protocol Administrative Manual. Afterwards, a collection of surveys was gathered from 32 different nurses from all five inpatient units assessed. Permission was obtained from the hospital's Sepsis Committee Director in order for the CNL nursing students to conduct the nursing observations, chart audits, and surveys. Any Registered Nurse who works on the selected units qualifies for a survey. Finally, data was gathered in order to help CNL students prepare questions that pertained to the hospital's policy regarding the sepsis protocol.

Results¹

The first step taken by the CNL students was the Sepsis Screening Observations to assess the care nurses provided to patients by shadowing for various days. Each day, every CNL student was assigned a different nurse on the unit and each student reported different observations related to patient care and the completion of the sepsis screening to other CNL students and the Director of the Sepsis Committee. However, even though the CNL students shadowed different nurses, all got similar results related to the lack of sepsis screenings completion each nurse was required to complete for each of their patients.

The total number of patients observed by CNL students were 66 patients, of those 66 only 38 patient sepsis screenings were completed however, they were not completed within the first three hours of the nursing shift. This information concludes that only half of patient sepsis screenings are completed, but not at an appropriate time. This portion of patients aren't getting screened for sepsis on time, which delays care if patients are positive for sepsis. In addition, results also demonstrated that 28 of the total number of sepsis screenings were completed within the first three hours of the nursing shift, which equals to 42% (Appendix A).

Sepsis screening data based on completed screenings concluded that the number of screenings completed within the first three hours of the nursing shift was 28, the total number of sepsis screenings where the vitals used were between 5 AM and 10 AM were 26 sepsis screenings, and the number of sepsis screenings where the vitals used were not between 5 AM and 10 AM were 2 sepsis screenings. In addition, there were 9 sepsis screenings where the nurse suspected or confirmed an infection and another 9 sepsis screenings where the CNL suspected or confirmed an infection. Data also demonstrated an additional 5 sepsis screenings that resulted with two criteria for Systemic Inflammatory Response Syndrome (SIRS) and a suspected or

confirmed infection, as well as 2 sepsis screenings where the sepsis protocol was initiated (Appendix B).

Next, CNL students completed the Sepsis Screening Chart Audits in order to collect data and evaluate whether the CNL student's observations correlated with the information provided in the chart audits. A total of 199 audited sepsis screenings were gathered and the data collected demonstrated that 144 sepsis screenings were performed within the first three hours of the shift. An additional, 55 sepsis screenings were performed after the first three hours of the nursing shift and 6 of the sepsis screenings collected were positive sepsis screenings. Data displayed only 2 positive sepsis screenings were followed by initiation of the sepsis bundle (Appendix C).

CNL students were also responsible of providing nurses with Nursing Sepsis Surveys in order to evaluate the knowledge and feelings nurses had related to the hospital's sepsis screening and protocol in a multiple-choice format. The survey contained a variety of questions, the first question nurses were asked was to define sepsis, only 88% answered the question correctly, 6% answered the question incorrectly, and 6% omitted the question. The next question on the survey was to identify the SIRS criteria, 94% of the nurses answered the question correctly and 6% answered it incorrectly (Appendix D).

The following question asked nurses to identify the nursing interventions necessary for a positive sepsis patient, 44% answered the question correctly, 53% answered the question incorrectly, and 3% omitted the question. Another question asked nurses to identify the criteria required for a code sepsis, 31% of the nurses answered the question correct, 66% of the nurses answered the question incorrect, and 3% omitted the question. The last question asked to nurses was to identify the interventions performed within three hours of the presentation of severe sepsis, 97% answered correctly and 3% answered incorrectly (Appendix B).

The next couple of questions asked were related to nurses' perception of the sepsis protocol, such as time management, adequate education resources, contributors to delays, and resources utilized. The first question asked was whether abnormal vital signs are reported to nurses in a timely manner, 50% of nurses answered "yes, almost always," 41% answered "sometimes," 3% answered "no, hardly ever," and 6% omitted the question (Appendix E). The following question asked whether adequate educational resources regarding sepsis are provided to nurses, 38% answered "yes, almost always," 44% answered "sometimes," 12% answered "no, hardly ever," and 6% omitted the question (Appendix F).

The next question asked nurses what the greatest contributor to delays in the treatment of sepsis was, 11 nurses stated that the great contributor is a lack of recognition of potential sepsis in triage. In addition, 9 stated that a delay in diagnosis of sepsis is the greatest contributor to delay, 12 said that knowledge deficit regarding appropriate treatment was the greatest contributor, and 2 stated nursing delays is the contributor. Another 22 nurses stated lab delays were the cause for the treatment of sepsis, 5 nurses said it was due to a lack of necessary equipment, and 3 stated other factors are contributors to the treatment of sepsis (Appendix G). The last question the CNL students asked nurses was regarding the types of resources utilized to reference the nurse driven protocol for sepsis. The top resources nurses mentioned were Arcis (electronic medical record), the Policy & Procedure Manual, and Google. Of the nurses surveyed 18 stated they use Arcis, 15 use the Policy & Procedure Manual, and 1 uses Google (Appendix H).

Implementation.

Unfortunately, the CNL students didn't have enough time to implement staff education, patient education, or other kinds of nursing implementations. However, the CNL students did

have a variety of ideas to be used at the large metropolitan hospital like implementing a SIRS assessment for each patient in all inpatient units to be completed by 10 AM and 10 PM utilizing appropriate vital signs with the help of the informatics team. The large metropolitan hospital's current charting system allows the nurses to choose the time when the sepsis screenings were completed. This greatly impacts early sepsis identification because nurses don't have to complete the sepsis screenings in the beginning of the morning or night shift because the charting system allows them to continue with other duties. For instance, the dayshift nurses could have completed their sepsis screenings at 4 PM, when in reality this task had to of been completed before 10 AM, but since the charting system allows them to change the time they can state the sepsis screening was completed on time.

