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An Education Program for Novice Nurses to Increase Case Management Knowledge

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Abstract

Problem: Heart failure (HF) is a chronic disease where the heart cannot deliver an adequate amount of blood that the body requires. HF is one of the costliest cardiovascular diseases plaguing public health in the United States (Go et al., 2014). HF is the main reason for hospitalizations in adults and a leading contributor to the rise in healthcare costs. Approximately 25% of Medicare patients are readmitted within 30-days of discharge (Go et al., 2013). To address excessive hospital readmissions, the Centers for Medicare and Medicaid Services (2019) initiated the Hospital Readmissions Reduction Program in October 2012 to reduce Medicare payments to healthcare organizations for unnecessary HF readmissions.

Context: A large academic medical institution specializing in cardiovascular patient-centered care is committed to improving the quality and patient health outcomes among the HF population. This institution is a public healthcare system in Southern California, with multiple campuses collectively operating as one entity. The practicum site operates as a licensed 799-bed facility and is the first comprehensive cardiovascular center in San Diego, California. The site employs approximately 9,100 individuals, consisting of 2,600 medical doctors (students, residents, and fellows) and over 2,500 registered nurses (RN).

Intervention: Case management (CM) coordinates healthcare services for patients to ensure the delivery of cost-effective care (Gray, White, & Brooks, 2013). Interprofessional (IP) collaboration is important to ensure that HF transitional care services are arranged prior to discharge to prevent avoidable readmissions. An IP approach consists of healthcare professionals from different disciplines, with specific knowledge and skills, working collaboratively to enhance the well-being of the individual through patient-centered practice (Allen, Penn, & Nora, 2006). Novice nurses are integral team members, but they often lack CM

knowledge and are inexperienced with nurse case manager (NCM) engagement to initiate early discharge planning. Novice nurses are newly-licensed RNs that possess 6 months or less of clinical nursing experience. Cardiovascular novice nurses received a live CM education lecture course to increase awareness of CM and to enhance confidence in NCM collaboration on HF discharge planning to decrease 30-day readmissions.

Measures: The outcome measures for novice nurses to achieve were (a) to enhance knowledge of CM, (b) to increase the confidence level of early collaboration with the NCM, and (c) to reduce 30-day HF readmissions by 10% at 4 months post-intervention. Improving current CM processes by offering novice nurses education to better their understanding of the purpose of CM and the importance of initial collaboration on transitional care planning led to positive outcomes. HF 30-day readmissions were monitored pre- and post-intervention to detect if there was a relationship between novice nurse knowledge of CM and hospital readmissions.

Results: Seventy-five percent of the cardiovascular novice nurses' who participated in the CM education program self-reported that they possessed no knowledge of the NCM role and had modest confidence in early NCM collaboration. Thirty-eight percent of participants stated they were aware that an effective and safe transitional care plan should be established prior to discharge for HF patients. Participant scores increased by 33% after the NCM education intervention. The Wilcoxon Matched-Pairs Signed Rank Test revealed a significant difference in the novice nurses' HF CM knowledge scores between pre-education and post-education, $N = 7$, $z = 2.37$, $p = .018$. Furthermore, a 12% reduction in HF 30-day readmissions was observed, based on the enhanced collaboration among the IP team to successfully secure a safe transitional care plan.

Conclusions: HF readmissions remain a domestic concern and greatly impacts healthcare expenditures among adults. Evidence illustrates that an IP approach on transitional care planning for HF patient population reduces 30-day hospital readmissions. Understanding the importance of the NCM role and early IP collaboration to coordinate transitional care services for HF patients yield to favorable patient health outcomes. Although other IP disciplines were excluded from the intervention, future participation in the CM education program would greatly benefit this group. Implementation of a live CM education program for novice nurses demonstrated to be an effective intervention and financially profitable to decrease readmissions by increasing knowledge of the NCM role and development of IP relationships.

Section II: Introduction

Problem Description

Approximately 5.1 million Americans are diagnosed with heart failure (HF), and the prevalence of this disease is expected to grow substantially to 46% by 2030 (Go et al., 2014). A national average of 25% of Medicare patients are readmitted within 30-days of discharge (Go et al., 2013). In 2019, HF readmission rates among academic medical centers ranged from 18% to 22% (Vizient, Inc., 2019). According to Clarkson, Schaffer, and Clarkson (2017), HF patients who are medically cleared to return home from the hospital are at high-risk for readmission and poor clinical outcomes.

