Increasing Sepsis Compliance in the Neuroscience Intensive Care Unit

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Introduction

In 2002 *sepsis* was and still is one of the world's oldest and most virulent killers. It was such a significant global issue that the *Surviving Sepsis Campaign* was newly formed and launched at the European Society of Intensive Care Medicine's (ESICM) annual meeting in 2002 in Barcelona, Spain, to address this global topic.

Surviving Sepsis Campaign brought together, for the first time, three leading professional organizations in the field of *sepsis*; the European Society of Intensive Care Medicine, the Society of Critical Care Medicine, and the International Sepsis Forum. The initial goal was to improve early recognition and treatment of *sepsis* to reduce the mortality rates by 25% in the first 5 years of the campaign.

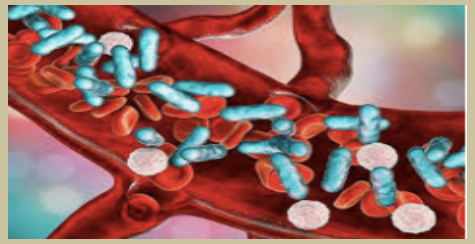
(www.survivingsepsis.org,n.d)

- *Sepsis* can result from a bacterial or viral infection such as **pneumonia, urinary tract infection, the flu, or the current Coronavirus Infection Disease (**Zick, 2020).

- You probably know someone and have certainly had a patient who has been affected by *sepsis* and may have died due to the complications associated with it (www.sepsis.org, 2020).

- The CDC describes sepsis as a clinical syndrome caused by *a dysregulated host response to infection*, **based on clinical judgment** (www.medicalmutual.com, 2019).

One of *sepsis's* essential features is multiple organ dysfunction, with the liver commonly involved in this syndrome.

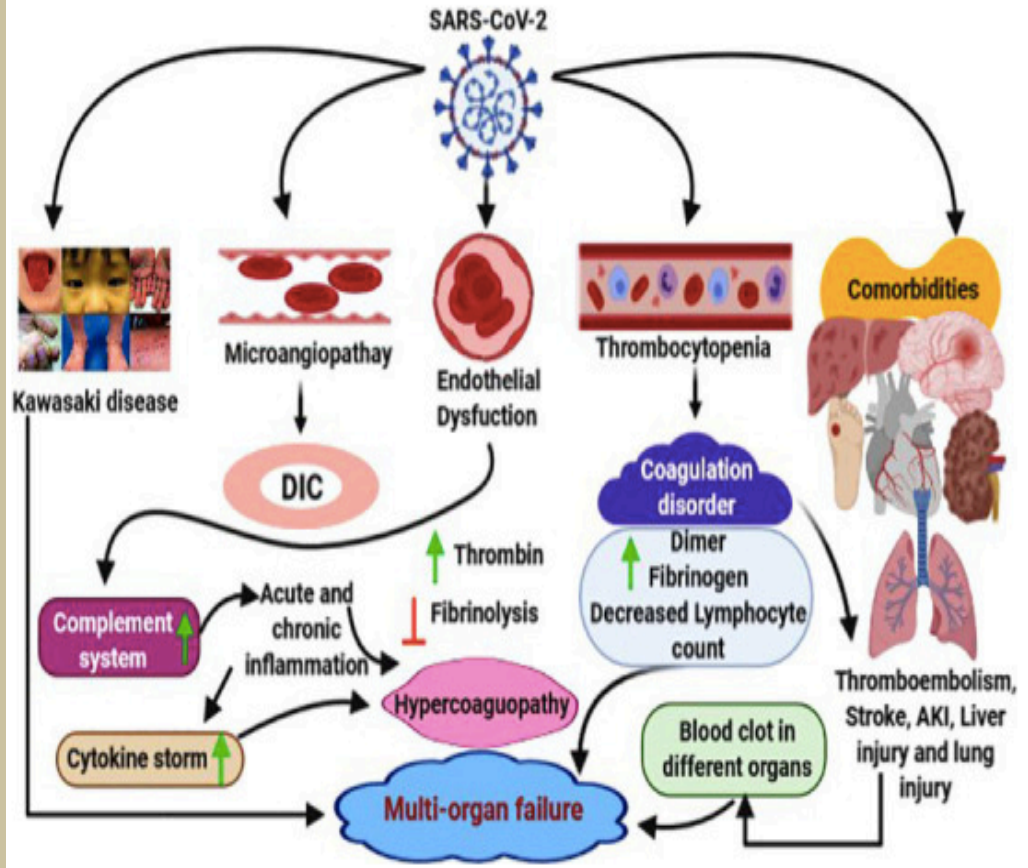


Coagulation dysfunction of the liver and metabolic disorders of elevated *ammonia levels* in the bloodstream can lead to abnormal blood coagulation, leading to a complicated *sepsis* diagnosis (Zhao et al., 2020).

Coagulopathy, sepsis, and covid-19

COVID-19 coupled with coagulopathic issues contribute to severe outcome of patients with comorbidities and may present in the form of:

- Venous thromboembolism
- **Stroke**
- Diabetes
- Acute Lung Injury***
- Heart attack
- Acute Kidney Injury
- Liver injury



Vinayagam & Sattu (2020)

Current Sepsis data in the United States

Sepsis management continues to be a major challenge for healthcare systems worldwide.

In the United States, over 970,000 sepsis cases are admitted annually, and the numbers have been rising year over year.

A two-decade study of U.S. hospitalizations identified an increase in the incidence of sepsis among hospitalized patients by 8.7% per year.

Sepsis accounts for more than 50% of hospital deaths and mortality rates increase as sepsis severity diagnosis increases:

10–20% mortality for sepsis (UTI)
20–40% mortality for severe sepsis (pneumonia and UTI)
40–80% mortality for septic shock (MODs)

(Paoli et al., 2018)

Utilization review

Septic patients represent a disproportionately high burden in terms of hospital utilization.

