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Reducing Congestive Heart Failure Hospital Readmission Through a Practice Guideline

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This is to certify that the doctoral study by

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has been found to be complete and satisfactory in all respects,
and that any and all revisions required by
the review committee have been made.

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Walden University
2020

Abstract

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MS, Walden University, 2009

BS, University of Phoenix, 2004

Project Submitted in Partial Fulfillment

of the Requirements for the Degree of

Doctor of Nursing Practice

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Abstract

Patients with congestive heart failure (CHF) are at increased risk for hospital readmission within 30 days of discharge. The gap in practice involves the coordination of care for patients with CHF in the transition from hospital to home. Patients with CHF are at increased risk for hospital readmission due to barriers involving self-care, communication, and coordination of care. The purpose of this project was to implement a clinical practice guideline (CPG) that used a predictive tool and clinical pathway for coordination of care for CHF patients at increased risk for hospital readmission within 30 days. The DNP project involved using the chronic care model as a framework and addressed the practice-focused question, which asked whether the CPG would be accepted by an expert panel for full implementation. The CPG was presented to a 9-member expert panel, all members of a larger QI readmission task force. There were 5 cardiac providers, and 4 nursing or administrative leaders with decision-making abilities at the site. Scores on the Agree II instrument from nine experts ranged from 5.5 to 6.81 across 23 items and 6 domains indicating overall agreement on the CPG. Recommendations of the panel included a change to the clinical practice guideline to reflect ischemic workup and criteria for admission when a patient presents to the emergency department. The expert panel agreed to full implementation of the CPG. The impact of this CPG will lead to decreased needs for hospital readmission, improved coordination of care, improved communication between the patient and the healthcare team, and empowerment of patients, leading to positive social change in terms of caring for patients with chronic CHF.

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Dedication

      I would like to dedicate this to my family. To my husband, Jim, you have been my biggest supporter from day one! From my days as a nursing student continuing throughout the graduate nursing process. You have been my cheerleader, my rock, and my proofreader! Thank you for giving me the confidence to find my passion and encouraging me to reach for my dreams! Your strength and support allowed me to continue reaching for my dreams, while we raised two amazing children. To my children Christopher and Isabelle, you are my inspiration to do more, give more, and honestly be more! To my grandmother, when I graduated from high school, she wrote the most loving poem about the nurse that I would become one day. While she never saw that dream fulfilled, I know she is smiling from the heavens as I reach this milestone!

Acknowledgments

I would like to extend my sincere gratitude to my project faculty team, including Dr. Barbara Niedz, Dr. Teresa Hayden, and Dr. Deborah Lewis. Not only have they provided support and guidance throughout the graduate process, but they have also encouraged me to push forward in the pursuit of my dream. I would also like to acknowledge the members of the expert panel for their encouragement and leadership. Each member of this team demonstrates a passion for excellence, while placing the care of our patients as the top priority. Not only has this journey has allowed me to grow both professionally and personally, I have been challenged to reach far beyond what I thought I was capable of. Over the years, I have overcome obstacles to get to this point; the encouragement of others has guided each step in this process. Learning to work on a complex health issue with a collaborative team has provided opportunities to enhance my leadership skills while learning from some amazing experts in the field of heart failure medicine.

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Section 1: Nature of the Project

Introduction

Heart failure is a significant cause of morbidity and mortality and is one of the leading causes of hospital admission and readmission. These readmissions affect more than a million patients annually, and anticipated healthcare spending is expected to eclipse $69.7 billion in 2030 (Zohrabian, Kapp, & Simoes, 2018). The Centers for Medicare and Medicaid Services (CMS) began reviewing heart failure readmission rates in 2012 and implemented penalties to hospitals with increased 30-day all-cause readmissions (CMS, 2019). Although there have been advances in the reduction of unnecessary hospital readmissions, many of these readmissions may be avoided when guideline-directed therapies are implemented in a timely, practical, or patient-centered manner (Gordin & Fonarow, 2016; Greene et al., 2018). Working to improve quality of life for patients with chronic illness begins with understanding what influences contribute to hospital admission and readmission. Each hospital readmission places the patient at increased risk for complications such as hospital-acquired illnesses and stress, while also placing additional financial burdens on patients (Fingar & Washington, 2015). The application of clinical guidelines allows for improving the patient experience while optimizing care. Creating treatment plans that incorporate current evidence into daily practice enables practitioners to develop individualized treatment plans while improving the lives of patients.

The financial burden of hospital readmission for heart failure exacerbates after 30 days of discharge. Healthcare teams have been challenged to identify the etiology of

readmission, develop methods to predict heart failure readmission, and evaluate strategies to prevent unnecessary readmission (Kitsiou, Paré, & Jaana, 2015). To decrease unnecessary hospital readmission and improve quality of life for patients with congestive heart failure (CHF), the DNP clinical practice guideline (CPG) incorporates evidence-based practice into recommendations of care for patients with CHF, through coordination of care from the acute care setting to the ambulatory setting. This process is intended to decrease heart failure readmission by optimizing patient care and overcoming barriers that lead to unnecessary hospital readmission (Fischer et al., 2016).

To further understand the need for hospital admission or risk for readmission in CHF patients, it is imperative to determine the barriers that these patients face. These readmissions are often multifactorial and related to a lack of appropriate discharge planning, patient education, communication, and transition of care planning (Wood, Migliore, Nasshan, Mirghani, & Contasti, 2019). Because of the multidisciplinary nature of inpatient hospital care, gaps in practice can result in readmission. If patients are not prepared at the time of discharge with adequate resources to bridge the transition from the inpatient setting to the next setting (home, long-term care, or subacute rehabilitation), the risk for readmissions increases. Programmatic changes have been developed as solutions. National initiatives detailed by CMS, have provided a foundation for creating processes focused on medication management, discharge planning, close follow up after discharge, and ongoing performance monitoring (Milfred-LaForest et al., 2017). Thus, the DNP project will involve using these existing strategies to construct a CPG for presentation to an expert panel for approval and implementation. Preventing readmission can improve

quality of life for patients as well as reduce the overall cost of caring for these patients, contributing to positive social change.

Problem Statement

Healthcare systems have been experiencing increased readmission rates for patients with CHF, with a projected increase in the future due to the number of patients affected by this chronic illness. Readmission rates for 2018 in patients with heart failure are higher than the national average of 21.7%, at one of five acute care hospitals within the network. Current readmission rates are 21.78%, which is 4-6% higher than the other four facilities in the system. Although the current 30-day readmission rate is at pace with the national average, it still results in penalties to revenue for the organization and costs to patients. The consequences to patients and the organization are both substantial. The cost of care for each of these readmissions is approximately $10,100 to $14,200 and may vary depending on the patient's insurance (Bailey, Weiss, Barrett, & Jiang, 2019). There were 326 patients identified as readmitted within 30-days of discharge in this 1-year period of time. Of these patients, more than half were discharged to home or self-care following their admission. In addition, patients transferred to home with home care and transitioned to long-term care were also included in the 1-year sample. Reducing hospital readmission aligns with practice site goals and healthcare initiatives, affects healthcare and healthcare systems financially, and positively impacts lives of patients and their families. Patients may find it challenging to understand their medical diagnosis due to complexity, lack of social support, or difficulty maneuvering through the healthcare system. Negative impacts due to this may increase the risk of hospital readmission.

Factors that negatively affect patients following hospital admission or readmission are often related to lifestyle modification. In addition to dietary and medication compliance, patients with CHF may experience complications due to decompensation of their illness during hospital admission. Morrison, Palumbo, and Rambur (2016) said that CHF patients are at increased vulnerability within the first weeks from discharge. Home visits occurred within the first 24 to 48 hours post-discharge, with the implementation of interventions applicable to reduce short-term and long-term hospital readmission. Initial assessments included a comprehensive physical examination, medication reconciliation, and patient education involving self-management of the disease. In addition, transitional care focused on the evaluation of additional needs related to home care, transportation, and nutritional needs (Morrison, Palumbo, & Rambur, 2016). Helping patients understand the importance of self-care, lifestyle modifications, and overcoming potential barriers will improve quality of life for these patients and their families.

Purpose Statement

The need to reduce hospital readmission in patients with CHF represents a gap in practice. Even with the use of predictive models, transitional care clinics, and close follow up, readmission rates remain elevated beyond the national average. There may be barriers to self-care that patients experience, such as lack of transportation, insufficient financial means for medication, or deficient dietary regimens; organizational processes do not address these barriers. Current processes do not anticipate patient questions that occur after discharge regarding daily management or changes that occur in patients'

current health status. There are communication deficits in terms of the transition of care that exist between the hospitalist, case manager, discharging nurse, and social services following discharge.

These gaps in practice identified are related to transition of care for patients with CHF from hospital to home. The purpose of the DNP project was to develop and implement a CPG using a risk stratification tool, evidence-based practice guidelines for CHF, heart failure order sets, and transitional care services designed specifically for patients with CHF. Hospital readmission rates currently exceeding the national average may not be reflective of the care provided. Thus, the practice-focused question that will help to close the gap in practice is: Will a transition of care practice guideline be accepted for full implementation by an expert panel at this site as a strategy to reduce this 30-day readmission rate in CHF patients??