Another implementation would be to perform routine chart audits of nurses to help identify problems related with SIRS/Sepsis screenings in order to measure the compliance and accountability of nurses. Regular and routine review of chart audit will help identify whether nurses are properly screening patients on the hospital's inpatient units. A variety of inconsistencies with SIRS/Sepsis screenings were noted in the results CNL students gathered, for this reason chart audits need to be reviewed and checked regularly to assure dependability. It's essential for nurses to record the screenings properly and the appropriate time in order to provide high quality patient care.

An additional possible implementation for early sepsis identification on inpatient units is the application of a SIRS/Sepsis champion on each inpatient unit to help monitor, prevent, and identify patients with early signs and symptoms of sepsis. The SIRS/Sepsis Champion will work on inpatient units and oversee the patients to help identify sepsis, this will speed the treatment process of sepsis and better improve patient outcomes. Furthermore, the SIRS/Sepsis champion

will help prevent the development of sepsis by closely examining the inpatient units on the floor by checking labs, current vitals, and other factors necessary for the identification of sepsis.

Another implantation CNL students would have liked to implement was to conduct annual training for current nurses on inpatient units, the education sessions covered topics related to the pathophysiology, SIRS criteria, and the importance of prompt and necessary interventions. The educational classes would reeducate nurses on subjects related to SIRS and sepsis in order to recognize septic patients and know the proper implementations needed to reduce to risk for further complications. Understanding and acknowledging the SIRS criteria is essential in recognizing sepsis early and help nurses take the necessary steps in further treatment of sepsis.

The final possible implementation the CNL students would have liked to implement at the large metropolitan hospital was to utilize a sepsis protocol badge card and process map the CNL students create. The sepsis protocol badges the CNL students created contained the ranges of normal temperature, heart rate, respiratory rate, and white blood cell count. The temperature range is $> 38.3\text{ }^{\circ}\text{C}/100.9\text{ }^{\circ}\text{F}$, or $> 36\text{ }^{\circ}\text{C}/96.8\text{ }^{\circ}\text{F}$, heart rate > 90 , respiratory rate > 20 , white blood cells $> 12,000$ or $> 4,000$, and $> 10\%$ for differential bands. If two SIRS criteria and suspected or confirmed infection are present, nurses need to call the Rapid Response Team (RRT) and initiate nurse driven protocols and sepsis panel (Appendix I).

Nurse driven protocols consist of initiating sepsis oxygen to keep saturation levels $> 95\%$, start peripheral IV line with at least an 18-gauge needle, providing acetaminophen 650mg PO or rectal for temperatures higher than 101°F , and take vital signs every 15 minutes with neurological checks until the patient is stable, then every hour. In addition, other nurse driven protocol consist of labs like lactic acid, CK-MB, troponin, CMP, CBC w/ differentials, PT w/INR, PTT, and other cultures that are order in MAR. Diagnostic tests like CXR, EKG will be

required, if they have not been completed within the past 24 hours. The sepsis panel will consist of labs such as CBC, PT/PTT, blood cultures x2, lactate (lactate level blood cultures is to be placed in a gray tube and immediately placed on ice), and urinalysis, urine cultures, and sensitivity. In addition, the sepsis process map will include sources of infection nurses should consider, the factors needed to initiate a positive sepsis screening, the nurse driven protocol (NDP) and the sepsis panel (Appendix J).

Cost Analysis. According to a 2016 brief from the Healthcare Cost and Utilization Project (HCUP) sepsis is the most expensive illness to treat in the United States. Sepsis is a medical condition where the average expense is around \$18,000 per hospital stay, while other expenses per hospital stay related an average of around only \$10,000. For instance, in the Intensive Care Unit (ICU) medical personnel treats 2-3 septic patients per week, however in the Emergency Department (ED) medical personnel cares for 3-4 sepsis patients per day. Septic patient rates are the highest in these two nursing units, other departments rarely attend to septic patients.

The large metropolitan hospital treats an average of 1176-1584 septic patient per year, which totals to approximately \$1.2 - 1.7 million per year, where 3% is due to poor management costing the hospital an average of \$630,000 - \$850,000 per year. A report for the CDC estimates that a septic patient's length of stay is around 8.5 days, but early sepsis recognition is desired in order to reduce a patient's length of stay and sepsis mortality rates. It is estimated that reducing the length of stay by half days can actually save the hospital an estimated \$1.2 - \$1.7 million per year. The CNL students mentioned that 3% of costs are due to poor management, but the CNL students hypothesized early sepsis recognition and adequate management can improve percentages from to 3% to 2% saving the hospital an average of \$250,000.

Evaluation. To evaluate the success of the implementation plan and interventions a pre-survey and post-survey will be provided to nurses on the inpatient units. The survey will contain questions related to nursing knowledge associated with sepsis, materials, and interventions necessary to treat the illness early on. If necessary, adjustments will be made in materials, learning objectives, and educators. The pre-survey and post-survey are vital in the evaluation of the implementation plan because they will help determine if nurses on inpatient units have acquired the knowledge necessary to recognize sepsis in the earlier stages during the educational sessions. The data gathered will be used to compare and contrast pre-nursing knowledge and post-nursing knowledge associated with sepsis and the surveys will help determine whether or not educational progression occurred.

