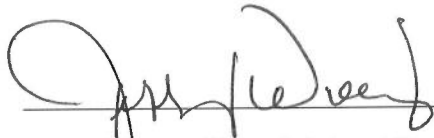


Implementing Discharge (D/C) Teaching for Sepsis Patients

to Decrease 30-Day Readmission Rate

Denise Owens, MS, RN, CCRN-K

APPROVED BY:



Dr. Jeffrey Willey, Advisor/Chair

5/20/2022

Date



Elizabeth Begley, Committee Member

5/18/22

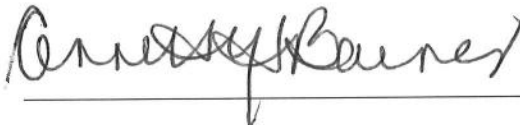
Date



Dr. Joanne Jarboe-Costello, Committee Member

5/17/22

Date



Dr. Annette Barnes, Graduate Program Chair

05/20/2022

Date

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Denise Owens, MS, RN, CCRN-K

DNP Project submitted to the School of Nursing
of Salisbury University in partial fulfillment of the requirements
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Doctor of Nursing Practice
May 2, 2022

D/C TEACHING TO PREVENT SEPSIS PATIENTS' READMISSION

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By

Denise Owens MS RN CCRN-K

2022

Dedication

I dedicate this work to my husband, Derrick Owens. He is my rock, keeps me focused, and edits my work. Thank you for your love, support, and understanding.

Acknowledgments

Thank you, Dr. Willey, for your support and guidance with my DNP project. Thanks to my family and Salisbury University Faculty for your undying support and words of encouragement. Thanks to my forever best friend, Paula Rose Waid, for your dedication to my success and encouraging me to see the light at the end of the tunnel. Thanks to Vanessa Donoughe, my biggest cheerleader.

Abstract

Hospitals recognize sepsis as a serious medical condition and recognize that early treatment of sepsis improves patient outcomes and saves lives. Unfortunately, post-sepsis patients being discharged from the hospital may redevelop sepsis. Readmissions due to sepsis can negatively impact patient outcomes and lead to increased hospital costs. Despite these findings, many hospitals underuse resources (e.g., patient education and patient engagement) to prevent hospital readmission due to sepsis. The purpose of this evidence-based project was to determine whether a sepsis education program introduced by the nursing staff at time of discharge from the medical/surgical unit will reduce the number of 30-day readmissions to the hospital setting due to sepsis. Educating the patients at discharge about sepsis, the importance of understanding the signs and symptoms of early sepsis, and the steps to take if they meet the criteria in meeting sepsis was implemented. A needs assessment was done to serve as a basis for preparation of developing an evidence-based project within the hospital setting designed for healthcare providers to consistently provide sepsis education at time of discharge. The IOWA Model design was used to assist the healthcare team in translating the research findings into practice and to increase positive patient outcomes. Malcom Knowles' Andragogy Theory was developed to understand and provide direction in meeting the needs of the adult learner. This theory assisted in the teaching of the healthcare team and the patients. Metrics, including readmission rates for patients being discharged with the diagnosis of sepsis were monitored to determine education program success. Measures included readmission rate and the compliance rate of sepsis education documentation at time of

discharge. Data collection on readmissions and sepsis education documentation were collected through chart audits and stored in the organization's secure drive.

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**Implementing Discharge (D/C) Teaching for Sepsis Patients
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Project Overview

Need for Sepsis Education

Sepsis is a life threatening, serious medical condition. Sepsis is caused by an overwhelming immune response to infection, which may lead to tissue injury, multiple organ dysfunction syndrome(MODS) and even death (Paradiso, 2019). Hospitals recognize sepsis as a serious medical condition and recognize that early treatment of sepsis improves patient outcomes and saves lives. Unfortunately, post-sepsis patients being discharged from the hospital may redevelop sepsis. According to Prescott and Angus (2018), sepsis accounts for more than 12.2% of all hospital readmissions far exceeding rates of heart failure, pneumonia, chronic obstructive pulmonary disease, and heart attacks. Post-sepsis syndrome is a condition that affects up to 50% of sepsis survivors. This syndrome can cause the patient to have physical and/or psychological long-term effects. "Post-sepsis syndrome must be recognized by the doctors and other healthcare professional who care for sepsis survivors so these patients can be directed to the proper resources" (Sepsis Alliance, 2019, para 1). Needed resources may include emotional and or physical support. In addition, the estimated cost of sepsis readmission to the hospital is costing nearly \$24 billion annually (Paradiso, 2019).

Despite these findings, many hospitals underuse resources (e.g., patient education and patient engagement) to prevent hospital readmission due to sepsis. The Sepsis Alliance (2019) is the largest sepsis advocacy organization in the United States and its mission is to save lives and reduce suffering by raising awareness of sepsis as a medical

emergency. With educational materials and healthcare professionals the post-sepsis patients, caregivers and the community can learn more about sepsis and how to decrease readmissions due to sepsis.

Problem Statement

Medical/surgical adult patients who are discharged from the hospital setting are experiencing increased incidence of being readmitted due to sepsis within 30 days of being discharged from the hospital (Shankar-Hari et al., 2020).

Purpose

The purpose is to determine whether a sepsis education program introduced by the nursing staff at time of discharge will reduce the number of 30-day readmissions to the hospital setting due to sepsis. Educating the patients at discharge about sepsis including, the importance of understanding the signs and symptoms of early sepsis, and the steps to take if they meet the criteria in meeting sepsis will be implemented on the medical/surgical units in a mid-Atlantic region, community hospital based in Montgomery County, Maryland.

PICOT

Using the Population, Intervention, Comparative, Outcomes, and Time or PICOT format, the clinical question for this DNP project developed was “In adult (18 and older) med/surg hospitalized patients, does implementing sepsis education before discharge, decrease 30-day readmissions?”

Synthesis and Analysis of Supporting Literature

A synthesis of literature was conducted to select and grade evidence supporting sepsis education at time of discharge to decrease 30-day readmission due to sepsis. The electronic databases of MEDLINE (Ovid), CINAHL and Google Scholar were accessed to search for relevant articles published between March 2016 to March 2021. Articles were searched that related to the PICOT question: In adult patients who are 18 years and older, admitted to the med/surg unit (P), does implementing teach back sepsis education (I) before hospital discharge, decrease 30-day (T) hospital readmissions (O)?

The key terms used in the literature search included (sepsis or septicemia) AND (hospital) AND (readmission and rehospitalization) AND (education). One hundred and ninety-five articles were identified using this method. Inclusion criteria included: written in English, study population consisted of adult patients in the medical/surgical units, reported outcomes related 30-day readmission, sepsis education. Studies were excluded if they took place in a specialty healthcare setting, included pediatric population, included hospice population, 180-day readmission. A PRISMA diagram overviews the search techniques and findings (Appendix A). A synthesis of the findings generated several themes of the effects of sepsis education on the medical/surgical adult patients, readmissions due to sepsis and expected outcome from education (Appendix B).

Important Themes

Several studies indicated the effectiveness of discharge interventions and the relationship to readmissions and increased cost (Braet et al., 2016; Sun et al., 2016; Norman et al., 2017). Goodwin & Ford (2018) indicated that readmissions after sepsis survival remains a concern due to the additional mortality sepsis could cause and the cost

to the healthcare system. Prevention strategies are needed to decrease lapses in care along with missed opportunities for interventions to decrease readmissions due to sepsis. Identifying sepsis, post discharge assessment, knowledge deficit about sepsis, and prevention of readmission of sepsis were common themes (Paradiso, 2019; Prescott & Angus, 2018; Palacios, Solenkova, & Gorostiaga, 2020). A qualitative study done by Schorr, Hunter, & Zuzelo (2018) recognized the importance of the understandability and actionability of the Center for Disease Control and Prevention's sepsis patient education material. Experts were asked to evaluate the understandability and the actionability of the sepsis education provided by the Center for Disease Control and Prevention. The mean understandability was 84.7%, actionability was 90.7% and these scores support the use of education tools in sepsis teaching (Schorr, Hunter, & Zuzelo 2018). There is an increased risk for a patient being discharged from the hospital after being admitted with the diagnosis of sepsis (Sun et al., 2016; Shankar-Hari et al., 2020). Implementing education at time of discharge leads to a comprehensive discharge planning for the sepsis patient population that require complex care (Weeks & Garber, 2020).

Variation in Methods Quality

The highest level of evidence study was a systematic review by Braet, Weltens, & Sermeus, (2016) on the effectiveness of discharge interventions from hospital to home on hospital readmissions. This was a level I and Quality A article. Many of the articles were level III and quality B focusing on decreasing readmissions but not specifically through education. This illustrates the need for further evidential inquiry.

