CE

Implementation of an Evidence-Based, Nurse-Driven Sepsis Protocol to Reduce Acute Care Transfer Readmissions in the Inpatient Rehabilitation Facility Setting

Jenelle L. Jacobs[1], DNP, RN, CNE, ACM, CMSRN

Abstract

Purpose: The aim of this study was to determine if implementing an evidence-based, nurse-driven sepsis protocol would reduce acute care transfer (ACT) readmissions from an inpatient rehabilitation facility compared to nonprotocolized or usual standard of care for adult sepsis patients undergoing physical rehabilitation.

Design: This study used a preintervention and postintervention model for quality improvement, which involved comparing the nonprotocolized care of adult sepsis patients in the inpatient rehabilitation population to the application of an evidence-based, nurse-driven sepsis protocol to determine its effect on reducing ACT readmissions.

Methods: Patients who screened positive for suspected sepsis and received protocolized interventions were analyzed to determine the occurrence of ACT readmission. Compliance with protocol elements was also evaluated.

Findings: The sepsis-related ACT readmission rate decreased from 36.28% to 25% in 8 weeks, and compliance with protocolized sepsis interventions increased.

Conclusions: Nurse-driven, protocolized assessment and treatment can improve the management and care of sepsis patients undergoing physical rehabilitation and can reduce ACT readmissions.

Clinical Relevance: This review provides rehabilitation nurses an evidence-based, nurse-driven approach to the clinical management of sepsis patients in the inpatient rehabilitation setting and discusses how this approach can reduce ACT readmissions and improve clinical outcomes.

Keywords: Clinical protocols; evidence-based practice; nursing assessment; sepsis; systemic inflammatory response syndrome.

Introduction

Problem Description

Sepsis is among one of the leading causes of hospital admissions and readmissions and is associated with negative clinical outcomes, which can lead to significant morbidity and mortality (Hall, Williams, DeFrances, & Golosinskiy, 2011). Although there is a multitude of research available regarding sepsis-related readmission rates and the management of sepsis patients in the acute care and emergency department (ED) settings, little research is available regarding these topics for the adult patient undergoing physical rehabilitation in an inpatient rehabilitation facility (IRF) setting. The identified practice problem involved a high incidence rate of sepsis-related acute care transfer (ACT) readmissions from a 52-bed IRF in central Virginia. A retrospective chart review revealed sepsis as the leading cause (36.28%) of ACT readmissions in 2016 from the IRF (see Appendix A); however, these patients did not receive sepsis-specific assessment or protocolized interventions based on evidence-based guidelines. Based on this assessment, an evidence-based, nurse-driven sepsis protocol (see Appendix B), adapted with permission from the Surviving Sepsis Campaign (SSC, 2013), was created to improve the clinical care of sepsis-positive patients at the IRF and reduce sepsis-related ACT readmissions. The study hypothesized that the application of an evidence-based, nurse-driven sepsis protocol would lead to a reduction in sepsis-related ACT readmissions from 36.28% to 25% in 8 weeks, compared to no protocol or the usual standard of care.

Correspondence: *Jenelle L. Jacobs, HealthSouth Rehabilitation Hospital, 300 Park Hill Drive, Fredericksburg, VA 22401. E-mail: jjbell77@gmail.com*

1 HealthSouth Rehabilitation Hospital, Fredericksburg, VA, USA

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Available Knowledge

Sepsis is a potentially life-threatening complication that occurs as a result of systemic manifestations of infection and can be deadly if not identified early and treated promptly. Sepsis remains a significant healthcare burden and, if left untreated, can lead to a multitude of complications, including organ damage, cognitive impairment, physical disability, or death (Hall, Williams, DeFrances, & Golosinskiy, 2011). Sepsis has been identified as a leading cause of hospital readmissions, which could be potentially avoidable with the timely implementation of early goal-directed therapy (EGDT) (Segal, Rollins, Hodges, & Roozeboom, 2014). Early identification of sepsis and subsequent timely implementation of EGDT have been shown to significantly decrease sepsis-related complications and are highly cost-effective, demonstrating the need for new clinical strategies for the management of sepsis at the bedside (Castellanos-Ortega et al., 2010). Nurse-driven protocols using critical assessment by the bedside nurse, coupled with bundled interventions, have been shown to improve the timeliness of sepsis care and empower nurses to initiate elements of EGDT (Coates, Villareal, Gordanier, & Pomernacki, 2015). Casserly et al. (2010) also found that the nurse-driven initiation of EGDT impacts the timeliness of interventions for sepsis-related infections, which, in turn, improves patient outcomes and can reduce readmission rates.