In order to evaluate nurses' compliance, chart reviews will be conducted 6 months after training has occurred to compare the baseline data with the current nursing charting, this will help determine whether or not change has occurred in nursing charting. This will also decide if long term change has occurred in the way nurses chart at inpatient units at the large metropolitan hospital. The new acquired data gathered through the evaluation plan will conclude if additional change needs to be put in place related to early sepsis identification, the sepsis treatment, and the initiation of the sepsis bundle.

Discussion. The large metropolitan hospital recognized a need for a sepsis quality improvement project and the CNL students were able to create and organize an early sepsis identification process. In order to obtain an understanding for the need for the sepsis quality improvement project, all of the CNL students had to shadow the Registered Nurses on inpatient units throughout the hospital and observe whether or not the sepsis screenings were completed at an appropriate time for each patient. The CNL students shadowed nurses with the assistance of

the Sepsis Chart Review Forms (Appendix K) that were provided in order to better organize observations the students would be making on inpatient floors.

Questions the CNL students asked themselves while shadowing nurses was what time sepsis screenings were completed, this gave the students an idea of how soon nurses were finalizing the sepsis screenings. Another question the CNL students had to ask themselves was which vital signs nurses used when finishing the sepsis screening, which is essential because the patient's latest vials should be used when completing the screenings in order to detect sepsis. CNL students also needed to investigate the patients' current lab values and recent vitals to help determine whether nurses were taking the correct and necessary steps when finalizing the sepsis screening.

CNL students additionally had to decide if the nurses being shadowed had any septic patients or patients who were positive for sepsis in the screening. Once a CNL had a nurse who was caring for a septic patient the CNL student had to note if the sepsis bundle was initiated, if the patient was transferred to a higher level of care, and how long was the patient on the floor before the transfer to the higher-level unit was complete.

The findings gathered demonstrated that many of the nurses on the inpatient units did not complete the sepsis screenings at an appropriate time. In fact, many of the nurses only completed one sepsis screening just to show the CNL student how they look like and how they should be completed, if the CNL students were not present it is doubtful any screenings would have been completed. The CNL students shadowed nurses for a variety of days and were placed with different nurses each time to obtain a better understanding of the nursing care and culture.

After shadowing was complete, the CNL nurses reviewed charts in order to check what time nurses were completing their sepsis screenings and what vitals and labs were being used.

According to the chart review the majority of nurses charted that the screenings was completed before 9 AM, which is time all of the nurse's patient sepsis screenings should be completed. However, this data did not correlate with what was observed during the shadowing process by the CNL students. In fact, some nurses charted that they completed their sepsis screenings at 8 AM, but used the vitals from 8:30 AM meanings that the nurses' charting of the sepsis screenings were inconsistent. There was a real issue with the way the charting system works at this particular large metropolitan hospital.

The CNL students discovered that nurses at the hospital have the ability to tamper with the time the sepsis screenings were completed. For instance, when nurses chart they can state that they completed their sepsis screening at 8 AM when in fact it was done at 4 PM. Nurses are able to chart the sepsis screenings at any time and have the ability to put whatever time they'd like to place. The CNL found this to be a real issue because if nurses aren't completing their sepsis screenings by 9 AM patients who are positive for sepsis won't be identified early on in the sepsis process, which ultimately delays the treatment of sepsis leading to sever sepsis.

The CNL students at the large metropolitan hospital also provided nurses on inpatient units with Nurses' Questionnaires (Appendix L) in order to better understand nursing knowledge related to sepsis on the inpatient floors. The questionnaires contained questions associated with sepsis screenings, SIRS criteria, necessary sepsis interventions, patient codes, labs, vital signs, contributors to delays, and many more. According to the CNL students' results, the percentages of questions answered correctly by nurses ranged from 88% to 31%, meaning many lacked adequate sepsis knowledge. Exactly, 88% of the nurses who participated were able to correctly define sepsis and 94% correctly answered SIRS criteria in a multiple-choice format. However, CNL students concluded that only 44% of participating nurses correctly identified nursing

interventions needed for septic patients and 31% knew the correct criteria required for code sepsis. The data informed the CNL students which areas the nurses were lacking at the large metropolitan hospital.

In addition, the questionnaires informed the CNL students how nurses felt about ways the nursing unit handles septic patients. For example, only 50% of nurses stated that abnormal vital signs were reported to them by nursing aides almost always, meaning only half of abnormal patient vital signs are reported. Also, only 38% of nurses felt that adequate educational resources were provided to nurses, the rest felt resources were only sometimes provided (44%), hardly ever provided (12%), or omitted the question all together (6%). Another important question asked to nurses were contributors to delay in the treatment of sepsis where the majority (22%) felt it was due to lab delays. The questionnaire provided CNL students with a better insight related to nursing knowledge allowing students to see which educational areas need improvement.

Nursing Relevance. One of a nurse's duties is to correctly identify septic patients, that's why they play such an important role in identification process of sepsis. During the time CNL students observed nurses many realized that many nurses were charting on patients without physically going into the patient rooms and looking at patients or not charting at all. The specific protocol at the large metropolitan hospital states that nurses are to complete the sepsis screenings by 10 AM for morning shift and 10 PM for night shift, however many nurses were not respecting the timeline. Completing the physical assessment of all patients plays a significant role in the way that nurses will be able to identify the early stages of sepsis, leading to early sepsis treatment and better patient outcomes.