Theoretical Framework & Evidence-Based Practice (EBP) Model

Theoretical Model

Malcom Knowles' Andragogy Theory relates to the adult learner, that adult learners retain information when it is relevant and useful. Malcolm Knowles focused on the science behind adult education in the United States (Kurt, 2020, June 30). The Adult Learning Theory was used for education of patients implemented in the PICOT question. The teaching about sepsis education to the adult learners at time of discharge. In the Andragogy Theory, the adult learner uses their own knowledge based on experience, will engage in learning when the material is relevant, wants to apply new information, and needs to have voice in the planning and evaluation of their learning (Rashid, 2017). This theory will assisted in implementing the teaching of the healthcare team and the patients. The theory is used in guiding the education and meeting the needs of the healthcare worker and patients. Through this theory educating the nurses on the importance and how to assist in educating the patients was implemented by providing information on the importance of decreasing the number of patients being readmitted with sepsis. The patient at discharge will be able to understand the education process about sepsis and relate the education to their hospitalization, providing the understanding of their hospitalization and how to manage their care after discharge.

EBP/IOWA Model

The IOWA Model of Evidence-Based Practice was used to promote quality of care (Hanrahan, Fowler & McCarthy, 2019). The PICOT question was designed to improve the quality of care by educating the medical surgical patient at discharged to increase the patient's knowledge about sepsis and to decrease the risk of readmission.

This was done by the multidisciplinary team that was formed to assist in the improvement effort. The members of the team were recruited from the hospital wide sepsis team. Each team member that was recruited was asked to participate in developing the evidence-based project based on patient education about sepsis. The multidisciplinary team brings members from pharmacy, nurse educators, management, laboratory members, chief nursing officer, chief clinical officer, and performance improvement.

The IOWA Model assisted the healthcare team to translate research findings into practice while increasing positive outcomes for patients (Hanrahan, Fowler & McCarthy, 2019). By implementing discharge teaching by the healthcare team at time of patient discharge, a decrease was noted in the risk of 30-day readmissions.

The IOWA Model has several steps to followed to have success in the problem-solving approach using the evidence-based practice model (Hanrahan, Fowler & McCarthy, 2019). The first step is to identify the triggering issues: 30-day readmission, patient education, and healthcare education. The second step was to state the question or purpose and to determine if the issue is a priority: readmissions within 30 days is expensive and lack of education can lead to poor patient outcomes. The third step was to form a team: an Interprofessional team has been established. The fourth step was to gather research: information on readmissions to the hospital identified. The fifth step was to design and pilot the change: The design was for the sepsis education added to the electronic health record and given to the patient at discharge including documentation. The change will include education to the medical surgical patient at discharge with documentation. The pilot unit is the medical surgical units. The sixth step is to redesign, consider alternatives, and indicate if the change is appropriate to adopt into practice. The

seventh step is to integrate and sustain the practice of change through data collection and reporting the findings. This step will be done by reporting the outcomes of the project.

The eighth step is to disseminate the results.

Project Design

Evidence-based project initiative process is useful in solving a problem and or improving care (Bonnell & Smith, 2018, p.141). A standardized evidence-based sepsis education process for patients being discharged from the hospital will be implemented at a community hospital based in Montgomery County, Maryland. The DNP project was intended to assist the nurses, staff, patients, and hospital in an educational process to decrease 30-day readmissions due to sepsis.

Project Methodology

Strengths, Weaknesses, Opportunities, Threats (SWOT) Analysis

A needs assessment was done to prepare for the DNP evidence-based practice project. The assessment tool used was the SWOT (strength, weaknesses, opportunities, threats) analysis. The SWOT analysis for this project included the internal factors of the strengths and weaknesses and the external factors that include the opportunities and threats (Appendix D). The strengths include the already existing interdisciplinary sepsis team, engaging nursing and leadership support, and the reputation with the community. The weaknesses include the lack and inconsistent sepsis education, the need for improved communication and the need to decrease readmissions due to sepsis. The opportunities for improvement include educating the healthcare team on EPIC and educating patients, patient engagement at time of discharge, and implementing EPIC. The threats to a successful project included competing priorities with COVID, lack of time to devote to

the quality project, and staff turnover. The SWOT analysis tool is helpful in planning the project by identifying these noted strengths, weaknesses, opportunities, and threats within the medical/surgical unit (Bonnell & Smith, 2018). The IOWA Model of Evidence-Based Practice was used to promote quality of care (Hanrahan, Fowler & McCarthy, 2019). The PICOT question was designed to improve the quality of care by educating the medical surgical patient at the time of discharge to increase the patient's knowledge about sepsis and to decrease the risk of readmission. The IOWA Model assists the healthcare team to translate research findings into practice while increasing positive outcomes for patients (Hanrahan, Fowler & McCarthy, 2019). Based on current evidence there is an inconsistent process for education taking place at time of discharge, it was hypothesized that maintaining a standardized education process at time of discharge would lead to a decrease in 30-day readmissions due to sepsis.

Timeline

A timeline was developed to follow the proper procedures and events to complete the DNP project. The timeline included developing the DNP topic, receiving IRB approval from the University of Salisbury, May 2021, and the organization in June 2021. Pre-implementation was done during the time of September 2020 to December 2020 and February 2021 to May 2021. Implementation timeline included the time from September 2021 to December 2021. The data analysis took place during December 2021, and from February 2022 to May 2022 the implications for practice took place. The project progressed per the timeline without revision (Appendix C).

Letters of Approval

Organizational and IRB approval was granted by the agency prior to project implementation and University and IRB approval was granted May 2021 (Appendix E, Appendix F).

Project Implementation

Participants

The eligible population to participate in the DNP project are adult patients, age 18 and older, admitted to the medical/surgical unit in the hospital with the diagnosis of sepsis or those patients who are diagnosed with sepsis during the hospital stay. The estimated sample size was patients, 55 pre-implementation and 80 post-implementations. The 55 pre-implementation patients were followed discharge to determine if they were readmitted due to sepsis within 30 days of being discharge from the hospital setting. The 80 post-implementation patients were followed through chart reviews to determine if sepsis education was provided and documented. Then following the post-implementation patients noting if any readmissions occurred within 30 days of discharge. All patients with the diagnosis of sepsis were eligible unless admitted to critical care, pediatrics, hospice, or 90-day readmission for prior acute care. Evaluation tools used to assess the outcome of decreased 30-day hospital readmission include chart reviews. Using the electronic health record of patients being readmitted within 30 days of discharge with the diagnosis of sepsis, data was collected as to the reason for readmission.

Setting/Site

The DNP project was implemented at a mid-Atlantic region, community hospital based in Montgomery County, Maryland. An interdisciplinary, sepsis team worked as a

unit to develop educational material for staff and patients related to sepsis education at time of discharge. No provider order was required since the education is standardized for patients based on the diagnosis of sepsis at time of admission or during the hospital stay. The nursing staff completed training on sepsis education material using the teach-back method, and documentation within the electronic health record. The Chief Clinical Officer and the Director of Performance Improvement at the hospital will oversee the EBP project. The nurse educators on the unit and sepsis coordinators implemented the education program with the direction of the DNP student co-investigator.

Data Collection

A convenience sample of medical/surgical patients with the diagnosis of sepsis were recruited from September 2021 to November 2021. All patients meeting the inclusion criteria received the sepsis education provided by a medical/surgical nurse and or the sepsis coordinator. A total of 135 patients' charts, 55 pre- and 80 post- implementations were reviewed. Pre-implementation and post-implementation data was collected based on inclusion and exclusion criteria, documentation of patient education regarding sepsis at time of discharge and 30-day readmission due to diagnosis of sepsis. Patients that refused education on sepsis, patients transferred to critical care area, or not meeting the inclusion criteria were noted. The chart review audits were done through a secure electronic health record using a patient medical record number and data was maintained on a secure, password protected laptop computer. No patient identifiers were kept after data analysis is completed.

The readmission rate for participants was collected from November to December 2021 and compared to the readmission rate prior to implementation from data collected

from August 2021 to September 2021. For analysis, the pre-implementation readmission rates and sepsis education completion rates were compared with the post-implementation rates. The sepsis education included education on sepsis, signs and symptoms of sepsis, and when to take the appropriate action of notifying their health care provider.

Documentation of patient education was completed by the nurse and recorded within the electronic healthcare record. Formative evaluation occurred during the implementation period to ensure that sepsis education was being completed and to address any issues that arise. Further education was provided to the nurses if incomplete documentation occurred. Data collection on readmissions and sepsis education documentation were completed through electronic chart audits and stored on the organization's secure drive. Descriptive statistical analysis for gender, race, and cause of sepsis will be done by percentages. Ranges and means will be used for descriptive analysis. Bar graphs representing aggregate data for readmission rates will be developed. Comparative pre-post-test analysis will occur regarding sepsis education completed and readmission rates. The statistical package for the Social Sciences (SPSS) can be utilized to perform comparative analysis. The hospital has performance improvement analyst that performed the analysis for the project.