Case management (CM) is a nursing practice focused on care coordination and assessment of discharge needs for a defined patient population (Gray, White, & Brooks-Buck, 2013). For care interventions to be effective in improving patient and safety outcomes, it is key to understand the value of the nurse case manager (NCM) role. The NCM is a registered nurse (RN) responsible for the care coordination and discharge planning of individual patients to ensure the delivery of cost-effective care (Leonard & Miller, 2012). Garcia (2017) found a correlation between the success of transitional care interventions and collaboration with the NCM to effectively attain better health results.

According to Allen, Penn, and Nora (2006), an interprofessional (IP) approach is essential to patient care delivery to ensure optimal clinical outcomes. An IP approach involves clinicians from different disciplines specifically trained in their specialty to work in partnership with other team members to improve the well-being of their patients (Allen et al., 2006). The IP care team may consist of physicians, nurses, pharmacists, social workers, rehabilitation therapists (i.e., occupational, physical, and speech), and dieticians. Collectively, each healthcare

professional works in collaboration with one another, the patient, and the patient's family to secure a safe transitional care plan to reduce hospital readmissions and to promote successful recovery at home. Transitional care interventions and discharge planning with an IP approach are considered valuable elements to enhance the health of the HF population.

Nurses are fundamental in identifying at-risk patients who need post-acute services to ensure avoidable readmissions. Currently, the chosen Doctor of Nursing Practice (DNP) practicum site does not incorporate a CM education session for new graduate nurses during their orientation period to learn about the NCM role and the discharge planning process. Novice nurses are unfamiliar with the NCM role and responsibilities or how to engage in collaboration with the NCM, since CM is not incorporated into the nursing program curricula or unit orientation (Pfaff, Baxter, Jack, & Ploeg, 2014). Implementation of a live CM education lecture course to increase novice nurse awareness of CM in HF is anticipated to enhance the relationship between the IP care team, improve the CM workflow process, and enrich patient health outcomes.

Available Knowledge

PICOT Question

Collaboration between the NCM and novice nurses on discharge planning is important to avoid HF readmissions and improve mortality (Garcia, 2017). It is imperative that appropriate transitional care services are arranged for patients to be successful with their recovery at home. Through the implementation of a CM education intervention program at a large academic medical center, novice nurses will achieve a better knowledge of CM in HF. The following PICOT question was formulated: In novice nurses (P), how will implementation of a case

management education program (I), compared to current practice (C), affect heart failure 30-day hospital readmissions (O) at 4 months post-intervention (T)?

Literature Review

A literature search was performed to obtain evidence supporting the NCM role and effectiveness of IP collaboration on transitional care interventions to prevent HF readmissions. Current practice for novice nurse education and boundary spanning leadership were also reviewed. The search was limited to complete articles that could be obtained electronically. Cumulative Index of Nursing and Allied Health Literature (CINAHL), Fusion, Science Direct, and PubMed databases were explored for applicable articles published in English from 2000 to 2018. Methodology limitations included a lack of current quantitative research pertaining to novice nurse knowledge of HF CM practice and inpatient care interventions. The PICOT question was generated to answer a process improvement question and to examine the available evidence to resolve the present issue: In novice nurses (P), how will implementation of a case management education program (I), compared to current practice (C), affect heart failure 30-day hospital readmissions (O) at 4 months post-intervention (T)? The following keywords were filtered for the literature search: *case management, education, heart failure, heart failure readmissions, interprofessional collaboration, interprofessional education, novice nurse, nurse case manager,* and *transitional care*. The search generated 265 articles. Inclusion criteria were applied to narrow the results to include articles centered on HF adult (18 years and older) hospitalizations, transitional care interventions aimed at reducing HF readmissions, and IP care. Forty-five studies were screened by title and abstract (if available). Integrative, qualitative, or quantitative reviews specific to HF admissions, NCM role, IP approach, novice nurse education, and HF transitional care interventions were selected. The remaining 14 articles were analyzed

and critically appraised using the Johns Hopkins Nursing Evidence-Based Practice Evidence Level and Quality Guide Tool. The final literature collection is summarized in Appendix A.

