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Implementation Strategies to Reduce Hospital Readmission Rates in Adults with Sepsis: A Quality Improvement Project

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TITLE PAGE

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ABSTRACT:
Background: Sepsis is a concern in healthcare, as patients are 2 to 3 times more likely to be readmitted to the hospital than those with other illnesses. Readmitted patient with sepsis costs the healthcare system $3.5 billion dollars per year. Effective care coordination is a tool that decreases readmission rates in other illnesses and is likely applicable to those with sepsis. The purpose of this quality improvement project was to determine if primary care provider follow-up appointments, increased home care utilization, and patient education would reduce sepsis readmissions.

Methods: The Transitional Care Model guided project design and The Kotter Model framed implementation of improvements. Design was a pre/post comparison in two Midwest hospitals, with nurses, social workers, care managers, and patients with sepsis. Stakeholders were engaged, the organization assessed, clinicians were educated, workflow was redesigned, and patient input obtained

Interventions: Evidence-based interventions were implemented to improve patient understanding of sepsis, discharge planning, and care coordination post-hospitalization. This included assessment of discharge need by a care manager; and increasing home health care referrals, registered nurse compliance with sepsis care plan and education documentation, and primary care follow-up appointment utilization.

Results: The convenience sample (N=17) prior (n=7) to and after (n=10) implementation were mean age 75 and 60.5 years, 71.4% and 70% male, and 71.4% and 90% white respectively. Nurse documentation of sepsis education improved 60% (Fishers Exact Test 0.02) and care plan initiation improved 3.1% (Chi-square 0.02). Patients reported somewhat (37%), fairly (50%, or very good (13%) understanding of sepsis following education by the nurse. A decline in home health referrals (11.1%) and primary care appointments (9.7%) occurred. No change in readmission rates were found.

Conclusions: Further intervention is needed to improve sepsis care plan initiation and patient education and documentation to determine if these interventions reduce the readmission rate. The majority of patients went home without a follow-up primary care appointment or home health care set up. Setting up follow-up care may improve the transition between hospitalization and home and prevent readmission of sepsis patients.

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Introduction

Sepsis is a serious health condition in which an infection, bacterial, fungal, or viral, overwhelms an individual's immune system and enters the bloodstream, spreading, and causing organ damage (World Health Organization [WHO], 2018). According to the National Institute of General Medical Science (NIGMS) (2018), sepsis affects 15 to 30 million people in the United States each year. Many diagnosed with sepsis completely recover. However, patients with chronic health conditions are more likely to have permanent effect on their health due to the organ damage that occurs with sepsis. Sepsis is one of the most expensive illnesses to treat, and those with sepsis are 2 to 3 times more likely to be readmitted to the hospital (NIGMS, 2018). Thus, reduction in the incidence of readmission for patients with sepsis is needed.

Nearly 6 million people die from sepsis each year (WHO, 2018). As a consequence, there is a need to focus on sepsis identification and treatment. Sepsis bundles have been implemented to improve sepsis management and to reduce mortality rates (Jozwiak, Monnet, & Teboul, 2016). A sepsis bundles was previously implemented in the healthcare system where this quality improvement (QI) project was conducted. However, sepsis patients continued to have a 2 to 3 times greater readmission rate compared to those with other illnesses. Therefore, the purpose of this QI project was to reduce readmission rates in those with sepsis.

Rationale

The organization where this project was conducted had focused on the management of patients with sepsis in the inpatient setting as those patients were high-risk for readmission. It can also be costly to a healthcare system, as $3.5 billion dollars per year are spent on sepsis readmission (Health Leaders Media Staff, 2019). Preventing readmission could save an organization more than $16,000 per patient (Susman, 2014). As the organization was experiencing a high sepsis readmission rate, a QI project to reduce readmissions was requested.

Specific Aims

The QI project aimed to answer the following question: *Will improved care coordination for adults with sepsis reduce readmission rates?* The purpose of this report is to discuss methods for implementation, the results, and discuss how the project can be used in other organizations, as well list the limitations of this QI project.

Methods

Design

This pre-/post-comparison design examined patient knowledge and actions. The project also examined clinician actions.

Setting and Participants

This QI project was conducted in two acute care hospitals within the same healthcare system. A convenience sample was used during implementation on one unit at one of hospitals within the organization to focus facilitation on inpatient registered nurse (RN) interventions to improve adherence and patient understanding of sepsis. Participants in the pre-implementation group were adult patients who had a prior admission with a diagnosis of sepsis and readmitted within 30 days of their previous discharge; and the care managers (CMs) and RNs who cared for them. Participants in the post-implementation group were patients admitted with sepsis (regardless of if they were readmitted or if this was their first admission) and the CMs and RNs who cared for them. Patients who were included in the pre-implementation group were excluded from the post-implementation group.

Context

The Burke and Litwin Model (1992) framed the organizational assessment. The model allowed for in-depth assessment of 12 concepts within the organization, critical to successful QI

project implementation (Burke & Litwin, 1992). The complex interplay between concepts are important to understand when implementing interventions to reduce sepsis readmissions (Burke & Litwin, 1992).

Data collection during organizational assessment. To examine the problem, chart reviews were conducted prior to implementation to determine days between the discharge and readmission, readmission cause, primary care provider (PCP) appointments upon discharge and attendance, and if the patient was stable upon prior discharge. In addition, patient interviews were conducted to determine their point of view regarding the readmission and any identified barriers related to their discharge plan. This allowed for identification of possible causes for readmission and further supported the need for QI. Chart review and patient interviews suggested care coordination and resource utilization should be a priority when addressing patient barriers, and education about the disease and condition should be stressed. The assessment identified possible causes for sepsis patient readmissions.

A literature review identified interventions to reduce readmission rates. A comprehensive electronic search was conducted in PubMed and CINAHL using the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) model as the framework (Mohler et al., 2015). Data were limited to 2014 to 2019. Results suggested readmission rates were reduced in other patient populations with PCP appointment follow-up, providing patient education and use of early discharge planning (Axon et al., 2016; Balaban et al., 2015; Braet et al., 2016; Leppin et al., 2014; Olsen et al., 2016; Patel & Dickerson, 2018; Shah et al., 2018). Articles in the review served as the basis for the interventions used for QI.

Framework Guiding Project Design. The Transitional Care Model (TCM) guided the care coordination for QI. TCM is a nurse-led care coordination model designed to reduce

unnecessary readmission and cost (Nayor et al., 2013). The purpose of TCM is to identify patients' goals of care, design and implement a streamlined plan of care, and emphasize continuity of care throughout the acute and outpatient care. To achieve this goal, the TCM utilizes nine components, which are screening, staffing, maintaining relationships, engaging patients and caregivers, assessing/managing risk and symptoms, educating/promoting self-management, collaborating, promoting continuity of care, and fostering coordination. Each of these components can be utilized to improve care coordination (Naylor et al., 2013).

Implementation Model. The Kotter Model (2016) guided implementation. The model contains three phases (creating a climate for change, engaging and enabling the whole organization, and implementing and sustaining change), and has eight steps. To create a climate for change, leaders must develop a sense of urgency, create a powerful coalition, and develop a vision for change. A sense of urgency can be created by expressing the magnitude of the problem and the consequences for the organization if the problem is not addressed. Key team members who will facilitate change should be identified to create a powerful coalition to support change. The vision of the change should be created to line up with the organizations mission and values and should be communicated to those participating in the change process (Kotter Inc., 2016). To gain organizational involvement, the vision for change must be communicated to the organization, staff should be empowered to help create change within the organization, and quick wins should be created to keep staff engaged in the change process (Kotter Inc., 2016). Once changes have taken place, it is important to continue to build on those changes and to create lasting changes for the organization (Kotter Inc., 2016).

Implementation strategies. Eight implementation strategies were selected for this QI project. Each strategy combined with the literature review data, helped design the interventions and the ways they were put into practice. The strategies are listed below.

Assess readiness and facilitate barriers. Readiness was assessed during the organizational assessment. Key facilitators and barriers were identified, a SWOT analysis was completed, and chart reviews and patient interviews occurred in July 2019. Each of these tasks facilitates the implementation step (Powell et al., 2015).

Stakeholder engagement. Stakeholder engagement is critical to successful project implementation. Getting stakeholders on board will help improve successful implementation (Moran, Burson, & Conrad, 2020). The care management department and sepsis team were engaged and committed to the project. Both continued to be curious about the findings of the project from the start and interested to learn from those findings. The student met with care managers (CMs), social workers (SWs), and RN leadership to discuss the results of the organizational assessment and the importance of the suggested practice change.

Education. Providing education in a way that makes it easier for stakeholders to understand their role is important for successful implementation (Powell et al., 2015). An educational flyer was provided on workflow changes and their importance for RNs, CMs, and SWs.

Develop/use of teaching guides for staff. Teaching guides, which help stakeholders understand what changes their expected to make, will improve the ability to perform the task at hand (Powell et al., 2015). A population health guideline (see Figure 1) and educational flyer were created for the CMs to explain the changes to their roles and the reasons for those changes. A step-by-step instruction packet and flyer were created for the inpatient RNs for review at team

huddles to help the RNs understand their role. Team huddles are held at the start and end of each shift and once during the shift to touch base on how the shift is going as well as to discuss practice changes that are occurring in the organization.

Workflow modification. Changes to the workflow of several employees within the organization were necessary to facilitate the implementation process. To demonstrate the new workflow to the CMs, SWs, and RNs, workflow diagrams were created and shared with the appropriate departments.

Patient/family feedback. Patients feedback allows an assessment of how effective the interventions are from their standpoint (Powell et al., 2015). Patients were interviewed to determine how well they felt they understood sepsis. This feedback was intended to inform if RNs were effectively educating their patients on this sepsis.

Chart audits of patients admitted with sepsis. Chart audits allowed for data collection and review of the compliance rates for interventions (Powell et al., 2015). Chart audits were performed to assess for RN compliance with sepsis care plan initiation and documentation of sepsis education and to ensure the CMs and SWs assessed the patient. The overall compliance rate was reported to the CMs, SWs, unit managers, and RNs bi-weekly starting 2 weeks after implementation of the interventions for this project. Areas for further growth were discussed to help employees understand what information may be missing or incomplete.

Deliver a final report. A final report of results was delivered to the organization with recommendations for the future.

Interventions

The assessment and literature review identified several interventions to improve care. This included, improved patient understanding of sepsis and increased utilization of home care services and PCP follow-up appointments after hospital discharge.

To improve patient understanding of sepsis, RNs were expected to initiate the sepsis care plan in the electronic health record and provide education on sepsis to patients. The electronic health record had the capability to allow the RNs to initiate the sepsis care plan. Once initiated, the sepsis education content and the ability to document use was automatically added to the patient record. RNs were expected to document on the sepsis care plan each shift and to provide education to the patient about the signs and symptoms of sepsis, treatment and management of this condition, the importance of prompt follow-up with PCPs, and reasons to seek emergency medical attention.