Barriers and Facilitators

The implementation of the Doctor of Nursing Practice (DNP) project began with identifying fifty charts of patients discharged from medical/surgical units with the diagnosis of sepsis or severe sepsis during the month of August. After 30 days these same 50 charts were assessed again to note if these patients were readmitted within 30 days of being discharged. The design of the project was for the sepsis education in the electronic

health record (EHR) to be accessed, the patient to be educated at discharge on sepsis, and documentation within the EHR of the education that took place at the time of discharge. A new EHR called EPIC began the start of October and teaching was ongoing for the staff and sepsis team involved through the summer months. The educators of the medical/surgical units were part of the implementation team to assist in the best way to educate the nurses on the medical/surgical unit about the education needed for the patients being discharged with sepsis and or severe sepsis. The team approach worked in getting the nurses involved in the project and buy in from other staff on the medical/surgical units. The implementation team met with the staff during the morning huddles and staff meetings on the medical/surgical units to educate the nurses of the discharge process/education that the patients with the diagnosis of sepsis will require to meet our goal of educating all patients diagnosed with sepsis on the medical/surgical units. The team huddle took place at the beginning of each shift, time was taken to discuss any questions, concerns or needs of the staff and the patients on the unit. This was a good time to teach and discuss the practice changes that were taking place with sepsis education on the units.

Barriers

A challenge identified was getting access to the correct data base to find the information needed for the DNP project. EPIC was a new system and education was required on where to find the information needed for the project. This included patient being discharged from a medical/surgical unit with the diagnosis of sepsis or severe sepsis. Several emails and meetings taking over a week, to get the correct access, the correct data, and the correct person to contact for the information to access the data base.

Facilitators

The head of the performance improvement team was able to assist in getting the connection needed to gain access to the correct data base to begin extracting 50 charts of patients discharged from the medical/surgical units with the diagnosis of sepsis and or severe sepsis. The sepsis team worked as a group dissecting way to retrieve the information needed from the electronic health record. The implementation of the evidence-based practice project was able to begin.

Nurses buy in was a challenge due to adding a project while learning the new EPIC system. Nurses were busy with the education required for EPIC, time was an issue when attempting to educate the nurses about the project and the goals of the project. The team huddles were identified as a time to educate the nurses about sepsis education, the need for the education, and where is document the education. The education was completed in short time intervals with time for questions and suggestions as to education process for the patients. A teaching flow sheet was implemented in assisting the nurses in the education process and documentation.

There are a lot of moving parts to keep track of when implementing the DNP project. Keeping the team members updated on the implementation was challenging due to conflicting schedules and time restraints. It was discovered to be easier to meet after the sepsis meeting each month to discuss the project and the needs of the project. Moran, Burson, & Conrad (2020), states "Successful project management involves the coordination of project activities, team member needs, team needs, stakeholder needs, and organizational needs (page 360)." Keeping these balanced was a challenge with conflicting schedules with EPIC education has been the major issue with keeping the

team together. Setting goals with the team members assisting in getting the project started and maintaining progress in implementing the project. As the sepsis team was already an established team, the team discussed the goals and outcomes for the project and knew that implementing the project with EPIC would be a challenge. Setting small goals between the larger goals helped to keep the team informed and moving towards our main goal of reducing readmissions.

Changes

During implementation of EPIC and the project found that if a sepsis care plan was initiated at time of meeting sepsis, sepsis education will automatically be added to the patient's chart. This allowed the nurse to begin the education process about sepsis during the hospital stay and to re-enforce the education at time of discharge. The education taking place included signs and symptoms of sepsis, treatment and management of sepsis, the need for follow-up with the healthcare provider, continuing medications as ordered, and when to reach out for emergency care (Appendix G).

Summative Evaluation of Implementation Process

To improve sepsis education at time of discharge and to decrease 30-day readmission rates due to sepsis, an education plan was developed and presented to the nursing staff on the medical/surgical units. The objectives of the evidence-based practice project included, researching evidence-based practice in sepsis and education, decreasing readmissions due to sepsis, utilizing evidence-based practice to develop education for the patients, and developing an education process for the nursing staff to utilize for the continuum of care for the patient. The outcomes and goals of the project were to educate the nurses on the importance of sepsis education to those patients being discharged with

the diagnosis of sepsis, to identify patients on the medical/surgical units diagnosed with sepsis, to increase nurse education to the patient at time of discharge and reduce 30-day readmissions to the hospital setting due to the diagnosis of sepsis. The outcome, objectives and goals were achieved on the project. Through chart audits, education was done and documented by the nurses at time of discharge.

The DNP project was beneficial to the target population. The education provided to the medical/surgical patient at time of discharge increased the patient's knowledge about sepsis, the importance of understanding the signs and symptoms of early sepsis, and the steps to take if they meet the criteria of sepsis. In addition, nurses' knowledge about sepsis education was increased, education was given to the patient, documentation was completed at time of discharge. There were no negative effects of the evidence-based practice project to the nurses, patients, or hospital.

The evaluation process for project was done through chart reviews after the patient was discharged from the hospital. Charts were accessed using the MRN, noted if education was done at discharge and documented, and if readmission took place with 30-days of discharge from the hospital.

The delivery of sepsis education at time of discharge engaged the nurses on the medical-surgical unit in implementing EBP to improve healthcare and patient outcomes. The nurses were able to access sepsis education and documentation as part of their daily routines and at time of discharge. In addition, the sepsis team and leadership were engaged and supportive during the planning, implementation, and evaluation phases of the project. The engagement and support by the nurses, sepsis team, and leadership was

maintained through the process by allowing opportunities for verbal feedback and suggestions to assist in the implementation process.

As the project was completed, the sepsis team and leadership were eager to receive the completed data analysis on 30-day readmission rates for sepsis patients due the end of December. The sepsis team will continue to monitor the use of the discharge education and the 30-day readmission rates monthly. The monthly results will continue to be reported each month during the sepsis committee meetings. Adjustments to the project will continue with the feedback from nurses, committee, and leadership. The EBP project is expected to expand to other units in the hospital starting with education on the nursing units.

Analysis and Discussion of Findings

Medical-surgical adult patients diagnosed with sepsis who are discharged from the hospital setting are experiencing increased incidence of being readmitted due to sepsis within 30 days of being discharged from the hospital (Shankar-Hari et al., 2020). Through the DNP project, sepsis patients received education at time of discharge and these patients were followed to determine if they were readmitted within 30 days of discharge. The intervention of standardized sepsis education was used to determine if readmissions due to sepsis can be decreased if these patients are educated on sepsis, sepsis care, discharge planning, and answering any questions or concerns at time of discharge. Basic analysis included descriptive statistics, comparative, and correlation statistics. Descriptive statistics related to the sample population included age and race. Eighty eligible participants were admitted to the medical-surgical units with the diagnosis of sepsis and or severe sepsis or diagnosed during the hospital stay. Descriptive statistics

to review the characteristics of the participants (n=80) were completed. The age ranged from 18 to 95 years with a mean age of 61 years. Gender was categorized as binary with fifty-eight percent of the population being male (n=47) and 42% being female. Identified race or ethnicity included 31 white, 27 Black, four Asian, six multiracial, two American Indian, and 10 as unknown or other. Therefore, the majority of participants were Caucasian or African American which were races represented fairly equally in the sample. Inferential Correlation test, Pearson Chi-square test, were used to note any comparison and correlation between education and the outcome of readmission rates within the 30-day period.

The participant sample pre-implementation was 55 patients and 80 patients post-implementation for this EBP practice project. The project was implemented to note any correlation between sepsis education at time of discharge and readmission rates within 30 days of discharge. The findings indicate that sepsis education at time of discharge will decrease the readmission rates of those patients diagnosed with sepsis.

The evaluation process for the project was completed using chart reviews after the patient was discharged from the hospital. Charts were accessed using the medical record number (MRN), noted if education was done at discharge and documented, and if readmission took place with 30-days of discharge.

Formative Evaluation

Throughout the DNP project, the IOWA Model was followed and used as the framework to assist in a successful project. The IOWA Model has several steps that were followed to allow forward progress in the problem-solving approach using the evidence-based practice model. The first step was to identify the purpose for the project: to reduce

30-day readmission, increase patient education, increase healthcare education, and to buy in from the organization. The second step and third step were to state the purpose and to determine if the issue is a priority: readmissions within 30 days is expensive and lack of education can lead to poor patient outcomes. Developing a sepsis team was needed to allow for interprofessional collaboration on the DNP project. A SWOT analysis was done and shared with the sepsis team. The fourth step was to gather research: information on readmissions to the hospital identified. The fifth was to design a pilot project to allow for change in the discharge process. The design included sepsis education to be added to the electronic health record and given to the patient at discharge including documentation. The pilot unit is the medical surgical units. The next two steps were to redesign, consider alternatives, and indicate if the change is appropriate to adopt into practice. Then to integrate and sustain the practice of change through data collection and reporting the findings. The last step is to disseminate the evidence. This will be done by a formal presentation to the sepsis committee and senior leaders, a poster presentation, and several educational sessions with the hospital units.