A transitional care clinic was implemented in May 2019 to assist with the transition from hospital to home. In the initial evaluation of the use of the post-discharge clinic in October 2019, more than 130 patients had been admitted with CHF, and only two patients had participated in the use of the transitional care clinic, representing an additional gap in transitional services. Barriers preventing self-care at home included lack of transportation to the clinic, lack of knowledge of appointment at the time of discharge, and inconsistent discharge instructions. Patients could benefit from the use of visiting nursing services post-discharge; however, these services may not be fully taken advantage of due to lack of referral or evaluation for eligibility for patients.

A CPG incorporates the use of patient education, communication, and transitional care development to assist in the coordination of care from acute care to ambulatory settings. Each member of the healthcare team must work to effectively transition patients to the home setting while decreasing their risk for readmission. Donaho et al. (2015) noted that involving the care team during hospital admission improves communication while creating the expectation of continuity of care. The practice guideline project allows for the creation of a comprehensive care approach to assist patients in the transition to home and will close the current gap in practice at the site.

Nature of the Doctoral Project

Multiple factors may influence hospital readmission. Ryan, Bierle, and Vuckovic (2019) noted that the transition of care should be individualized and multifaceted due to the complexity of CHF patients. The DNP project involved the development of a CPG intended to improve patients' health by providing therapies based on clinical evidence. The development of a CPG involved the use of multidisciplinary teams following a comprehensive review of the evidence. The use of a CPG empowered staff to facilitate shared decision making, identify gaps in practice, and overcome barriers to care.

Hospital readmission is attributed to the discharge process as patients transition from hospital to home, which involves access to care, inconsistencies in discharge instructions, and insufficient education in the self-management of the disease process. Current processes allow for initial risk stratification of patients with chronic diseases; however, outcomes of this risk stratification are unclear. Using a risk stratification model, the LACE index tool demonstrates a score based on the hospital length of stay (L), acuity

of admission (A), comorbidities (C), and emergency department visits (E). This score

provides objective criteria for the prediction of hospital readmission (Miller, Nguyen,

Vangala, & Dowling, 2018). The current use of the LACE index tool at the practice site

is unclear; however, through the CPG, the transition of care process will actively include

the use of this predictive score.

As part of the transition of care, the OPTIMIZE-HF and Get with the Guidelines-

Heart Failure (GWTG-HF) demonstrated a reduction in 30-day readmission rates when

CHF patients were evaluated within 7 days from discharge (Blood, Fraiche, & Eapen,

2017). In addition to follow up within 7 days from discharge, designated transitional care

paperwork should include the medical diagnosis, current medication regimen, diagnostic,

and pending workup. Alternative strategies, such as telemonitoring of patients with heart

failure, providing diagnostic evidence of fluid changes resulting in changes in pulmonary

pressures or thoracic impedance may be necessary in the days to weeks preceding

exacerbation of symptoms (Murphy, Shanks, & Alderman, 2019). Coordination of care

when transitioning patients to home, use of telemonitoring, and close followup allows for

early intervention and adjustments in treatment plans. Implementation of the CPG

supported by evidence-based practice allows for transitional care from hospital to home

and facilitates communication between patients and their healthcare team. The objective

of this CPG was to decrease hospital readmission and improve self-care of patients with

CHF.

Significance

This project is intended to have a positive impact on primary stakeholders, including patients, families, organizations, healthcare providers, nursing administration, and quality improvement teams. Secondary stakeholders of the DNP project include interdisciplinary teams comprised of acute care team members from case management, acute care cardiac rehabilitation, nursing, hospitalist teams, cardiologists and cardiology advanced practice providers (APPs), and pharmacy staff.

In addition to these teams, ambulatory stakeholders included ambulatory staff (i.e., transitional care nursing, ambulatory cardiac rehab, ambulatory case management, and ambulatory nursing staff). These teams improve the lives of CHF patients when engaged in a CPG that bridges gaps in practice. This guideline focuses on optimizing medical therapies and transitioning care, while overcoming barriers to care for this patient population to decrease the risk for unnecessary hospital readmissions.

Summary

Patients with CHF are at increased risk for hospital admission and readmission. This disease affects more than 6.5 million individuals in the United States, leading to annual healthcare expenditures of more than $39 billion (Donaho et al., 2015). Much of this cost is related to unnecessary hospital readmission for patients with a primary or secondary diagnosis of CHF. Healthcare teams play a role in reducing these hospital readmissions through the ongoing management of patients. The gap in practice identified inconsistencies in transitional care leading to hospital readmission. The purpose of the DNP project was to bridge the gap in practice through a CPG that will more accurately

define the transition of care process for CHF patients at the site. This guideline has the potential to prevent or reduce 30-day hospital readmissions, improving patients' quality of life, and reducing costs of care. Section 2 will provide a link to concepts, models, and theories, as well as relevance of nursing practice from the published literature to provide support for the CPG.

Section 2: Background and Context

Introduction

Heart failure is a significant cause of morbidity and mortality, and one of the leading causes of hospital admission and readmission. These readmissions affect more than a million patients annually, accounting for more than $1.7 billion in healthcare spending (Mirkin, Enomoto, Caputo, & Hollenbeak, 2017). Noting the magnitude of this issue, CMS began reviewing heart failure readmission rates and implemented penalties to hospitals with increased 30-day all-cause readmissions, creating the foundation for the Hospital Readmission Reduction Program (HRRP) (CMS, 2019). While there have been advances in the reduction of unnecessary hospital readmissions, many of these readmissions may be avoided when guideline-directed therapies are implemented in a timely, practical, or patient-centered manner (Ryan, Bierle, & Vuckovic, 2019). Working to improve quality of life for patients with chronic illnesses begins with understanding influences that contribute to hospital admission and readmission.

The practice focus question addressed was: Will a transition of care practice guideline be accepted for full implementation by an expert panel at this site as a strategy to reduce this 30-day readmission rate in CHF patients? The gap in practice involves readmission rates, which at this practice site remain elevated beyond the national average of 21.7%. The purpose of the DNP project is to bridge the gap in practice through a practice guideline that will more accurately define the transition of care process for CHF patients.

Concepts, Models, and Theories

CHF is a chronic disease requiring ongoing daily management that leads to an increased risk for hospital readmission. With the establishment of the HRRP by the CMS in 2012, hospitals may be penalized with reduced payments with increased 30-day readmission rates. Due to this initiative, healthcare systems have been evaluating methods to identify patients who may be at risk and implementing interventions that potentially reduce the need for hospital readmission in patients with CHF. Reduction of risks for hospital readmission requires a multifaceted approach. This CPG involves using predictive risk models to risk-stratify patients, identify patient and system barriers, and identify methods to overcome these barriers.

Predicting Risk of Readmission

Flanagan et al. (2018) conducted a retrospective medical record review to evaluate factors that lead to hospital readmission. Identification of individual behaviors, such as social support needs assessment. These health behaviors influenced the likelihood of hospital readmission. It was also noted that patients with chronic CHF compared to a new onset diagnosis are 2.5 times increase the risk for readmission. Additional assessments of these patients, using risk assessment tools such as the Braden skin score, showed that patients with increased Braden scores are at 20 times increased risk for readmission. Thus, demonstrating the need for comprehensive risk assessment prior to discharge from the acute care setting (Flanagan et al., 2018).

Ritt and Taylor (2016) conducted a descriptive non-experimental study, implemented in the electronic health record (EHR) to validate the use of the LACE index

tool in predicting hospital readmission in patients with CHF. This LACE index score demonstrates objective data demonstrating the potential risk for hospital readmission. Implemented at hospital admission, it allows for identification of patients who are at moderate to high risk for readmission. Patients with elevated scores demonstrate not only potential risks for hospital readmission but an increased risk of early death after discharge from the acute care facility.

Mirkin, Enomoto, Caputo, and Hollenbeak (2017) used administrative discharge data, detailed patient variables: including age, gender, and race, as well as diagnosis and procedure codes to determine risk for readmission. Additional characteristics of CHF patients that demonstrated that increased the risk for readmission included those who were readmitted from home, less than 65 years in age, black race/ethnicity, have an increased length of stay, demonstrate an emergent admission, and have an increased comorbidity burden. Factors that may influence readmission include sociodemographic discriminators of male sex, age, black race, and Medicare insurance is associated with increased risk for readmission

Miller et al. (2018) evaluated the use of a 3-question survey compared to the LACE index tool to assess provider ability to predict a patient's risk for readmission. Both the LACE index and the provider's assessment demonstrated predictive values in determining the potential for readmission; however, the LACE showed predictive value for new medical residents or inexperienced clinicians. Neither the survey or the LACE index identifies the patient's understanding of their disease process or provides evidence related to adherence to a medication regimen or plan of treatment.

In addition to the LACE index, the use of predictive models such as the HOSPITAL predictive score may provide insight into the risk of unnecessary hospital readmission. Aubert et al.'s (2017) retrospective study evaluated the prognostic value of the simplified HOSPITAL score for predicting 30-day hospital readmission. This predictive model involves using seven clinical variables a discharge: hemoglobin levels, cancer diagnosis, sodium levels, nonelective admission, number of admissions in the past 12 months, and hospital length of stay. This model allows for the prediction of avoidable hospital readmission, and this score may be calculated prior to hospital discharge. While this demonstrated a predictive model of CHF patients at increased risk, there is limited evidence regarding interventions for this at-risk population.