Early identification of SIRS and other septic signs and symptoms are the key in reducing longer hospital stays and improving mortality rates at the facility. The large metropolitan hospital

is dedicated to associate their work with the hospital values: “Respect, Caring, Integrity, Passion, Stewardship” (“Our Values”, 2017). The nurses need to realize that they are the ones who providing high quality patient care due to the reason that they are the individuals who care for the patient, so recognizing sepsis is of utter importance.

CNL Relevance. This facility is in need of a CNL to better improve communication between staff, promote quality improvement and safety, and to advocate for patients and health policies. A lack of communication was observed at the inpatient units in the large metropolitan hospital. A CNL is the perfect individual to enter the facility in order to help improve communication between nurses, nursing aids, the laboratory, physicians, and other members of the healthcare team. Many nurses mentioned a lack of communication, in fact only 50% stated that nursing aids informed them of abnormal vital signs in a timely manner. Other nurses also mentioned lab delays and a lack of communication with the laboratory staff. In addition, the CNL would be able to promote quality and safety at the facility by endorsing the implementation of an Early Identification Sepsis Program which could be done by completing a microsystem assessment as well as planning protocol improvements.

The CNL could also work with the informatics team in order to improve the charting system disabling nurses from changing the time sepsis screenings are completed. This will assure the nurses complete the sepsis screenings by the required time of 10 AM and 10 PM. Furthermore, the CNL will continually advocate for frequent sepsis education in order to maintain nurse competency which will ultimately increase the quality of care and keep patients’ safe. The CNL would also continue to monitor and modify the sepsis protocol and nursing interventions by using evidence-based practice at all levels of care.

Future Directions. Comprehensive and systematic approaches are essential for the CNL to put into effect in order for the sepsis screening process to work effectively. The CNL is the healthcare individual who fixes the gaps in the unsuccessful system and is the bridge between other members of the healthcare team like nurses, physicians, therapists, and other healthcare members involved. The CNL assists in ways to improve patient outcomes and implements necessary interventions by advocating for patients. The CNL can additionally promote the importance of having a “Sepsis Champion” on the floor and assign certain nurses to take on the role in order to detect septic patients in the earlier stages by becoming sepsis experts and guide other nurses. Another CNL responsibility is to provide nurses with sepsis educational session twice a year, only then will nurses stay educated and have sepsis related knowledge leading to a reduced length of stay and better patient outcomes.

The next step would be to make a plan on ways to educate nurses on sepsis, what to look for in a septic patient, and what to do if the patient is septic. The returning CNL students need to develop this plan by assessing the needs of the microsystem and determining if any additional changes need to occur. This will guide the CNL students on ways to approach the nursing environment and how they can work with the Director of the Sepsis Committee to promote change in the microsystem.

The project presented to the CNL students consisted of many factors and the students had to take a variety of steps in order to accomplish the goals and gather significant data on ways to improve the identification on sepsis at earlier stages. The large metropolitan hospital needs improvement in different areas of care and with the help of the CNL significant change can occur ultimately reducing the cost, length of stay, and mortality of sepsis.