In the IRF setting, an ACT readmission occurs when a patient who is undergoing physical rehabilitation must be transferred back to an acute care setting or ED for medical treatment during their rehabilitation stay, which causes an interruption in the patient's rehabilitation program. Walsh et al. (2012) noted ACT readmissions are potentially avoidable, can be physically and emotionally difficult for patients and families, can result in numerous complications of hospitalization, delay the patient's rehabilitation program, and are costly to both the patient and the hospital (Walsh et al., 2012). Pellicane (2014) studied patients in an IRF to determine the relationship between hemodynamic assessment and ACT readmission. Pellicane discovered infection-related illness accounted for the highest incidence of ACT readmission. This is important because sepsis is a direct result of a complication of infection; therefore, infection places the patient at risk for the development of sepsis, necessitating the need for early identification of infection along with the initiation of goal-directed therapy (Dellinger et al., 2013). Pellicane discovered timely clinical assessment coupled with goal-directed interventions can improve quality care and reduce sepsis-related ACT readmissions from the IRF. Similar to Pellicane, Guerini et al. (2010) also discovered that patients undergoing rehabilitation in an IRF have a higher risk of ACT readmission with hemodynamic instability, which can be an early indicator of sepsis. Guerini et al. discussed the importance of managing the medical conditions of IRF patients because patients who admit to the IRF for inpatient rehabilitation typically present with acute comorbid conditions, necessitating timely assessment and subsequent treatment for acute medical needs. Both authors argued the importance of critical nurse assessment along with interventions to prevent ACT readmissions and improve quality care by using EGDT in the IRF setting.

The SSC is recognized as the gold standard in sepsis care and management. The SSC established a set of internationally recognized clinical practice guidelines for the management of sepsis and septic shock based on current evidence, with EGDT as one of the cornerstones of the guidelines (Dellinger et al., 2013). Protocols adapted from the SSC have been shown to produce improved rates of timely assessment and interventions based on best practice evidence (Hasan & Katona, 2015). Utilization of nurse-driven protocols adapted from the SSC has been shown to streamline care for sepsis patients, empower bedside nurses to critically assess patients for sepsis symptoms, and promote timely interventions based on evidence-based guidelines. In a nurse-driven model, the bedside nurse has the tools to complete accurate, rapid assessments and begin intervention bundles in collaboration with the patient's provider to improve patient outcomes (Giuliano, Lecardo, & Staul, 2011).

Rationale

The complex adaptive systems theory was utilized as the theoretical framework for the study. Mann-Salinas, Engebretson, and Batchinsky (2013) argued that the complex adaptive systems theory relates directly to the management of sepsis because sepsis is a complicated syndrome that threatens the adaptive processes of the human body. Because multiple systems are involved in the sepsis cascade, adaptive response to sepsis and organ failure varies depending on the ability of the system to adapt. If a septic patient is unable to adapt, deleterious consequences can occur if timely, effective intervention is not implemented (Mann-Salinas et al., 2013). Dellinger et al. (2013) noted the principles of SSC and EGDT substantiate the importance of a multifaceted approach to sepsis management. Critical bedside nurse assessments, along with the delivery of timely interventions to manage sepsis, are critical to the application of complex systems to clinical practice.

Specific Aims

Given the potential negative impact of an ACT readmission for the patient from an IRF setting as well as the

potential complications from untimely, nonprotocolized sepsis treatment, the aim of the study was to protocolize sepsis care based on the evidence-based guidelines provided by the SSC. The goal of the study was to protocolize the care already being provided to sepsis patients and, therefore, improve clinical outcomes and prevent an ACT readmission. Compliance with protocol elements was measured because a high rate of compliance was critical to providing timely and effective EGDT to sepsis-positive patients in the IRF setting.

The purpose of this report is to provide rehabilitation nurses an evidence-based, nurse-driven approach to the clinical management of sepsis patients in the inpatient rehabilitation setting. This report highlights the importance of clinically evident approaches to the management of acute medical conditions in the rehabilitation setting. The readers of this review will discover how the implementation of an evidence-based, nurse-driven protocol can improve clinical outcomes and reduce the negative effects of sepsis and subsequent readmission within the adult inpatient rehabilitation population.

Methods

Ethical Considerations

Patient information was protected by compliance with the Health Insurance Portability and Accountability Act guidelines. There was no change in patient standard of care, patients were not identified and remained anonymous, and no consent was required. For those nurses who did not follow the nurse-driven sepsis protocol, there was no repercussion to their status of employment. Patients were evaluated and treated for sepsis regardless of age, gender, religion, ethnic or racial minority status, socioeconomic status, or English proficiency.

On March 20, 2017, Chamberlain University Institutional Review Board for the Protection of Human Subjects determined the proposed study did not meet the criteria for human subjects research and did not require the review or oversight of the institutional review board. Only adult patients were involved in the study as the IRF does not admit patients under the age of 18. No conflict of interest was appreciated during implementation of the study.

Context of the Study

Little research is currently available that directly addresses protocolized sepsis assessment and treatment in the adult rehabilitation population, but rather a multitude of research is available on this subject in the acute care and ED settings. Because the literature indicates rehabilitation patients are at risk for readmission back to an acute care setting due to acute medical comorbid conditions, the study aimed to determine the effects of nurse-driven, protocolized sepsis assessment and treatment on reducing ACT readmissions from the IRF. Because an IRF is a hospital level of physical rehabilitation, the nurse-driven sepsis protocol was adapted to meet the needs of patients in this specific healthcare environment. Reducing readmissions from the acute rehabilitation setting is equally important for patient care and outcomes compared to other acute care settings, thus necessitating new strategies for the management and care of sepsis patients in the IRF.