The average length of stay (LOS) for sepsis patients in U.S. hospitals is approximately 75% greater than for most other conditions.

Mean LOS in 2013 was reported to dramatically increase with sepsis severity:

- 4.5 days for sepsis,
- 6.5 days for severe sepsis, and
- 16.5 days for septic shock.

(Paoli et al., 2018)

The cost of sepsis management in U.S. hospitals ranks highest among admissions for all disease states.

In 2013, sepsis accounted for
-**more than $24 billion in hospital expenses**
-represented 13% of total U.S. hospital cost
-accounted for only 3.6% of hospital stays

The $24 billion (~$18,244 per hospitalization) attributed to sepsis far surpassed other dx:

- osteoarthritis at $17 billion (~$16,148 per hospitalization)
- childbirth at $13 billion (~$3,529 per hospitalization).

Hospital costs for sepsis continue to grow at 3x the rate of other admissions.

As with mortality and LOS, mean **daily** hospital costs were shown in 2013 to increase markedly with increasing sepsis severity:

- $1,830 for sepsis (Diagnosis-Related Group [DRG]–870)
- $2,193 for severe sepsis (DRG-871)
- $3,087 for septic shock (DRG-872).

(Paoli et. al., 2018)

If a patient survives a *sepsis* condition, 50% of those patients will develop the post-sepsis syndrome, which can have lasting health results.

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Post Sepsis Syndrome

This syndrome can cause physical and psychological long-term effects such as:

- depression
- insomnia
- sleep disorders
- panic attacks
- hallucinations
- nightmares
- decreased cognitive functioning

(Sepsis Alliance, 2020)

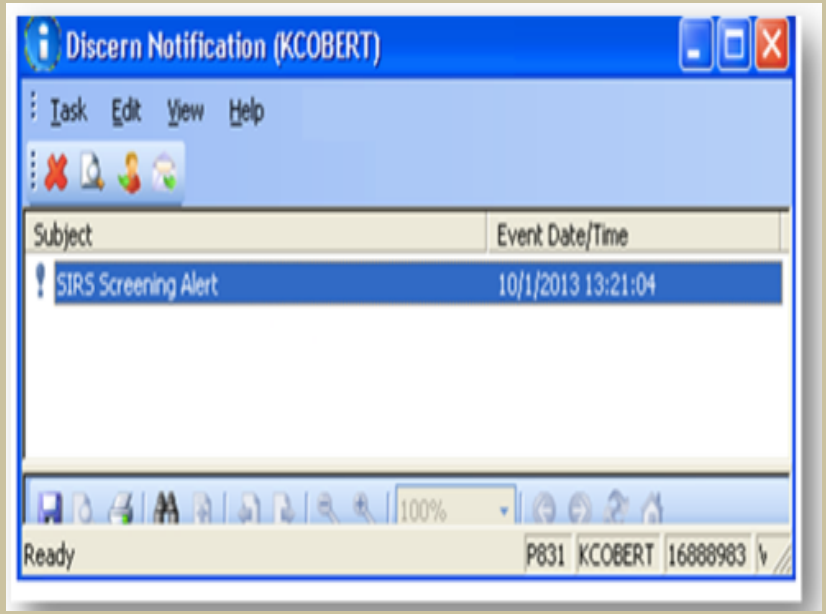
Background & Significance

- This NSICU has a history of under-reporting the automatic SIRS/ Sepsis alerts from the electronic medical record (EMR) that triggers sepsis alerts.
- As a result, this has placed patients at a higher risk of developing *sepsis* to underreporting to the medical team.
- The warnings are part of a safety net along with the patient's clinical picture when combined with collaborative rounding enhances patient safety.
- The alerts work in conjunction with the physician practices, and despite these alerts, the medical team also had missed opportunities of acknowledging the warnings compiled with the patient's clinical picture.
- This project was initiated and resulted from a case study of a patient who avoidably died of sepsis due to a lack of nurse compliance and communication between the medical staff .

How did we fail this patient?

- multiple sepsis alerts triggered by tachycardia, tachypnea
- increasing trends of his white blood cells (WBCs) level
- no ammonia levels drawn
- ignoring automatic lactate lab not drawn.
- did not intervene at the time of the report and during collaborative rounding at the bedside
- nurses did not report alerts promptly
- medical staff, nonintervention
- nursing staff were alarm-fatigued
- dismissed some of the alarms
- turned off some of the parameter
- physicians also had the sepsis alarms reported several times in a shift and failed to respond

The hospital's Electronic Medical Record (EMR) reporting system is set to notify the nursing staff of any two of four patient parameter outliers; increased temperature, increased heart rate, decreased blood pressure, or an increased lactic level.