Breaking down healthcare silos. Healthcare organizations strive to provide excellence of care to all patients, with a commitment to improving quality and patient safety practices. According to Driscoll, Tobis, Gurka, Serafin, and Carlson (2015), segregation between clinical service lines and patient care units is present in the inpatient setting. Unfortunately, silos present challenges in providing patients the optimal care they require. Healthcare silos emerge when clinical disciplines work exclusively from one another, causing barriers to communication and disconnected partnership among IP members of the care team. Silos create poor communication and collaboration between disciplines, which compromises the health outcomes of the patients served (Driscoll et al., 2015). Driscoll et al. reported that an in-house diversion plan on the neuroscience care units at a Midwest academic medical center demonstrated better patient flow and safety. The plan was created to find admitted patients with placement options to support bed flow and patient safety. Interventions, such as forecasting tools and daily bed huddles, proved to reduce internal bed flow disruptions. The enhanced collaboration resulted in a 50% reduction, with inpatients being internally diverted to alternate patient care units. Driscoll et al. found that the process improvement initiative led to improved collaboration between all organizational members.

Boundary spanning. Increased communication and collaboration between patient care units and IP teams are possible when healthcare silos are eliminated. Medically complex patients require navigation of care through a fragmented healthcare system. Boundary spanning practices can help with maintaining effective IP collaboration and communication to ensure healthcare silos are avoided. Ehrlich, Kendall, and Muenchberger (2012) performed a qualitative

study based on grounded theory aimed to gain an understanding of the difference between routine chronic care and chronic care coordination. Ehrlich et al. interviewed 10 general practitioners and six RNs from an Australian community-based setting which provided complex care coordination. Four processes emerged to classify CM: (a) moving beyond routine care practice by spanning boundaries, (b) relationship-based care, (c) established roles, and (d) commitment to chronic care coordination. These results implied that effective CM depended on the ability to shift across boundaries to achieve optimal clinical outcomes (Ehrlich et al., 2012). Spanning boundaries to efficiently organize care involves IP communication and collaboration. According to Ehrlich et al., CM education and role clarification need to be explored further. Boundary spanning practice connects the organization and the clinical environment by creating strong relationships among patients and the IP team.

Nurse engagement. Integration of care coordination into routine care would offer clarification about CM (Ehrlich et al., 2012). Growing evidence indicates that IP education and collaborative care are essential elements of healthcare education and practice (Institute of Medicine, 2003; World Health Organization, 2010). Confidence is required for effective IP collaboration. At the beginning of novice nurses' clinical careers, they often lack confidence because of their inexperience, which can negatively impact the delivery of safe and effective care (Pfaff et al., 2014). Pfaff et al. (2014) explored new graduate nurse confidence in IP collaboration through a cross-sectional descriptive survey, which included 514 new graduate nurses working at acute, community, and long-term care (LTC) facilities in Ontario, Canada. Results were linked to novice nurse professional development (e.g., experience and knowledge), as well as team promotion (e.g., leadership, respect, and opportunities) and leadership support. Opportunities for new graduate nurses to build relationships with other healthcare disciplines,

discover more about their roles, and engage in shared governance improved IP collaboration. Participation at IP rounds and CM meetings allowed new graduate nurses to encounter valuable collaboration (Pfaff et al., 2014). In addition, increased confidence of new graduate nurses was achieved through awareness and collaboration of other IP specialties (Pfaff et al., 2014).

Nurse engagement is imperative for respectable and trustworthy IP collaboration. An integrative review conducted by Pfaff, Baxter, Jack, and Ploeg (2013) examined barriers that new graduate nurses encountered within IP collaboration. The authors selected and appraised 26 articles. The analysis illustrated that new graduate nurse engagement barriers to IP collaboration included individual factors (i.e., lack of self-confidence, knowledge, experience, and communication), team factors, and leadership factors. Despite a mediocre collection sample, the review suggested implications for team and organizational development, education, and research that may influence new graduate nurse engagement pertaining to IP collaboration (Pfaff et al., 2013).