Predictive models may also assist with the identification of patients at risk, as patients with CHF may benefit from palliative care. Fasolino and Phillips' (2016) retrospective analysis used the risk readmission assessment tool (RRAT) and the need for palliative care in this patient population. The use of this tool allows for incorporating nonhospice palliative care (NPHC) to improve quality of life for CHF patients and their families. NPHC provides for a multidisciplinary approach to care, addressing physical, emotional, and spiritual needs of patients. The use of NPHC aids in symptom management of this at-risk population, while establishing goals for end-stage heart failure patients and assisting with enrollment into hospice if and when appropriate.

The use of predictive models allows for identification of patients that may be at increased risk for readmission. While these risk stratification tools demonstrate predictive risk, used alone is not enough to identify a patient's risk for hospital readmission.

Predictive models, such as the LACE index tool, incorporate comorbid conditions that may increase the patient's risk for hospital readmission. Limitations of this tool include age of the patient, gender, demographics such as socioeconomic status, and ethnicity. While these limitations play a role in the patient's condition, they influence the outcome of predictive score.

Transitional Care Model

Koser, Ball, Homa, and Mehta (2018) conducted a retrospective chart review aimed at the development of an ambulatory heart failure clinic to reduce hospital readmission. Patients with a primary or secondary diagnosis of CHF were admitted to this clinic. The initial visit included detailed evaluation, monitoring at designated intervals, access to care, and aggressive management of symptoms in the ambulatory setting. Implementation at this clinic included an interdisciplinary team that evaluated patients prior to discharge to assess barriers to adherence to treatment regimens and acknowledgment of follow up appointments. At the first ambulatory appointment, patients were provided with tools such as a blood pressure cuff and scale to ensure that they were able to follow their blood pressure and weights accurately. In addition, the nursing staff contacted the patient weekly by phone for 60-days post-discharge.

Hudali, Robinson, and Bhattarai (2017) discussed efforts to reduce hospital readmission and costs associated with this readmission through the use of a transitional care clinic facilitated by a hospitalist care team. Statistical significance was demonstrated by the use of a post-discharge clinic, noting a reduction from 11.7% to 3.8%. Facilitation

of this clinic allows for early intervention post-discharge, assisting patients with educational needs, and reviewing medications.

The use of transitional care models allows for the translation of evidence into practice and improving patient outcomes. Interventions include close follow up, use of multidisciplinary teams, and coordination of care lower the patient's risk for hospital readmission. Implementation of a CPG allows for continuity of care across disciplines, increases efficiency, optimizes care, ultimately decreases the need for hospital readmission.

Barriers to Care

Ahmad et al. (2019) conducted a qualitative study to evaluate experiences and perceptions of patients with congestive heart failure, their caregivers, and the healthcare team. Using a free listing approach, respondents were asked open ended questions, then asked to provide a list of words related to the prompt and provide an order of importance of these items. The results were then triangulated between the patient, caregiver, and the healthcare team to create a better understanding of reasons for hospital readmission. This study allowed for identification of target areas for further interventions to reduce the need for hospital readmission. Key areas identified were related to patient teaching/education, barriers and priorities for self-care, adherence to therapeutic regimens, communication and management of symptom burden. Barriers identified by healthcare providers included assessment of management related to functional status, ability to perform activities of daily living, and individual personal influences on care processes. In response to hospital readmission, the patients, caregivers, and healthcare

teams identified areas of improvement related to self-care, management of symptoms, action plans when symptoms change, and patient perception of the need for hospital readmission.

Trivedi et al.'s (2019) qualitative study examined barriers to self-care and management of CHF. Key points that emerged included fragmented or poorly coordinated care, concern for organizational barriers to care, barriers to collaborative practice, sources of conflict, and successful strategies to overcome barriers. CHF patients and healthcare providers noted the key concept of lack of knowledge in self-care as detrimental to the patient's health status. Common themes were further identified based on a coding system that clarified barriers to self-care and the strategies to overcome these barriers. The patient identified barriers included lack of knowledge in self-care, lack of information materials, disempowerment related to symptom management, and ineffective communication between patient, primary caregiver, and healthcare team. Healthcare provider identified barriers included lack of standardized protocols, lack of knowledge with medication use and purpose, the concern that current care practices do not align with guideline care, communication with patient at time of discharge, coordination of care at discharge, and provider to provider communication. Limitations noted by Trivedi et al. (2019) that all CHF patients in the study were male. It was also noted race concordance between patient and provider aligned with adherence to the treatment plan.

Ryan, Bierle, and Vuckovic (2019) summarized existing data from multiple registries that have identified preventable or unpreventable hospital readmissions and discussed a focus on treatment strategies to reduce hospital readmission. One intervention

is not sufficient to address the complexity of CHF patients; the transition of care should be multidisciplinary with a focus on the discharge process. Discharge planning should include self-management of the disease process, patient education, evaluation of biomarkers, identification of comorbidities, assessment of the patient's perception of the quality of life, and depression screening. Overcoming obstacles that may interfere with transition of care have been identified into common themes, demonstrating a multidisciplinary approach to post-hospital care.

Identification of barriers to care allows practitioners to assess the needs of the patients and their families. These barriers may highlight inefficiencies in quality of care, use of guideline-directed therapy, and optimal medical management of patients with CHF. Lack of evidence-based care may not be reflective of the quality of care; however, it leads to ineffective transitioning, placing the patient at risk for unnecessary hospital readmission.

Palliative Care

Hupcey, Kitko, and Alonso (2016) conducted a longitudinal study to evaluate the patient's perceptions of the severity and terminality with advanced heart failure. These patients had a predicted survival rate of fewer than two years. The sample size included 100 patients with advanced heart failure, with 40% of these patients with a less than one year expected rate of survival (Hupcey, Kitko, & Alonso, 2016). Using a patient-centered approach, the healthcare team implemented a multidisciplinary approach that included the use of palliative care. The use of palliative care with this patient population allows for initiation of resources that include goal setting and ways to improve the patient's quality

of life. Survival rate of the patients included in the study was less than 2 years. Majority

of patients included did not perceive heart failure to be a terminal disease process. This

perception affected the incorporation of palliative care into the care process for these

patients.

Diop et al. (2017) noted the complexity of patients with CHF and the use of a

multidisciplinary approach allows for incorporating care that impacts the patient

physically, cognitively, and socially. To provide patient-centered care, the management

of these patients requires individualized care-planning, communication, and the use of

palliative care. This systematic review assessed the effectiveness of palliative care and

interventions for heart failure patients (Sidebottom et al., 2015; Wiskar et al., 2017). It

was noted that as this patient population continues to progress toward advanced disease

processes, the implementation of palliative care is imperative. Interventions that

incorporate self-care, team-based palliative care along with heart failure management,

improve patient outcomes as well as decrease health care costs and the utilization of

resources, needed by hospital readmission (Chuang et al., 2016).

Chronic Care Model

The chronic care model provides a framework in the management of patients with

chronic illness. Ballo et al. (2018) evaluated the use of this framework through a cohort

study to determine the prognostic impact in chronically ill patients. Patients identified for

were evaluated by a general practitioner at routine intervals, received counseling

regarding lifestyle modifications, placed on guideline-directed medication therapies, and

placed on a clinical pathway based on their diagnosis. Limitations included the lack of

referral to specialty care, including cardiology and the input of appropriate diagnosis coding for congestive heart failure. There is prognostic support in the use of the chronic care framework, demonstrating a decrease in mortality, but an increase in hospitalization.

Implementation of the chronic care model in the CPG allowed for ongoing interaction and interventions in patients with congestive heart failure. This chronic illness requires daily adjustments in self-care, self-monitoring, and self-management (Francesconi et al., 2019). Changes in care, monitoring, or management may require alterations in the treatment plan, communication, and interaction with the healthcare team. The chronic care model allows for daily management and early intervention, leading to decreased risk for unnecessary hospital readmission.

Definitions of Terms

Though there are many terms in common usage in the DNP project, perhaps clarification is needed regarding the use of the word *project* within the context of the DNP project and the organization's QI initiatives. The focus of the DNP project is to develop a CPG as to support the organization's QI initiative. As QI initiatives are also called *QI projects*, I offer this clarification. Although the organization has had a QI project team that I have been a member of for several months, the DNP project is an extension of that work, with the development of the CPG.

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Relevance to Nursing Practice

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Heart failure readmission and patient outcomes impact the patient, as well as those providing care for this patient population. Research has demonstrated the impact of CHF and the risk for hospital readmission. Statistics show the number of patients affected

by this chronic illness is expected to increase over the next 10 years. Although patients have been identified through the use of predictive tools such as the LACE index too, practice site readmission rates remain elevated beyond the national average.

As patients are identified by individual risk and through risk stratification, several factors contribute to unplanned hospital readmission, including system factors of early discharge from the hospital, lack of symptom management by non-heart failure specialists during admission, and lack of support services post-discharge. Targeted interventions such as care coordination and transitional care programs have shown some improvements in readmission rates; however, the risk for readmission remains. Jun and Faulkner (2018) noted interventions with the utilization of multi-disciplinary teams including referral to heart failure specialists and face-to-face communication, have been demonstrated to reduce the risk for readmission. Nurses also play a significant role in patient outcomes. Nurses provide continuous care of these complex patients, engage in medication administration, and provide education on therapies, symptom management, and self-care. Additional system factors that may contribute to hospital readmission and patient outcomes is the patient-to-nurse ratio, work environment, and nursing knowledge of congestive heart failure.