The utilization of home health care requires the assessment of the patient by CM or SW. In this organization, the CM or SW does an initial risk assessment of each patient on the unit and assigns a level. Level 1 (patient who will require discharge planning, have a high-risk for readmission, patients who take >10 medications) or level 2 (patient who will not require discharge planning). All patient with a level 1 risk score are assessed, in person, by the CM or SW who match the patient with appropriate service post-hospitalization, including home health care. Prior to the QI project, patients with sepsis were not always assigned a level 1 risk score as needed. Consequently, a workflow modification was put in place for the CMs and SWs to create a standard of care that all patients with a diagnosis of sepsis were to be given a level 1 in the risk stratification tool. Doing so, prompted the CMs and SWs to do an assessment of the patient and screen for eligibility of post-acute care services, including home health care.

A CM coordinator was utilized to increase PCP follow-up appointments. Meetings were held with the CM coordinator and the CM department to determine how to standardize the process and ensure awareness of the process. This included patients who were admitted with sepsis and who met the following criteria were automatically set-up with a PCP follow-up appointment within 7-14 days of discharge.

1. A LACE (length of stay, acuity of admission, co-morbidities, and emergency department visits within the last 6 months) score of 59 or above (the LACE score identifies patients at high-risk for readmission and/or death within 30 days of discharge).
2. An in-network PCP.
3. Going home without services or home with home care.
4. Having a diagnosis of sepsis.

An additional chart audit was conducted to determine if patients had a PCP follow-up appointment and whether or not they met the criteria to have the CM coordinator set the patient up with an appointment. The RN interventions for the convenience sample were identical to those throughout the organization. In addition to auditing the charts on the convenience sample unit, patients were interviewed 1 week after the interventions were implemented to determine if the RNs were effectively educating the patients to improve their understanding of sepsis.

Measures, Data Collection, and Analysis

Measures included readmission rate, home health care referral rate, and the compliance rate of sepsis care plan initiation and sepsis education documentation. The readmission rate was collected from August 2019 thru March 2020 and compared to the readmission rate prior to implementation. The readmission rate was tracked and averaged for the pre-implementation and post-implementation months. Data collection on PCP appointment utilization following hospital

discharge, care management risk-stratification and assessment, and sepsis care plan and education documentation was collected through chart audits and stored in on the organization's secure drive. For analysis, a chi-square test was done to compare pre/post data for the non-unit specific data and a Fisher's Exact test was done for the unit specific convenience sample data to determine if there is a statistically significant difference in compliance rates of the interventions.

Results

Demographics and Characteristics of Patients

Age, gender, and race of patients pre and post-implementation for unit specific and non-unit specific data are shown in Table1 and 2. Non-unit specific age race and gender were similar, while specific unit age difference occurred, with the post-implementation sample being 9.5 mean years younger. Patient admitting diagnoses were similar for both the non-specific (see Table 3) and specific unit data (see Table 4). Discharge disposition was collected on non-specific units pre and post-implementation, as shown in Table 5, with the majority discharged without home health care services.

Registered Nurses Care Plan Use and Documentation of Education

RN sepsis care plan initiation compliance is shown in Figure 2. A significant improvement of 18.4% ($p=0.02$) was found in in non-specific units and 96.9% in the specific unit ($p=0.02$). Initiation of the sepsis care plan automatically opens up the sepsis education material in the electronic health record, which is necessary for the RN to review to educate the patient on sepsis.

RNs documentation of sepsis patient education is shown in Figure 3. Non-specific-unit documentation decline 6.4% ($p=0.05$) and improved 60% ($p=0.02$) on the specific unit. Of 8 patients interviewed, 13% (1) understood education very well, 50% (n=4) fairly well, and 37%

somewhat wells (3). Furthermore, the sepsis education that was documented an average of 9% of shifts for patients during the post-implementation.

Care Management Actions

CMs or SWs identified appropriate risk stratification scores 88% of the time and performed a thorough assessment on 93% of the time. There was a decline of 11.1% (p=0.22) in PCP appointments and 9.7% (p=0.17) in home health care referrals in non-specific units upon discharge (see Figure 4).

Patient Hospital Readmission Rates for Sepsis

Figure 5 shows hospital readmission rate for Sepsis before and after implementation. No change was found after the QI project was implemented.

Discussion

The non-unit specific data for the RN sepsis education documentation declined despite having an education packet available and receiving continuous reminders every two weeks throughout implementation. While disappointing, this QI project findings align with the data the Joint Commission collected during their last site visit at this organization.

Unit-specific, convenience sample data for the RN's found sepsis care plan initiation and education documentation improved. This suggests that focused facilitation efforts improved the RN's compliance with the interventions. Thus, it could be possible that if there were more team members (i.e. the unit managers or inpatient RNs) educated on the expectations and engaging in facilitation on other units may be needed to reduce readmission rates for sepsis.

Patients reported an understanding of sepsis on the specific unit after implementation when compared to the patients interviewed prior to implementation. It is possible that the RNs could have been providing the patients with education more often and neglected to document.

The CMs and SWs had a very high compliance rate with correctly risk stratifying and assessing this patient population and the fact that there were not increased home health care referrals may be due in part by the requirements to qualify for these services which are set by the insurance companies. There was no improvement in home health care referrals and or PCP appointments even with more consistent CM or SW assessments of discharge needs and having a designated care management coordinator to make PCP appointments for patients that met the criteria. However, it is possible that there were more PCP appointments occurred than were reported as patients who had a PCP outside the system would not have been visible within the patient's chart. Patients who were discharged to skilled nursing facilities, subacute rehabilitation, or with palliative/hospice care were not eligible to be set-up with a PCP appointment. Thus, it was up to the patient's discretion to get a PCP appointment when appropriate. This could also be a factor for having fewer PCP appointments. Due to the cost of sepsis readmissions, employing two or three CMs to focus specifically on management of the sepsis population and PCP appointment follow-up may reduce readmission rate and financial burden on the organization. Additional CMs to focus on patients with sepsis, could expand inclusion criteria for PCP appointment follow-up scheduling for more patients. Finally, creating a standard of work for PCPs to utilize when conducting follow-up visits for patients with sepsis upon discharge may also reduce readmission rates.

Limitations

This QI project was based on other patient population interventions as there was limited research available on readmission reduction in patients with sepsis. Therefore, it is possible that interventions that work to reduce readmission rates in other patient populations may not work for the sepsis population. Furthermore, sepsis is a very complicated illness and results in patients

being discharged to many different services (i.e. subacute rehabilitation, long term care, home health care) and those services may need to be assessed in the future to ensure that there are processes in place to monitor this patient population after discharge with the intent to reduce the incidence of readmission.

The organization where this QI project took place was large and complex. There were many departments that needed to be involved. This organization was utilizing a sepsis team to make all decisions about the care of patients with sepsis; therefore, some key involvement from the nursing leadership was deferred to the sepsis team. While the sepsis team supported the moving forward with this project, there was not a lot of involvement from sepsis team members or RN leadership with the implementation process and enforcing the expectations outlined for the project. The RN leadership input and involvement in this project may have helped to improve the RN dependent interventions and could have resulted in better compliance rates. Furthermore, the communication pathways within this organization are complex and required e-mail communication for important documents. Many inpatient unit managers overlooked the e-mail until several weeks after it was distributed causing a delay for the RNs to review the information and begin implementing the interventions into their daily practice.

The compliance rate of the inpatient RN intervention was poor. Therefore, it is difficult to say if the RNs interventions could have reduced the readmission rate if the compliance occurred. RNs compliance with care plan and education documentation, in general, is a known issue within the organization and was recently identified in a gap analysis by The Joint Commission. Therefore, steps should be taken within the organization in the future to improve RN compliance with care plan and education documentation, as a measure of quality of care that is provided in this organization. Furthermore, 43.2% of patients in the post-implementation group did not have

sepsis as a primary diagnosis even though they did have this diagnosis as well. This may have resulted in RNs overlooking the diagnosis and unknowingly neglecting to initiate the sepsis care plan and providing sepsis education.

Conclusion

The design of this QI project is feasible for the organization to continue to utilize in the future. However, it is crucial to address the RN compliance with care plan and education documentation to assess if those interventions are useful to reduce the readmission rate for patients with sepsis. To improve the RN compliance with their interventions utilizing the unit managers and/or change champions within each unit may be beneficial. While having a DNP student to facilitate these interventions was useful for the organization as a whole, more support is needed to facilitate these interventions to improve the overall compliance within the entire organization to determine if they reduce the readmission rate for this patient population. The care management department did exceptionally well with complying with the interventions outlined for them; however, there are still more patients going home without services than home with services and therefore, having better compliance with PCP appointments may improve the patients' transition from hospital to home and keep them out of the hospital.

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Table 1: Patient demographics non-unit specific

Characteristic	Pre-implementation (n=42)	Post-implementation (n=259)
	Mean (SD) Range	
Age	63.6 (15.5) 29-97	63.7 (17.9) 19-95
	Number (%)	
Gender		
Male	22 (52.4%)	140 (54.1%)
Female	20 (47.6%)	119 (49.9%)
Race		
White	35 (83.3%)	218 (84.2%)
Hispanic	4 (9.5%)	10 (3.9%)
Asian	-	3 (1.2%)
African American	2 (4.8%)	26 (10%)
Unknown	-	2 (0.8%)
Missing	1 (2.4%)	-

Table 2: Patient demographics unit-specific

Characteristics	Pre-implementation (n=7)	Post- implementation (n=10)
	Mean (SD) Range	
Age	75 (9.7) 60-85	60.6 (15.6) 37-83
	Number (%)	
Gender		
Male	5 (71.4%)	7 (70%)
Female	2 (28.6%)	3 (30%)
Race		
White	5 (71.4%)	9 (90%)
Hispanic	2 (28.6%)	-
African American	-	1 (10%)

Table 3: Admitting diagnoses (Non-specific Unit)

Primary Diagnosis at Admission	Pre-implementation (n=42)	Post-implementation (n=259)
Acute renal failure	-	3 (1.2%)
COPD	-	1 (0.4%)
Diabetes	1 (2.4%)	-
Pneumonia	8 (19.1%)	25 (9.6%)
Aspiration Pneumonia	1 (2.4%)	1 (0.4%)
Fever/SIRS/Sepsis	8 (19.1%)	147 (56.8%)
UTI	1 (2.4%)	2 (0.8%)
Neuro, including mental status changes	2 (4.8%)	5 (1.9%)
GI/GU	7 (16.7%)	22 (8.5%)
Cardiac/DVT/PE	-	-
Fluid Overload	2 (4.8%)	3 (1.2%)
Other	12 (28.6%)	50 (19.3%)