Analysis and Discussion of Findings

Data Collection, Analysis, and Results

Data measures used and included in this project were readmission rate and the compliance of sepsis education documentation. The readmission rate was collected from November 2021 thru December 2021 and compared to the readmission rate prior to implementation from August 2021 to September 2021. Data collected from the electronic health record (EHR) post-discharge included sepsis education documentation and readmission status through chart audits with information stored on the organization's

secure drive. For analysis, a Pearson chi-square test was done to compare pre/post data for the medical/surgical units where the evidence-based practice project took place.

Results of demographics and characteristics of patients' age), gender, and race of patient's pre-implementation and post-implementation for the medical/surgical unit data were analyzed and the medical-surgical participants' age, race and gender were similar (Figure 1, Figure 2).

Figure 1

Demographics of Participants, Age

Descriptive Statistics						
	N	Range	Minimum	Maximum	Mean	Std. Deviation
Age	80	77	18	95	60.73	20.221
Valid N (listwise)	80					

Figure 2*Participants' Demographics of Gender, Education, Race, and Readmissions*

Gender		
	N	%
Male	47	58.8%
Female	33	41.3%

Education		
	N	%
yes	74	92.5%
No	6	7.5%

Race		
	N	%
white	31	38.8%
Black	27	33.8%
Asian	4	5.0%
Other	10	12.5%
multiracial	6	7.5%
Am Indian	2	2.5%

Readmitted		
	N	%
yes	12	15.0%
no	68	85.0%

Participants' admitting diagnoses were similar for both pre- and post-implementation samples as anticipated due to the diagnosis of sepsis. A change in admission rates was demonstrated after the project was implemented. A readmission rate of 24% was noted for the pre-implementation sample. After implementation of the sepsis education at discharge, the post-implementation readmission rate decreased to 15%.

Of the 80 eligible participants, 92.5% ($n=74$) received education at the time of discharge and only six, or 7.5%, did not (Figure 2). Of the 74 participants who received the standardized discharge education, 13.5% ($n=10$) were readmitted within 30 days of

discharge due to sepsis. Of the six participants who did not receive education, two patients were readmitted, equaling 33.3% of the not educated group.

A Pearson Chi-Square test was used to determine if a relationship existed between education and readmission for these 80 participants which indicated no statistically significance ($p=.191$) between participants who received or did not education and readmission status (Table 1). This finding may be related to the small number of patients ($n=6$) who did not receive education in the participants' sample. To further evaluate if discharge education status and readmission status were related, a Fisher's Exact Test was conducted and found no significant difference ($p=.291$,) which again could be impacted by the small number of participants who did not receive education and the small number of patients readmitted (Table 1).

Table 1

Pearson Chi Square & Fisher's Exact Test

Chi-Square Tests					
	Value	df	Asymptotic Significance (2-sided)	Exact Sig. (2- sided)	Exact Sig. (1- sided)
Pearson Chi-Square	1.710 ^a	1	.191		
Continuity Correction ^b	.509	1	.476		
Likelihood Ratio	1.382	1	.240		
Fisher's Exact Test				.291	.291
Linear-by-Linear Association	1.689	1	.194		
N of Valid Cases	80				

a. 1 cells (25.0%) have expected count less than 5. The minimum expected count is .30

b. Computed only for a 2x2 table

Recommendations

Economic Considerations

Thirty-day readmissions and post sepsis care continue to be a burden to healthcare costs and resources. The estimated cost of sepsis readmission to the hospital is costing nearly \$24 billion annually (Paradiso, 2019). Despite these findings, many hospitals underuse resources (e.g., patient education and patient engagement) to prevent hospital readmission due to sepsis. Through use of educational materials and knowledge about sepsis, the healthcare professionals, post-sepsis patients, caregivers and the community can learn more about sepsis and how to decrease readmissions due to sepsis. Prevention of one patient readmission for sepsis is estimated to save \$16,000 for the U.S. healthcare system and decrease the demand on hospital resources (citation).

Implications for Practice

DNP nurses in administration, executive leadership positions, and in educational roles can promote innovative approaches to problems in highly complex healthcare environments, exploring technologies that embrace efficiency, and overseeing patient safety, patient and staff satisfaction, and cost factors (American Association of Colleges of Nursing, 2021). The DNP program at the Salisbury University in leadership emphasizes systems thinking, preparing graduates with an understanding of everything from leadership roles, change management, conflict resolution, to organizational behavior in the healthcare environment. The DNP evidenced-based practice (EBP) project assists in expanding the role of the DNP as a leader and change agent in the complex health care and educational organizational systems.

Process and Outcome Recommendations

The project was a success in that education was able to be delivered to the healthcare team, patients, and decreased readmissions due to sepsis. Follow-up on the patient after discharge continues to need to be addressed to assess patient satisfaction. The follow-up would include the sepsis team sending out a survey or follow-up with a phone call to the patients to ask if they felt the information assisted them after discharge. The sepsis team will continue to monitor education at time of discharge and can add the survey to the project.

Dissemination Plan

A written DNP project final paper was reviewed and approved by the DNP student co-investigator's project committee. A formal DNP project presentation to the DNP project committee, Salisbury University faculty, peers, and invited guests was also completed in May 2022.

A formal presentation to the hospital will be provided to discuss the findings and possible implementation in other areas of the hospital. A poster presentation at a national conference and publication in a peer-reviewed journal to inform nurses and health care leaders may occur.

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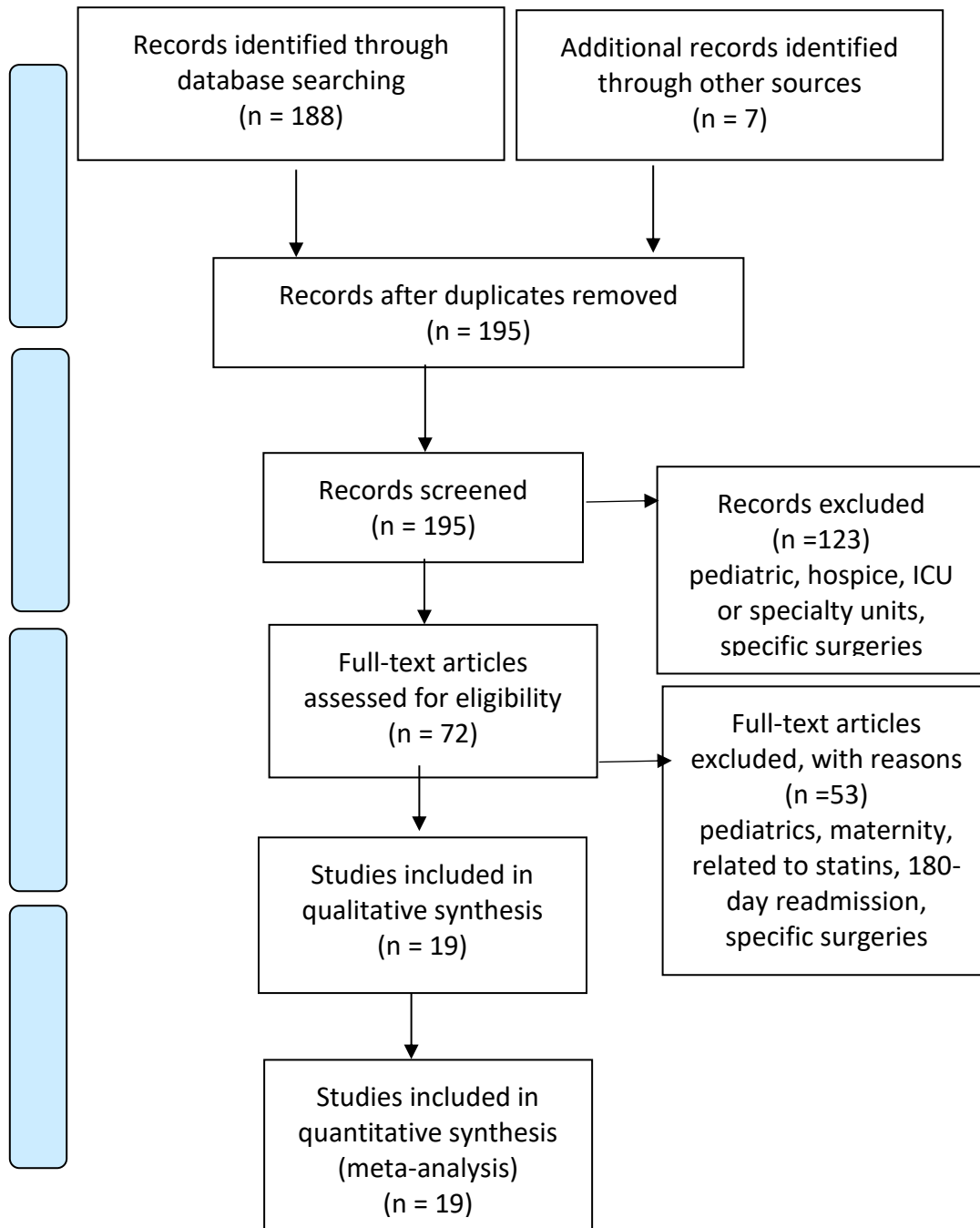
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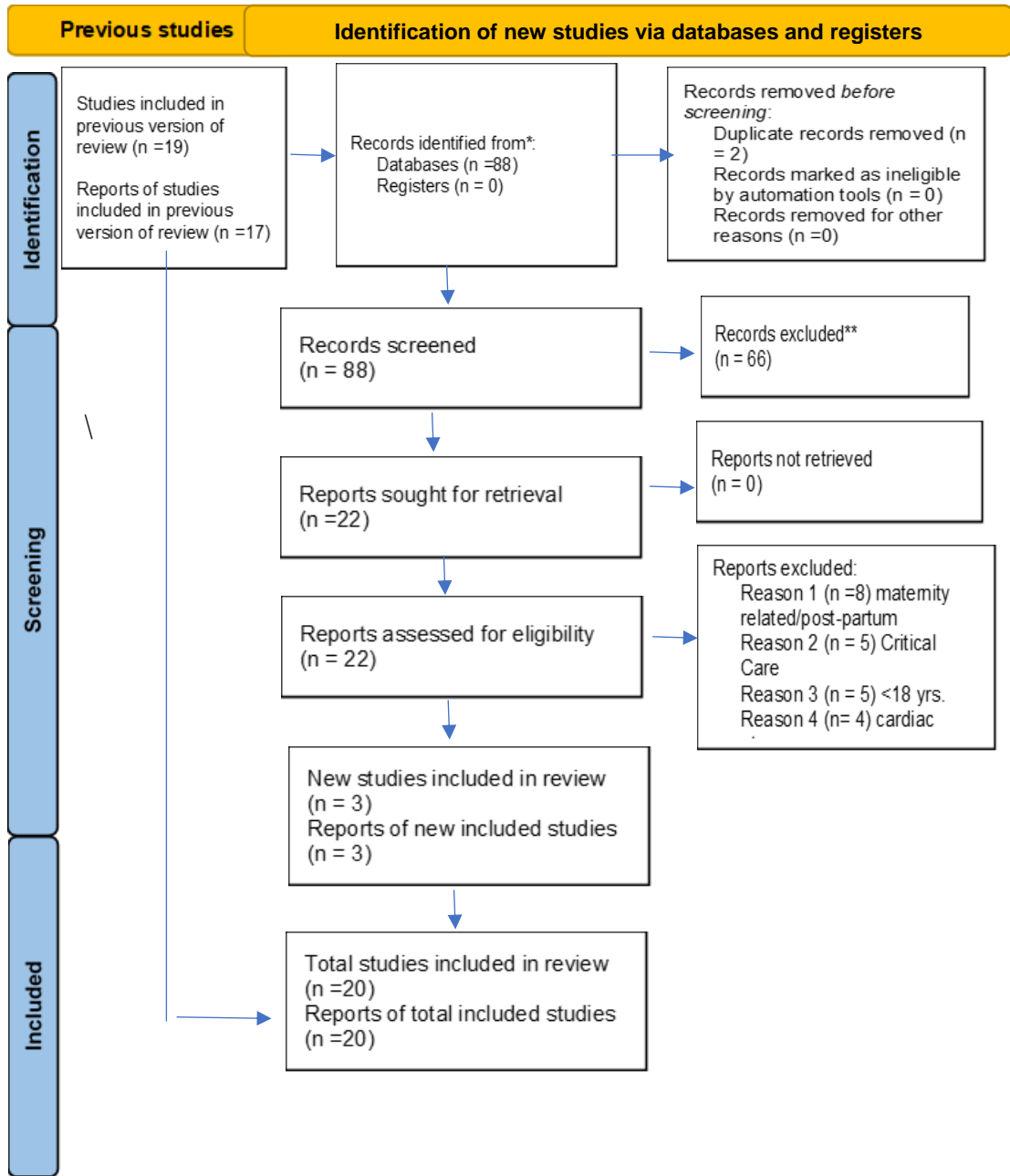
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Appendix A