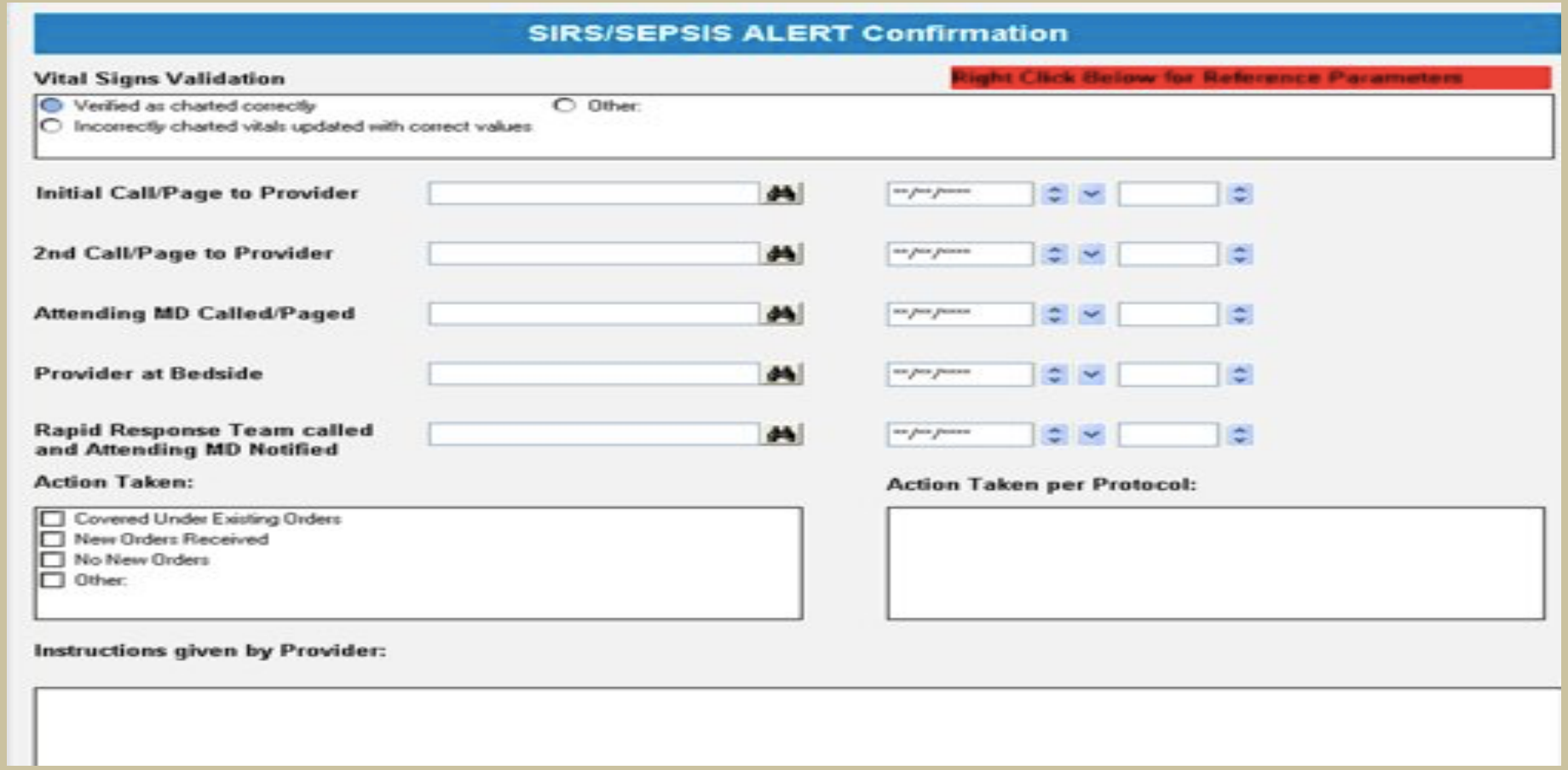
(www.virginiacommonwealthhealthsystem.org, 2019).

- **The nurse is responsible for determining if the triggered alert is a true representation of the patient's condition at the time of the trigger,**

ex: a patient has a seizure and the heart rate goes up, the oxygen level goes down and the blood pressure increases as a result of the seizure.

- **The nurse has the option to decide if the trigger is really related to sepsis or the seizure and nurses have the option to check a box within the trigger screen that discounts the vital signs as part of the trigger, but it still needs to be reported to the medical team with further communication. The sepsis alert is still reported with the accurate conditions being given as to what triggered the alert.**

- **After it is reported to the medical team the team they decide based on labs and condition of the patient if the trigger requires intervention.**



(www.virginiacommonwealthhealthsystem.org, 2019).

- Based on the unit's current sepsis initial reporting data of 64%, there appeared to be a need for more explanation or education surrounding the sepsis diagnosis and interventions (Riordan, personal communication, September 12, 2018).

- If the gap in knowledge is one of the issues of noncompliance, an educational intervention should close the gap. This doctoral project will attempt to address this need through evidence-based education of current sepsis standards and guidelines.

Needs Assessment

- A year before starting the sepsis QI project, the unit's sepsis compliance reporting was 64%, with an average reporting time > 2 hours.
- It was undetermined if the unit’s compliance rate resulted from noncompliance or an education gap for the nursing and medical staff.
- A SWOT analysis guided the project towards increasing compliance reporting of sepsis alert acknowledgments and increasing one-hour report compliance.

SWOT Analysis Strengths of Internal and External Factors

The **strengths** of the **internal factors** analyzed with the strengths were; strong stakeholder buy-in, planned intervention is evidence-based in literature, the facility supports decreased sepsis occurrences as mission-driven, and facility promotes health and well-being. The sepsis objective aligns with the organization's mission, and there is recent funding for an approved sepsis team in the organization. A strength of the EMR system is the trigger alerts that do not go away until acknowledgment.

External factors that supported the health system's opportunities included a meeting with a representative of the quality department to determine organizational opportunities and attendance to monthly hospital sepsis meetings.

SWOT Analysis Weaknesses of Internal and External Factors

The **weaknesses** of the **internal factors** identified are; change is difficult to manage with RNs and MDs, no sepsis category identified on current rounding sheet for step-down/general patient population and no emphasis on off-service rounding teams to use current rounding sheets in stepdown.

External threats include; ineffective communication between the RN shifts, day and night shifts, ineffective communication between RNs and physicians, inadequate follow-up, and inefficient monthly reporting during unit practice council.

PROBLEM STATEMENT

Decreased nurse compliance in timely notification of the one-hour window for sepsis reporting from the data triggered through the electronic medical record system (EMR) on the NSICU may lead to adverse outcomes and increased mortality rates for the patient population on the unit and hospital-wide.