Table 4: Admitting diagnoses (specific-unit)

Primary Diagnosis at Admission	Pre-implementation (n=7)	Post-implementation (n=10)
Pneumonia	2 (28.6%)	-
Aspiration Pneumonia	1 (14.2%)	-
Fever/SIRS/Sepsis	2 (28.6%)	8 (80%)
GI/GU	-	1 (10%)
Neuro, including mental status changes	1 (14.2%)	-
Other	2 (28.6%)	1 (10%)

Table 5: Discharge Disposition of Patients

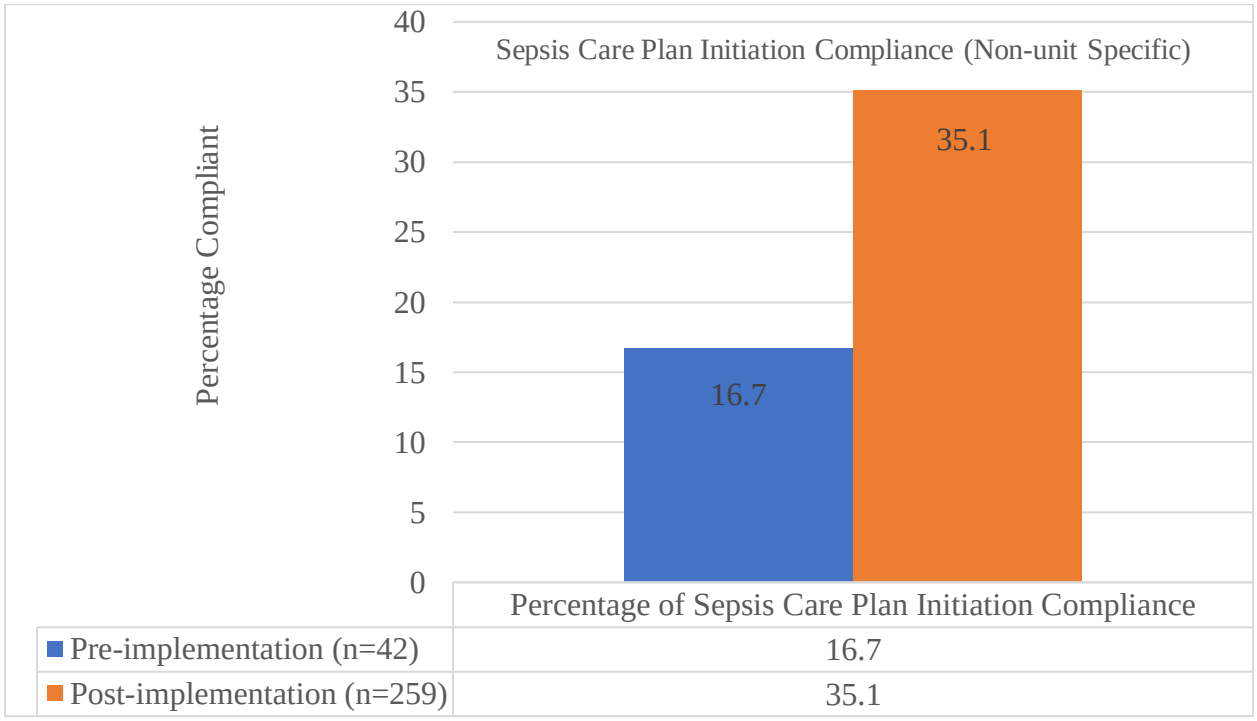
Discharge Disposition	Pre-implementation (n=7)	Post-implementation (n=10)
Home without services	12 (42.9%)	76 (29.3%)
Home Health Care Services	6 (21.4%)	62 (23.9%)
Palliative Care/ Hospice	-	14 (5.4%)
Assisted living/ Skilled nursing facility	2 (7.1%)	33 (12.7%)
Subacute Rehabilitation	6 (21.4%)	56 (21.6%)
Other (i.e. LTACH other hospital system)	2 (7.1%)	6 (2.3%)
Deceased	-	12 (4.6%)

Figure 1: The population health guideline for the CMs and SWs to utilize when caring for a patient with sepsis.

Inpatient Care Management Population Health Guideline: Sepsis
November 2019

1. **Identify sepsis as a primary diagnosis or within the problem list**
2. **Assign risk screen level 1**
    a. Sepsis is considered a high-risk diagnosis for readmission. The QI project that is being conducted suggests that these patients require discharge planning.
3. **Complete care management initial assessment.**
    a. Emphasis on home health care services and support at home.
4. **Send referrals to the identified needed services**
    a. Home health care services, SAR, etc.
    b. Facilitate/obtain medication prior authorizations as needed
5. **Verify PCP follow-up appointment in the AVS prior to discharge.**
    a. The care management coordinator will set-up patients with the following criteria with a follow-up appointment within 10-14 days of discharge.:
        i. Sepsis as a primary diagnosis or within the problem list
        ii. BW/BL/MHC patients
        iii. Lace score of 59+
        iv. Going home with self or home care
        v. SHMG PCP
    b. Please make sure the appointment has been made prior to the patient's discharge.
6. **Ensure the patient is aware of their PCP follow-up appointment and ensure the patient does not have any barriers preventing him/her from getting to the appointment.**
    a. Provide cab vouchers or make referral to round trip Ambucab if transportation is an issue.

Figure 2: Sepsis care plan initiation compliance percentages of non-unit and unit specific locations



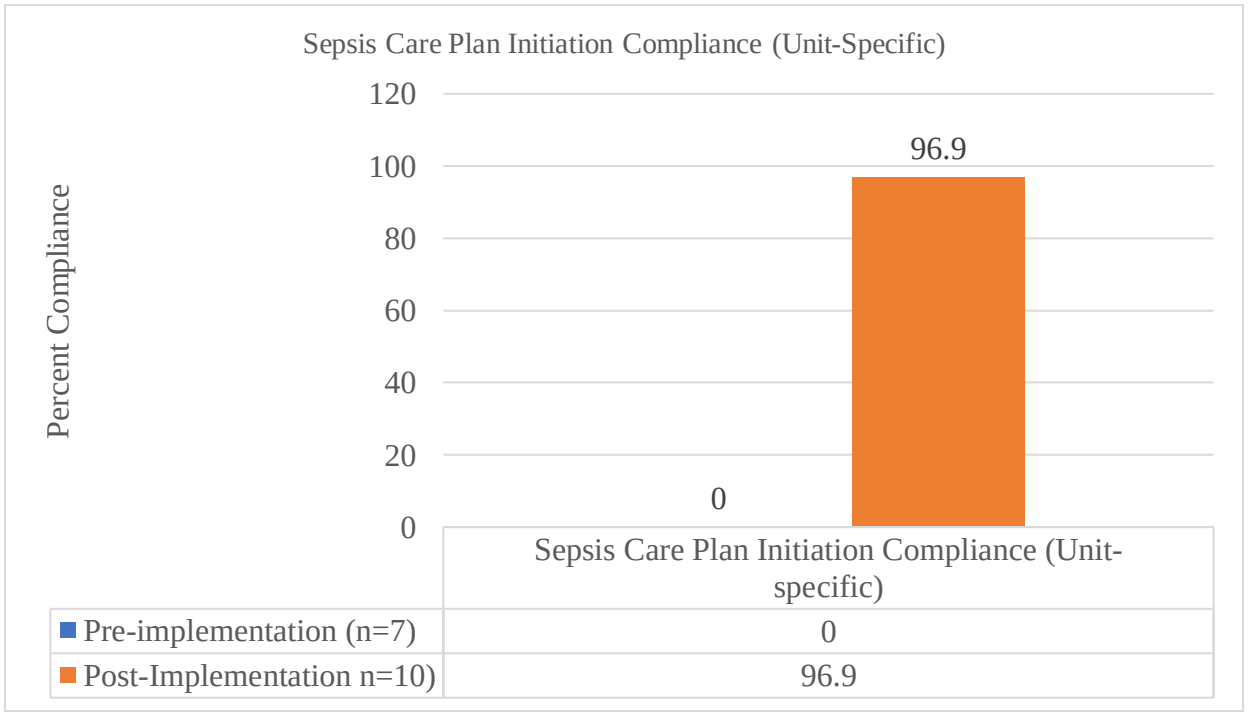
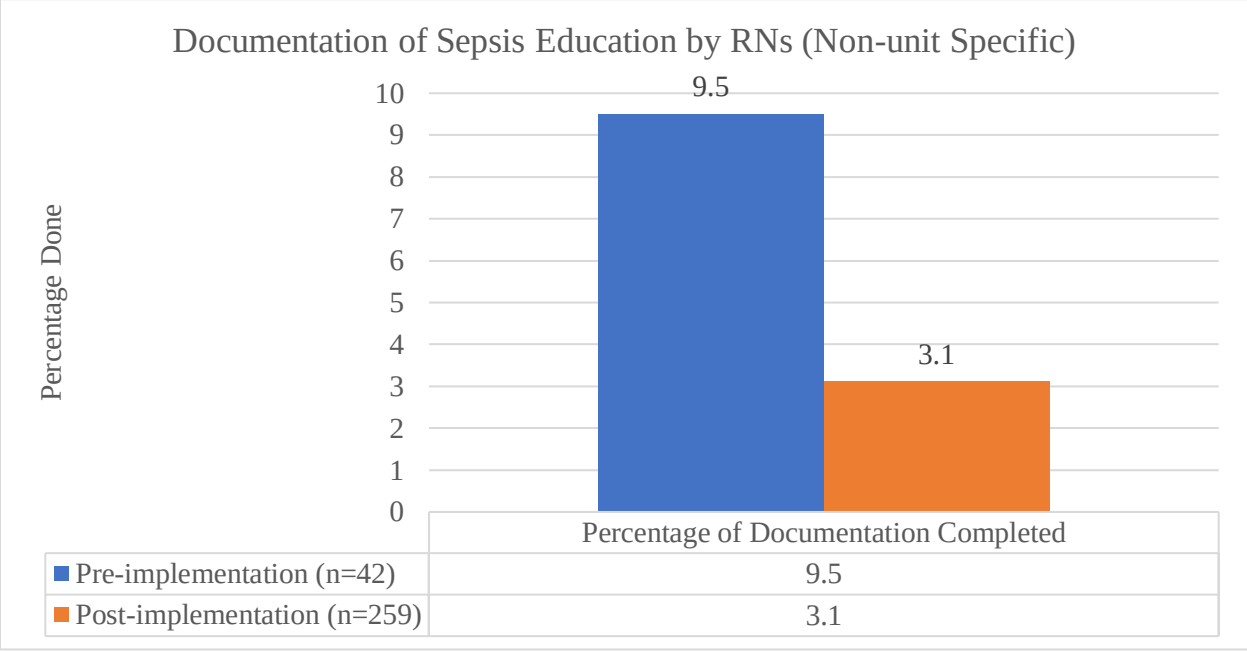