PRISMA (2 pages)





Appendix B

Table of Evidence

Citation	Conceptual Framework	Design/Purpose	Sample/Setting	Measurement of Major Variables	Study Findings	Appraisal of Worth to Practice	Strength & Quality of Evidence
Inpatient Education and readmission							
Afshar et al., (2019). Assess patient outcomes in patients with suspected infection and the cost-effectiveness of implementing a plan		Observational single-center study	13,877 adults with suspected infection between March 1, 2014, and July 31, 2017. The 18-month period before and after the effective date for mandated reporting of the sepsis bundle was examined. The Sequential Organ Failure Assessment score and culture and antibiotic orders were used to identify patients meeting Sepsis-	Primary health outcomes were in-hospital death and length of stay. The incremental cost-effectiveness ratio was calculated and the empirical 95% CI for the incremental cost-effectiveness ratio was estimated from 5,000 bootstrap samples.	In multivariable analysis, the odds ratio for in-hospital death in the post-versus pre-implementation periods was 0.70 (95% CI, 0.57–0.86) in those with suspected infection, and the hazard ratio for time to discharge was 1.25 (95% CI, 1.20–1.29). Similarly, a decrease in the odds for in-hospital death and an increase in the speed to discharge was observed for the subset that met Sepsis-3 criteria. The program was cost saving in		

			3 criteria from the electronic health record.		patients with suspected infection (-\$272,645.7; 95% CI, -\$757,970.3 to -\$79,667.7). Cost savings were also observed in the Sepsis-3 group.		
Braet, Weltens, & Sermeus, (2016). Effectiveness of discharge interventions from hospital to home on hospital readmissions: systematic review.		Systematic review- Quantitative Study RCT The objective of this review was to identify discharge interventions from hospital to home that reduce hospital readmissions within three months and to understand their effect on secondary outcome measures.	Participants were adults (18 years or older) discharged from a medical or surgical ward. Meta-analysis was performed on 47 studies. Meta-analysis was performed by using a random effect model; data were pooled using Mantel-Haenszel methods. For subgroups analysis only papers with critical appraisal score of seven or	Methodological validity was assessed by two reviewers prior to inclusion using the standardized critical appraisal instruments from the Joanna Briggs Institute.	The overall relative risk for hospital readmission was 0.77 [95% CI, 0.70-0.84] (p<0.00001). The relative risk for return to the emergency department was 0.75 [95% CI, 0.55-1.01] (p=0.06) and for mortality 0.70 [95% CI, 0.48-1.01] (p=0.06). Patient satisfaction improved in favor of the intervention group in five out of the six studies evaluating patient satisfaction. Exploratory subgroup analysis found that interventions starting during		

			more were selected.		hospital stay and continuing after discharge were more effective in reducing readmissions compared to interventions starting after discharge (between subgroup difference $p=0.01$). Multicomponent interventions were not more effective compared to single component interventions (between subgroup difference $p=0.54$). Interventions oriented towards patient empowerment were more effective compared to all other interventions (between subgroup difference $p=0.02$).		
Donnelly, Hohmann, & Wang,(2015). Unplanned readmissions after hospitalization for severe sepsis at		Retrospective analysis of 345,657 severe sepsis discharges from	345,657 severe sepsis discharges from University Health System	Identified unplanned, all-cause readmissions within 7- and 30-days of	Among 216,328 eligible severe sepsis discharges, there were 14,932 readmissions within 7 days (6.9%; 95%		