CLINICAL QUESTION or PICOT

For nursing staff in the Neuroscience Intensive Care Unit with decreased compliance reporting to the medical team of embedded triggered sepsis alerts in real-time, does 1:1 education increase compliance?

CONGRUENCE WITH ORGANIZATIONAL STRATEGIC PLAN

Centers for Medicare & Medicaid Services (CMS) (www.cms.gov, n.d.) partnered with Virginia hospitals, including the project healthcare system, to provide the same initiative of sepsis interventions to decrease sepsis readmissions from outside hospitals to the project healthcare system.

This strategic initiative includes case studies of patients admitted from other facilities, nursing homes, and regional or statewide collaboratives to review processes, lessons learned, and assist other systems in decreasing sepsis mortality rates (Smith et al., 2017).

Sepsis education and nursing knowledge align with the organizational strategic plan for the project healthcare system

A unit-based and hospital-wide sepsis committee meets monthly to share data, compliance, and best practices among the facility's units.

The unit committees report to the hospital-wide chair, which sits on the hospital-wide critical care committee, which in turn, reports to the chief nurse and medical committee.

(www.virginiacommonwealthhealthsystem.org, 2019).

SYNTHESIS OF EVIDENCE

A review of the literature to research was done using CINAHL, Google Scholar, Cochrane Library, EBSCO, Sepsis Alliance, and MEDLINE.

The keywords used for this search were: *sepsis,* continuing education*,* knowledge, attitude, practice, electronic health record data; mortality, predictive modeling; *severe sepsis; surviving sepsis campaign guidelines, SIRS,* hospital mortality, care bundle, antibacterial agents, antibiotics*, septic shock,* shock recognition, the timing of antibiotics, and early recognition.

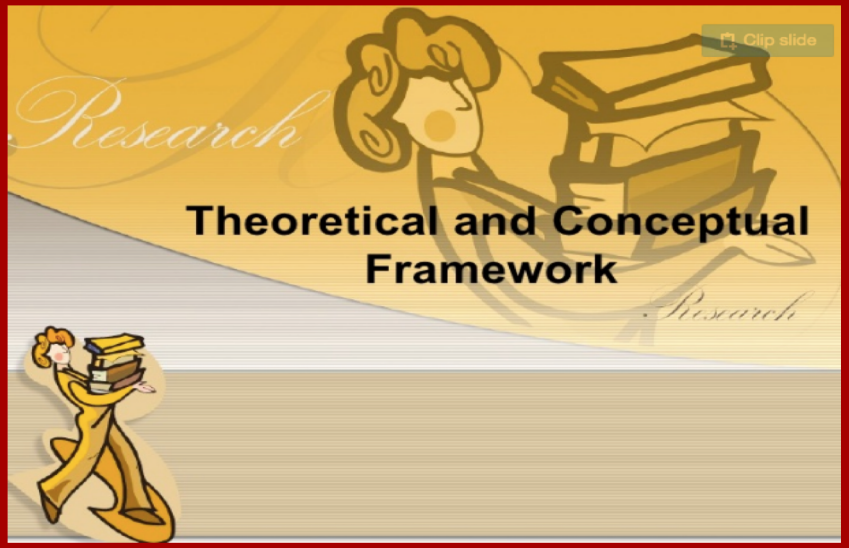
Using the search and the Boolean phrase: sepsis, *severe, severe sepsis, SIRS, mortality,* economics, quality of life, *septic shock, lactate level, nurse education, and intensive care unit.* MeSH terms in PubMed epidemiology, *mortality,* economics, quality of life, and statistics were utilized to obtain 51 articles for review.

Of these articles, 20 did not apply to the project or excluded as being of inferior quality, poor design, or out of date for the project search criteria of the last five years or less. Search criteria included the terms: ICU, length of stay, adherence, increasing adherence, and a range of factors that affect the length of stay.

The following databases used to research *sepsis* evidence were the Cochran database, OVID, google scholar, EBSCO, and CINAHL.

The literature synthesis's purpose was to identify the underlying theme of early sepsis recognition and practice-based inter-professional collaborative interventions to improve healthcare processes and outcomes while lowering mortality rates.

Conceptual or Theoretical framework



The framework that best fits this project is Knowle's adult learning theory. This theory, chosen because the team requiring education are adult nurses of different generations and genders, was the correct QI project framework .

Knowles's approach to education describes adult principles and how they learn with examples of the best strategies for these learners.

Malcolm Knowles has five assumptions regarding adult learners, which applied to any adult educational situation, explains the staff's different mindsets and their point of view of the importance of the project (Papas, 2013).

- Assumption 1: is one of maturity-as adults, we are supposed to become less dependent on others and more self-directed and reliant.
- Assumption 2: is the accumulation of life experience. As the adult becomes more proficient in her/his practice, they slowly transition to an official or unofficial resource for novice learners.
- Assumption 3: is the readiness to learn, and as we mature, our willingness to learn attaches to the responsibilities we share at work. A charge nurse may be more inclined to follow policies than the bedside nurse.
- Assumption 4: is an orientation to learning. The adult learner shifts their direction of learning from subject to problem-solving, which needs to happen for sepsis reporting and compliance.
- Assumption 5: is one of motivation. As we mature, the motivation to learn becomes more internal and perhaps the most challenging assumption to overcome because tangible items drive some people, and others are excited to learn by nature (Papas, 2013).

PROJECT DESIGN

The proposed project is a sepsis quality improvement project to increase the percentage of sepsis compliance reporting in the NSICU.

To achieve goals for the project, the nursing staff needed to improve timely communication to the physician, this was done to ensure the physician rounds on the patient at some point during the day.