Intervention

Prior to implementation of the study, an electronic HealthStream module in a voice-enhanced PowerPoint format was created and provided to all nurses within the hospital and included epidemiology, pathophysiology, signs and symptoms of sepsis, the SSC guidelines, and directions regarding how to implement the nurse-driven sepsis protocol. Twenty face-to-face educational sessions were completed on both day and night shifts and during staff huddle to provide required education and answer questions in real time.

The bedside nurses used the nurse-driven sepsis protocol to assess each patient at the time of admission, once each shift, and as needed (PRN) during the 8-week implementation phase. The sepsis screening tool allowed the bedside nurses to perform a focused assessment on all patients to identify those who were positive for suspected sepsis and to implement bundled interventions within 3 hours of a positive screening based on the SSC guidelines (Surviving Sepsis Campaign, 2015). The nurse-driven sepsis protocol allowed for critical assessment of three major components, which included (1) patient history suggestive of a new infection, (2) systemic inflammatory response syndrome criteria, and (3) organ dysfunction. The SSC 3-hour bundled interventions included a nurse-initiated complete blood count, a basic metabolic panel, blood cultures at two sites prior to antibiotic administration, and a lactate level. Provider-initiated elements included administration of a broad-spectrum intravenous antibiotic and administration of intravenous crystalloid fluids if the patient was hypotensive or the lactate level was greater than 4. At the provider's discretion, urinalysis, urine culture, chest X-ray, amylase, lipase, arterial blood gas, C-reactive protein, and computerized tomography scan were obtained (see Appendix B).

All bedside nurses implemented the protocol on each shift and internal medicine physicians, physiatrists, and physician-extenders collaborated with the bedside nurses

to initiate protocolized treatment based on a positive sepsis screening. The nursing supervisors and the nurse manager were instrumental in monitoring protocol compliance and facilitating interdisciplinary communication between bedside nurses and providers. Sepsis patients were debriefed in multidisciplinary rounds, which included nurses, supervisors, physicians, the quality director, the chief nursing officer, the medical director, and care managers. The quality improvement initiative was highly collaborative and involved stakeholders at the microsystem, mesosystem, and macrosystem levels within the hospital.

Study of the Intervention

Summative evaluation involved identifying which patients who screened positive for sepsis and received bundled interventions experienced an ACT readmission. The protocol tool was completed in paper format and then scanned into the electronic medical record (EMR) to become part of the permanent record. Daily audit of the protocol tool was performed by review of the EMR, followed by a weekly summary audit. Compliance with the implementation of protocol elements was also evaluated by review of the EMR. The bedside nurses screened all patients for suspected sepsis using the protocol tool, thereby reducing the chance that some patients would be chosen for the screening and some would not, which controlled for extraneous variables.

Measures

Data were analyzed using the Two-Sample Proportion Hypothesis Test, which provides objective criteria for deciding whether research hypotheses should be accepted as true or rejected as false. The study aimed to determine if implementing an evidence-based, nurse-driven sepsis protocol caused a reduction in ACT readmission rates in the adult sepsis patient population, which was the research hypothesis. The null hypothesis stated implementing an evidence-based, nurse-driven sepsis protocol demonstrated no cause for reducing ACT readmission rates in the sepsis population. The rejection of the null hypothesis is what the study sought to accomplish. The level of statistical significance was set at an alpha of less than .05 per literature precedence (Polit & Beck, 2010).

Analysis

The study was implemented over an 8-week period during the writer's final Doctor of Nursing Practice practicum coursework during the months of May and June 2017. Outcomes were evaluated over a 5-week period after the study was complete. The project timeline involved engaging stakeholder support and buy-in; nurse and staff education and training; daily and weekly rounding with attending physicians, staff nurses, and supervisors; and daily and weekly audits of the implementation process with data analysis. The project statistician assisted to confirm inclusion data for study analysis and verified statistical significance of the data. Data were synthesized after review of protocol completion, compliance with protocol elements, and occurrence of ACT readmission based on protocol interventions.

Results

ACT Readmission Rate

During the 8-week implementation phase, 238 patients were admitted to the IRF. Of those 238 patients, 17 patients screened positive for sepsis using the nurse-driven sepsis protocol. Of the 238 patients, 14 patients should have screened positive for sepsis but were missed by nursing. Nurse compliance with protocol completion was 76%. Of the 238 patients admitted during the implementation phase of the study, 44.1% admitted to the IRF with a documented history of infection. Clinical signs and symptoms of systemic inflammatory response syndrome were present in 18.5%, and 52.9% demonstrated one or more signs of organ dysfunction at the time of a positive sepsis screening (see Appendix C).