Figure 3: Documentation of sepsis education by RNs percentages of non-unit and unit specific locations



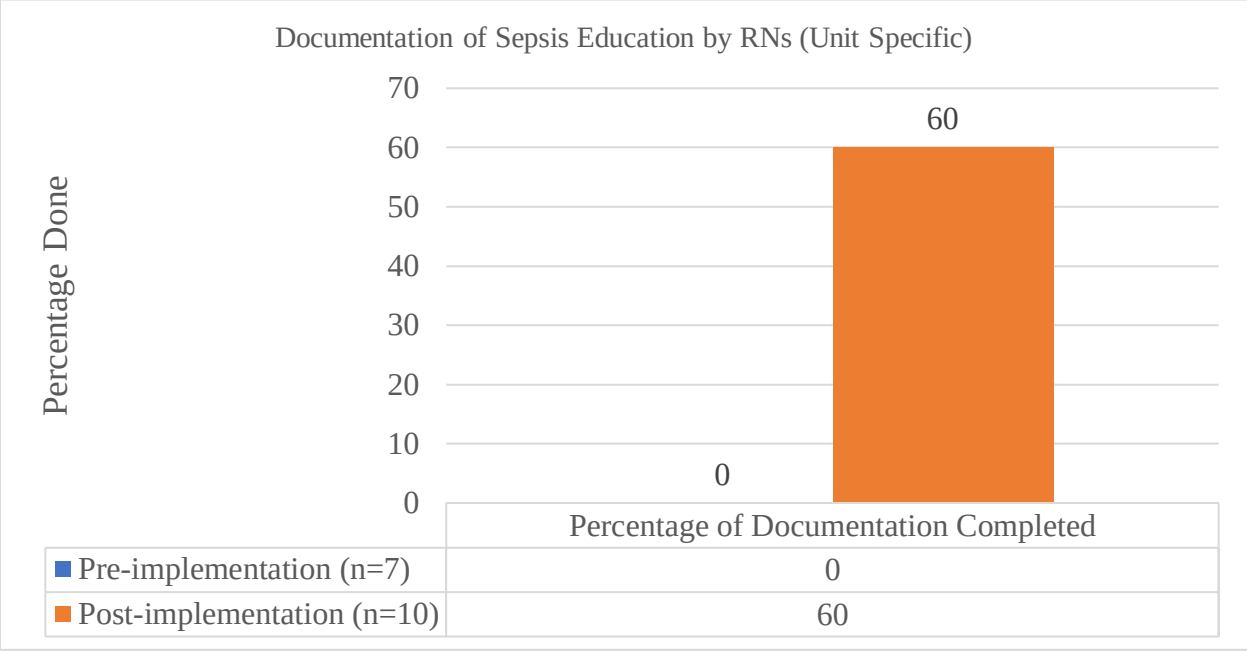
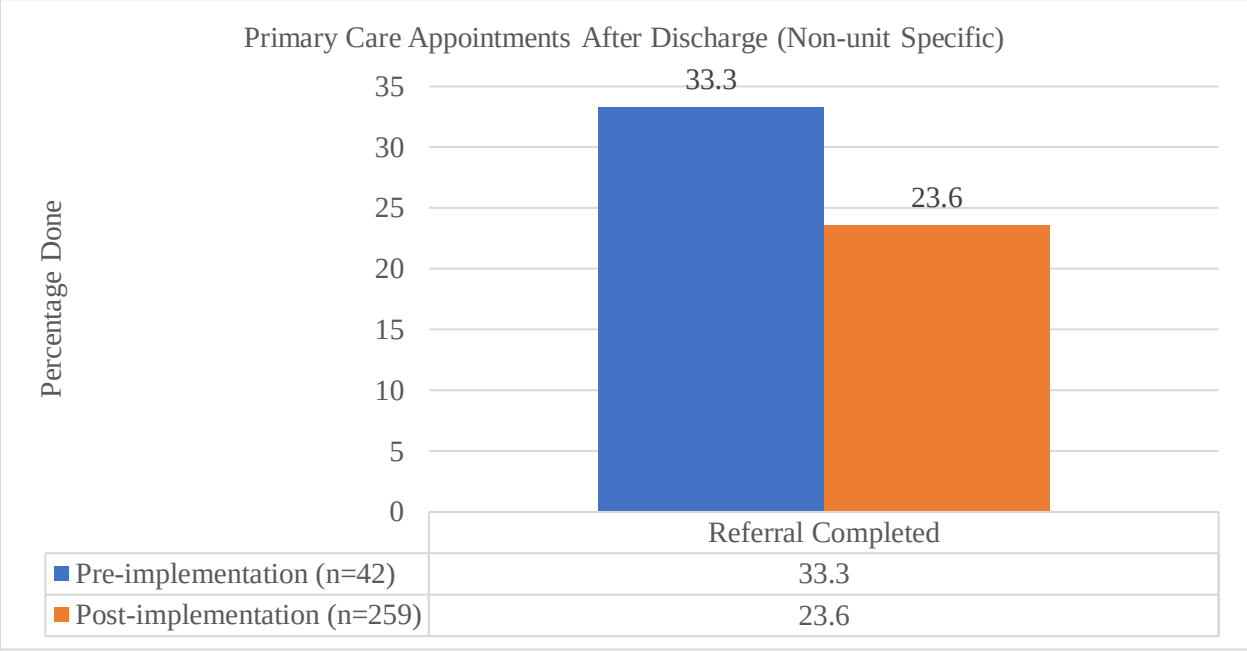


Figure 4: PCP appointments and home health care referrals scheduled upon discharge (non-specific units) percentages



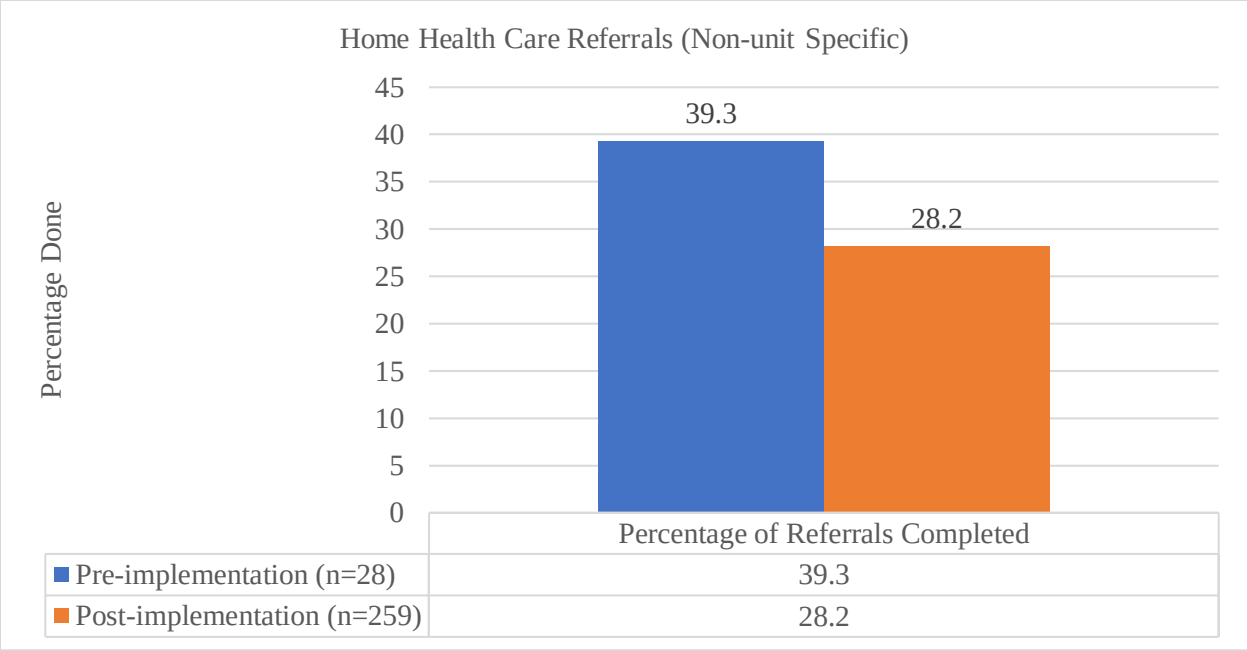
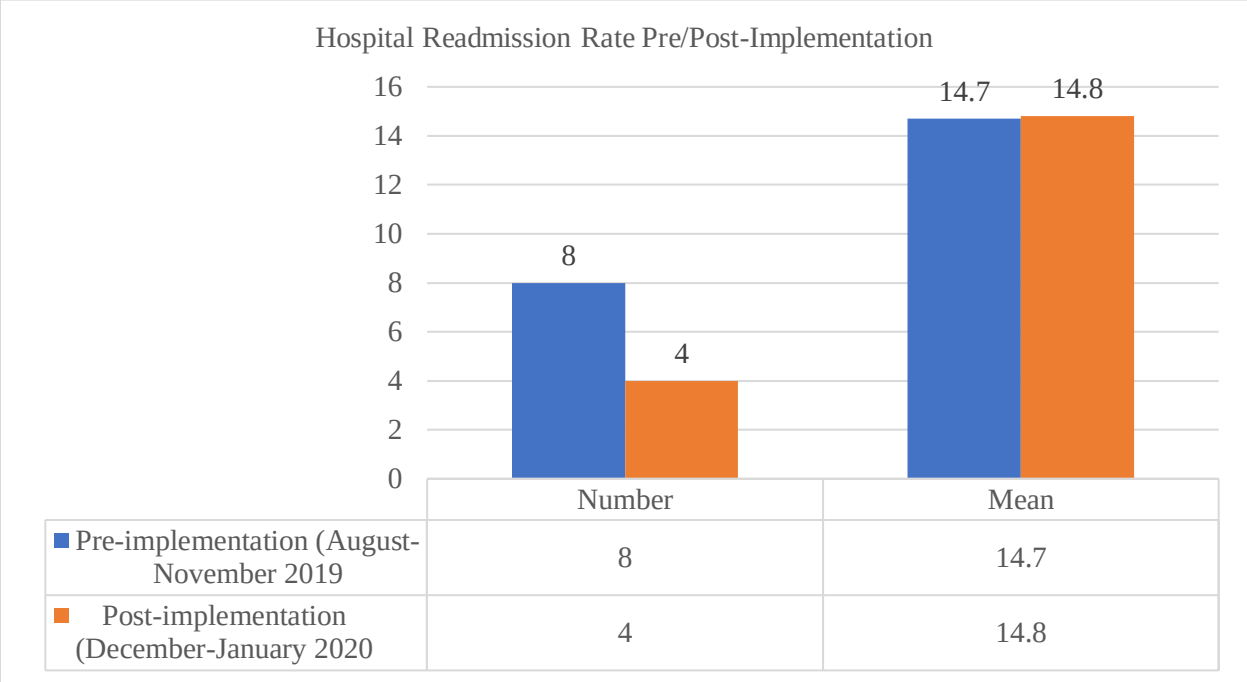


Figure 5: Hospital readmission rate number and means pre-/post-implementation



	Number	Mean
Pre-implementation (August-November 2019	8	14.7
Post-implementation (December-January 2020	4	14.8

Implementation Strategies to Reduce Readmission Rates in Adults with Sepsis

Erin Kucharek
DNP Project Defense
April 14, 2019

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Acknowledgements

- Project Team Members:
  - Advisor: Sandra Spoelstra, PHD, RN, FGSA, FAAN
  - Heather Chappell (Krull), FNP, DNP
  - Kim Doherty, RN, BSN, MSN (retired)
  - Mary Dougherty, MSN, DNP
- Special thanks:
  - Lindsey Eastman, BSN, RN
  - Mary Hukill, BSN, RN

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Objectives for Presentation

1. Review the background and significance of the problem.
2. Review the organizational assessment and literature review results of evidence-based interventions.
3. Describe the project plan and discuss the results of this project.
4. Discuss the implications for practice and dissemination plan.
5. Report engagement with DNP Essentials.