The Neuroscience Intensive Care Unit has 28 total beds, including the three stepdown beds. The NSICU is in the critical care tower of the project site.

Setting

The study took place in a facility that was an early adopter of the SIRS and sepsis alerts, in partnership with their primary healthcare information system vendor, Cerner Corporation. The hospital is in an urban city with 865 beds (Zink, 2018).

The facility is one of the region's Level I Trauma Center and is a referral center for the region on the east coast and state of Virginia's surrounding states.

The project's setting is a teaching hospital with nurses, medical students, residents, and interprofessional teams who collaborate throughout the day.

Population Sample

The proposed sample size was the 75 nurses in the Neuroscience Intensive Care Unit. The nursing staff included all the team members, regardless of benefitted position status, and comprised both dayshift, nightshift and weekend option nurses.

Data Collection Tools

- The EMR system used for the project is a Cerner product.
- The hospital-based tool used for sepsis alerts was the Sepsis Surveillance Agent, also developed by Cerner.
- The sepsis alert system is a clinical decision support system with real-time surveillance and electronic alert notification capabilities (Amland & Sutariya, 2017).

Table 3
Sepsis Data Compliance Tool/Instrument

Order Type	Order Trigger Date	Powerform	Total N	Number completed	Powerform Time	PFT-OTT	HR	RR	Temp	WBC	Band

PROJECT PLAN

Description of the Interventions or implementation Process

The detailed description of the interventions for the project started with an initial meeting with the QI project DNP student and the project mentor by the first week in September of 2019. Together it was decided that based on some of the unit's educational needs assessments, sepsis was high on the list of needs.

The nurse education was carried out by the DNP project student with each of the nurses on the unit through a 1:1 education approach.

Data was gathered using the Sepsis Data Collection Tool form and saved the data on thumb drive in a locked locker

There was a development of a PowerPoint presentation by the end of October 2019, regarding sepsis that was specific to the Neuroscience population that was added to the hospital SharePoint site.

A sepsis poster was created by the end of November 2019, to share sepsis data to staff and visitors on the unit.

A color-coded dashboard was created by the end of October 2019 and is currently in use and presented each month at the monthly unit practice council.

The stepdown rounding sheet was redesigned to include the question of a triggered sepsis alerts during the shift.

Early in the project planning, the last week of September 2019, I met with the Information Technology (IT) member via a phone call to discuss the EMR sepsis alerts to see if they were modifiable.

- The overall rate of NSICU compliance was collected from an EMR query by the DNP mentor via a monthly standardized computer program that the hospital uses.

- The patient's data was deidentified and passed on to the QI project student for the percentage of compliance for the month based on the number of triggers, the time the trigger was acknowledged, and the time the nurse notified the physician.

- This information was put into a monthly dashboard and reported out to the staff in a unit practice council.

- During the project education with the medical team, it was discovered by the DNP student that the medical team does not get the sepsis alerts.

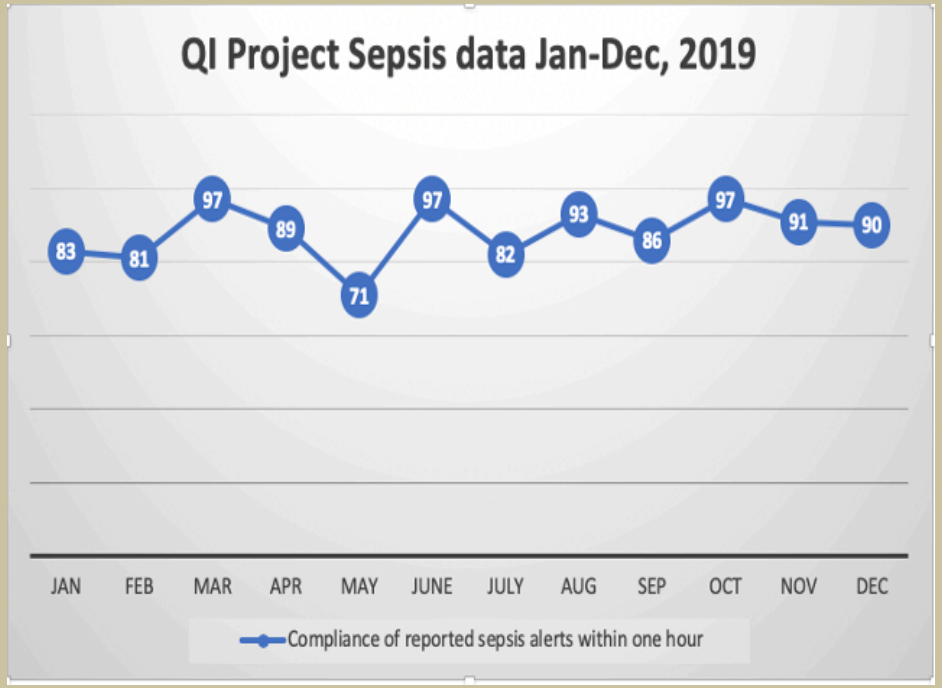
- The sepsis alerts are linked to the patients that the nurse establishes a relationship with on the day that they are assigned to the patient.

- Physicians, PAs and NPs do not have the same view and because they are potentially assigned to hundreds of patients throughout the facility, this is not a feasible feature for them.

- A lactate label was then designed to be triggered and printed for the nursing staff when the sepsis parameters were correctly identified by the nursing staff when an EMR alert was triggered.

Outcomes to be Measured

The data analysis at the end of the project used a simple before, and after compliance percentage graphed to analyze the change after the intervention was applied. This analysis determined the degree of change and the increased compliance percentage of triggered sepsis alerts by the EMR



Evaluation and Sustainability Plan

The sustainability of the project will be the poster board in the unit as a continued reminder of the sepsis education

The shared PowerPoint on the hospital website,
the monthly meetings attended by the DNP student as the unit sepsis champion for the unit.