Interprofessional education. IP education is an important approach for all novice healthcare professionals to expand clinical competence and knowledge. Continuous education and training for the new graduate clinician remain a priority for successful transition from scholar to professional. Cockerham, Figueroa-Altmann, Eyster, Ross, and Salamy (2011) evaluated the importance for novice nurses to be supported by nursing leadership during their first year of clinical practice. Through a Post Orientation Education Program (POEP), 18 novice nurses were provided ongoing clinical education and leadership support through individualized meetings (Cockerham et al., 2011). The coaching relationship established between preceptor and student helped the new graduate nurse feel confident in utilizing their resources appropriately and aided with integration into their new role in the nursing unit (Cockerham et al., 2011). The

POEP demonstrated increased clinical knowledge, enhanced confidence, and fostered trusting partnerships with teammates (Cockerham et al., 2011). Furthermore, an increase in nurse retention and job satisfaction was observed.

MacDonald, Bally, Ferguson, Murray, and Fowler-Kerry (2009) examined the essential competencies of IP collaboration for patient-centered practice. The researchers conducted interviews with Canadian professionals of academia, administration, clinical psychology, education, nursing, medicine, pharmacy, physical therapy, rehabilitation counseling, and social work ($N = 24$). Among the six competencies identified, knowledge of the professional role of others was found to be the most important competency of IP collaboration. Results indicated that increased awareness of other IP roles and their linked behaviors were significant factors in optimizing clinical outcomes (MacDonald et al., 2009). Opportunities for the development of clinical scholars to collaborate and improve knowledge of IP disciplines is imperative to affect clinical practice and the welfare of the patient (MacDonald et al., 2009).

Achieving the highest clinical outcomes for the HF population is a primary goal of the clinical team. Clarkson et al. (2017) evaluated the impact of an HF education-based program on hospital readmissions. The project aim was intended to understand the relationship between participant attendance at an outpatient HF education program and how it influences 30-day readmissions. A total of 106 HF patients with a New York Heart Association (NYHA) classification of II or III participated by attending an IP outpatient education program at no charge. Heart Failure University (HFU) offered HF patients comprehensive education on their disease process and management. Results afforded a statistically significant relationship between 30-day readmission and HFU attendance (χ^2 [1, $N = 106$] = 5.68, $p = .02$). Findings supported the effectiveness of HFU attendance in reducing 30-day readmissions, compared to

HF patients who did not receive the intervention. Evidence-based IP education strategies proved to decrease HF readmissions (Clarkson et al., 2017).

Heckman et al. (2018) found that care delivered with an IP chronic disease management approach was useful in reducing readmissions. Barriers to HF management observed in the healthcare setting are knowledge gaps and ineffective IP communication. Heckman et al. performed a pilot study to assess the impact of an IP educational care-based program to improve HF knowledge, increase IP communication, and enhance workflow processes: *Enhancing Knowledge and Interprofessional Care for HF* (EKWIP-HF). Educational training and resources were provided to clinical staff by HF and/or long term care (LTC) specialists. IP care teams were created, and continued educational support was delivered by HF/LTC expert clinicians until group members were able to confidently execute their roles. The EKWIP-HF program was piloted over 6 months in a convenience sample of LTC homes in South Central Ontario, Canada. Results were consistent at both settings where optimization of IP communication to promote HF care was established. Improved confidence among staff, enhanced skills, and better IP collaboration were seen (Heckman et al., 2018).

Interprofessional collaboration. Collaboration between the NCM and novice nurses on discharge planning is crucial to avoid HF readmissions. Early collaboration between the NCM, novice nurse, patient, family, and IP team is essential to developing a safe discharge plan. Thoma and Waite (2018) studied elements that contributed to a strong partnership between the NCM (N = 8) and a multidisciplinary team in an acute care international setting through a qualitative descriptive study. Significant themes discovered were professional competency of the NCM as self-valued or valued by peers, shared collaboration between the NCM and patients, and identification of barriers to discharge (Thoma & Waite, 2018). It is important to emphasize

that an effective discharge plan can be acquired through patient, family, and IP collaboration to garner desirable health results.

Nurse case manager role. Novice nurses are unfamiliar with the CM nursing specialty since nursing curricula and orientation programs do not emphasize the discipline (Pfaff et al., 2014). Gray et al. (2013) investigated NCM role ambiguity in a qualitative study through a phenomenological method. A convenience sample size of NCM participants ($N = 25$) confirmed the uncertainty of job function regarding the utilization of time, resources, and nursing abilities. For care interventions to be beneficial in improving patient and safety outcomes, understanding the value of the NCM role is key. Gray et al. found a correlation between the success of transitional care interventions and collaboration with the NCM to effectively attain better health effects.