Of the 17 patients who screened positive using the nurse-driven sepsis protocol, 12 received some but not all protocol elements. Because no patients in the postintervention group received all protocol elements as they should have been implemented, based on statistician recommendation, the treatment group was identified as those 12 patients who received partial protocol elements. Also based on statistician recommendation, in retrospect, comparing preintervention data during the months of May and June 2016 instead of the entire year, compared to May and June 2017, which reflected the postintervention group, demonstrates a more critical analysis of the comparison data. The comparison of 8-week time frames in both the preintervention and postintervention groups allows for isolation of a more accurate clinical picture of the patient groups. Because the time of year can affect illness and exacerbation of disease, comparing patients in these exact 8-week time frames provides a more accurate analysis of the data and demonstrates a greater ability to prove or disprove the study hypotheses (C. Garcia, personal communication, July 11, 2017).

Statistical Analysis

Two sets of data were analyzed as a result of the study. Table 1 shows the formula variables and definitions of the Two-Sample Proportion Hypothesis Test. Table 2 shows the preintervention data from 2016 compared to

Table 1 Two-sample proportion hypothesis test variable definitions

Formula Variable	Formula Definition
N1	Control group size
N2	Treatment group size
P1	Proportion of individuals from the control group that have the characteristics in question
P2	Proportion of individuals from the treatment group that have the characteristics in question
$\pi 1$	Proportion of individuals who do not receive treatment; this is the population from which the control group is drawn
$\pi 2$	Proportion of individuals who receive treatment; this is the population from which the treatment group is drawn
H0	Null hypothesis, which is what the study is intending to disprove
H1	Study hypothesis, which is what the study is intending to prove
$H0 = \pi 1 = \pi 2$	Null hypothesis is supported; the treatment demonstrated no significant effect on the study outcome
$H1 = \pi 1 > \pi 2$	Study hypothesis is supported; the treatment demonstrated significant effect on the study outcome
$p < .05$	p Value indicates statistical significance

Note. From Social Science Statistics (2017, by J. Stangroom, http://www.socscistatistics.com/tests/ztest/).

the postintervention group, which reflected data from an 8-week period during the implementation phase in 2017. This analysis yielded a p value of .06301, which is not significant at $p > .05$. Table 3 shows data analysis comparing preintervention data from the same 8-week period, May and June, in 2016 and 2017. This analysis yielded a p value of .03754, which is statistically significant at $p < .05$.

It is important to note that the sepsis-related ACT readmission rate for the months of May and June 2016 was 45% compared to 36.28% over the entire year 2016. In analyzing both data sets, the sepsis-related ACT readmission rate decreased to 25% as a result of implementing an evidence-based, nurse-driven sepsis protocol, which fulfilled the study hypothesis and allowed for rejection of the null hypothesis (see Appendix D).

Compliance With Protocol Elements

Compliance with the SSC 3-hour bundled intervention protocol elements was analyzed and compared to preintervention data and was as follows: A complete blood count was obtained in 64.7% of patients in the postintervention group compared to 41.4% in the preintervention group, a basic metabolic panel or complete metabolic panel was obtained in 35.3% of patients in the postintervention group compared to 26.8% in the preintervention group, blood cultures prior to initiation of an antibiotic were obtained in 52.9% in the postintervention group compared to 0.73% in the preintervention group, a lactate level was obtained in 47.1% of patients in the postintervention group compared to zero in the preintervention group, intravenous crystalloid fluids were initiated in 23.5% in the postintervention group compared to 0.73% in the preintervention group, and intravenous antibiotics were initiated in 41.2% in the postintervention group compared to 0.48% in the preintervention group (see Appendix E).

Compliance with other SSC protocol elements was analyzed and compared to preintervention data and was as follows: A chest X-ray was obtained in 29.4% of patients in the postintervention group compared to 14.6% in the preintervention group. A urinalysis and a urine culture were obtained in 41.2% of patients in the postintervention group compared to 19.5% in the preintervention group (see Appendix F).

Financial Impact

In the 2016 preintervention patient group, sepsis-related ACT readmissions accounted for a $359,547.65 reduction in Medicare reimbursement to the IRF. The Medicare reimbursement reduction for the months of May and June 2016 for all Medicare sepsis-related ACT readmissions was $82,033.87 (Patcom, 2017). It is estimated that $120,000 was saved in Medicare reimbursement during the 8-week study period as a direct result of those patients who screened positive for sepsis, received protocol elements, and did not experience an ACT readmission (Patcom, 2017; see Appendix G).

Discussion

Summary

In light of the findings, implementing an evidence-based, nurse-driven sepsis protocol was associated with a reduction in sepsis-related ACT readmission rates in the adult

Table 2 Problem, intervention, comparison, outcome, time statistical analysis

Formula Variable	Study Data	Definition
N1	1,360	All patients 2016
N2	238	All patients May–June 2017
P1	41/1,360	Total sepsis-related ACT readmissions 2016/all patients 2016
P2	3/238	Total sepsis-related ACT readmissions treatment group/all patients May–June 2017

Note. $p = .06301$. This result is not significant at $p > .05$, and the null hypothesis is supported. $H0 = \pi 1 = \pi 2$.