The continued report of the month-to-month sepsis compliance data via the newly created dashboard at the unit practice council.

The DNP student will continue to meet with new nurses, travel nurses, transfer nurses from other units within the facility, and those nurses who are floated to the unit on a 1:1 basis for sepsis education once the EMR triggers are turned back on-off since Mar due to the pandemic.

Institutional Review Board or Ethical Issues

This project qualified for exempt 45 CFR 46. 101(b) exempt through Bradley University:

- **qualified for expedited review category 45 CFR46.110 for, no more than minimal risk.**
- **qualified for expedited or full review as it satisfies all of the requirements for 45 CFR 46.110 (Bradley University, 2019)**
- **The project was approved by Bradley University in August of 2019**

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The facility's IRB issue of the patient's HIPPA rights was accomplished through the monthly compliance data that was de-identified by the project mentor and then given to the DNP student who locked the information in a locker away from other staff on the unit and was destroyed in a global shred bin on the unit.

Approval for the project was obtained on August 18, 2019.

This QI project did not involve the physical patients at the project time. The privacy of all patients whose charts were reviewed by and done in the unit clinician's private office away from others who may see their HIPPA protected health information (PHI).

The information used in the QI project was redacted names of the patient and keep the integrity of the data safe.

Organizational Assessment

- Readiness for a change in the organization was evident by a full-time sepsis coordinator position created whose focus is the monitoring and implementation of sepsis strategies for the organization.

- The organization also in the process of putting together a full-time sepsis alert system that will go out over the PA system of a sepsis alert as the patient comes into the emergency room from an outside source.

- There were no foreseen anticipated risks or barriers in the facilitation of this implementation of the project, it was in alignment with the strategic initiatives of the facility.

- The suggestion for the project was guided by a mentor who is a unit leader, and the unit sepsis champions were very enthusiastic and engaged in their roles as unit champions.

- There were minimal risks related to this project, increased knowledge and better patient outcomes may result as a benefit to staff and patients.

Cost Factors

Table 1 Project Budget Table

Additional Hours of labor for Project FY 2019

Month $-Labor Material Meetings

	4- hour weekly education	Poster	Sepsis	Unit Practice Council
September	$318	$51.98	$30.75	$58.13
October	318		39.75	58.13
November	318		39.75	58.13
December	318		39.75	58.13
Total	$5,088	$51.98	$123	$232.52

Total Project Budget: $ _5,495.50_

- This project initiation's cost factors were minimal

- Budgetary needs were the meeting times (sepsis, mortality, and unit practice council) given to the PI for additional hours to meet with individual nurses.

- The unit nurse’s time was not included in the budget table because the education was done with the staff at the bedside so that they could continue to care for their patients and not be pulled off the floor for any extended timeframe, average time with each nurse was 15-20 minutes with real-time interactions if a sepsis alert was triggered during the education.

Cost Avoidance or Savings Associated with Implementation

I was unable to get answers to the following questions for the project:

-the yearly cost of sepsis at the institution?
-how it is determined, and how sepsis (hospital-acquired) impacts hospital compare data?
-dollars for sepsis occurrences?

From 2015 to 2018 the cost to treat hospital acquired sepsis rose from $58,000 per case to $70,000 per case of sepsis (healthcaredive.com, 2019). If we include the inflation for each year of approximately sepsis approximately 5% from 2015 to 2020; the proposed average cost of sepsis for inpatient encounters would be $74,024 per case for 2020 (see Table 2).

Possible inflation of 5% for hospital-acquired infections from 2015-2020

2015	2016	2017	2018	2019	2020
	$58,000 x 0.05=2,900	$60,900 X 0.05=3,045	$63,945 x0.05=3,197.25	$67, 142.25 x 0.05=3,357	$70,499.36 x 0.05=3,524.97
$58, 000	$60, 900	$63,945	$67,142.25	$70,499.36	$74,024.33