<p>academic medical center-affiliated hospitals.</p>		<p>University Health System Consortium (UHC) hospitals in 2012. Readmissions after severe sepsis remain under-studied and could possibly signify lapses in care and missed opportunities for intervention.</p>	<p>Consortium (UHC) hospitals in 2012.</p>	<p>discharge using claims-based algorithms. Using mixed effects logistic regression, determined factors associated with 30-day readmission. Used risk-standardized readmission rates (RSRRs) to assess institutional variations.</p>	<p>CI 6.8–7.0) and 43,092 within 30 days (19.9%; 95% CI 19.8–20.1). Among those readmitted within 30 days, 66.9% had an infection and 40.3% had severe sepsis on readmission. Patient severity, length of stay, and specific diagnoses were associated with increased odds of 30-day readmission. Observed institutional 7-day readmission rates ranged from 0–12.3%, 30-day rates from 3.6–29.1%, and 30-day RSRRs from 14.1–31.1%. Greater institutional volume, teaching status, trauma services, location in the Northeast and lower ICU rates were associated with poor RSRR performance.</p>		
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<p>Gadre et al.,(2019).Epidemiology and predictors of 30-Day readmission in patients with sepsis.</p>		<p>Descriptive Research: Retrospective study</p>	<p>The study cohort was derived from the Healthcare Cost and Utilization Project's National Readmission Data from 2013 to 2014 by identifying patients admitted with sepsis. The primary outcome was 30-day readmission with etiology identified by using International Classification of Diseases, Ninth Revision, Clinical Modification, code</p>	<p>SPSS 23.0 (IBM) was used for analysis. Differences between categorical variables were tested using the c2 test and continuous variables by using the student t test. A multivariable regression model with the hospital identification as random effect was used to evaluate predictors of readmission. The model included patient level variables such as age groups (50-64, 65-79, >80 vs 18-49), sex, CCI (>3, 2 vs 1), LOS of index admission (< 2 as reference, 3-</p>	<p>1,030,335 index admissions; mean age, 66.8 ± 17.4 years (60% age ≥65 years), 898,257 patients (87.2%) survived to discharge. A total of 157,235 (17.5%) patients had a 30-day readmission; Infectious etiology (42.16%; including sepsis, 22.86%) was the most associated cause for 30-day readmission. Significant predictors associated with increased 30-day readmission included diabetes (OR, 1.07; 95% CI, 1.06-1.08; P < .001), chronic kidney disease (1.12; 1.10-1.14, P < .001), congestive heart failure (OR, 1.16; 95% CI, 1.14-1.18; P < .001), discharge to short-/long-term facility (OR, 1.13; 95% CI, 1.11-1.14;</p>		
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				4, 5-8, and > 8). Multivariate model for readmission was run only among patients who survived index admission.	P < .001), The mean cost per readmission was \$16,852; annual cost was > \$3.5 billion within the United States. The study suggests that the risk of readmission was highest during the first 2 weeks after discharge from the hospital.		
Galiatsatos et al., (2020) Evaluate the associations between a readily available composite measurement of neighborhood socioeconomic disadvantage and 30-day readmissions for patients who were previously hospitalized with sepsis		Retrospective study	An urban, academic medical institution. The authors conducted a manual audit for adult patients (greater than 18 yrs.) discharged with diagnosis of sepsis during the 2017 fiscal year to confirm that they met SEP-3 criteria.	The area deprivation index (composite score) constructed from socioeconomic components (e.g., income, poverty, education, housing characteristics) based on census block level, where higher scores are associated with more disadvantaged	The associations between readmissions and area deprivation index were explored using logistic regression models. A total of 647 patients had an International Classification of Diseases, diagnosis code of sepsis. Of these 647, 116 (17.9%) either died in hospital or were discharged to hospice and were excluded from our analysis. Of the remaining 531		

				<p>areas (range, 1–100). Using discharge data from the hospital population health data base, residential addresses were geocoded and linked to their respective area deprivation index. Patient characteristics, contextual-level variables, and readmissions were compared by t tests for continuous variables and Fisher exact test for categorical variables</p>	<p>patients, the mean age was 61.0 years (± 17.6 yrs.), 281 were females (52.9%), and 164 (30.9%) were active smokers. The mean length of stay was 6.9 days (± 5.6 d) with the mean Sequential Organ Failure Assessment score 4.9 (± 2.5). The mean area deprivation index was 54.2 (± 23.8). The mean area deprivation index of patients who were readmitted was 62.5 (± 27.4), which was significantly larger than the area deprivation index of patients not readmitted (51.8 [± 22.2]) ($p < 0.001$). In adjusted logistic regression models, a greater area deprivation index was significantly associated with</p>	
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					readmissions (β , 0.03; $p < 0.001$)		
Mayr et al., (2017). Proportion and Cost of Unplanned 30-Day Readmissions After Sepsis Compared with Other Medical Conditions		Descriptive Research Retrospective study	14,325,172 hospitalizations, identified 1,187,697 index admissions for medical reasons that were associated with an unplanned 30-day readmission. Performed pairwise comparisons of proportions of index admissions, length of stay, and cost for each of the 5 conditions using multinomial logistic, negative binomial, and γ regression, respectively.	For all analyses, robust standard errors were used, and 2-sided P values less than .005 were considered significant to account for multiple comparisons. All statistical analyses were performed using SAS (SAS Institute), version 9.3, and Stata (StataCorp), version 13.1.	147,084 (12.2%; 95% CI, 11.9%-12.4%) had a diagnosis of sepsis, 15,001 (1.3%; 95% CI, 1.2%-1.3%) AMI, 79,480 (6.7%; 95% CI, 6.5%-6.8%) heart failure, 54,396 (4.6%; 95% CI, 4.5%-4.8%) COPD, and 59,378 (5.0%; 95% CI, 5.0%-5.3%) pneumonia. Among sepsis index admissions, 1,061 (0.7%) also had diagnostic codes that met CMS criteria for AMI, 5063 (3.4%) heart failure, 4829 (3.3%) COPD, and 11,093 (7.5%) pneumonia. Among medical conditions, sepsis is a leading cause of readmissions and associated costs. Adding sepsis to the Hospital Readmission		

					Reduction Program may lead to development of new interventions to reduce unplanned readmissions and associated costs.		
Norman et al. (2017). Sepsis-Associated 30-Day Risk-Standardized Readmissions: Analysis of a Nationwide Medicare sample.		Cross-sectional study of sepsis readmissions between 2008-2011. 633,407 hospitalizations among 3,315 hospitals from 2008 to 2011,	Acute care, Medicare participating hospitals from 2008-2011. Septic patients as identified by International Classification of Disease, Ninth Revision codes using Angus method.	Generated hospital-level, risk standardized, 30-day readmission rates among sepsis survivors and compared rates across region, ownership, teaching status, sepsis volume, hospital size, and proportion of underserved patients.	Median risk-standardized readmission rates were 28.7% (interquartile range, 26.1–31.9). There were differences in risk-standardized readmission rates by region (Northeast, 30.4%; South, 29.6%; Midwest, 28.8%; and West, 27.7%; $p < 0.001$), teaching versus non-teaching status (31.1% vs 29.0%; $p < 0.001$), and hospitals serving the highest proportion of underserved patients (30.6% vs 28.7%; $p < 0.001$). The best performing hospitals on a composite quality measure had highest		

					risk-standardized readmission rates compared with the lowest (32.0% vs 27.5%; $p < 0.001$). Risk-standardized readmission rates was lower in the highest mortality hospitals compared with those in the lowest (28.7% vs 30.7%; $p < 0.001$)		
Novosad et al.(2016).Vital signs: Epidemiology of sepsis: Prevalence of health care factors and opportunities for prevention.		Retrospective medical record review	Four general, acute care hospitals in New York performed through CDC's Emerging Infections Program. Patients were eligible for inclusion if they had a hospital admission during October 1, 2012–September 30, 2013 (fiscal year [FY] 2013), or	A target sample size of 300 records was selected. The lists of medical records were sorted into random order, and samples of records were selected and reviewed to identify demographic characteristics, underlying conditions, and infections leading to sepsis. Patients' demographic	The median age of adult patients with sepsis was 69 years; 127 (52%) were male. The median length of hospital stay was 9 days. Most patients (238 [97%]) had at least one comorbidity; 87 (35%) had diabetes mellitus, 79 (32%) had cardiovascular disease ,56 (23%) had chronic kidney disease, and 50 (20%) had chronic obstructive pulmonary disease. The most common illnesses leading to		

			October 1, 2014–September 30, 2015 (FY 2015).	and clinical characteristics were abstracted using a standardized form.	sepsis were pneumonia (85 [35%]), urinary tract infections (62 [25%]), gastrointestinal infections (28 [11%]), and skin/soft tissue infections (26 [11%]). Many interventions that are currently viewed as pathogen-specific or disease-specific should also be considered opportunities to prevent sepsis and included in efforts to improve sepsis education.		
Palacios, C., Solenkova, N., & Gorostiaga, F. (2020). Among sepsis survivors, readmissions due to infections occur sooner and are associated with increased mortality.		retrospective cohort study of 147 sepsis survivors	Data of demographics, clinical, radiological and laboratory variables at index hospitalization, days to first readmission, number of readmissions,		Over a median follow-up of 565 days (200–953) days, 88 patients (59.8%) were readmitted, 40 with an infectious process (45.4%) and 48 with a non-infectious condition (54.5%). Median time to first rehospitalisation for		

			main cause of admission and readmission, cause of death.		the entire cohort was 89 (19–337) days, although patients admitted with an infectious cause were readmitted sooner: 65.7 (11–201) days vs. 144 (52.3–383) days, $P = 0.02$. Median number of readmissions was 2 during the study period.		
Paoli, C. J., Reynolds, M. A., Sinha, M., Gitlin, M., & Crouser, E. (2018).		A retrospective observational study	A retrospective observational study was conducted using the Premier Healthcare Database, which represents ~20% of U.S. inpatient discharges among private and academic hospitals. Hospital costs were obtained from billing by each hospital.	Descriptive statistics were performed on patient demographics, characteristics, and clinical and economic outcomes for the index hospitalization and 30-day readmissions.	2,566,689 sepsis cases, representing patients with a mean age of 65 years (50.8% female). Overall mortality was 12.5% but varied by severity (5.6%, 14.9%, and 34.2%) for sepsis without organ dysfunction, severe sepsis, and septic shock, respectively. Costs followed a similar pattern increasing by severity level: \$16,324, \$24,638, and \$38,298 and		