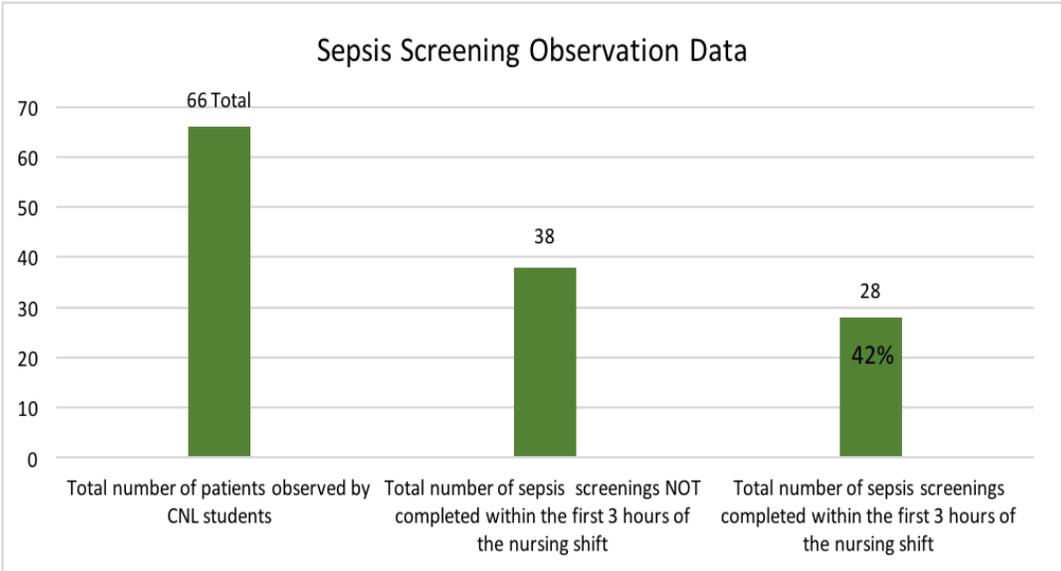
References

- American Association of Colleges of Nursing. (2013). Competencies and curricular Expectations for clinical nurse leader education and practice. Retrieved from <http://www.aacnnursing.org/Portals/42/AcademicNursing/CurriculumGuidelines/CNL-Competencies-October-2013.pdf>
- Bastable, S.B. (2014). *Nurse as Educator: Principles of Teaching and Learning for Nursing Practice*. Burlington, MA: Jones & Bartlett Learning.
- Data Reports | Sepsis | CDC. (2017, August 25). Retrieved from <https://www.cdc.gov/sepsis/datareports/index.html>
- King, C. R., & Gerard, S. O. (2013). *Clinical nurse leader certification review* (1st ed.). New York, NY: Springer Pub. Co.
- Maclay, T. (2017). In Our Unit: The Impact of Early Identification and a Critical Care-Based Sepsis Response Team on Sepsis Outcomes. *Critical Care Nurse*, 37(6), 88-91.
- Novosad, S. A., Sapiano, M. R., Grigg, C., Lake, J., Robyn, M., Dumyati, G., & ... Epstein, L. (2016). Vital signs: epidemiology of sepsis: prevalence of health care factors and opportunities for prevention. *Morbidity and Mortality Weekly Report*. p. 864.
- “Our Values.” *St. Francis Medical Center: A Part of Verity Health*, 2017, Retrieved from <https://stfrancis.verity.org/about-us/our-values/>
- Torio, C.M., & Moore B.J. (May 2016). National Inpatient Hospital Costs: The Most Expensive Conditions by Payer, 2013. Retrieved from https://www.hcupus.ahrq.gov/reports/statbriefs/sb204-Most-Expensive-HospitalConditions.jsp?utm_source=AHRQ&utm_medium=AHRQSTAT&utm_content=Content&utm_term

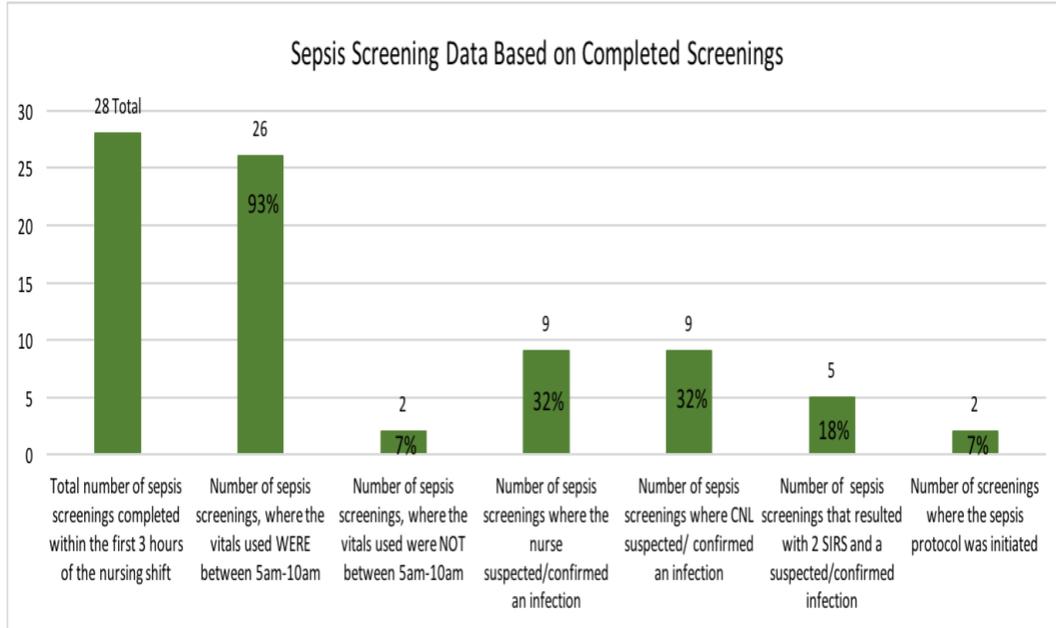
=HCUP&utm_campaign=AHRQ_SB_204_2016

Torsvik, M., Gustad, L. T., Mehl, A., Bangstad, I. L., Vinje, L. J., Damås, J. K., & Solligård, E. (2016). Early identification of sepsis in hospital inpatients by ward nurses increases 30-day survival. *Critical Care*, 20, 244. <http://doi.org/10.1186/s13054-016-1423-1>