Understanding the value of the NCM's role in the IP care team is important for the novice nurse. The NCM not only coordinates care but is a true advocate for the patient. Hellwig, Yam, and DiGiulio (2003) explored the meaning of advocacy from the NCM's ($N = 7$) perspective through a phenomenological approach in a qualitative study. The NCM's perspective as a patient advocate is to ensure that the individual's health, safety, and rights are protected. Participants challenged NCMs to be the voice for their patients. Establishing a genuine bond with the patient will render the individual to feel safe and valued. The relationship-based connection is safeguarded by trust, resulting in better patient, provider, and health system outcomes (Hellwig et al., 2003).

Transitional care coordination. Innovative research and implementation of evidence-based practice (EBP) have improved health outcomes among HF patients (Riegel et al., 2002). Pharmaceutical therapies, discharge education, and supportive interventions are independent

variables proven to reduce hospitalizations while increasing the quality of life among the HF community. Riegel et al. (2002) examined the success of a telephonic CM intervention in HF patients to lower post-hospitalization resource use through a random control trial (RCT). The telephonic CM plan improved organization goals by lowering hospital readmissions (3 months at 45.7%, $p = .03$ and 6 months at 47.8%, $p = .01$), costs (6 months at 45.5%, $p = .04$), and post-discharge resource use. In addition, Riegel et al. observed enhanced patient satisfaction. Findings concluded that the use of telephonic care follow-up in HF patients reduced hospitalizations, costs, and other resource use, while increasing patient satisfaction. The telephonic CM program illustrated an increase in the overall well-being of HF individuals (Riegel et al., 2002).

Establishing a robust discharge plan is crucial to sustaining optimal health outcomes once patients are transitioned from hospital to home. Another RCT study conducted by Riegel, Carlson, Glaser, and Romero (2017) explored the value of telephonic transitional CM in lowering hospital admissions, improving health-related quality of life, and reducing despair in HF Hispanic patients. Results validated that early CM intervention decreased acute care resource use (1 month at 8.7%, $p = .46$). The study implied that telephonic CM improved patient and safety outcomes in HF Hispanic patients (Riegel et al., 2017).

Joo and Huber (2014) provided an integrative review to support community-based case management (CBCM) as a suitable transitional care intervention. CBCM centers on care coordination for high-risk patients in the community who require individualized transitional follow-up care and support services for disease management (Joo, 2014). Joo and Huber chose a collection of 18 studies for this review, where all results incorporated the CM intervention of home health services, telephonic follow-up, and patient education. An evidence evaluation table

was included to present the findings of each study. Results revealed that CBCM decreased readmissions, optimized health outcomes, and increased client gratification (Joo & Huber, 2014).

The articles examined in Appendix A outline essential components valuable in an education program for the novice nurse to be successful with increasing their knowledge base of CM. Novice nurses are unfamiliar with the NCM role and responsibilities or how to engage in collaboration with the NCM, since CM is not incorporated into the nursing curricula or unit orientation (Pfaff et al., 2014). Establishing a strong relationship between the NCM and novice nurse on discharge planning is crucial to avoid HF readmissions. Research proved a correlation between the success of transitional care interventions and IP partnership with the NCM to effectively attain better HF patient health outcomes (Garcia, 2017). Collaborative innovations that have the potential to improve the well-being of the community can emerge by crossing boundaries to build relationships. Boundary spanning in healthcare can eliminate silos and bridge IP teams together. The advantages of an IP education program for the novice nurse are to enhance CM knowledge and to encourage NCM engagement on transitional care collaboration to prevent HF readmissions. Moreover, the program is expected to enhance the relationship between the IP care team, improve collaboration on discharge planning, and enrich the patient's overall health.

Rationale (Framework)

The presence of healthcare silos threatens to prevent hospitals from delivering optimal patient-centered care. Clinical silos develop when service lines work independently from one another, causing disruption in patient-centered care practice among IP members. According to Driscoll et al. (2015), silos influence ineffective communication and partnership between IP teams, which negatively impacts the health outcomes of the patient population. These

operational silos create barriers that divide clinical groups and patient care units. As a result, fractured relationships and fragmented care can lead to unwanted risks or harm to the patient. According to Aungst et al. (2012), risk can be reduced by elements that enable and encourage engagement between IP members. Breaking down silos can help organizations attain better-coordinated care, resulting in an efficient healthcare system.