			Descriptive statistics were performed on patient demographics, characteristics, and clinical and economic outcomes for the index hospitalization and 30-day readmissions.		varied by sepsis present at admission (\$18,023) and not present at admission (\$51,022).		
Paradiso (2019). Sepsis beyond the hospital.		Expert opinion	Identifying sepsis, post discharge assessment, knowledge deficient about sepsis, and prevention of readmission of sepsis.	Expert opinion using sepsis stats, definition, causes, prevention, and sepsis initiatives.	Defines sepsis, sepsis stats- 70-80% of sepsis cases originate in the community. Sepsis is the number one cause of hospital readmissions.		
Prescott, H. C., Angus, D.C. (2018).Enhancing recovery from sepsis: A Review.		Literature search of MEDLINE was conducted in PubMed through April 26, 2017, using search terms and synonyms	Literature search sepsis and survivors	Summary of published literature	In a study involving 2617 Medicare beneficiaries who survived hospitalization for sepsis, 40% were readmitted within 90 days. The most common		

		<p>for <i>sepsis</i> and <i>survivors</i>. Non-English language articles or those published before January 1, 2000, were excluded. Bibliographies of retrieved studies were searched for other relevant studies. Articles were reviewed for their contribution to current understanding of sepsis survivors, with priority given to clinical trials, large longitudinal observational studies, and more recently published articles.</p>			<p>readmission diagnosis was infection; 11.9% were readmitted for sepsis, pneumonia, urinary tract, or skin or soft tissue infection compared with 8.0% of age- and comorbidity-matched patients surviving hospitalizations for other acute medical diagnoses ($P < .001$).</p>		
Schorr, Hunter & Zuzelo, (2018).		Qualitative study: Survey.	Data were submitted by	The PEMAT-P assess tool was	Nine experts responded. Mean		

<p>Understandability and actionability of the CDC's printable sepsis patient education material.</p>		<p>Nine experts answered the survey. To evaluate the understandability and actionability of patient education tool for sepsis</p>	<p>SurveyMonkey to nine experts using descriptive analysis.</p>	<p>created in SurveyMonkey</p>	<p>understandability(84.7%), Actionability (90.7%), and overall(83.3%) scores support tools utility for patient education.</p>		
<p>Shankar-Hari et al., (2020). Rate and risk factors for rehospitalization in sepsis survivors: systematic review and meta-analysis</p>		<p>Systematic review and meta-analysis. Assessed the rate, diagnosis, and independent predictors for rehospitalization in adult sepsis survivors. The literature search identified 12,544 records. Among 56 studies (36 full and 20 conference abstracts) that met our inclusion criteria, all</p>	<p>Searched for non-randomized studies and randomized clinical trials in MEDLINE, Cochrane, Web of Science, and EMBASE(OVID interface, 1992-October 2019)</p>	<p>56 studies included in evidence synthesis. N=36 full manuscripts N=20conference abstracts</p>	<p>Studies most often report 30-day rehospitalization rate (mean 21.4%, 95% confidence interval [CI] 17.6–25.4%; N=36 studies reporting 6,729,617 patients). The mean (95%CI) rehospitalisation rates increased from 9.3% (8.3–10.3%) by 7 days to 39.0% (22.0–59.4%) by 365 days. In</p>		

		were non-randomized studies.					
Sun et al., (2016). Association Between Index Hospitalization and Hospital Readmission in Sepsis Survivors.		In a retrospective cohort study, we evaluated 444 sepsis survivors at risk of an unplanned hospital readmission in 2012. The primary outcome was 30-day unplanned hospital readmission.	Three hospitals within an academic healthcare system. Four hundred forty-four sepsis survivors. Examined the relationship between infection during the acute care hospitalization and readmission and to identify potentially modifiable factors during the index sepsis hospitalization associated with readmission.	Association between index hospitalization and hospital readmission in sepsis survivors.	444 sepsis survivors, 23.4% (95% CI, 19.6-27.6%) experienced an unplanned 30-day readmission compared with 10.1% (95% CI, 9.6-10.7%) among 11,364 non sepsis survivors over the same time. The most common cause for readmission after sepsis was infection (69.2%, 72 of 104). Patients with sepsis present on their index admission who also developed a hospital-acquired infection were nearly twice as likely to have an unplanned 30-day readmission compared with those who presented with sepsis at admission and did not develop a hospital-acquired		

					infection or those who presented without infection and then developed hospital-acquired sepsis (38.6% vs 22.2% vs 20.0%, p = 0.04).		
Taylor et al., (2020). Association between Adherence to Recommended Care and Outcomes for adult sepsis survivors		Retrospective chart review of a random sample	Chart review of random sample of patients discharged from hospital admission for sepsis and evaluate the association between receipt of post sepsis care elements and reduced mortality and hospital readmission within 90-days	Structured chart abstraction determines whether four elements of post sepsis care were provided within 90 days of hospital discharge, per expert recommendations. Multivariable logistic regression to evaluate the association between receipt of care elements and 90-day hospital readmission and mortality, adjusted for age, comorbidity, length of stay,	Among 189 sepsis survivors, 117 (62%) had medications optimized, 123 (65%) had screening for functional or mental health impairments, 86 (46%) were monitored for common and preventable causes of health deterioration, and 110 (58%) had care alignment processes documented (i.e., assessed for palliative care or goals of care). Only 20 (11%) received all four care elements within 90 days. Within 90 days of discharge,		

				and discharge disposition.	66 (35%) patients were readmitted and 33 (17%) died (total patients readmitted or died, n = 82). Receipt of two (odds ratio [OR], 0.26; 95% confidence interval [95% CI], 0.10– 0.69) or more (three OR, 0.28; 95% CI, 0.11–0.72; four OR 0.12; 95% CI, 0.03–0.50) care elements was associated with lower odds of 90-day readmission, or 90-day mortality compared with zero or one element documented.		
Weeks & Garber(2020) Implementing a Nurse Discharge Navigator: Reducing 30-Day Readmissions for Heart Failure and Sepsis Populations		The purpose of this project was to evaluate the impact of a nurse discharge navigator on reducing 30-day readmissions for the heart failure and	The 238-bed community hospital in Virginia, part of a health care system that encompasses 13 acute care facilities. The aim of this project was to	Pilot program : Implementing a nurse discharge navigator: giving education material, discharge instructions. Pre and post analysis consisted of	Out of the 28 participants, 7 participants were readmitted within 30 days. The heart failure readmission rates during the project implementation were as follows: January 24.05%, February 20%,		

		sepsis populations.	identify, implement, and evaluate the transition of care of high-risk readmission patients from January 2019 to April 2019. Inclusion criteria included patients who were 55 years and older, English speaking, diagnosed with heart failure and/or sepsis, discharged to home with or without home health, and/or consults received from case management and social services. Forty-one potential participants were identified	descriptive statistics	March 19.75%, and April 11.11%. After the project completion the readmission rates were 22.97% for May and 26.03% for June, respectively. The potential cost avoidance with sustained gain from the project is \$405,316.00.		
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			with 28 consented.				
Weinreich et al.,(2019). Sepsis at a safety net hospital: Risk factors associated with 30-day readmission.		Retrospective cohort study	1355 sepsis survivors at risk for readmission in 2013. Description patient characteristics during initial admission and risk factors associated with 30-day readmission	1355 sepsis survivors at risk of hospital readmission in fiscal year 2013 were evaluated at a safety net hospital, describing patient characteristics during their initial and readmission hospitalizations, and analyzed risk factors associated with 30-day readmission.	The 30-day readmission rate among sepsis survivors was 22.6%. Comorbid conditions associated with readmissions included end-stage renal disease (odds ratio [OR], 1.26; 95% confidence interval [CI], 1.17-1.36), malignancy (OR, 1.14; 95% CI, 1.08-1.21), and cirrhosis (OR, 1.11; 95% CI, 1.02-1.20). Bacteremia during the initial hospitalization (OR, 1.07; 95% CI, 1.01-1.15) and being discharged with a vascular catheter (OR, 1.10; 95% CI, 1.01-1.20) were associated with readmission. Less severe sepsis during the initial hospitalization was		

					associated with a reduced risk of 30-day readmission (OR, 0.91; 95% CI, 0.87-0.94).		
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Appendix C**Project Timeline**

September-December 2020	Introduction, Background/Significance, Problem Statement, Review of literature
February-May 2021	Organizational Assessment Conceptual and Theoretical Framework
May-July 2021	Setting, develop education material, develop data base, finalize project
September-December 2021	Participants, Intervention and Data Collection, Analysis of data
February-May 2022	Implications for Practice

Appendix D

SWOT Analysis Results

PURPOSE: Implement Discharge Teaching to Decrease 30-Day Readmission Rate

S STRENGTHS	
1	Established Sepsis team
2	Good reputation with community
3	Engaged nursing leadership
4	Leadership support
5	Interprofessional team members

W WEAKNESSES	
1	Inconsistent sepsis education at discharge
2	Lack healthcare provider education
3	Need for improved communication
4	30-day readmission rate increase
5	Lack of patient awareness of sepsis

O OPPORTUNITIES	
1	Educate staff for consistent discharge teaching
2	Patient engagement
3	EPIC implementation in summer/fall
4	Implement sepsis education at discharge
5	Decrease 30-day readmissions

T THREATS	
1	Lack of time
2	Competing priorities
3	COVID threat/Patients not wanting to come to hospital
4	Lack of ongoing support
5	Staff turnover

ACTION ITEMS & GOALS BASED ON SWOT ANALYSIS	
1	Educate staff on discharge teaching related to sepsis
2	Implement teaching on the medical/surgical unit
3	Education patient at time of discharge about sepsis
4	Decrease 30-day readmissions related to sepsis

Appendix E**Agency Approval**

(Agency Name Redacted)

Re: Denise Owens February 20, 2021

This letter is to inform you that, Denise Owens will be working with (name redacted) to develop and implement her DNP project from Fall 2020 to Spring 2022 at (agency redacted). As the manager of Nursing Education, I give Denise Owens permission to conduct research at our (agency redacted) for the study, "In adult (18 and older) med/surg hospitalized patients, does implementing sepsis education before discharge, decrease 30-day readmissions?" from August 2021-December 2021.