Herrin et al. (2015) conducted an observational study to further understand the barriers that lead to hospital readmission. Focusing on patient-level barriers such as health literacy, and social support, noting the specific barriers of living alone, employment status, and educational level, CHF patients demonstrated an increased risk for hospital readmission. System barriers noted included access to primary care, as well

as access to specialty care, and were also associated with lower hospital readmission rates. Understanding these risks for readmission and the barriers that congestive heart failure patient's face allows for implementation of a multi-disciplinary CPG to reduce the risk for hospital readmission.

There is ample research evidence that supports the development of a practice guideline focused on coordinating efforts organizationally to assure that patients are adequately prepared for discharge and have access to resources that can ease the transition. Prediction of risk for readmission allows healthcare teams to ensure that the patients' needs are being assessed and addressed based on their potential risk for readmission. Identification of comorbidities, common characteristics, evidence of social support, and individual behaviors play a role in patients' predictive risk for readmission (Ritt & Taylor, 2016; Mirkin, Enomoto, Caputo, & Hollenbeak, 2017; Flanagan et al., 2018).

Building on the potential risk for readmission, healthcare teams must understand challenges for both patients and the healthcare system. These barriers may lead to readmission, affect the quality of life for the patient and their family members, and increase the risk of mortality. The HRRP allows organizations to identify patient populations that have a higher than expected risk for readmission and implement care guidelines that reduce this risk and assist patients in overcoming barriers to care. Reducing patient level and system level barriers allows the patient and their healthcare team to work toward improved patient outcomes, reducing the need for hospital

readmission (McIlvennen, Eapen, & Allen, 2015; Ziaeian, & Fonarow, 2016; Sevilla-Cazes et al., 2018; Wood et al., 2019).

Transitioning patients from hospital to home requires the efforts of a multi-disciplinary team. This transition includes the timeliness of outpatient follow up, coordination of care from hospital to home, communication, and self-care. Incorporating palliative care in this transition, allows for goal setting that is realistic and empowers to the patient to be an active participant in their care (Donaho et al., 2015; Koser, Ball, Homa, & Mehta, 2018; Hudali, Robinson, & Bhattarai, 2017). Through an evidence-based CPG, CHF patients are identified, risk stratified, and placed on a heart failure pathway that allows for increased self-care, reduction in hospital admission, and improvement in their quality of life.

Local Background and Context

CHF affects more than six million individuals and accounts for more than 700,000 hospitalizations annually (Mirkin, Enomoto, Caputo, and Hollenbeak, 2017). Many of these patients are readmitted to the hospital within 30-days, with an additional increase in readmission at 90-days. In 2018, the readmission rate for patients with congestive heart failure, exceeded the national average of 21.7%. Reducing this readmission rate below the national average aligns with the mission and goals of the practice site.

Patients at increased risk are noted to have lower socioeconomic status, be uninsured, and be greater than 65 years of age. The project setting is a 208-bed facility within a five-hospital campus system. This system serves an 11-county area with a

population of more than 3 million individuals. The population served by this facility is more than 500,000 patients, accounting for more than 100,000 admissions and emergency room visits annually. This demographic includes predominately non-Hispanic whites, higher household median income than other regions in the state, the lowest number of uninsured individuals, and only 16% of the population do not have transportation.

Despite significant efforts over the past six months, the 30-day readmission rate at the site remains higher than the national average. Strategies including use of the LACE predictive model and establishing a post-discharge clinic have not been successful to date. These initiatives have not been well coordinated or implemented across the facility as they involve varied departments and personnel. Thus, the purpose of the DNP project is to close the gap in practice, develop a practice-guideline that can potentially pull all of the disjointed pieces together in a coordinated way, and answer the practice-focused question: Will a transition of care practice guideline be accepted for full implementation by an expert panel at this site as a strategy to reduce this 30-day readmission rate in heart failure patients?

Role of the DNP Student

CHF is one of the most common health concerns that I see in daily practice. As a cardiovascular advanced practice nurse, working to improve the lives of this patient panel is a daily endeavor. Patients with CHF deal with the day-to-day self-management of a disease process that can affect their overall well-being. This ongoing management can lead to decompensation with small changes in their dietary regimen, missed doses of medication, or inability to manage symptoms at home.

The role of the DNP student is to ultimately close a gap in practice through the DNP project. The site for the project is affiliated with my place of employment; however, I am not directly employed at this site, minimizing the potential bias for the project. Implementation of the CPG has the potential to change clinical practice through the implementation of evidence-based practice, improved communication, and improved coordination of care. This DNP project has the potential for bridging the gap in nursing practice leading to a change in culture at the clinical site. These changes lead to decreased need for hospital readmission, improved coordination of care, improved communication between the patient and the healthcare team, and empowerment of the patient, leading to positive social change in caring for patients with chronic congestive heart failure.

Role of the Project Team

Current readmission rates for CHF patients remain above the national average, despite efforts to coordinate care and transition patients to home. Efforts to reduce the current 30-day readmission rate have been well-intentioned, but not coordinated. Use of a CPG bridges the gaps in knowledge to ensure that care is coordinated between healthcare teams, opens lines of communication, and allows for implementation of guideline-based therapies.

For the DNP project, and as the DNP project leader, I presented the CPG to an expert panel derived from the QI team at the site seeking their discussion, feedback and ultimately, their approval to fully implement. The panel included the heart failure physicians, heart failure advanced practice providers, members of the quality improvement team, data analyst, the nursing leadership, cardiac rehabilitation, case

management, and the cardiology medical director. This team creates a bridge between

hospital leadership and the care teams, working to align national initiatives with network

goals in the care of heart failure patients. The expert panel served a dual purpose, as their

roles as part of this interdisciplinary team include their leadership as well as their care at

the bedside for these complex patients. This team not only impacts the implementation of

care, but also plays a role in the ongoing evaluation of quality metrics, as well as care of

the patient.

Summary

The gap in practice identified is the need for reducing hospital readmission in

patients with CHF. The results of the literature demonstrate that communication and

coordination of care based on evidence and guideline-directed therapies should be used

when working to reduce hospital readmission and improve patient outcomes. Patients

with congestive heart failure are often complex, requiring a multidisciplinary approach to

care. The use of a CPG should be implemented to reduce the risk for hospital

readmission, improve communication and coordination of care, and improve the quality

of life for patients with congestive heart failure. This DNP project will collect and

analyze data, demonstrating the gap in practice and the project site and will be addressed

through the CPG. Section 3 will provide details into the methods used to develop the

CPG, the process of review, and implementation by the key stakeholders identified.

Section 3: Collection and Analysis of Evidence

Introduction

CHF is one of the leading causes of hospital admission and readmission, affecting more than a million patients annually. Initiatives from CMS include the enforcement of penalties to hospitals and healthcare systems with increased 30-day all-cause readmission. Research at the practice site has demonstrated the use of predictive models, use of targeted interventions, and coordination of care to reduce the risk for hospital readmission, yet despite these efforts, the 30- day readmission rate remains elevated beyond national average (Flanagan et al, 2018; Ritt & Taylor, 2016). Implementation of a CPG translates evidence into practice to improve the quality of life for patients with chronic congestive heart failure and has the potential to decrease the influences that contribute to hospital admission and readmission

CHF is a chronic disease requiring ongoing daily management that leads to increased risks for hospital readmission. The CMS established the HRRP to reduce payments to hospitals with increased 30-day readmission rates. Due to this initiative, healthcare systems have been evaluating methods to identify patients who may be at risk and implementing interventions that potentially reduce the need for hospital readmission. This reduction of risk for hospital readmission requires a multifaceted approach. A CPG involves using predictive risk models to risk-stratify patients, identify patient and system barriers, and include methods to overcome barriers that patients and healthcare systems face. The purpose of the DNP project is to bridge the gap in practice evidenced by

increased readmission rates through a CPG that will more accurately define and coordinate transition of care processes for CHF patients.

Practice-Focused Question

The practice-focused question is: Will a transition of care practice guideline be accepted for full implementation by an expert panel at this site as a strategy to reduce this 30-day readmission rate in CHF patients? The gap in practice identified is the need for reducing hospital readmission, yet with the use of predictive models, transitional care clinics, and close follow up, readmission rates remain elevated beyond the national average of 21.7%. The DNP project bridges the gap in practice through a CPG that more accurately defines the transition of care process for CHF patients, reducing the risk for hospital readmission.

Sources of Evidence

Published Outcomes and Research

The CPG is based on evidence and involves reducing risks for hospital readmission. Sources of evidence for the CPG consist of literature that allows for risk stratification of patients with congestive heart failure at risk for readmission. This CPG also acknowledges patient and system barriers, allowing for the implementation of targeted interventions, including the use of palliative care and transitional care clinics to reduce risks for hospital readmission. The literature review included the database and search engines CINAHL Plus, Medline, ProQuest. Key search terms included: *heart failure*, *cardiac failure*, *CHF*, *chronic heart failure*, *congestive heart failure*, *readmission*, *rehospitalization*, *readmittance*, *rehospitalization*, *re-admittance*,

readmission, *LACE index*, *patient barriers*, *obstacles or challenges*, and *palliative care*. Limitations of searched articles included full-text articles, published within the last five years, and conducted in the United States.