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Introduction

- Sepsis can cause permanent organ damage and long-lasting physical and cognitive decline (National Institute of General Medical Science [NIGMS], 2018; Sepsis Alliance, 2018).
- Sepsis leads to 6 million deaths worldwide (World Health Organization, 2018).
- Patients with sepsis are 2-3 times more likely to be readmitted (NIGMS, 2018).
- Cost is $3.5 billion per year, approximately $16,000 per patient (Susman, 2014).

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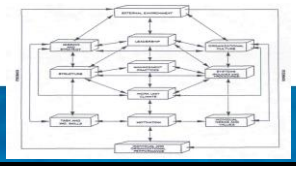
Assessment of Organization

- A large Midwestern health care system.
- The organization identified sepsis. readmissions as a primary concern.
- Chart review and patient interviews were conducted.
  - Results suggest that improved care coordination and patient education should be addressed.
  - Internal Review Board (IRB)
    - Determined Quality Improvement.
    - Available upon request.



Burke & Litwin, 1992

The Problem

- Only 31% of patients in the cohort had a primary care follow-up appointment.
- Patients reported a poor understanding of sepsis.
  - Lack of sepsis care plan initiation and documentation and sepsis education documentation.
- Patients reported feeling like they needed more services or assistance at home.
- Care managers and social workers need more information about the current efforts in place for the care of sepsis patients.

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Stakeholders

- Care managers and social workers.
- Registered nurses.
- Care coordinators.
- Patients.
- Providers.
- The sepsis team.
- Post-hospitalization facilities.

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SWOT Analysis	
Strengths	**Weaknesses**
• Clear organizational mission statement and strategy. • Strong commitment from the organization's key stakeholders to provide high quality, evidence-based care. • Voiced desire to reduce sepsis readmission rates. • Support from multiple teams to implement this project.	• The care management department is extremely busy. • There is no standard of work for sepsis discharge planning or care coordination.
Opportunities	**Threats**
• A project done on heart failure had a similar goal (to reduce heart failure readmissions) and their findings may be very similar to these findings and the team which worked on that project could serve as a mentor to this team. • There is a standard of work for heart failure discharge planning, which may be able to be adjusted to fit the needs of sepsis patients.	• Insurance company policies. • Expenses associated with home care services and other post-acute care services. • Busy primary care practices may make it difficult to schedule appointments in a timely manner.

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Clinical Practice Question

Will improved care coordination for adults with sepsis reduce readmission rates?

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Literature Review

- Purpose:
  - Identify if there is research on interventions to reduce readmission rates in adults with sepsis.
  - Identify what interventions reduce readmission rates in the adult population.
- Method:
  - Comprehensive electronic search: CINAHL and PubMed.
  - Key words:
    - Search one: preventing readmission, heart failure, and care coordination.
    - Search two: post hospital primary care appointment and readmission rates.

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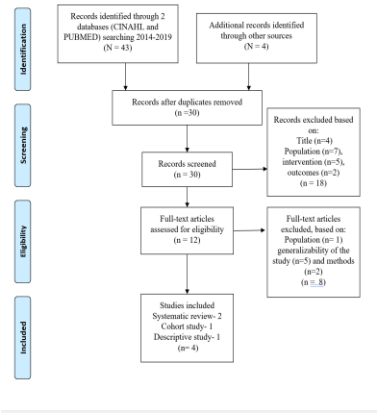
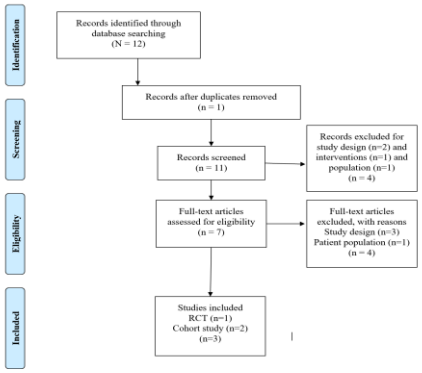
Search Outcomes

- Limited to:
  - 2014-2019.
  - Adult population.
  - Meta analyses, RCTs, and cohort studies.
  - Interventions starting inpatient.
- Population:
  - Adults readmitted to the acute care setting with chronic conditions (i.e. congestive heart failure, chronic obstructive pulmonary disease), pneumonia, total knee arthroplasty, and total hip arthroplasty were included.
- Comparison:
  - Patients that did not receive care coordination interventions, primary care office visit follow-ups, or post-discharge phone calls.

PRISMA Figure

Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) model (Mohler et al., 2015)





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Results Summary

- There are several different interventions that were utilized in each of the 7 studies.
- Many of these studies included a combination of interventions to reduce readmission rates.
  - All studies included patient education.
- Interventions used:
  - Primary care follow-up appointments.
  - Post-discharge phone calls.
  - Discharge planning.
  - Patient education.

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Evidence for Project

- Evidence-based interventions used for project:
  - Primary care follow-up appointments.
  - Discharge Planning.
  - Patient education.

Intervention	Author
Primary care follow-up appointment	Axon et al., 2016; Leppin et al., 2014; Patel & Dickerson, 2018; Shah et al., 2018
Discharge planning	Axon et al., 2016; Braet et al., 2016; Leppin et al., 2014; & Shah et al., 2018
Patient education	Axon et al., 2016; Balaban et al., 2015; Braet et al., 2016; Leppin et al., 2014; Olsen et al., 2016; Patel & Dickerson, 2018; Shah et al., 2018

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Project Purpose & Objectives

Purpose: to reduce the readmission rate for adults with sepsis

Objectives:

1. Identify causes for readmission through chart reviews and patient interviews
2. Implement evidence-based strategies to address barriers identified in patient interviews
3. Increase primary care follow-up appointments from 31% to 60%
4. Increase CMs and SWs understanding of efforts in place for the management of patients with sepsis
5. Increase CMs and SWs assessment of discharge needs for patients with sepsis.
6. Increase patient knowledge about sepsis by increasing RNs' compliance with patient education

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Methodology

- Design:
  - Quality Improvement.
  - Pre-post comparison.
- Setting: two of the organization's Midwestern acute care hospitals.
  - A convenience sample was also used and included one unit at one of the hospitals.
- Participants:
  - Staff members: CMs, SWs, RNs, care coordinators.
  - Patients with sepsis.

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Framework Guiding Project Design

Appendix J

The Transitional Care Model

Adapted from "About the TCM," by Penn Nursing. Copyright 2018 NewCourtland Center for Transitions and Health.

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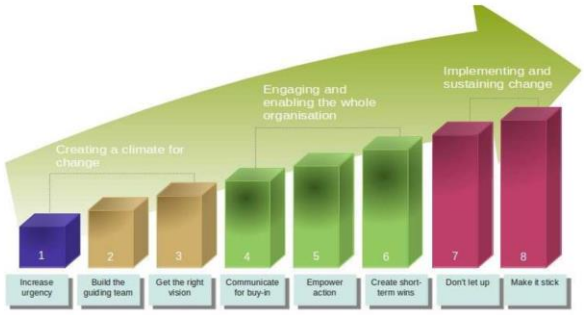
Implementation Model

Appendix K

The Kotter Model



Kotter's 8-step change model

Adapted from "Successful Change Management — Kotter's 8-Step Change Model" by Webster, V. & Webster, M. Copyright 2019 from Vicky Webster.

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#1 Implementation Strategy & Element

- *Assess readiness; identify facilitators and barriers*.
  - Organizational assessment and SWOT analysis.
    - Readiness, strengths, weaknesses, opportunities, and threats related to this project were assessed (Powell et al., 2015).
  - Chart reviews and patient interviews:
    - Reinforced need for this project.
    - Identified what barriers patients experienced.
- Kotter's 1st step (Kotter, Inc., 2016)

2 Implementation Strategy & Element

- *Stakeholder engagement:*
  - Care management and sepsis team engaged in this project.
  - Meetings held with CMs, SWs, RN leadership, and sepsis team to discuss the results of the organizational assessment and need for interventions.
- Kotter's 2nd step and staffing component of the TCM (Kotter, Inc., 2016; Naylor et al., 2013).

#3 Implementation Strategy & Element

- *Education:*
  - To increase key stakeholders understanding of their role (Powell et al., 2015).
  - Changes to the workflow of RNs, CMs, and SWs.
  - Education will be provided to:
    - Each department on the need for this project.
    - RNs on their role to initiate a sepsis care plan, provide education to patients with sepsis about the condition, and document that education.
    - CMs and SWs about the current efforts of the sepsis team, how to risk stratify patients with sepsis, and role of care coordinators.
    - Care coordinators on the expectation for follow-up appointments within 7-14 days of discharge.
- Kotter's 3rd step and multidisciplinary approach to care concept in the TCM (Kotter, Inc., 2016; Naylor et al., 2013).

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4 Implementation Strategy & Element

- *Develop and use of teaching guides for staff:*
  - Teaching guides which help stakeholders understand what changes their expected to make will improve their ability to perform the task at hand (Powell et al., 2015).
  - RNs- provided with a step-by-step instruction packet:
    - Instructions for sepsis care plan initiation and sepsis education documentation.
    - Educational guide.
  - CMs and SWs – provided with an e-mail update:
    - Educational guide.
- Kotter's 4th step and the education and empower action and the active engagement of patients and their caregivers with focus on education and support concept (Kotter, Inc., 2016; Naylor et al., 2013).