I have acknowledgement of the evidence-based project, the scope of practice and the procedures being implemented.

Denise Owens will be working with (name redacted) on developing and implementing her DNP project. (Name redacted) will oversee the project and will be active in the process of the project.

The project will be conducted on the med/surg unit by implementing education for the nurses on the unit, sepsis education being implemented at time of discharge to the patients, and then data analysis will be conducted about the 30-day readmissions and compared to before and after the education was done.

If there are any questions, please contact my office.

Thank you,

(Name and Signature redacted), MSN RN Manager,

Appendix F

Agency and University IRB Approvals (2 pages)

EXEMPTION DETERMINATION

June 23, 2021

Denise Owens, MS RN CCRN-K

IRB# 2021-13

PICOT: In adult(18 and older)med/surg hospitalized patients(P), does implementing sepsis education(I) before discharge, decrease 30-day(T) readmissions(O)?

Dear Owens:

On behalf of the (agency redacted) (IRB), I have reviewed the above-referenced research project and determined that it meets the criteria for exemption from IRB review under categories 1, 2, 3, & 4, of the Code of Federal Regulations [45 CFR 46.101](#), which states:

- (1) Research conducted in established or commonly accepted educational settings, involving normal educational practices.
- (2) Research involving the use of educational tests (cognitive, diagnostic, aptitude, achievement), survey procedures, interview procedures or observation of public behavior, **unless**:
 - (i) information obtained is recorded in such a manner that human subjects can be identified, directly or through identifiers linked to the subjects; **and**
 - (ii) any disclosure of the human subjects' responses outside the research could reasonably place the subjects at risk of criminal or civil liability or be damaging to the subjects' financial standing, employability, or reputation.
- (4) Research involving the collection or study of existing data, documents, records, pathological specimens, or diagnostic specimens, if these sources are publicly available or if the information is recorded by the investigator in such a manner that subjects cannot be identified, directly or through identifiers linked to the subjects.

Sensitive information reasonable persons would not want disclosed is exempt only when the research participants cannot be identified directly or through identifiers linked to them.

Should you have any questions, or if we can be of further assistance, please do not hesitate to contact me.

Sincerely,

Signed Wednesday, June 23, 2021, 12:37:23 PM ET

IRB Member (signature and name redacted)

University IRB Approval

Salisbury University
Institutional Review Board
Committee on Human Research
Phone: (410) 548-3549
Fax: (410) 677-0052
Email:humanresearch@salisbury.edu

IRB Research Protocol Approval Notification

Date: 5/6/2021

To: J.Willey

D. Owens

RE: Protocol #42

Type of Submission: Expedited

Type of IRB Review: Expedited

Protocol is scheduled to begin 8/2021 end 5/2022

Approval for this project is valid from 5/6/2021 to 5/31/2022.

This letter serves to notify Dr. Jeffrey Willey that the Salisbury University (SU) Institutional Review Board (IRB) approved the above referenced protocol entitled, Implementing Discharge Teaching for Sepsis Patients to Decrease 30 Day Re-admission Rate on May 6, 2021.

Pursuant to Federal regulations 21 CFR 56.109, the IRB has determined that this protocol qualifies for Expedited review.

Federal regulation 45 CFR 46.103 (b)(4)(iii) requires Primary Investigators (PI), except when a subject is in immediate danger, to assure any change to an approved protocol is not initiated prior to IRB review and approval. Additionally, the PI must also inform the IRB of unanticipated problems involving risks to participants.

These same federal regulations require continuing review of research be conducted by the IRB at intervals appropriate to the degree of risk. Your research is scheduled to begin 8/2021 and end 5/2022. It is the PI's responsibility to submit continuing review reports in a timely manner (at least 3 weeks prior to scheduled end date on the protocol approval).

The SU IRB is organized and operated according to guidelines of the United States Office for Human Research Protections and the United States Code of Federal Regulations and under Federal Wide Assurance No. FWA00020237.

Appendix G

Education

Sepsis: Care Instructions



Overview

Sepsis is an intense reaction to an infection. It can cause damage to the body and lead to dangerously low blood pressure. You may have inflammation across large areas of your body. It can damage tissue and even go deep into your organs.

Infections that can lead to sepsis include:

- A skin infection such as from a cut.
- A lung infection like pneumonia.
- A kidney infection.
- A gut infection such as E. coli.

Sepsis is treated with antibiotics. Your doctor will try to find the infection that led to sepsis. You'll also get fluids through a vein (IV). Machines will track your vital signs, including temperature, blood pressure, breathing rate, and pulse rate.

The physical and mental effects of sepsis may not be seen for several weeks after treatment. And they may last long after the infection is gone.

Physical problems may include:

- Feeling weak and tired.
- Feeling out of breath.
- Aches and pains.
- Problems with getting around.
- Trouble falling asleep or staying asleep.
- Dry and itchy skin, brittle nails, and hair loss.

Some of these effects can lead to problems with your organs or your feet, legs, hands, or arms.

Sepsis can also affect your mind and emotions. Problems may include:

- Self-doubt.
- Anxiety.
- Nightmares.

- Depression and mood problems.
- Wanting to avoid other people.
- Confusion.
- Flashbacks and bad memories of your illness.

It's important to care for yourself and try to avoid infections. This may lower your risk of getting sepsis again. **Follow-up care is a key part of your treatment and safety.** Be sure to make and go to all appointments and call your doctor if you are having problems. It's also a good idea to know your test results and keep a list of the medicines you take.

How can you care for yourself at home?

- Be safe with medicines. Take your medicines exactly as prescribed. Call your doctor if you think you are having a problem with your medicine.
- If your doctor prescribed antibiotics, take them as directed. Do not stop taking them just because you feel better. You need to take the full course of antibiotics.
- Help prevent infections that could again lead to sepsis.
 - Try to avoid colds and flu. If you must be around people who have a cold or the flu, wash your hands often. And get a flu vaccine every year.
 - Ask your doctor if you need a pneumococcal vaccine (to prevent pneumonia, meningitis, and other infections). If you have had one before, ask your doctor if you need another dose.
 - Clean any wounds or scrapes.
- Do not smoke or use other tobacco products. When you quit smoking, you are less likely to get a cold, the flu, bronchitis, and pneumonia. If you need help quitting, talk to your doctor about stop-smoking programs and medicines. These can increase your chances of quitting for good.
- Drink plenty of fluids to prevent dehydration. Choose water and other clear liquids until you feel better. If you have kidney, heart, or liver disease and must limit fluids, talk with your doctor before you increase the number of fluids you drink.
- Eat a healthy diet. Include fruits, vegetables, and whole grains in your diet every day.
- If your doctor recommends it, try doing some physical activity. Walking is a good choice. Bit by bit, increase the amount you walk every day.
- Talk with your family and friends about your challenges. Ask for help if you need it.
- Keep a journal. Writing down your thoughts and feelings can help reduce your stress.
- Ask family members to fill in gaps in your memory.
- Set small goals for yourself that you can reach. Reward yourself for success.

When should you call for help? **Call 911** anytime you think you may need emergency care. For example, call if you passed out (lost consciousness).

Call your doctor now or seek immediate medical care if:

- You have symptoms such as:
 - Shortness of breath.
 - Feeling very sick.
 - Severe pain.
 - A fast heart rate.

- Cool, pale, or clammy skin.
- Feeling confused.
- Feeling very sleepy, or you are hard to wake up.
- You are dizzy or lightheaded, or you feel like you may faint.
- You have a fever or chills.

Watch closely for changes in your health, and be sure to contact your doctor if:

- You do not get better as expected.

Where can you learn more?

Go to <https://www.healthwise.net/patientEd>

Enter **T383** in the search box to learn more about "**Sepsis: Care Instructions**".

Current as of: September 23, 2020

Author: Healthwise Staff

Reviewees. Gregory Thompson MD - Internal Medicine & Adam Husney MD - Family Medicine & Kathleen Romito MD - Family Medicine & William H. Bland Jr. MD, FACEP - Emergency Medicine & Heather Quinn MD - Family Medicine



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