Evidence Generated for the Doctoral Project

   Participants. Participants who contributed to reviewing the practice-focused question included a multidisciplinary practice site expert panel. This panel was comprised of practice site heart failure physicians, and heart failure advanced practice providers, members of the acute care quality improvement team, an acute care data analyst, nursing leadership, cardiac rehabilitation, case management, and the cardiology medical director. This team not only provides care at the bedside, members of this team guide implementation of the CPG.

   Procedures. The development of the CPG was based on evidence. Presentation of the CPG to the expert panel allowed for input and feedback based on expert opinions of members. The CPG was presented along with an algorithm for reducing the risk of 30-day hospital readmission. Upon a patient's presentation to the emergency department, the LACE score is calculated, and diagnostic workup is initiated. If admission is deemed necessary, patients are admitted to the medicine team with a consult to cardiology. The current heart failure order set does not include a consult to cardiology. Initiating this care team early in the process allows for implementation of guideline directed medical therapy (GMDT) and continuity of care in the ambulatory setting. In patients with new onset heart failure, further diagnostics with cardiology may be necessary including possible right and left heart catheterization. Information obtained from this diagnostic testing

allows for further implementation of guideline-directed medical therapies. Additional consults to ancillary services that will assist in the assessment of patients as well as case management/social services, pharmacy, nutrition, cardiac rehab, transitional care nursing, and palliative care allow for a comprehensive and multidisciplinary approach to assessing potential risks and barriers to care for these patients. At the time of discharge, the use of a CHF checklist allows for documentation and data gathering of guideline- directed therapies and medication reconciliation, as well documentation of the needs assessments and ambulatory follow up (see Appendix B).

The development of the CPG involved the use of the AGREE II instrument that assesses for methodological rigor (see Appendix C). This instrument provides a framework for assessing the quality of the CPG and how information is reported within the CPG. This tool consists of 23 items in six domains focused on each component of the CPG. Members of the expert panel completed the tool scoring each domain using the seven-point scale. A summation of the domain scores are included in the findings and recommendations (Brouwers et al., 2010). Permissions to use this tool were also obtained (see Appendix D).

Following presentation of the CPG, members of the expert panel were asked to complete the AGREE II instrument, and additional input was obtained from the expert panel using the Delphi technique. These rounds of questions involved information gathering regarding what solutions would be effective in the guideline, how to monitor progress following implementation of the CPG, including a timeline for full implementation, and whether the expert panel agrees with implementation and planning.

Planning for possible barriers that may hinder implementation include utilization of resources: Currently there is no inpatient cardiac rehab at each facility, which places the emphasis of heart failure education on practitioners or nursing. How will we complete 60-minutes of education with a patient? How is the CPG different than what we are currently doing? Resources are different at each facility; how do we expect to meet the needs for education? Can low risk patients be managed by the medicine team? How does the transitional care clinic apply to the clinical guideline? A brief summary of the open-ended questions used in the qualitative discussion is found in Appendix E.

Protections. The Walden IRB process and manual were followed, as well as the organizational IRB process in the development and presentation of the CPG to the expert panel (Manual for clinical practice guideline development, 2019). The site IRB provided exempt approval number 64183 on February 26, 2020 and Walden University's IRB approval was obtained with the approval number 01-16-20-0064183. Members of the expert panel were asked to participate in the presentation and discussion, and their anonymity was protected. No incentives were offered for involvement in the process. No communication with the expert panel was conducted until the completion of the IRB process for Walden University, as well as the practice site (U.S. Department of Health & Human Services, 2018).

<div align="center">

Analysis and Synthesis

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Rating on the AGREE II instrument was summarized using descriptive statistics. Interrater reliability among the expert panel participants was established using SPSS v26. In addition to the quantitative summary, qualitative data will be collected to capture the

discussion and overall support (or lack thereof) for the practice guideline. The Delphi method allows for communication and feedback (Wilkes, 2015). Using this method allows for the development of the CPG to reduce the risk for heart failure readmission. The guideline involves evidence-based practice, feedback from an expert panel, and the willingness of this group of stakeholders to proceed with full implementation of the CPG. The Delphi methodology was used in the presentation of the guideline, which includes the use of open-ended questions and feedback (see Appendix E). As part of the presentation, the DNP project provided the evidence, rationale, and algorithm to identify tools to risk stratify patients, obstacles, and barriers for both the patient and the healthcare system, as well as interventions that allow for the implementation of guideline-directed therapies that reduce the risk for unnecessary readmissions.

Summary

The DNP project proposed is the development of a CPG to reduce readmission for patients with congestive heart failure. This project was developed and was presented to an expert panel of heart failure specialists and stakeholders involved with the care of this at-risk patient population. The project was presented to the expert panel for review, discussion, and approval for full implementation at the clinical practice site. Section 4 will provide the results of the DNP project.

Section 4: Findings and Recommendations

Introduction

The development of a CPG for reducing heart failure readmissions is aimed at improving the care of patients with heart failure while bridging a gap in nursing practice, leading to changes in the culture of care at the clinical site. These changes lead to decreased need for hospital readmission, coordination of care, improved communication between patients and healthcare teams, and empowerment of patients. In addition, these changes have the potential to lead to a reduction in hospital admission and readmission, ultimately decreasing in-hospital mortality and morbidity in patients with chronic CHF.

The purpose of the DNP project was to develop a CPG to reduce heart failure readmission. This CPG was developed using the LACE risk stratification tool, evidence-based practice guidelines for CHF, heart failure order sets, and transitional care services designed specifically for patients with CHF. With the reinforcement of the HRRP from the CMS, reducing heart failure readmissions helps bridge the gap in practice and more accurately define the transition of care process for CHF patients at the site. This CPG involves closing the gap in practice through implementation of strategies to reduce 30-day readmissions in CHF patients.

Findings and Implications

The DNP project not only demonstrates the potential positive impact for the organization, but also the positive impact for patients and their families as well as the healthcare system. Decreasing heart failure readmissions keep patients at home and lower costs for this patient population. The CPG demonstrates the need for a multidisciplinary

approach and standardization of processes in caring for patients with CHF (Wood et al., 2019). While the practice site represents one facility within a five-hospital campus system, resources vary at each of the five facilities. Using this multidisciplinary team allows each facility to adapt the CPG to effectively use resources while remaining fiscally responsible.

The CPG was presented to a panel of nine local experts. These experts participated in a one-hour overview and discussion of the CPG. Once the presentation was concluded, the 23-item Agree II survey was sent electronically via SurveyMonkey® to 9 members of the team. There were nine surveys returned for analysis. The majority of participants agreed (6) or strongly agreed (7) on all domains except four domains: stakeholder involvement, rigor of development, applicability, and editorial independence. One respondent scored these with a response of five which indicates a mild level of disagreement. One respondent provided no response to domain six.

Data gathered using the Agree II instrument allows for objective evaluation of the CPG. The score of each respondent allows for determining the quality of the CPG to be implemented. Scoring of the instrument using a numeric scale, from 1 (strongly disagree) to 7 (strongly agree). The average score of each domain is outlined in Table 1.

Table 1

Summary Scores on AGREE II Survey Domains and Selected Questions

	Average Score
Scope and Purpose	6.81
Stakeholder Involvement	6.51
5. The views and preferences of the target population (patients, public, etc.) have been sought.	5.8
Rigor of Development	6.33
8. The criteria for selecting the evidence are clearly described.	5.8
13. The guideline has been externally reviewed by experts prior to its publication.	6.1
14. A procedure for updating the guideline is provided.	5.5
Clarity of Presentation	6.70
Applicability	6.47
20. The potential resource implications of applying the recommendations have been considered.	6.4
21. The guideline presents monitoring and/or auditing criteria.	6.3
Editorial Independence	5.91
22. The views of the funding body have not influenced the content of the guideline.	5.8
23. Competing interests of guideline development group members have been recorded and addressed.	6

The Delphi method with the expert panel addressed the practice-focused question: Will a transition of care practice guideline be accepted for full implementation by an expert panel at this site as a strategy to reduce this 30-day readmission rate in CHF patients? The expert panel members were asked six open-ended questions pertaining to the CPG (see Appendix E). Discussion of these questions included current processes, implications regarding heart failure readmission, and how the GPG reflects use of guideline-directed therapy.

After review of the CPG, the expert panel discussion included the need for detailed information regarding criteria for admission and ischemic workup (including stress testing, echocardiography, or cardiac catheterization) at the discretion of the

consulting cardiologist. Low acuity patients will continue to be followed in the ambulatory setting by the primary care physician. If the need arises, an ambulatory consult to cardiology may be placed. These changes to the CPG are supported by directed therapies of the American College of Cardiology (ACC) and the American Heart Association (AHA) guidelines for managing heart failure (Yancy et al., 2017, American Heart Association, 2017). The discussion reflected incorporating evidence-based practice, improving the culture of care, and methods on reducing 30-day hospital readmissions.