Table 3 Comparison of May–June 2016 and 2017

Formula Variable	Study Data	Definition
N1	235	All patients May–June 2016
N2	238	All patients May–June 2017
P1	9/235	Total sepsis-related ACT readmissions May–June 2016/all patients May–June 2016
P2	3/238	Total sepsis-related ACT readmissions May–June 2017/all patients May–June 2017

Note. $p = .03754$. This result is significant at $p < .05$, and the study hypothesis is supported. H1 = $\pi 1 > \pi 2$.

rehabilitation population. Although this study did demonstrate statistical significance, clinical significance was also demonstrated in the following ways: (1) increase in the implementation of the SSC bundled interventions from the preintervention group compared to the postintervention group, (2) organizational change in the way sepsis patients were both assessed and treated at the IRF, and (3) enhanced interprofessional communication between bedside nurses and providers. Although the protocol elements were imperfectly applied and were not executed within the required 3-hour time frame, the results demonstrate the importance of critical assessment and treatment for sepsis-positive patients to reduce readmissions and improve patient outcomes.

Interpretation

Because of the intervention, more patients were able to be medically managed at the IRF and did not require an ACT readmission. These patients also received a higher percentage of protocolized treatment compared to preintervention patients, therefore demonstrating the importance of protocolized assessment and treatment for the medical management of adult sepsis patients in the IRF setting.

The results of this study are commensurate with previously identified studies in several ways: (1) goal-directed therapy can impact the timeliness of sepsis-specific interventions; (2) early, critical assessment of sepsis can lead to an increase in the administration of protocolized elements in a timelier manner; and (3) patients in an IRF are at risk for medical compromise, which can lead to acute care readmission, requiring protocolized assessment and treatment in this setting.

Limitations

The chief study limitation was that the protocol was not universally applied, and thus, some patients missed being screened and treated with protocol elements fully applied. Because the readmission rates differed with statistical significance even with imperfectly applied treatment, the obvious conclusion that follows is if all patients had received the required screening and protocol application, then the sepsis-related ACT readmission rates would have likely been lower. This limitation is favorable because it strengthens the desirable conclusion that the protocol was indeed effective in achieving the desired results.

Given the relatively small sample size in this study, future studies including a larger sample size are necessary to find differences. Per statistician report, a sample size of more than 30 would have been desirable and a postintervention sample size of 31 would have been analyzed had the 14 patients missed in the screening process been addressed appropriately (C. Garcia, personal communication, July 11, 2017).

Conclusions

The project has implications for the healthcare system because when implementing a protocol that involves all stakeholders at all organizational system levels, this can change the practice of how sepsis patients are assessed and treated. Although the study focused on implementation at the microsystem level, both the macrosystem and mesosystem levels were directly affected because this encompassed a system-wide change involving all stakeholders within the organization. Because the evidence-based, nurse-driven sepsis protocol required both nurse-driven elements and provider-driven elements, this facilitated interdisciplinary communication to effectively drive sepsis care and address patient outcomes.

Although this project focused on implementing a nurse-driven sepsis protocol for adult patients in an IRF, nurse-driven protocols can be adapted and implemented based on current evidence for multiple medical diagnoses or diagnosis-related groups. The nurse-driven elements of an EGDT protocol are applicable and replicable in other patient populations or healthcare environments. The nurse-driven element of the sepsis protocol was of critical importance because the nurse's ability to identify suspected sepsis early and initiate treatment, in collaboration with the patient's provider, offers a more comprehensive approach to sepsis care and management compared to a provider-driven model alone.

Future study of sepsis patients in the adult rehabilitation population and the impact on readmissions and clinical outcomes is warranted. Because there is little research currently available that directly addresses protocolized

sepsis assessment and treatment in the adult rehabilitation population, further research is warranted in this particular patient population. Because the project sample size was small, future studies with a larger sample size over a longer period of time may allow for more patient participation and increase the chance of greater generalizability. The results of this study also indicate the need for future research to determine the most effective way to achieve higher sepsis bundle compliance and to determine the impact of nurse-driven protocols on ACT readmissions in the adult rehabilitation population. Because the study intervention did save the IRF resources and money by reducing Medicare penalties for ACT readmission, further research is warranted to discover how Medicare reimbursement could be affected as a result of implementing EGDT for diagnoses other than sepsis.

For future practice, an EMR-based, nurse-driven sepsis protocol is recommended because a paper version of the protocol presented challenges with nurse compliance and protocol completion. This would require ample preparation time to embed the sepsis protocol into the existing EMR, which was not an option for this study.