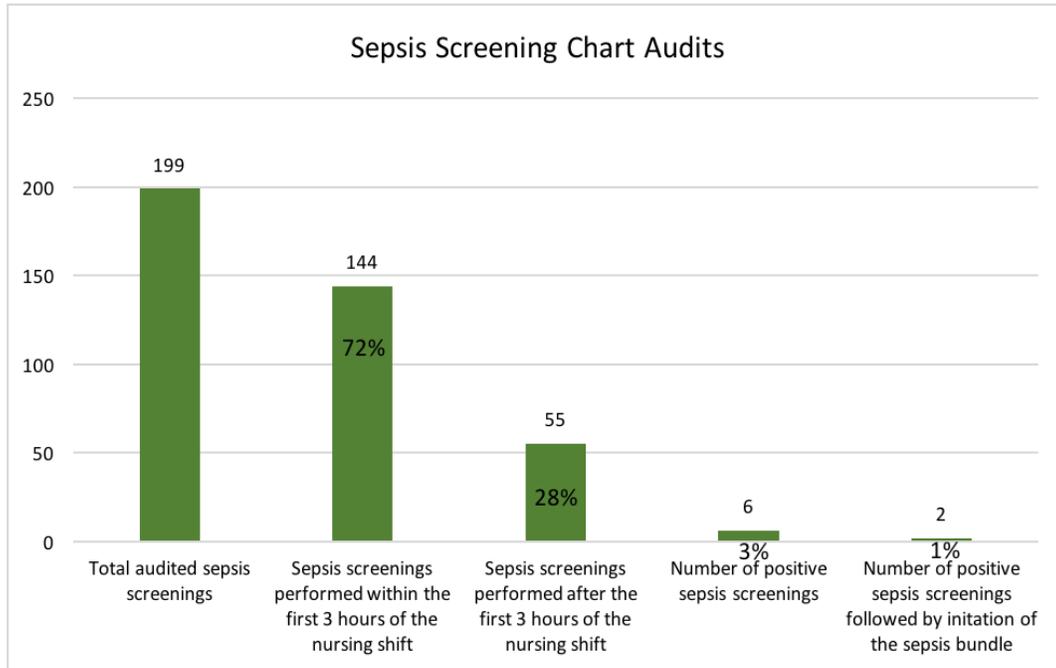
Appendix A



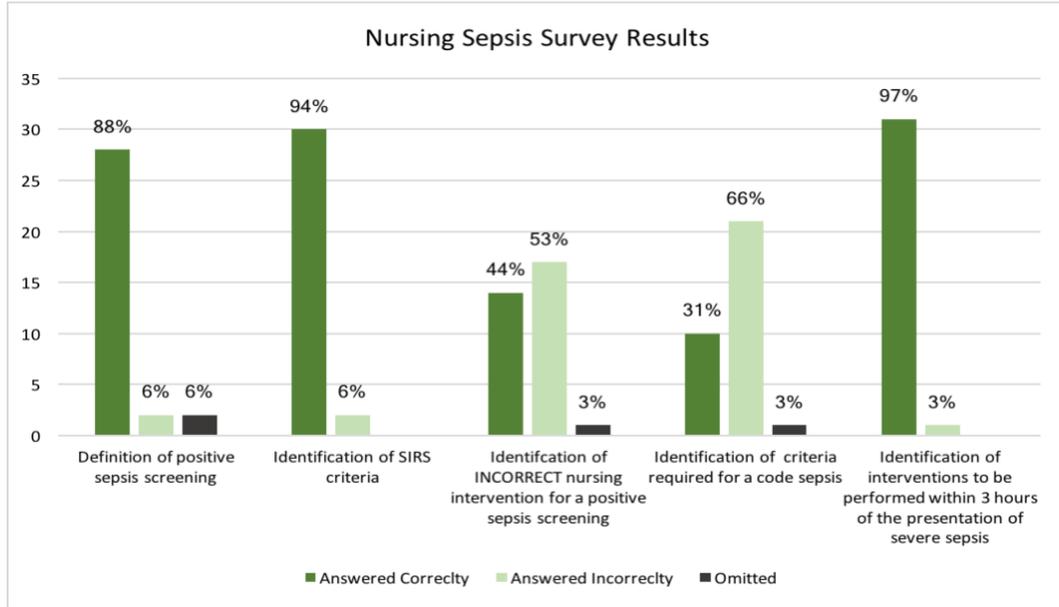
Appendix B



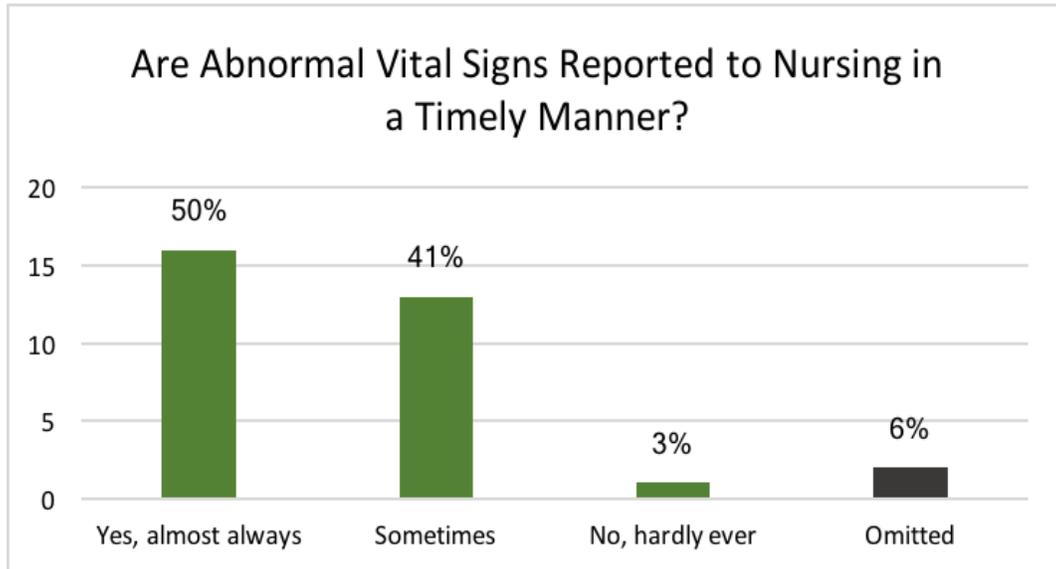
Appendix C



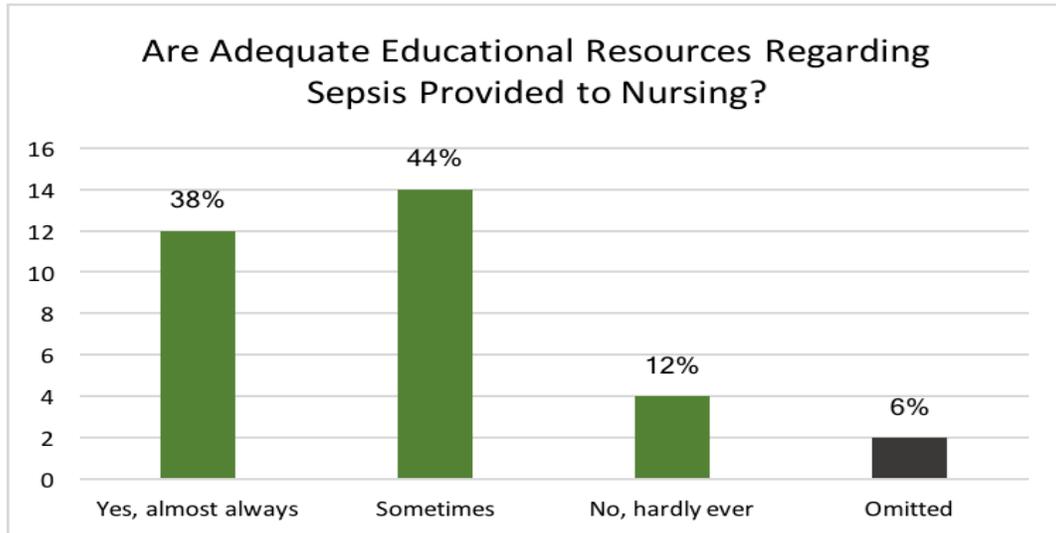
Appendix D



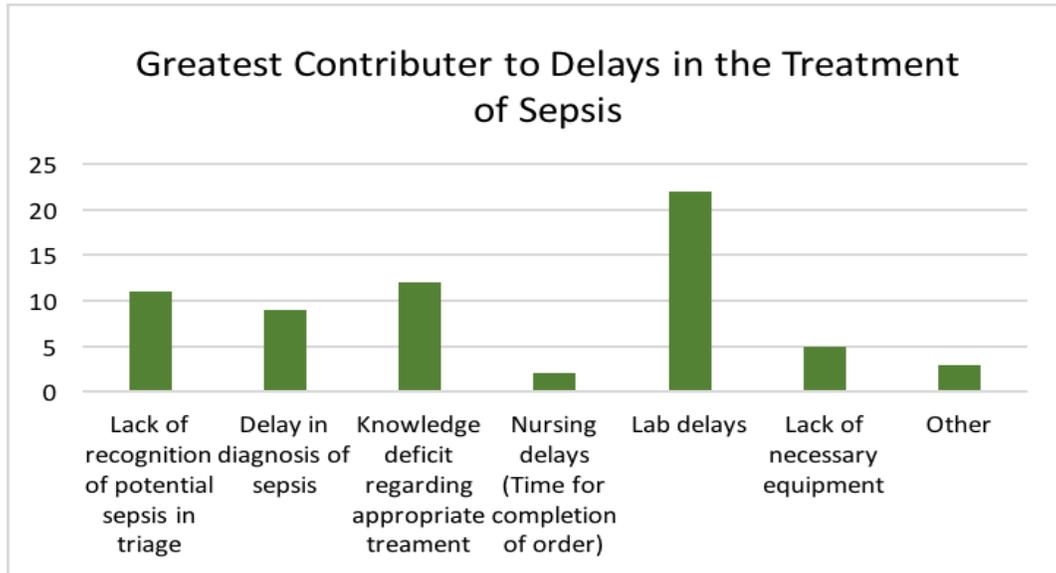
Appendix E