Research supports an association between IP collaboration and health outcomes. The essential foundation for IP teamwork is collaboration, cooperation, and coordination to deliver optimal patient-centered care. Effective IP partnership begins with trust among team members. The IP team utilizes their specialized skills to ensure the delivery of cost-effective care, while improving clinical outcomes through shared governance. Collaborative innovations that have the potential to improve the well-being of the community can emerge by crossing boundaries to build partnerships. Boundary spanning in healthcare can eliminate silos and bridge IP teams together. It is a leadership strategy that creates direction, alignment, and commitment across the organization to achieve a higher goal or vision (Aungst et al., 2012). This conceptual framework promotes health by developing relationships to address complex issues. The CM education-based program developed for the novice nurse was intended to improve HF CM knowledge and encourage NCM engagement on transitional care collaboration for the HF patient. The program influenced the delivery of ideal care practice, resulting in improved working relationships and patient outcomes.

Boundary spanning is a promising approach that can provide resolution to breaking down silos within healthcare organizations. Healthcare leaders are instrumental in pushing through these barriers. Boundary spanning in healthcare extends partnerships and collaboration by creating sustainable relationships to understand purpose, roles, and responsibilities (Shirey &

White-Williams, 2015). According to Shirey and White-Williams (2015), boundary-spanning organizations create strong partnerships to drive IP collaboration across organizational boundaries. Healthcare leaders can close the gap by bridging external relationships through collaborative skills, attitudes, and behaviors. Bringing people together in novel ways and establishing reciprocal relationships can ignite innovation and encourage meaningful purpose to all involved (Aungst et al., 2012).

Specific Aims

This process improvement project aimed to enhance awareness of CM in HF among novice nurses through a CM education-based program. The target audience was novice nurses who possessed 6 months or less of clinical nursing experience working in the following cardiovascular center patient care units: intensive care unit (ICU), progressive care unit (PCU), or immediate medicine unit (IMU). These nurses provide primary care to cardiothoracic (CT) surgery, general cardiology, HF, organ transplant, pulmonary thromboendarterectomy (PTE), and pulmonary vascular patient populations. The aim was to increase knowledge of the NCM role, to promote IP collaboration with the NCM on transitional care planning of HF patients, and to decrease HF readmission rates by 10% at the end of June 2020. The IP care team may consist of physicians, nurses, pharmacists, social workers, rehabilitation therapists (i.e., occupational, physical, and speech), and dieticians who work collectively on the plan of care of the HF population to prevent avoidable readmissions. Effective communication and cooperative planning by the IP team is imperative to decreasing hospital readmissions. The goals of this project were for novice nurses to (a) gain a better understanding of the NCM role, (b) increase their confidence level of early collaboration with the NCM, and (c) reduce 30-day HF readmissions by 10% at 4 months post-intervention.

Section III: Methods

Context

The project scope for the CM education program was to increase novice nurse awareness of CM among the HF population. Preferred participants were novice nurses who had 6 months or less of clinical RN experience caring for the following patient populations: CT surgery, general cardiology, HF, organ transplant, PTE, and pulmonary vascular on ICU, PCU, or IMU. The program assessed novice nurse knowledge of CM, designed novice nurse support processes, and identified opportunities that increased the nurses' ability to successfully navigate patient care through their education experience. The project deliverables were: (a) increase awareness of CM role and process, (b) enhance the confidence of IP collaboration with the NCM pertaining to HF transitional care planning, and (c) reduce HF 30-day readmissions by 10% at the end of June 2020. This metric presented data on the number of patients who were readmitted to the medical facility shortly after being discharged. Tracking readmission rates is critical because it offers data on the quality of care the hospital provides to its patients. Establishing a novice nurse support system, with well-defined pathways to assist with successful completion of orientation goals, is desired.

The DNP project was implemented at a large academic medical institution in Southern California. It is a public healthcare system with multiple campuses collectively operating as one entity. With a combined capacity of 799-inpatient beds, the DNP practicum site offers specialized cardiovascular patient-centered care and was the first comprehensive cardiovascular center in San Diego, California. There are approximately 9,100 employees, consisting of 2,600 medical doctors (students, residents, and fellows) and over 2,500 RNs.