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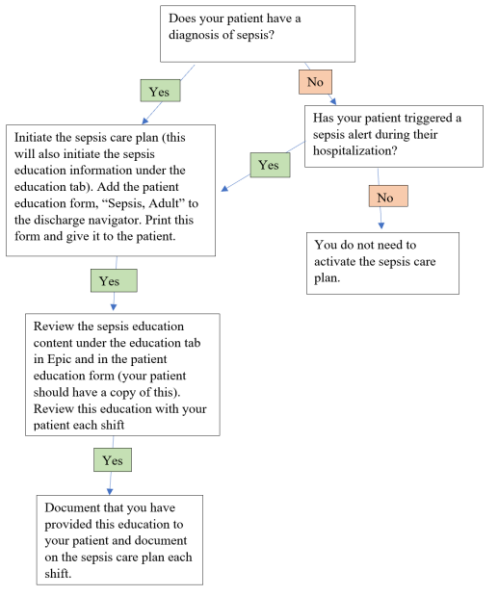
Workflow Diagram for RNs



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IMPROVING PATIENT UNDERSTANDING OF SEPSIS

Go-Live: 12/20/19

PATIENTS REQUIRE FURTHER EDUCATION ON SEPSIS

Purpose:

Patients were interviewed and 82% reported a poor understanding of sepsis.

- **46% reported no understanding at all.**
- **36% reported somewhat of an understanding of sepsis**
- Research has shown that patient education is a critical intervention to reduce readmission rates.
- Education not only helps patients understand what their illness is, but also how to manage it.

What should patients be taught about sepsis?

Refer to, "Sepsis, Adult," patient education form:

- Teach patients- what sepsis is, its signs and symptoms, the treatment, and reasons for the patient to contact their primary care provider.
- Establish that it is important for the patient to follow up with their primary care provider after discharge.
  - The primary care provider can evaluate the patient and ensure he or she is stable and set him or her up with outpatient services should the need arise.

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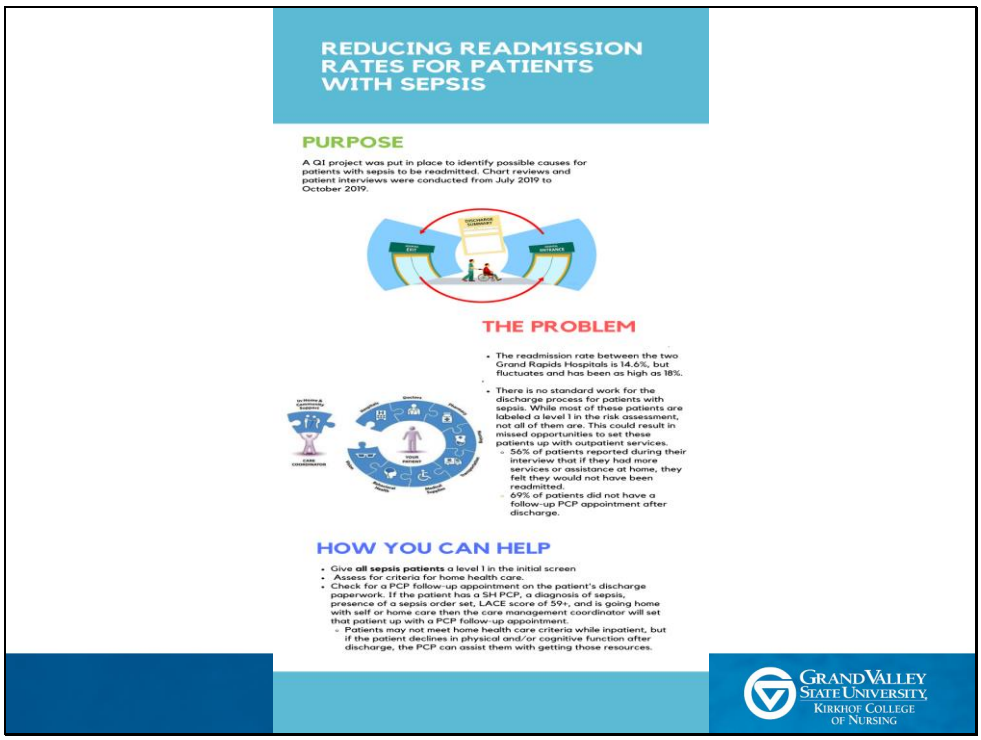

5 Implementation Strategy & Element

- *Workflow modifications:*
  - CMs' and SWs' workflow is being modified:
    - Workflow diagram will be utilized to show this change.
- Kotter's fourth step, empower action and the in-hospital assessment and development of an evidence-based plan of care concept in the TCM model (Kotter, Inc., 2016; Naylor et al., 2013).

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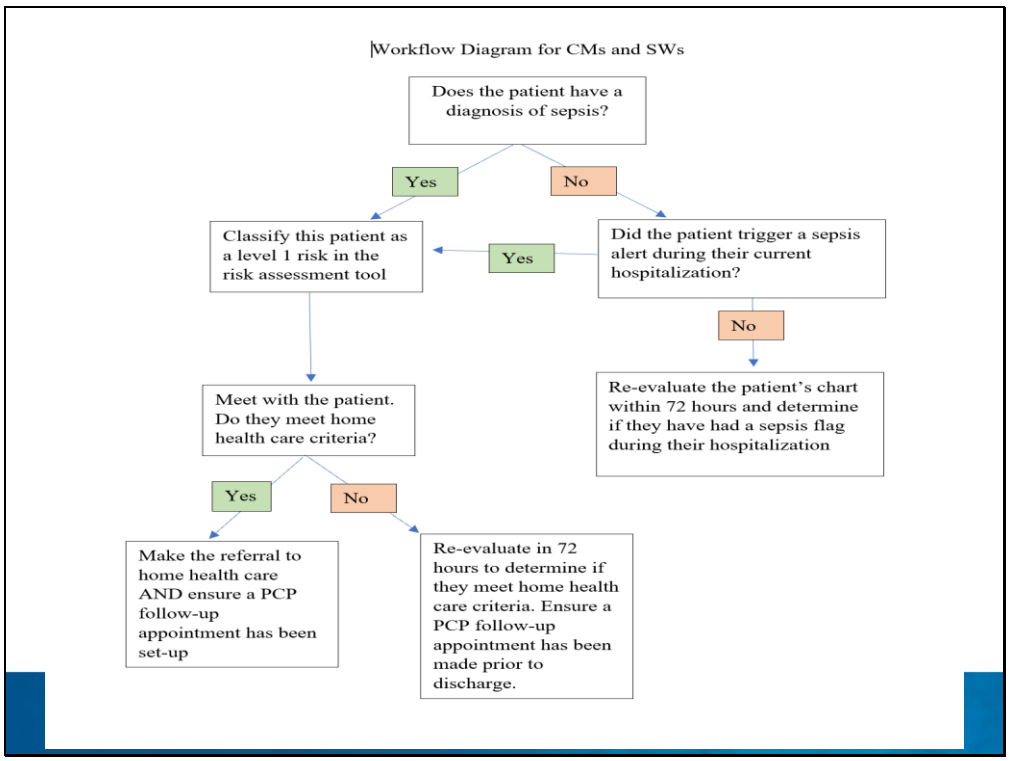

6 Implementation Strategy & Element

- *Patient/Family feedback:*
  - Patient interviews utilizing question 14 on the patient interview tool, "How well do you feel you understand sepsis?"
    - Begin 1 week after implementation starts for the convenience sample patients only.
    - Data shared weekly with the unit manager.
    - Congratulate RNs on their progress and commitment to improve patient's understanding of sepsis and encourage them to continue.
- Kotter's sixth step, create short-term wins (Kotter, Inc., (2016).

7 Implementation Strategy & Element

- *Chart audits of patients admitted with sepsis:*
  - Chart audits performed to assess for RN compliance with sepsis care plan initiation and documentation of sepsis education and to ensure the CMs and SWs assessed the patient.
    - Results reported to each department every 2 weeks.
    - Improvements shared and areas for further growth discussed.
- Kotter's sixth step, create short term wins and Kotter's seventh step, don't let up (Kotter, Inc., 2016).

8 Implementation Strategy & Element

- *Deliver a final report:*
  - Data collected until March 2020.
  - Final report presented to care management department and reported to RN unit managers to share with their team.
    - Success of the project and the areas for improvement will be discussed.
    - Recommendations for the future will be provided.
  - Kotter's seventh step, don't let up (Kotter, Inc., 2016).

Measures & Analysis Plan

- System outcomes:
  - Readmission rate: through each month of implementation.
    - Reported on the organization's website.
  - Sepsis care plan initiation and sepsis education provided by RN:
    - Chart audit.
- Patient outcomes:
  - Patient understanding of sepsis:
    - Patient interview.
  - Presence of a primary care appointment:
    - Chart audit.
  - Home health care referrals :
    - Chart audit.
- Data analysis using SAS (Statistical Analysis System):
  - Descriptive statistics.
  - Chi-square/Fisher's Exact test as appropriate.

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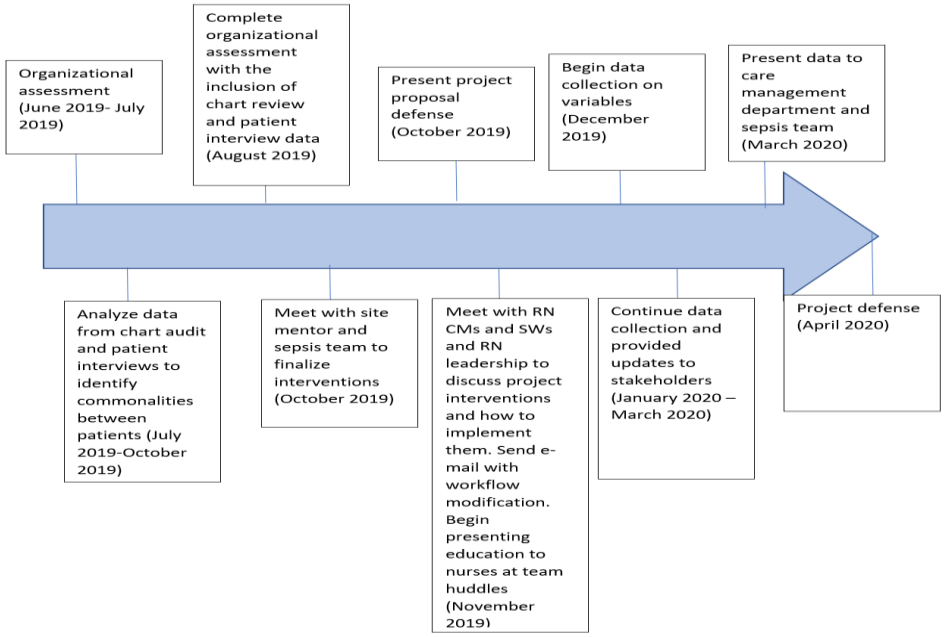
Appendix R

Timeline



Results

Results: Participant Characteristics

- Adult patients.
- Acute care setting.
- Sepsis diagnosis.
  - Sepsis list within the charting system.
  - Each patient was reviewed to ensure he/she met sepsis criteria.