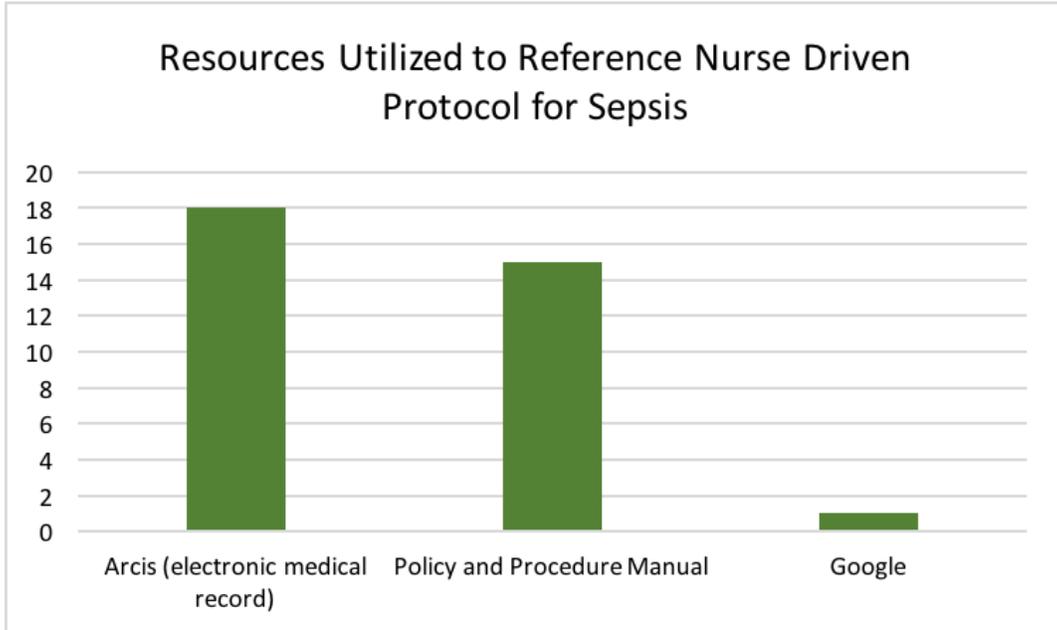
Appendix F



Appendix G



Appendix H



Appendix I



Sepsis Protocol

SIRS Criteria:

- 1. Temperature >38.3°C/100.9°F or <36°C/96.8°F
- 2. Heart rate > 90
- 3. Respiratory rate > 20
- 4. WBC > 12,000 or < 4,000
- 5. > 10% for differential bands