The expert panel engaged in a robust discussion regarding the CPG. For the most part, the discussion was very positive. One member of the panel stated, "sounds like the CPG will help us to reduce readmissions for heart failure patients". Another member of the expert panel stated, "I think it will work." However, there was also some debate that ultimately required some refinements to the CPG. For example, there was discussion about the need for defined criteria demonstrating the need for hospital admission when patients present to the emergency department. These criteria were defined as elevation of ProBNP, evidence of pulmonary edema on chest x-ray, LACE score of greater than 5, elevated troponin, and physical exam evidence of volume overload. These criteria demonstrate patients' needs for more aggressive therapies than what could be provided in the emergency department. Revisions to CPG reflect recommendations of the expert panel (see Appendix F).

Additional debate ensued regarding the need for an automatic consult to cardiology for patients admitted with a diagnosis of CHF. Referral to the specialty care of cardiology allows for implementation of guideline-directed therapies, interventions, and

coordination of care at discharge. In addition, this patient population often needs an ischemic workup that may include stress testing, echocardiography, and coronary angiography. Workup may be completed during current hospitalization or deferred to the ambulatory setting to allow for recovery from acute illnesses. Involving cardiology at admission allows for early intervention, implementation of evidence-based therapies, and use of a multidisciplinary team of providers to care for patients while hospitalized, as well as in the ambulatory setting. Potential concerns involve coordinating care with primary care providers, as some of these providers are not affiliated with the network. This creates obstacles with obtaining ambulatory data to determine if patients are following up as outlined in the CPG, as well as continuing with GMDT as prescribed prior to discharge.

Additional discussion with the expert panel included agreement across the board that the use of the multidisciplinary approach to care would be effective; however, with financial constraints and variability of resources in facilities, implementation of the CPG should be phased in over a 3-month period of time. The initial phase of implementation includes education and awareness of the practice guideline for providers (physician and APP) in the emergency department, hospitalists, and the cardiology department. Additional teams included in the implementation of the CPG include case management, pharmacy, nursing (including transitional care nursing), clinical informatics, and cardiac rehabilitation. Communication includes changes in workflow that are organization and provider-focused, education materials, current guidelines, and protocols for implementation. Additional phases of implementation include communication of

processes while the patient is hospitalized, use of the multidisciplinary team, further engagement of staff, and use of detailed protocols implemented into the EHR.

<div align="center">**Recommendations**</div>

The nine-member expert panel unanimously recommended full implementation of the CPG. As part of this recommendation, a modified for phased implementation plan should occur over a three-month period, with education, data collection, and evaluation. The initial one-month phase includes education for providers in primary care, emergency department, cardiology providers, and hospitalists. Education will also occur with nursing, cardiac rehabilitation, case management, transitional care nursing, pharmacy, and the QI team, which also includes data analysts. Education for these departments includes presentation of current hospital readmission rates, practice site goals for hospital readmission, heart failure guidelines, and the CPG.

In phase two of implementation, data collection included 50 patients presenting to the emergency department with a primary diagnosis of congestive heart failure. Criteria have been outlined in the CPG to assist providers with determining if hospital admission is recommended or aggressive diuresis is needed while the patient is in the emergency room. Prior to discharge from the emergency department, criteria determine the pathway for ambulatory follow up for patients based on their LACE score.

The next phase of implementation a multidisciplinary team will be involved in with CHF patients who are admitted acute exacerbation of heart failure. At the time of admission and initiation of the CPG, a consult is placed to cardiology. In patients with new onset heart failure or acute on chronic heart failure with a change in the documented

ejection fraction (EF), the cardiologist will determine the treatment plan including ischemic workup and implementation of guideline directed therapy. As guideline directed medical therapy is initiated, the multidisciplinary team will be consulted for care coordination and optimization of treatment. In patients with an EF< 30%, a consult to electrophysiology and heart failure physicians will also be placed. Consultation with these subspecialties is initiated for ongoing follow up in the ambulatory setting.

Strengths and Limitations of the Project

Strength of the DNP project included the development of a CPG that can be used across disciplines. This guideline demonstrates the use of a multidisciplinary team to identify patients that are at increased risk for readmission, criteria for patients that require hospital admission, use of the multidisciplinary team, and demonstration of guideline directed therapies. The algorithm for the CPG provides detailed steps for each phase of care, including hospitalization and transition to home. This project uses the Agree II instrument for the assessment of methodological rigor.

Limitations of the DNP project focused on inclusion of cardiology in the management of congestive heart failure patients, however education of the multidisciplinary team is needed for effective use of the CPG. This project will not demonstrate the impact on 30-day hospital readmission until further evaluation following the implementation of the practice guideline. Tracking and effectiveness through data collection is imperative for continued improvement in care of this patient population.

Summary

Collaboration, communication, engagement of staff, and effective use of resources allows for implementation of evidence-based practice. As a multidisciplinary team, the CPG provides guidance in caring for patients with CHF. This guideline promotes positive social change by improving patient outcomes, decreasing mortality and morbidity, while decreasing heart failure readmissions. The differentiation in the CPG to reflect ischemic workup allows for broad work up to include, but not limited to stress testing and cardiac catheterization. Additional recommendations of the expert panel included implementation of tailored therapies for each patient. Identification of potential barriers allows for directing care and effective use of resources based on each facility. Coordination of care by consulting cardiology allows for building relationships and implementing care that may previously been delayed. Additional effective therapies include the use of pharmacy staff to verify and reconcile medications, as well as assist with education of medication therapies. Inclusion of case management allows for early identification of social barriers that may influence care after discharge, such as transportation, support, and ability to afford care/medications.

Through implementation of the guideline, data collection will include evaluation of the LACE score, which demonstrates a decreasing risk for hospital admission. Additional data collection includes long-term evaluation of the CPG to determine if a decrease in hospital readmission is occurring. Decreasing the LACE score is reflective of decreasing hospital readmissions. As part of the CPG, long-term evaluation will occur for 6-months to determine the correlation of the CPG and reduction of heart failure

readmissions. The practice site will be responsible for ongoing evaluation and updating of the CPG reflecting changes or updates in GMDT.

Education across disciplines of the CPG allows for care coordination. Consultation to cardiology at time of admission decreases the need for nursing staff to ask for specialty consultation for the care of CHF patients. Implementation of the CPG for all CHF patients decreases potential conflict regarding care coordination. Current processes include consultation to cardiology; however, the order may not be placed, creating a delay in care.

Education provided for patients may vary depending on discipline providing education. Resources vary per facility and may not include inpatient cardiac rehabilitation. To overcome this barrier, educational materials for patients should be standardized. Providing and documenting standardized education prior to discharge allows for evaluation of the effectiveness of teaching.

Section 5: Dissemination Plan

CHF is a leading cause of morbidity and mortality, leading to hospital admission and readmission. Each of these readmissions creates a financial burden for hospitals as well as patients, leading to expenditures of greater than $10,000 per readmission (Bailey et al., 2019). With readmission rates that currently exceed the national average of 21.7%, the CPG provides awareness of current issues, strategies for overcoming barriers, and recommendations for communication, follow up, and access to care.

Dissemination of this project includes a detailed presentation to the multidisciplinary team involved in the care of this patient population across a five-hospital campus system. This team includes hospitalist and emergency department physicians and APPs, case management, nursing (bedside and transitional care), cardiac rehabilitation (inpatient and ambulatory), heart failure physicians and APPs, general cardiology physicians and APPs, clinical informatics, and the quality improvement team.

Further dissemination of this DNP project includes presentation of the CPG to membership of the Heart Failure Society of America (HFSA) and American Association of Heart Failure Nurses (AAHFN) as well as presenting during the practice site cardiology annual symposium. Presentation of this project builds on DNP essentials as outlined by the American Association of Colleges of Nursing (AACN). These essentials address foundational components of advanced practice nursing, focusing on assessment, evaluation, collaboration, and the implementation of new care delivery models for target populations. These models of care influence organization, political, and economic perspectives of care (AACN, 2016).

Analysis of Self

As a scholarly practitioner, the DNP process allows for professional and personal growth. Not only did this project allow me to expand my knowledge of CHF, it also afforded the opportunity to research literature on CHF, exam care processes, communication, and interactions with patients. As I gained a deeper understanding of this patient population, I also gained an enhanced understanding of the social determinants that affect patients daily. This awareness allows for working to improve care processes, but also promote evidence-based practice for patients. Guidelines direct care: however, we may not be able to meet these guidelines due to cost, patient literacy, access to care, or social support. Care providers must be innovative in terms of ways to care for patients while improving their quality of life.

In addition to learning and growth as a scholarly practitioner, I was able to develop relationships of care with a multidisciplinary team. This team approach allows for promoting engagement in patient care and promotes effective transitions for our patients from hospital to home. This project has opened lines of communication and engagement of a multidisciplinary team, creating an awareness for the need to change the culture of care for CHF patients.

As a clinician, the DNP process allows for developing clinical knowledge and implementation of clinical guidelines based on evidence into daily practice. These guidelines demonstrate therapies designed to improve patient outcomes and mortality. Managing CHF patients presents complex challenges, as these patients often present multiple comorbid conditions. Management of these multiple health conditions is

accomplished through education, daily management of therapies, detection of symptoms, and early intervention, ultimately decreasing the need for hospitalization. As a manager of the DNP project, this process allows practitioners to seek out ways to improve care of designated patient populations. Working to create new processes of care, demonstration of leadership through collaboration, critical analysis of research and evidence, and offering new care processes allows for advancing the nursing profession. The foundational components of the DNP focus on demonstrating transformational change in nursing.