Results: Demographics (Non-unit Specific)

Characteristic	Pre-implementation (n=42)	Post-implementation (n=259)
Age	Mean (SD) Range 63.6 (15.5) 29-97	Mean (SD) Range 63.7 (17.9) 19-95
Gender		
Male	22 (52.4%)	140 (54.1%)
Female	20 (47.6%)	119 (49.9%)
Race		
White	35 (83.3%)	218 (84.2%)
Hispanic	4 (9.5%)	10 (3.9%)
Asian	-	3 (1.2%)
African American	2 (4.8%)	26 (10%)
Unknown	-	2 (0.8%)
Missing	1 (2.4%)	-

Results: Demographics (Unit-specific)

Characteristics	Pre-implementation (n=7)	Post- implementation (n=10)
Age	Mean (SD) Range 75 (9.7) 60-85	Mean (SD) Range 60.6 (15.6) 37-83
Gender	Number (%)	Number (%)
Male	5 (71.4%)	7 (70%)
Female	2 (28.6%)	3 (30%)
Race	Number (%)	Number (%)
White	5 (71.4%)	9 (90%)
Hispanic	2 (28.6%)	-
African American	-	1 (10%)

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Results: Admit Diagnosis (Non-unit Specific)

Primary Diagnosis at Admission	Pre-implementation (n=42)	Post-implementation (n=259)
Acute renal failure	-	3 (1.2%)
COPD	-	1 (0.4%)
Diabetes	1 (2.4%)	-
Pneumonia	8 (19.1%)	25 (9.6%)
Aspiration Pneumonia	1 (2.4%)	1 (0.4%)
Fever/SIRS/Sepsis	8 (19.1%)	147 (56.8%)
UTI	1 (2.4%)	2 (0.8%)
Neuro, including mental status changes	2 (4.8%)	5 (1.9%)
GI/GU	7 (16.7%)	22 (8.5%)
Cardiac/DVT/PE	-	-
Fluid Overload	-	3 (1.2%)
Other	2 (4.8%)	-
	12 (28.6%)	50 (19.3%)

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Results: Admit Diagnosis (Unit-Specific)

Primary Diagnosis at Admission	Pre-implementation (n=7)	Post-implementation (n=10)
Pneumonia	2 (28.6%)	-
Aspiration Pneumonia	1 (14.2%)	-
Fever/SIRS/Sepsis	2 (28.6%)	8 (80%)
GI/GU	-	1 (10%)
Neuro, including mental status changes	1 (14.2%)	-
Other	2 (28.6%)	1 (10%)

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Results: Discharge Disposition

(Non-unit Specific Only)

Discharge Disposition	Pre-implementation (n=28)	Post-implementation (n=259)
Home without services	12 (42.9%)	76 (29.3%)
Home Health Care Services	6 (21.4%)	62 (23.9%)
Palliative Care/ Hospice	-	14 (5.4%)
Assisted living/ Skilled nursing facility	2 (7.1%)	33 (12.7%)
Subacute Rehabilitation	6 (21.4%)	56 (21.6%)
Other (i.e. LTACH other hospital system)	2 (7.1%)	6 (2.3%)
Deceased	-	12 (4.6%)

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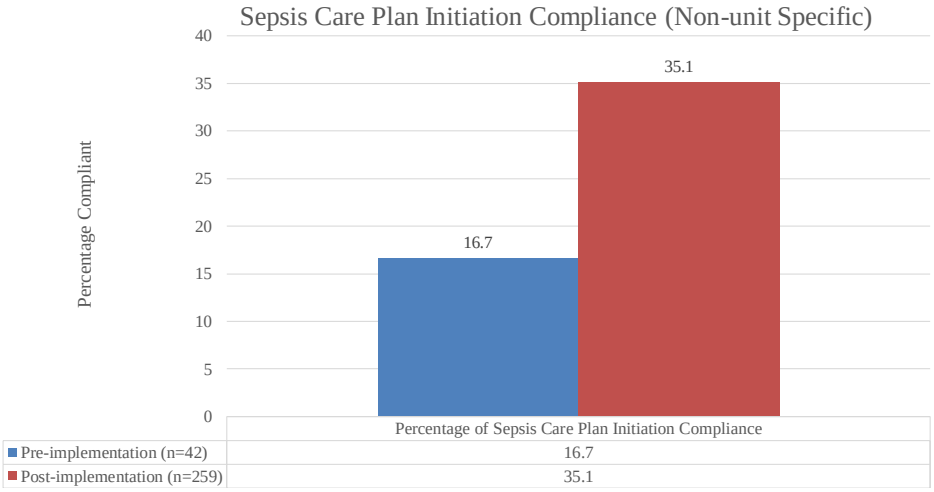
Results



- Pre/Post Differences: Chi-square 0.02 (significant difference).
- **Improvement in care plan initiation by 18.4%.**

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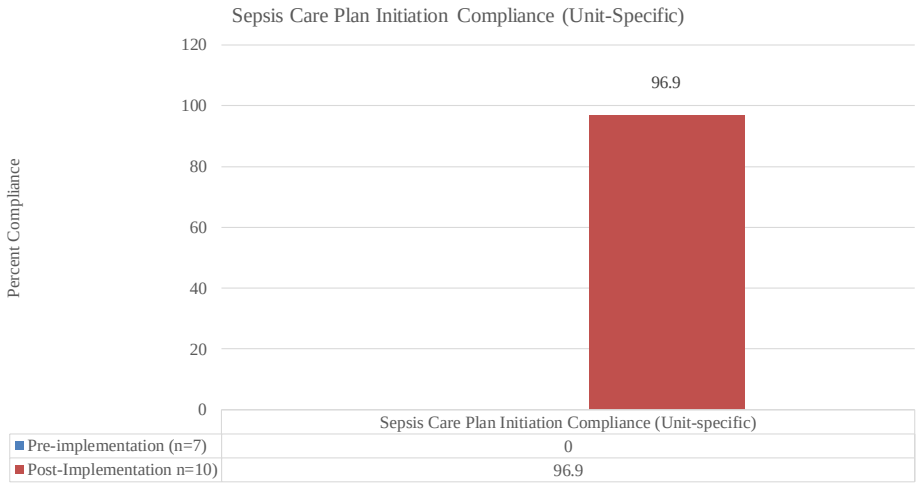
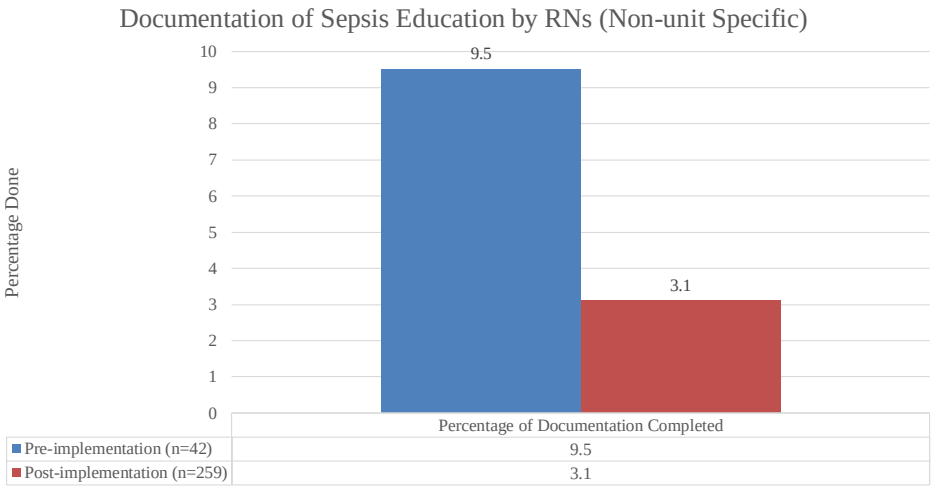
Results



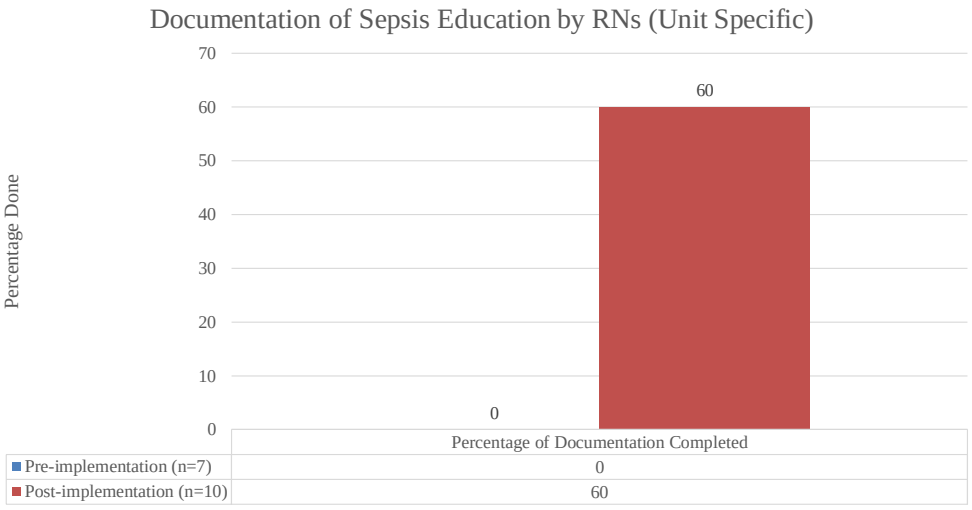
- Pre/Post Differences: Chi-square 0.02 (significant difference).
- **Improvement in care plan initiation by 96.9%**

Results



- Pre/Post Differences: Fishers Exact Test 0.05 (significant difference).
- **Decline in documentation by 6.4%.**

Results



- Pre/Post Differences: Fishers Exact Test 0.02 (significant difference).
- **Increased documentation by 60%.**