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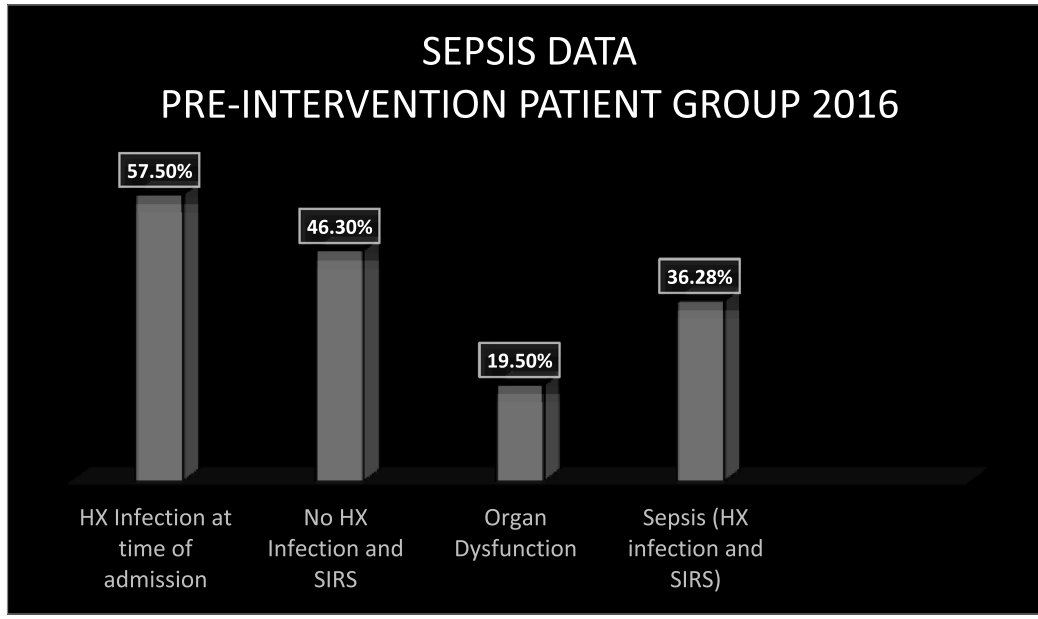
Appendix A

Sepsis Data Pre-Intervention Patient Group 2016



Legend: HX = history, SIRS = systemic inflammatory response syndrome

Appendix B

Nurse-Driven Sepsis Protocol

Date_____ **Time_____**

******Sepsis assessment at time of admission, every shift, and as needed

1. **Is the patient's history suggestive of a new infection?** (Check all that apply)

___Pneumonia, empyema
___Acute abdominal infection
___Skin/soft tissue infection
___Wound infection
___Endocarditis
___Other_____
___Urinary tract infection
___Meningitis
___Bone/joint infection
___Blood stream catheter infection
___Implantable device infection

Yes_____ No_____

2. **Are any 2 of the following signs & symptoms of infection present? (SIRS Criteria)**

___Hyperthermia: Temp >101.0 F
___Tachycardia: Heart rate >90 bpm
___Systolic BP <90
___Altered mental status
___Leukopenia: WBC <4,000
___Hypothermia: Temp <96.8 F
___Tachypnea: RR >20 bpm
___SpO2 <92%
___Leukocytosis: WBC >12,000
___Hyperglycemia: plasma glucose >140

Yes_____ No_____

***If **NO**, then stop (screening completed)

3. If you answered **YES** to both questions 1 and 2, suspicion for sepsis is present, **the nurse will:**

___Obtain lactic acid, CBC with diff, BMP
___Obtain blood cultures x2 prior to antibiotic

4. Contact physician/provider to determine need for

___Broad-spectrum antibiotic
___IV fluids/crystalloids 30ML/KG for hypotension or lactate >4mmol/L
___(At the physician's discretion) UA/C&S, Chest X-Ray, amylase, lipase, ABG, CRP, CT

Date_____ Time of completion_____****Goal is completion of above within 3 hours**

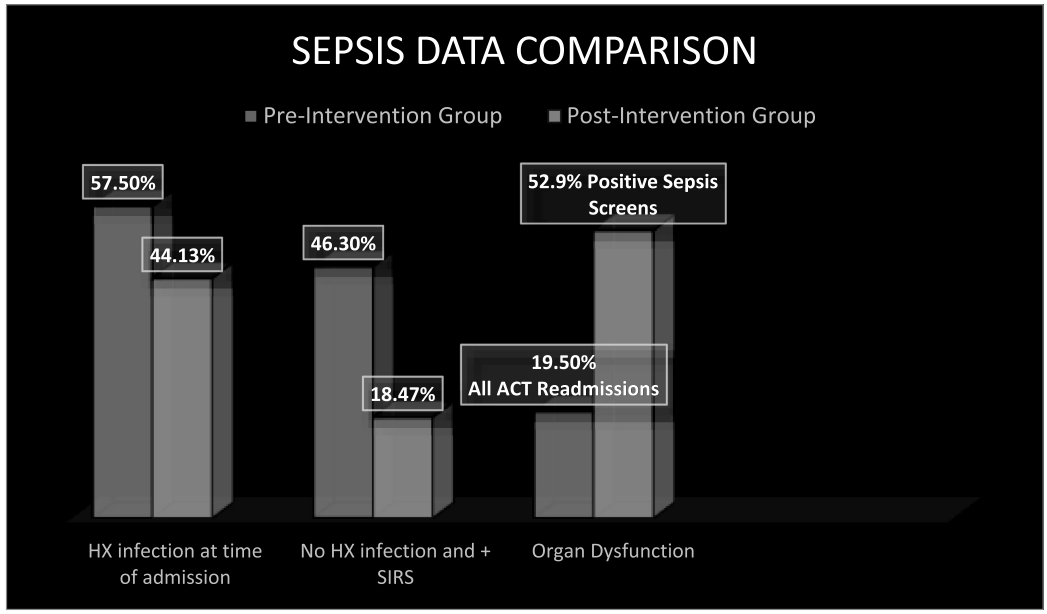
5. Are any of the following organ dysfunction criteria present that are **NOT** considered to be chronic conditions?