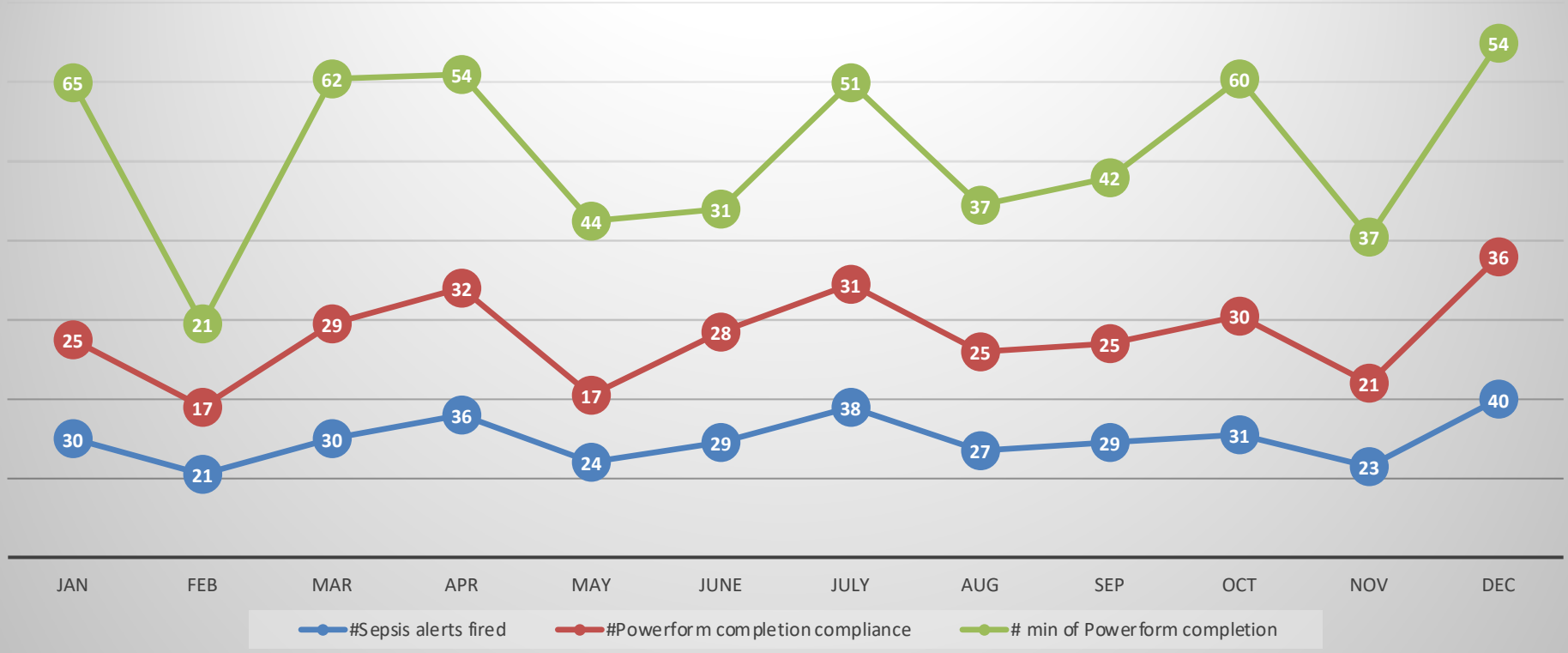
Results

In January of 2019 the average compliance reporting was 83% with an average tie of completion of 65 minutes and had a lower dip in compliance in May of 71 % completion and just prior to the beginning of the project the completion compliance percentage was only 82%.

The first month of the project the compliance rose to 86% with the final compliance of 90% and the compliance time went from 75 minutes to 54 minutes at the end of the project.

The below figure represents the project reaching the benchmark goal of compliance of for the project at completion, 90% compliance of reporting sepsis alerts to the medical staff. The timeframe compliance of 54 minutes, the benchmark goal was to report in less than 60 minutes, was met at the end of the project as well

NSICU Sepsis Compliance Data



Summary of findings and outcomes linked to SMART objectives

The significant findings discovered during the project were:

- the physicians, nurse practitioners, and physician's assistants were not getting the sepsis alerts.
- Many of the medical staff did not know what to expect and did not know what interventions were needed to be in place for the patient's safety
- Medical staff thought the nurse notifications were just an FYI
- No orders to draw lactate lab levels when a sepsis alert was triggered
- Nursing staff did not know they could page the attending if no response from the resident when reporting alerts

SMART Objectives

DNP Essential I: Scientific underpinnings for practice through the nursing actions or processes by which positive changes in health status are affected was addressed through (AACN, 2006):

- IRB approval from VCU Health Systems and Bradley University to start the QI project by the third week of August 2018 aligns with this essential.

AACN *DNP Essential II: Organizational and systems leadership for quality improvement and systems thinking* through advanced communication skills/processes leading to quality improvement and patient safety initiatives in health care systems (AACN, 2006):

- relates to the objective of the medical staff acknowledge the nurse's page and phone call when a sepsis alert is triggered by the end of December 2019 after the project. This evidence will be reported on the nursing staff's documentation form in the EMR on the sepsis datasheet

DNP Essentials III: Clinical scholarship and analytical methods for evidence-based practice was met through the direction, evaluation, and design of a quality improvement methodology to promote effective, safe, timely, efficient, equitable, and patient-centered care (AACN, 2006).

- NSICU nurses will enhance their understanding of the importance of the EMR sepsis triggers and report them within the 1-hour window by the end of December 2019, after the DNP student's education for the sepsis encounters aligned with the this DNP essential.

Essential IV: Information systems/technology and patient care technology for the improvement and transformation of health care through the analysis communication of critical elements necessary to the selection, use and evaluation of health care information systems and patient care technology (AACN, 2006).

- The objective to have a meeting set up via phone with IT director by the second week of September 2018.

DNP Essential V: Health care policy for advocacy in health care was met through education of others, including policymakers at all levels, regarding nursing, health policy, and patient care outcomes (AACN, 2006).

- Carried out this essential by obtaining a completed list of all nurses on the unit for enhanced education with my team-members' assistance on the correct submission of the fired sepsis alerts from EMR by the first week of August 2019

- Developed a plan for small-group education for new hires (RN) monthly during their unit orientation-30-minute presentation with a Q & A post-presentation by the end of March 2019.

- Sent a detailed email with plans for the project and what is desired from the staff for participation with the project's reason during the project's QI roll-out phase by the end of September 2019

DNP Essentials VI: Interprofessional collaboration for improving patient and population health outcomes through (AACN, 2006):

- consultative and leadership skills with interprofessional and interprofessional teams to create change in health care and complex healthcare delivery systems was also met by this project. A dashboard captured all data necessary for reporting monthly to the unit practice council with monthly completion rates noted and an overall unit percentage of capture and data shared with the medical team by the end of January 2019.

- I created a Neuroscience ICU power-point on the shared facility website highlighting the uniqueness of sepsis patients on the Neuroscience patient population and what data we are capturing on this patient population that may be different on other ICU units by the end of March 2019.

- I also, created a sepsis poster on the unit to share the information of sepsis data from the literature research and our initial completion rates when the project was introduced in May of 2019

DNP Essential VII: Clinical prevention and population health for improving the nation's health was met through evaluating care delivery models and strategies using concepts related to community, environmental and occupational health, and cultural and socioeconomic dimensions of health (AACN, 2006).