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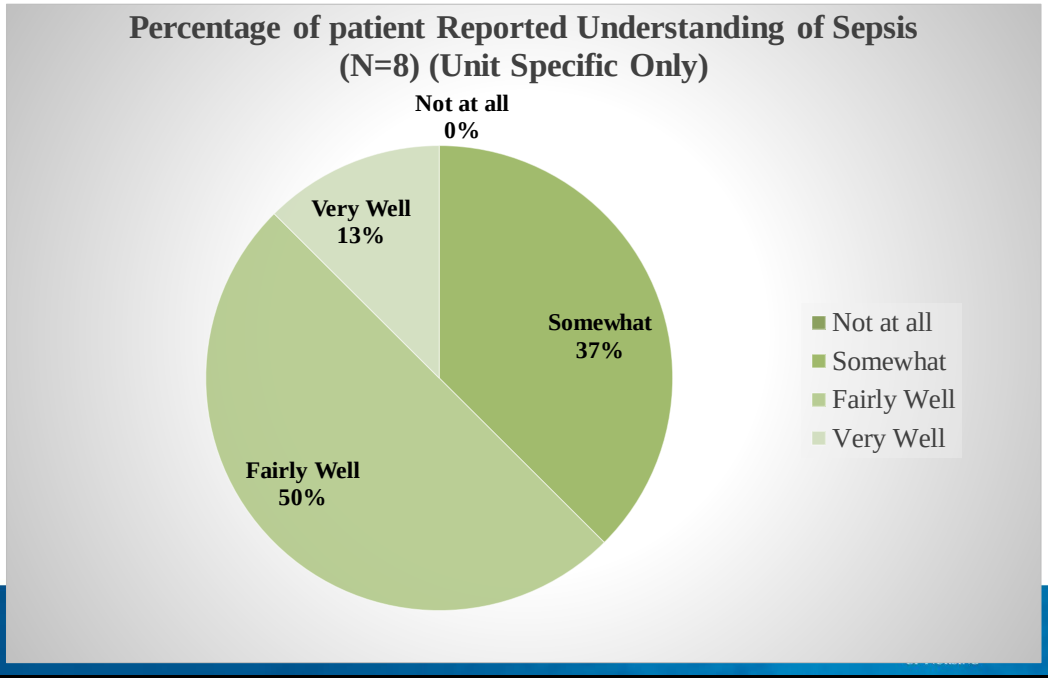
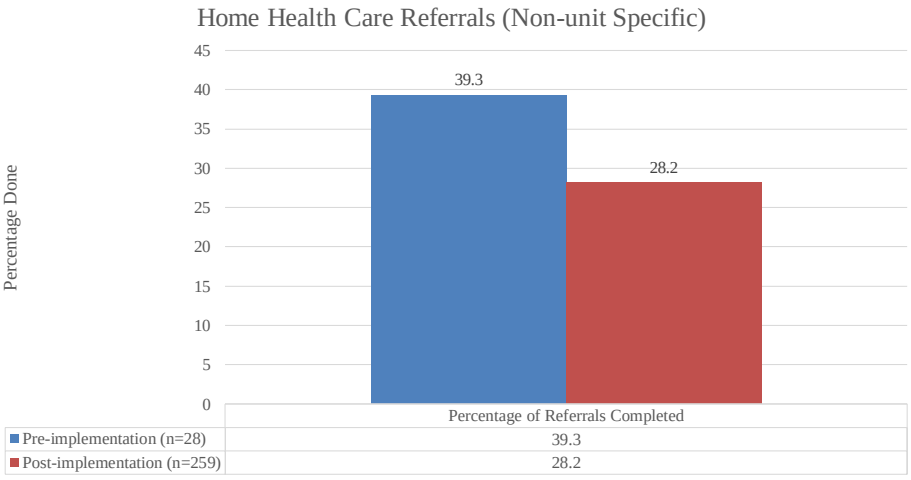
Results



Results: Care Management

- Care Manager practice:
  - Appropriate risk stratification: **88%**
  - Assessment fully completed: **93%**

Results



- Pre/Post Differences: Chi-square 0.22 (Not significant difference).
- **Decline in referrals by 11.1%.**

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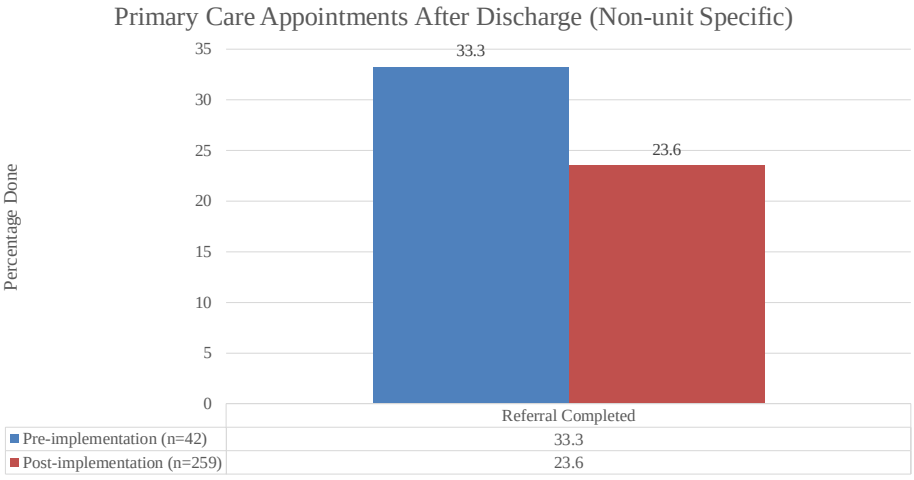
Results



- Pre/Post Differences: Chi-square 0.17 (Not significant difference).
- **Decline in appointments by 9.7%.**

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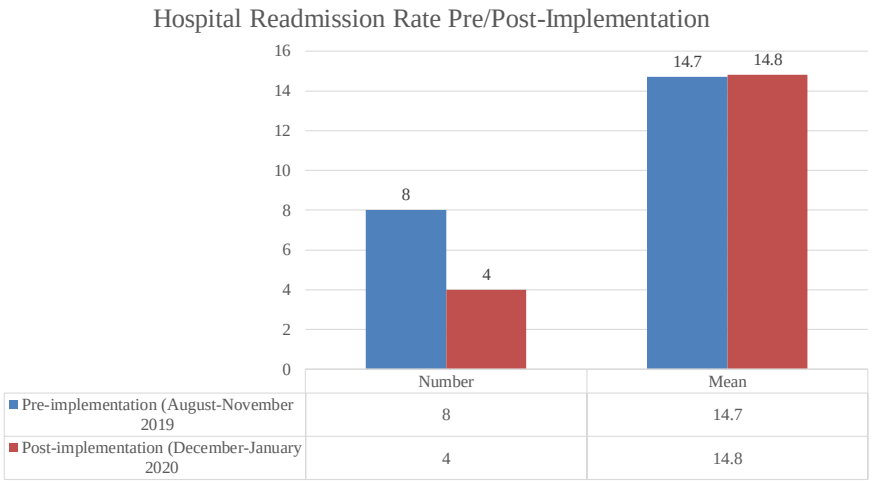
Results: Readmission Rate



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Discussion & Limitations

Discussion:

- There are many factors at play for sepsis readmission rates.
  - Project implemented several different interventions to address those factors.
- Sepsis care plans and education were important tools to utilize.
  - Compliance rate was not very high.
- Improved documentation of Sepsis education and care plan initiation.
- Sepsis patients are at high risk for readmission.
  - The care management department agreed to screen all patients for outpatient service qualifications.
- Primary care appointments have been shown to reduce readmission rates.
  - Project implemented a process where patients who met criteria could be set up with PCP appointment.

Limitations:

- Limited research available on sepsis population.
  - Inpatient nurses struggled with documentation of care plans and education historically.
    - Identified as a gap by The Joint Commission.
- Not all patients had sepsis as primary diagnosis; some did not have on problem list so difficult to examine.
- Support for conducting this project.
  - May have needed more team members for success.
  - Involving unit managers more in this process could have been beneficial.
- Complexities of the organization.
  - Several different departments.
  - Communication pathways challenging.

Implications for Practice

- Recommendations:
  - Improve nursing compliance with care plan initiation and education documentation by utilizing unit managers to facilitate this process.
  - Identify a process to increase the number of PCP appointment follow-ups by expanding the inclusion criteria utilized by the care coordinators.
  - Hire 2-3 more care managers to focus on care coordination and PCP appointment follow-up for the sepsis population.
  - Create a standard of work for outpatient primary care providers to reference when seeing patients with sepsis at follow-up appointments.
  - Assess outpatient subacute rehabilitation centers, skilled nursing facilities, and home health care use.

Conclusions

- The readmission rate did not improve over the course of this short QI Project, but may have if examined longer.
- Care managers compliance was high.
  - Home health care referrals did not differ pre/post-implementation.
  - Fewer primary care follow-up appointments after implementation.
- RN compliance with care processes was a significant barrier during this project.

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Resources & Budget

Revenue from Cost Mitigation of Sepsis Readmission Cases	
Prevention of 1 Sepsis readmission	$16,941
Prevention of 10 Sepsis readmission	$169,410
Prevention of 100 Sepsis readmission	$16,941,000

Expenses for QI Project	
Project Manager $65.50/hour for 400 hours	$26,200
RNs CMs time 15"/patient; floor RNs educate patients $55.45/hour for 10 patients	$138.63
SWs time 15"/patient for 10 patients	$71.53
Care Coordinators 15"/patient for 10 patients	$78.95
Statistician $48.61/hour for 7 hours	$340.27
Supplies	$16.00
Net Expenses	$26,845.38

Net Mitigation Savings for 10 Sepsis Readmission Cases	$142,564.62

Sustainability Plan

- Currently working with the care management department on a plan.
  1. RN unit managers to sustain RN initiation of sepsis care plan and education.
  2. Care management department to sustain changes to workflow of CMs and SWs.
- Possibility for work for another DNP student.

Dissemination

- Project results will be shared with care management department, sepsis team, and inpatient nurse unit managers.
- Project results will be reported during formal defense.
- ScholarWorks upload and available to public.

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DNP Essentials Reflection

- Essential I: Scientific Underpinnings for Practice.
  - Organizational assessment, Literature Review, other sepsis educational opportunities.
- Essential II: Organizational and Systems Leadership.
  - Development and evaluation of project interventions.
- Essential III: Clinical Scholarship and Analytical Methods for Evidence-Based Practice.
  - Analysis and dissemination of project findings.

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DNP Essentials Reflection

- Essential IV: Information Systems and Technology.
  - Use of technology to implement interventions and use of technology to collect and analyze data.
- Essential V: Advocacy for Health Care Policy.
  - Advocating for the needs of this patient population, analyzing policies already in place for nursing documentation.
- Essential VI: Interprofessional Collaboration.
  - Working with several different departments including the care management department, sepsis team, inpatient nurse managers, and registered nurses.

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DNP Essentials Reflection

- Essential VII: Clinical Prevention and Population Health.
  - Evaluation of current practice in place for patients with sepsis.
- Essential VIII: Advanced Nursing Practice.
  - Served as a mentor for the implementation process.

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