___SBP decrease >40mmHG from baseline BP
___Creatinine >2.0 mg/dl
___Lactate >2mmol/L
___Platelet count <100,000 uL
___Urine output <0.5ml/kg/hour x 2 hrs
___Coagulopathy (INR >1.5 or PTT>60)

*****If SIRS + and organ dysfunction +, Re-assess for rapid progression or decline in status, contact provider for further determinations *Surviving Sepsis Campaign, 2013*

Appendix C

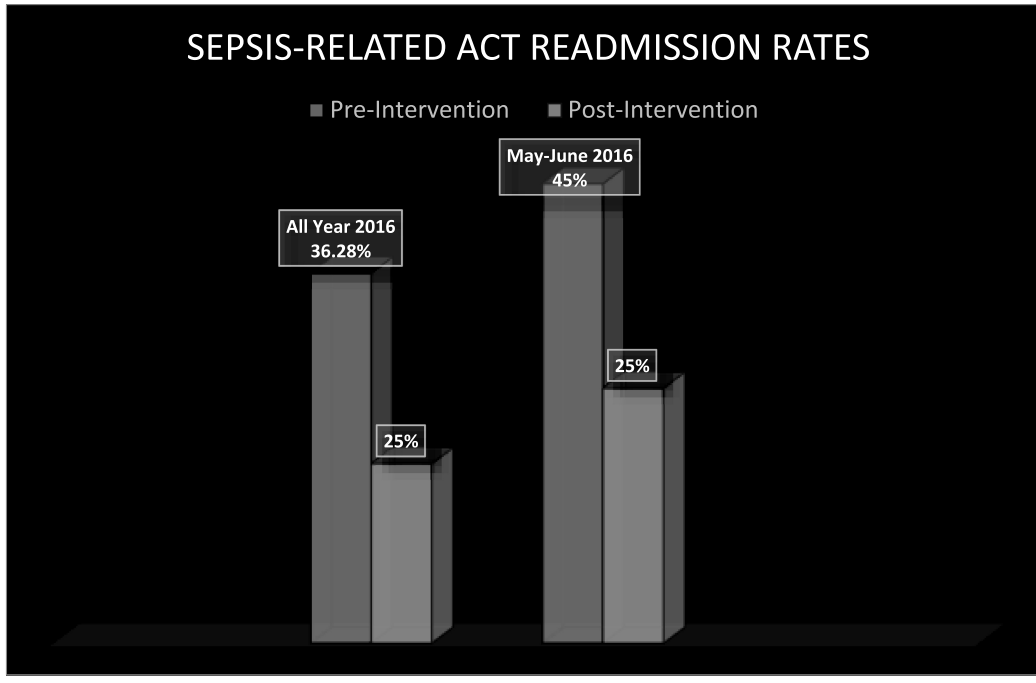
Sepsis Data Pre-and Post-Intervention Comparison



Legend: ACT = acute care transfer, HX = history, SIRS = systemic inflammatory response syndrome