The key stakeholders involved with this project were the DNP candidate (project leader), the chief nursing officer, the chief administration officer-CM, the cardiovascular nursing and quality improvement leadership teams, the cardiovascular clinical nurse educators, the cardiovascular center HF NCM, and the cardiovascular novice nurses. These stakeholders recognized that knowledge of CM processes and duties was needed for better communication between the NCM and IP team regarding transitional care planning to avoid potential hospital readmissions. Organizational leadership realized how crucial it was that adequate services and resources were coordinated for HF patients prior to discharge to prevent unnecessary 30-day readmissions. The DNP candidate assumed the role of the project leader and worked collectively with all stakeholders to foster a common vision to address HF readmissions. Engagement and support from all stakeholders were imperative with designing an appropriate CM education program reflective of EBP strategies to improve collaboration with the NCM on HF transitional care planning to reduce 30-day readmissions. Stakeholders strongly endorsed offering and funding novice nurse educational opportunities (e.g., continuing education classes and seminars), mentorship, and resources to encourage success during their first year of clinical practice.

Intervention

Increased awareness of HF CM is important for novice nurses. Awareness of the NCM role and transitional care processes afforded the novice nurse confidence with IP collaboration on satisfying the discharge needs of the patient. According to Pfaff et al. (2013), novice nurses can be better prepared for IP practice when nursing curricula or orientation programs address other interdisciplinary roles. IP education focused on the importance of CM, as it provides novice nurses with a voice to positively impact their clinical practice as dedicated patient advocates, especially for the HF population. Opportunities for professional development to

strengthen the understanding of the NCM role and encourage early IP collaboration can improve patient health outcomes. Due to the medical complexity and high frequency of avoidable readmissions among this patient population, a CM education-based course to build confidence and improve IP partnership in HF CM for the novice nurse was warranted.

The objective of this project was to enhance novice nurse awareness of CM and increase confidence to initiate early NCM collaboration on discharge planning in HF patients to reduce hospital readmissions through participation in a live CM education lecture session. The intervention included novice nurses, defined as having 6 months or less of clinical RN experience, who provide primary nursing care for the following patient populations: CT surgery, general cardiology, HF, organ transplant, PTE, and pulmonary vascular on ICU, PCU, or IMU. The CM education course explored novice nurse knowledge of CM, strategized to provide better IP support for novice nurses, and recognized opportunities for improvement to increase the nurses' skill to address transitional care planning through their education experience. Project outcomes were to (a) increase awareness of CM role and practice, (b) enhance confidence of IP collaboration with the NCM pertaining to HF discharge planning, and (c) decrease HF 30-day readmissions by 10% at 4 months post-intervention. Further review on the process and patient outcomes are discussed in the Outcome Measures section.

Clarity and knowledge about the NCM role are valuable elements for novice nurses to understand the correlation between transitional care interventions and HF readmissions. The project leader delivered a live CM education lecture course during the *Cardiovascular Boot Camp* for novice nurses who recently graduated and possessed less than 6 months of RN experience. The educational intervention aimed to enhance knowledge about the essential function of the NCM role. The CM education session focused on the following learning

objectives and outcomes: (a) explain the differences between the role of the NCM and the clinical social worker, (b) review existing CM processes, (c) examine transitional care services, (d) discuss payer sources, and (d) understand the importance of thorough discharge planning of HF patients. In addition, the emphasis was placed on how an IP partnership was imperative to effectively enhance the well-being of HF patients to improve efficiency with the present CM process.

The affiliation agreement was approved prior to participant recruitment and data collection. Pre- and post-surveys were used to assess the novice nurse's level of CM knowledge pre- and post-intervention. A modified version of the *Nurses' Knowledge of Heart Failure Self-Management Education Principles* (NKHFEP) survey was used for this project. The survey was found appropriate to use to determine novice nurses' knowledge gaps in HF CM. The authors, (Hart, Spiva, & Kimble, 2011) who refined the NKHFEP survey, granted permission to the project leader to alter the questionnaire to accommodate the focus of this project. A 20-question, 5-point Likert score survey was distributed to participants at the *Cardiovascular Boot Camp* before and after the education intervention. Data obtained from these surveys were entered into a password-protected Excel spreadsheet. The project leader managed all data on the Excel spreadsheet and performed data analysis when all surveys were completed. The sample survey is found in Appendix B.