- The NSICU nursing staff will increase their reporting of sepsis triggers and report greater than 90 percent of the triggered alerts by the end of December 2019 aligns with the *DNP Essential VII: Clinical prevention and population health for improving the nation's health* was met through evaluating care delivery models and strategies using concepts related to community, environmental and occupational health, and cultural and socioeconomic dimensions of health.

Essential VIII: Advanced nursing practice through the guidance, mentoring, and support of other nurses to achieve excellence in nursing practice (AACN, 2006).

- This objective aligns with the the NSICU nursing team will show their increased awareness. Reporting will be evident in the increase in compliance of reporting with a compliance percentage greater than 64%, which was the starting point before the project. This objective aligns with the

Limitations or Deviations from project plan

- Limitations to the project was the length of time for the project (6 months is ideal).
- Meeting times with staff was shorter than I would have liked.
- Original goal was to educate 100% of the staff, unable to fulfill this due to matriculation of the unit, different shifts, and FTEs that were PRN that I never saw.

A deviation from the project plan was the change in the stepdown report and lab values.

- Unable to present sepsis PowerPoint slides at staff meeting in Mar due to covid-19 restrictions and was unable to meet with the nurse interns due to covid-19 restrictions
- The Neuro PA left her position on the unit and was no longer the point person for the medical team.

Implications of Results on:

Practice- the nurse inspired change in practice of the lactate lab label printing was a little easier to accept

Future research- Sepsis education needs to be addressed in underserved communities.

Nursing-empowered novice nurses to speak up and advocate for patients when reporting alerts

Health Policy- This project is in line with the global initiative for sepsis and the recognition that sepsis is the leading cause of death worldwide, with the goal of multidisciplinary teams committed to improving time to recognize and treat sepsis and septic shock.

The value and impact of the project to healthcare and practice

Patients who are admitted and die from COVID-19 related to overwhelming sepsis infections have a better chance of survival as the medical community continues to determine how to treat this patient population best, they do have one weapon in their arsenal; they know how to treat sepsis.

Sepsis can result from any viral infection, including the flu or COVID-19, leading to severe illness, septic shock, and even death.

Through early recognition, increased compliance of timely reporting, we may be been able to decrease the number of sepsis mortality cases on the unit and potentially keep patient from returning to the unit after a transfer

References

Amland, R. & Sutariya, B. (2017). *Saving lives through sepsis surveillance.* Cerner. https://www.cerner.com/perspectives/saving-lives-through-sepsis-surveillance/

Bryant, M. (2019). *Hospital-acquired sepsis cases drop, but treatment costs rise, report finds*. https://www.healthcaredive.com/news/hospital-acquired-sepsis-cases-drop-but-treatment-costs-rise-report-finds/551083/

Paoli, C. J., Reynolds, M. A., Sinha, M., Gitlin, M., & Crouser, E. (2018). Epidemiology and Cost in the United States-An Analysis Based on Timing of Diagnosis and Severity Level. *Critical care medicine*, *46*(12), 1889–1897. https://doi.org/10.1097/CCM.0000000000003342

Pappas, C. (2013). The Adult Learning Theory Andragogy of Malcolm Knowles. https://elearningindustry.com/the-adult-learning-theory-andragogy-of-malcolm--knowles.

Sepsis Alliance (2020b). *Post Sepsis Syndrome.* https://www.sepsis.org/sepsisbasics/post-sepsis-syndrome/

Riordan, personal communication, September 12, 2018).

Smith, D., Hammer, C., Archer, B.C., & Clevenger, W. (2017). Stopping Sepsis Hospital Overview. http://qin.hqi.solutions/wp-content/uploads/2017/05/Stopping-Sepsis-Hospital-Webinar-1.-1-30-17WC_reviewed.pdf

Vinayagam, S., & Sattu, K. (2020). SARS-CoV-2 and coagulation disorders in different organs. *Life sciences*, *260*, 118431. https://doi.org/10.1016/j.lfs.2020.118431

vcuhealth.org, (2019*). Virginia commonwealth Health System.* https://www.virginia.gov/agencies/virginia-commonwealth-university-health-systems-authority/

www.survivingsepsis.org (n.d.) *History*. http://www.survivingsepsis.org/About-SSC/Pages/default.aspx

Zhao, J., He, Y., Xu, P., Liu, J., Ye, S., & Cao, Y. (2020). Serum ammonia levels on admission or predicting sepsis patient mortality at D28 In the emergency department: A 2-center retrospective study. *Medicine*, *99*(11), e19477. https://doi.org/10.1097/MD.0000000000019477

www.sepsis.org, (2020). *Novel coronavirus and sepsis.* https://www.sepsis.org/

www.cms.gov, (n.d.). *We are putting patients first.* https://www.cms.gov/

www.medicalmutual.com (2019). Sepsis: A Medical Emergency. Retrieved from, https://www.medicalmutual.com/news/article/sepsis-a-medical-emergency/357.

Zink, J.A. (2018). *Reducing Sepsis Mortality: A Cloud-Based Alert Approach*. [Doctoral Dissertation, Virginia Commonwealth University]. https://scholarscompass.vcu.edu/cgi/viewcontent.cgi?article=6786&context=etd

Zink, M. (2020). *Can COVID-19 Cause Sepsis? Explaining the Relationship Between the Coronavirus Disease and Sepsis.* https://www.global-sepsis-alliance.org/news/2020/3/4/can-covid-19-cause-sepsis-explaining-the-relationship-between-the-coronavirus-disease-and-sepsis-cvd-novel-coronavirus

Sepsis Alliance (2020b). *Post Sepsis Syndrome.* https://www.sepsis.org/sepsisbasics/post-sepsis-syndrome/