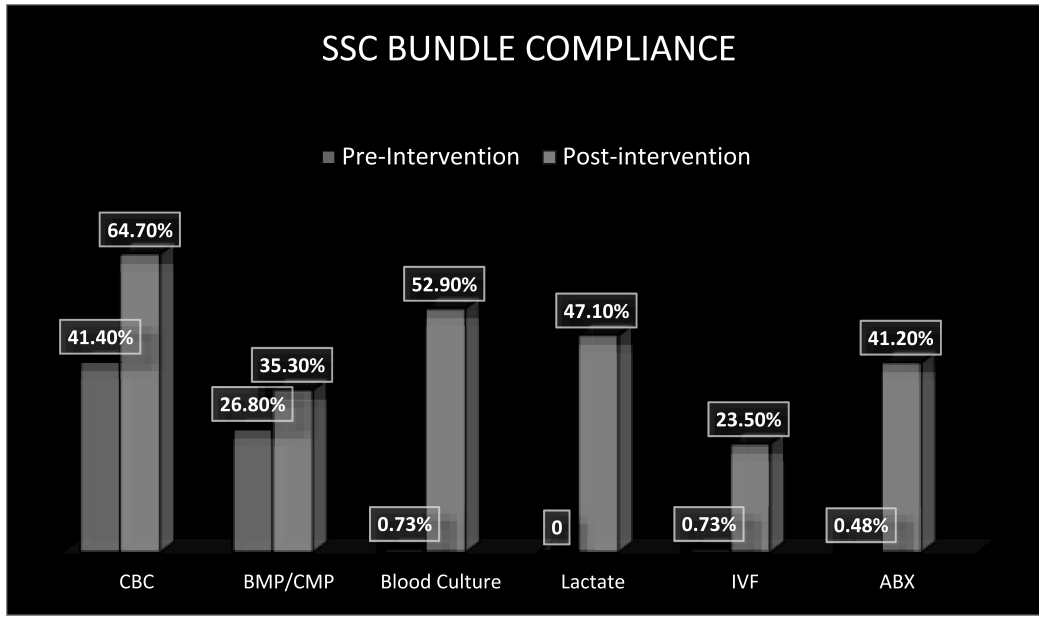
Appendix D

PICOT Analysis



Appendix E

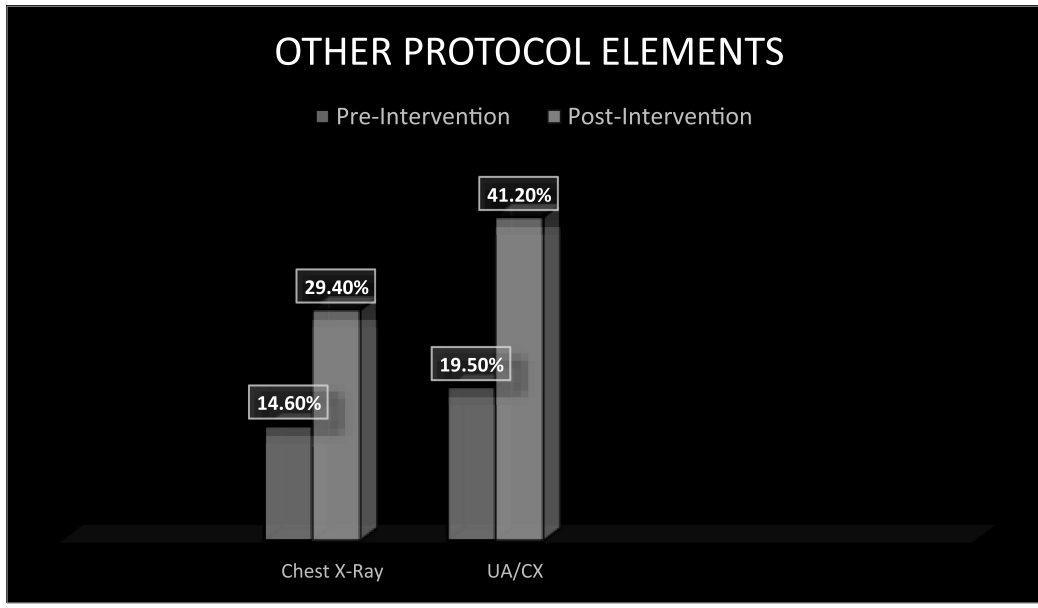
SSC Bundle Compliance



Legend: ABX = antibiotics, BMP = basic metabolic panel, CBC = complete blood count, CMP = complete metabolic panel, IVF = intravenous fluids, SSC = Surviving Sepsis Campaign

Appendix F

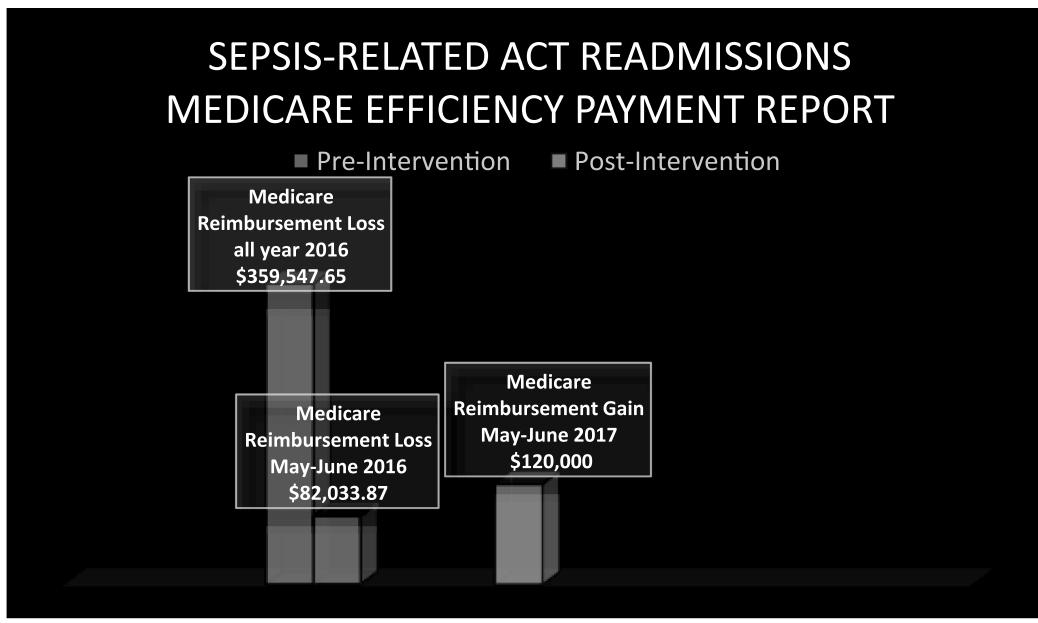
Other Protocol Elements



Legend: CXR = chest x-ray, CX = urine culture, UA = urinalysis

Appendix G

Medicare Efficiency Payment Report



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Registration Deadline: March 4, 2022

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