<div align="center">**Summary**</div>

This DNP project includes the development and implementation of a CPG to reduce 30-day CHF readmissions. The CPG was developed and presented to an expert panel at the practice site seeking their feedback and ultimately approval for full implementation of the CPG. The panel was comprised of CHF physicians, CHF APPs, members of the quality improvement team, data analysts, nursing leadership, cardiac rehabilitation, case management, and the cardiology medical director. This team not only provides care at the bedside, but also care directly related to the implementation of the CPG. This guideline was presented and approved for full implementation at the practice site.

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Appendix A: Literature Matrix

Authors	Year	Name of Journal or Book	Title of Article	Brief summary	Evidence Level
Mirkin, K. A., Enomoto, L. M., Caputo, G. M., & Hollenbeak, C. S.	2017	Heart & Lung	Risk factors for 30-day readmission in patients with congestive heart failure	Retrospective cohort study with a discharge diagnosis of CHF in 155, 146 patients readmitted within 30-days using a logistic regression model to determine risk of readmission. Overall readmission rate or 22.8%, noting the highest rate of readmission in patients discharged to skilled nursing facilities, with the lowest readmission rate in patients discharged to home.	IV
Ritt, E. & Taylor, N. P.	2016	Clinical Nursing Studies	Identification of post-acute patient at risk for hospital readmission: Clinical implications for the LACE index	Descriptive, non-experimental design to determine risk for hospital readmission. The use of the LACE index tool combined with additional assessment tools and targeted interventions allows for further research in the use of predictive models to promote positive patient outcomes.	VI
Miller, W. D., Nguyen, K., Vangala, S., & Dowling, E.	2018	BioMed Health Services Research	Clinicians can independently predict 30-day hospital readmissions as well as the LACE index	Use of a modified 3-question survey to determine if providers were able to determine predictive risk for readmission compared to LACE index tool	VI

Fasolino, T., & Phillips, M.	2016	Journal of Palliative Medicine	Utilizing risk readmission assessment toll for nonhospice palliative care consults in heart failure patients	Identification of congestive heart failure patients identified through use of risk readmission assessment tool (RRAT) to determine risk of readmission and if patient received palliative care consult.	IV
Koser, K. D., Ball, L. S., Homa, J. K., & Mehta, V.	2018	The Journal of Nursing Research	An outpatient Heart failure Clinic reduces 30-day readmission and mortality rates for discharge Patient: process and preliminary outcome	Analyze process and patient outcomes to determine if use of heart failure clinic lowers readmission rates. Use of clinic demonstrates 69% reduction in 30-day readmission rates.	IV
Sevilla-Cazes, J., Ahmad, F. S., Bowles, K., H., Jaskowiak, A., Gallagher T., Goldberg, L. R., … Kimme, S. E.	2018	Journal of General Internal Medicine	Heart failure home management challenges in regions for readmission: A qualitative study to understand the patient's perspective	Observational qualitative study to understand patient/caregiver barriers to home manage of heart failure. Understanding of patient perceived reason for hospital readmission.	VI
Donaho, E. K., Hall, A. C., Gass, J. A., Elayda, M. A., Lee, V. V., Paire, S., & Meyers, D.	2015	Journal of American Heart Association	Protocol-driven allied health post-discharge transition clinic to reduce hospital readmissions in heart failure	Use of a transitional care clinic for patients with congestive heart failure post discharge for 2 visit follow up at 1 week and 4-6 weeks demonstrated a 44.3% reduction in readmission rates.	IV
Hudali, T., Robinson, R., & Bhattarai, M.	2017	Advances in Medicine	Reducing 30-day rehospitalization rates using a transition of care clinic model in a single medical center	Retrospective observational study to determine effects of transitional care clinic on hospital readmission rates.	V

Trivedi, R. B., Slightam, C., Nevedal, A., Guetterman, T. C., Fan, V. S., Nelson, K. M., … & Piette, J. D.	2019	The Journal of Cardiovascular Nursing	Comparing the barriers and facilitators of heart failure management as perceived by patients, caregivers, and clinical providers	Qualitative study that identifies theses in the care of heart failure patients, including self-care, knowledge deficits, barriers, and concerns with communication.	VI
Ryan, C. J., Bierle, R., & Vuckovic, K. M.	2019	Critical Care Nursing	The three R's for preventing heart failure readmission: Review, reassess, and reeducate	Summary of evidence related to reducing 30-day heart failure readmission after discharge.	VI
Fischer, F., Lange, K., Klose, K., Greiner, W., & Kraemer, A.	2016	Healthcare	Barriers and strategies in guideline implementation-a scoping review	A scoping review to describe and categorize barriers to guideline implementation in patients with congestive heart failure.	VII
Hupcey, J. E., Kitko, L., & Alonso, W	2016	Journal of Hospital and Palliative Nursing	Patients' perceptions of illness severity in advanced heart failure.	Understanding patient perception of illness severity and terminality of advanced heart failure and use of palliative care consult.	VI
Ballo, P., Profili, F., Policardo, L., Roti, L., Francesconi, P., & Zuppiroli, A.	2015	BMC Health Services Research	Opposite trends in hospitalization and mortality after implementation of a chronic care model-based regional program for the management of patients with heart failure in primary care	The retrospective study reviewed the implementation of the chronic care model in the management of congestive heart failure patients to reduce mortality and risk for hospitalization.	IV
Francesconi, P., Ballo, P., Profili, F., Policardo, L., Roti, L., & Zuppiroli, A.	2019	Health Services Insight	Chronic Care Model for the management of patients with Heart Failure in primary care	Use of the chronic care model in heart failure allows for proactive care of patients, demonstrating effects on patient outcomes and decreasing risk for readmission and mortality reduction.	IV

(Table continues)

Wiskar, K., Celi, L. A., Walley, K. R., Fruhstorfer, C., & Rush, B.	2017	Journal of Internal Medicine	Inpatient palliative care referral and 9-month hospital readmission in patients with congestive heart failure: a linked nationwide analysis	Retrospective analysis with 9-month follow-up to evaluate the use of inpatient palliative care consult on hospital readmission.	IV
Chuang, E., Kim, G., Blank, A. E., Southern, W., & Fausto, J.	2016	Journal of Palliative Medicine	30-day readmission rates in patients admitted for heart failure exacerbation with and without palliative care consultation: A retrospective cohort study	Comparison of 30-day readmission for patients admitted with congestive heart failure exacerbation who received palliative care consult.	VI
Diop, M. S., Rudolph, J. L., Zimmerman, K. M., Richter, M. A., & Skarf, L. M.	2017	Journal of Palliative Medicine	Palliative care interventions for patients with heart failure: A systematic review and meta-analysis	Meta-analysis of risk for rehospitalization in heart failure patients.	IV
Sidebottom, A. C., Jorgenson, A., Richards, H., Kirven, J., & Sillah, A.	2015	Journal of Palliative Medicine	Inpatient palliative care for patients with acute heart failure: Outcomes from a randomized trial	Assess inpatient palliative care consult for heart failure and assessment of symptom burden.	II

Evidence Level Key using Fineout-Overholt et al. (2010)	
I = Synthesis of evidence	
II=RCT	
III=Quasi-experimental design	
IV=Case studies	
V=Systematic Review	
VI=Qualitative or descriptive	
VII= Expert opinion	

Appendix B: CPG

Presentation to ED

Diagnostic workup:
EKG, ProBNP, POCT troponin, CXR, BMP, ECHO
Physical Exam: Does exam and diagnostic workup support clinical diagnosis of acute exacerbation of CHF?
LACE Score: Low (0-4), Moderate (5-9), High ≥10

No admission

Discharge from ED:
Documentation of follow up appt prior to discharge from ED, including phone numbers to call.
Pt verbalizes understanding of follow up appt date/time.
Medication reconciliation and verification that patient has current medications or prescriptions.
Verification of transportation to follow up.
Document communication with transitional care nursing in EPIC
Document Heart failure education on symptom management.
Consult to OP case management
Staff message in EPIC to primary cardiologist and PCP
Pt verbalizes understanding of discharge plan.

Hospital Admission

Admit to Medicine
Consult to Cardiology

New onset CHF?

Acute on Chronic CHF?