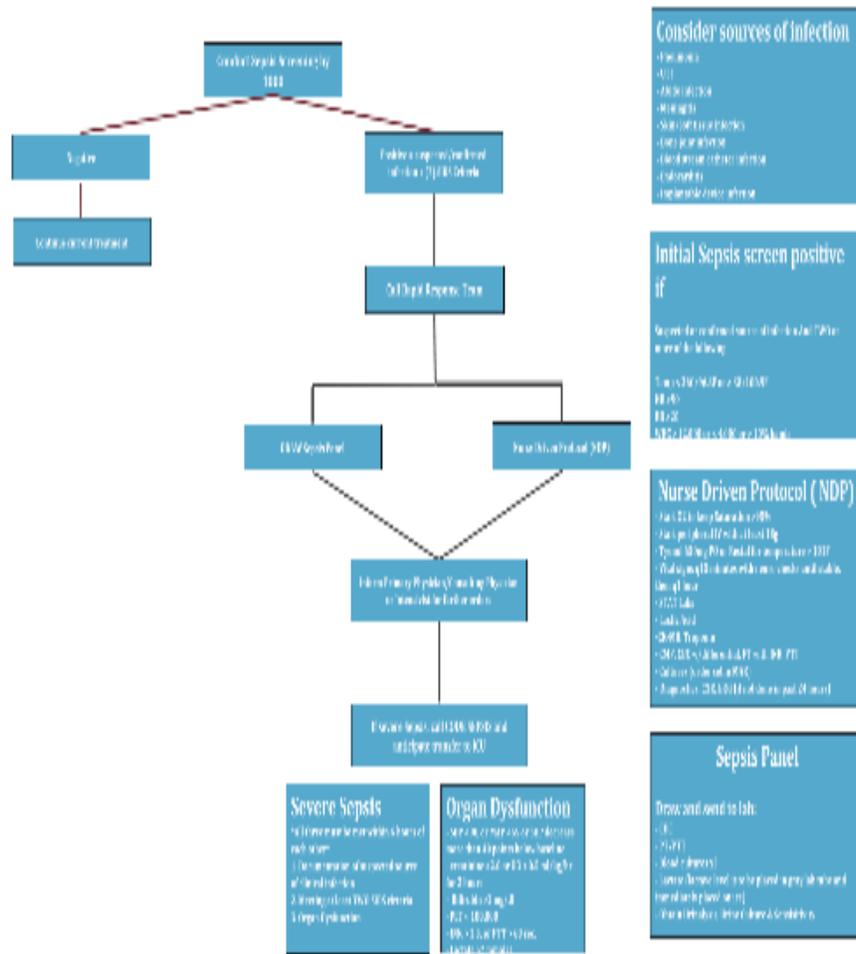
*If 2 SIRS criteria & suspected/confirmed infection are present, CALL RRT & initiate nurse driven protocol & sepsis panel.



Sepsis Protocol

<p>Nurse Driven Protocol:</p> <ul style="list-style-type: none"> • Start O2, keep saturation >95% • Start peripheral IV w/at least 18g • Tylenol 650mg PO or rectal for temp >101F • Vital signs q15 min w/neuro checks until stable, then q1 hour • STAT labs • Lactic acid • CK-MB, Troponin • CMP, CBC w/ differentials, PT w/INR, PTT • Cultures (order set in MAR) • Diagnostic: CXR, EKG (if not done in past 24 hours) 	<p>Sepsis Panel:</p> <ul style="list-style-type: none"> • Draw and send to lab: • CBC • PT/PTT • Blood cultures x2 • Lactate (lactate level is to be placed in gray tube and immediately placed on ice) • Obtain urinalysis, urine culture & sensitivity
--	--

Appendix J



Appendix K

Sepsis Chart Review Form

1. Was sepsis screening done?
2. What time
3. What time were vitals taken which were used for the sepsis screening
4. What were the lab values related to the SIRS criteria?
 - a. Temperature
 - b. RR rate
 - c. WBC count
 - d. HR
5. Did patient present positive for sepsis screening
6. Was the sepsis bundle initiated
7. Was the patient transferred to a higher level of care
8. How long was the patient on the floor before transfer was completed?

Appendix L

Nurses' Questionnaire

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 $>38.3^{\circ}\text{C}/100.9^{\circ}\text{F}$ or body temperature $<36^{\circ}\text{C}/96.8^{\circ}\text{F}$
 - b. Tachycardia
 - c. WBC $>12,000/\text{mm}^3$ or $<4,000$ or 10% bands
 - d. Bradypnea

3. **If patient presents with positive sepsis screening, which of the following is NOT nursing intervention(s) to be implemented?**
 - . Call RRT
 - a. Draw sepsis panel labs
 - b. Call Code Sepsis
 - c. 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?**
 - . Obtain blood cultures prior to administering antibiotics
 - a. Measure lactate level
 - b. Administer broad spectrum antibiotics
 - c. Administer 30mL/kg crystalloid for hypotension or lactate $>2\text{mmol/dL}$
 - d. 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.)**
 - . Lack of recognition of potential sepsis in triage
 - a. Delay in diagnosis of sepsis
 - b. Knowledge deficit regarding appropriate management

- c. Nursing delays (time to completion of orders)
- d. Lab delays
- e. Lack of necessary equipment (Please explain.) _____
- f. Other (Please explain.) _____

8. Do you feel that this facility provides adequate educational resources regarding sepsis for nurses?

- . Yes, almost always
- a. Sometimes
- b. No, hardly ever

9. When needed, what resource do you use to reference the Nurse Driven Protocol for sepsis?

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

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