If EF < 35%:
Consult to CHF MD
Consult to EP

LACE: (0-4) follow up with PCP in 1 week

LACE: (5 or >) follow up with Cardiology within 1 week

coronary angiography to define coronary anatomy (if stable)

Heart Failure Hospital Orders:
- Management of comorbid conditions (afib, HTN, DM, COPD)
- Low sodium diet with fluid restriction
- strict Intake and output
- daily weight (standing scale)
- Heart Failure Education

Initiate GMDT:
- Diuretic
- Beta blocker
- ACEi/ARB (if EF < 40%)
- or ARNI (if EF < 35%)
- Digoxin as needed
- Hydralazine and nitrates
- MRA

Initiate multidisciplinary team:
- Consult to case management/social services
- Consult to pharmacy
- Consult to transitional care nursing
- Consult to palliative care if LACE > 4

Assessment of Discharge Needs:
Case management:
- follow all patients with diagnosis of HF
document needs assessment:
- transportation/mobility/access to care/cost for co-pay appt and prescriptions
- understanding of treatment plan and follow up
- does the pt have insurance and/or prescription drug coverage
- if no insurance assist with applying for state insurance (HIP)
- if pt receives HIP insurance – may have immediate coverage including Rx
assess for issues with transportation
- concern for transportation to access medications
- arrange for medications to be sent to pharmacy with ability to deliver medications
- if no transportation may qualify for:
- Medicaid: verify plan coverage for transportation to and from MD appt
- CICOA (seniors/disabled), based on income
- Per county resources for transportation
- offer Taxi voucher
assess for issues with medications
- ability to pay co-pay/access to obtaining medications
- facility application for medication assistance
- application for prescription company medication assistance
- co-pay card
- if need medication and no low-cost alternative available: discharge fund

Post-Discharge plan:
Transitional Care:
- follow pt for 30-days for patients with LACE score >4
- collaborate with home health care and palliative care
- weekly contact to discuss compliance: medications, daily weights, diet, fluid restriction
- discuss follow up with PCP/specialty care and adjustments in treatment plan
- consult to OP cardiac rehab for pt with EF <35%

No readmission within 30-days

Appendix C: Agree II

Domain 1. Scope and Purpose
1. The overall objective(s) of the guideline is (are) specifically described.
2. The health question(s) covered by the guideline is (are) specifically described.
3. The population (patients, public, etc.) to whom the guideline is meant to apply is specifically described.

Domain 2. Stakeholder Involvement
4. The guideline development group includes individuals from all relevant professional groups.
5. The views and preferences of the target population (patients, public, etc.) have been sought.
6. The target users of the guideline are clearly defined.

Domain 3. Rigour of Development
7. Systematic methods were used to search for evidence.
8. The criteria for selecting the evidence are clearly described.
9. The strength and limitations of the body of evidence are clearly described.
10. The methods for formulating the recommendations are clearly described.
11. The health benefits, side effects, and risks have been considered in formulating the recommendations.
12. There is an explicit link between the recommendations and the supporting evidence.
13. The guideline has been externally reviewed by experts prior to its publication.
14. A procedure for updating the guideline is provided.

Domain 4. Clarity of Presentation
15. The recommendations are specific and unambiguous
16. The different options for management of the condition or health issue are clearly presented.
17. Key recommendations are easily identifiable.

Domain 5. Applicability
18. The guideline describes facilitators and barriers to its application.
19. The guideline provides advice and/or tools on how the recommendations can be put into practice.
20. The potential resource implications of applying the recommendations have been considered.
21. The guideline presents monitoring and/or auditing criteria.

Domain 6. Editorial Independence
22. The views of the funding body have not influenced the content of the guideline.
23. Competing interests of guideline development group members have been recorded and addressed.

Overall Guideline Assessment
Items are measured on a scale of 1 to 7; 1 indicates strong disagreement, 7 equates to strong agreement. Permission to use and reprint from Brouwers et al. (2010) has been obtained.

Appendix D: Agree II Permissions

FW: New contact us received from the AGREE Enterprise website

Agree, Z <agree@mcmaster.ca>
Sun 12/22/2019 6:16 PM
To: Michelle Hamric <michelle.hamric@waldenu.edu>

Dear Michelle,

We, the AGREE Enterprise Research Office, give permission to Michelle Hamric to use the AGREE II in her studies, provided that she properly cite the AGREE II in all related documents.
If any clarification of the conditions is needed, please contact the AGREE office at agree@mcmaster.ca.

Sincerely,

Pamela Velásquez
Research Assistant
AGREE Scientific Research Office
Medical Investigations Institute
University of Antioquia
Medellin, Colombia
Email: agree@mcmaster.ca
Website: https://nam04.safelinks.protection.outlook.com/?
url=www.agreetrust.org&data=02%7C01%7Cmichelle.hamric%40waldenu.edu%7C70a85703f6b440
92658908d787350659%7C7e53ec4ad32542289e0ea55a6b8892d5%7C0%7C0%7C637126534116054347
&sdata=NEgV28owuV0YWT4aS0B0cz5WxEY%2FqaJKMjkd9aowLB4%3D&reserved=0
Twitter feed: @AGREEScientific

_____

From: AGREE Enterprise website [agree@mcmaster.ca]
Sent: Thursday, December 19, 2019 3:08 PM
To: Agree, Z
Subject: New contact us received from the AGREE Enterprise website

Name: Michelle Hamric
Email: michelle.hamric@waldenu.edu
Your message: I would like to use the Agree II instrument in my DNP project. I am working on a clinical practice guideline for reducing heart failure readmission.

Appendix E: Questions Delphi Method

1. What do you anticipate will be effective or ineffective in the guideline once implemented?

2. How might we monitor progress following implementation of the clinical practice guideline?

3. What is the timeline for full implementation?

4 Resources are different at each facility, how could we overcome these differences?

5. What organizational and patient barriers may hinder implementation?

6. Do you (as the expert panel) agree with implementation of the clinical practice guideline?

Appendix F: CPG (Revised)
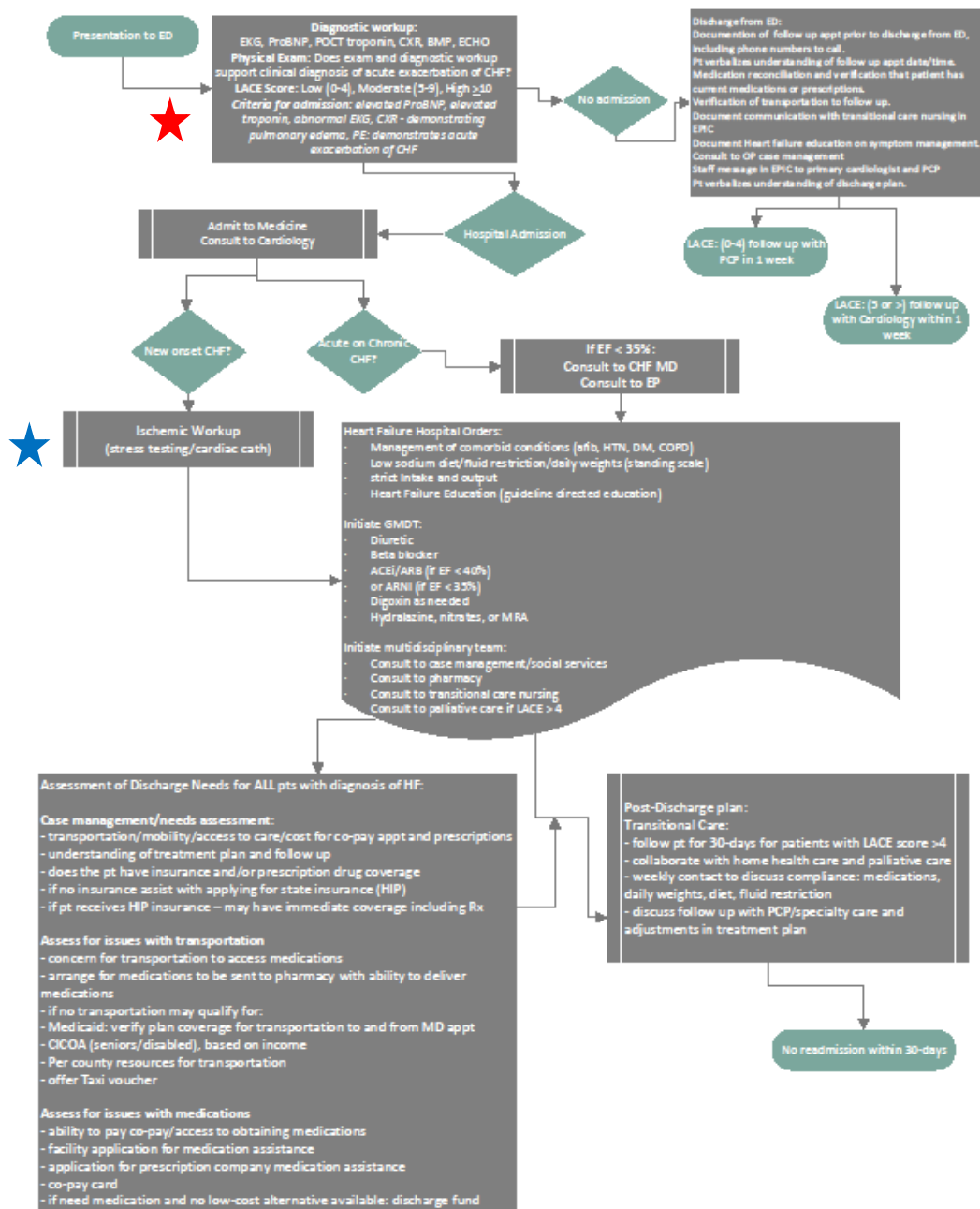
★ **Represents changes to reflect criteria for admission:** *elevated ProBNP, elevated troponin, abnormal EKG, CXR – demonstrating pulmonary edema, physical exam demonstrates acute exacerbation of CHF*

★ **Represents changes to reflect ischemic workup**: cardiac catheterization changed per expert panel recommendation to reflect ischemic workup