From November 2019 to December 2019, the cardiovascular novice nurse cohort was identified and invited to participate in the education session. The cardiovascular clinical nurse educators assisted with reserving space for the CM education session on the *Cardiovascular Boot Camp* agenda and confirmed participation attendance from all nursing cohort members. The

project leader certified that all participants clearly understood the conditions to which they agreed to voluntarily participate in the project.

Collaboration on the design of the live CM education-based course was performed between the project leader, cardiovascular center HF NCM, and clinical social worker. The HF NCM was present at the education session to share the role, function, and responsibilities of CM. In addition, the NCM provided insight regarding the current practice and barriers of CM. The presence of the NCM at the education session added authenticity and spanned the boundaries between nursing and CM. Post-surveys were distributed to participants immediately following the intervention. HF 30-day readmission rates were measured by Cardiovascular Quality Assurance and Performance Improvement (QAPI) reports from February 2020 to June 2020. The project leader gathered pre- and post-CM intervention data from clinical staff, nursing leadership, and the cardiovascular outcomes team. If the CM education intervention program was successful, a decline in HF readmission rates should be observed within four months post-implementation.

Gap Analysis

There is a need for novice nurses to improve their knowledge regarding the value of the NCM role and the importance of early collaboration among the IP team on discharge planning to positively affect HF readmissions and patient outcomes (Garcia, 2017). In 2019, HF readmission rates among academic medical centers ranged from 18% to 22% (Vizient, Inc., 2019). The academic medical center observed a HF 30-day readmission rate of 23% during FY 2019-2020 (Vizient, Inc., 2019). A gap analysis was performed for the CM education project (see Appendix C).

Gantt Chart

The Gantt chart for the CM education project is summarized in Appendix D. All activities and corresponding dates are illustrated to monitor the progress of the process improvement project. A timeline for the implementation of the CM education program was developed, and most of the strategic direction components were achieved by the target dates. Collaboration with the HF NCM and a clinical social worker was valuable in designing the CM education-based course. The HF NCM was invited to attend the education session to describe the NCM role and responsibilities, to review current CM processes, to review barriers of CM, and to offer solutions to improving IP collaboration on transitional care planning.

Work Breakdown Structure

A CM education work breakdown structure (WBS) represents all work and specific tasks needed to guide the completion of this project (see Appendix E). The WBS outlines the project scope and deconstructs the scope into phases of work that were assigned to the appropriate project team member. Understanding the basic tasks and activities to be accomplished was essential. The WBS helped visualize project elements in more manageable components. The WBS provided the project leader, stakeholders, organizational leaders, and team members a snapshot of the project requirements and action plans required in each stage of the project. The WBS was designed as a project tree illustration of the work activities or deliverables, broken down into tasks and subtasks. The diagram displays four phases of the project. The tasks for each phase of the CM education WBS project were assessment, development, implementation, and evaluation.

Assessment is typically the initial step that involves the healthcare system and promotes awareness about its potential impact on advancing national health goals. Project actions in this

phase included reviewing hospital goals, determining the organization's HF 30-day readmission rate, conducting staff surveys and interviews, observing current CM practices, collecting pre-intervention data, identifying gaps, and developing recommendations. The timeframe for the assessment phase was from November 2019 to December 2019.

The development of all tasks and activities to implement the project was organized in the development phase level. In collaboration with the appropriate key stakeholders, the project leader identified the target audience, defined objectives and learning outcomes, described the course content and format, determined delivery methods, and established evaluation methods. The projected development phase occurred from January 2020 to February 2020.

The implementation of tasks completed in this phase include the execution of the project. The project leader worked together with the clinical nurse educators to schedule the CM education session, advertise the CM education program, and ensure participation attendance from all novice nurses. Collaboration between the HF NCM, clinical social worker, and project leader was conducted to design the CM education-based course. The HF NCM was invited as a guest speaker at the education session to define the NCM role and responsibilities, discuss the current CM process, examine barriers of CM, and consider opportunities to enhance IP engagement. The project leader delivered training, obtained immediate feedback from post-surveys, filed education completion documentation, and provided ongoing support to novice nurses. Implementation of the live CM education lecture course was initiated in February 2020.

Evaluation of activities to ensure that all tasks were established to drive the project to successful completion was observed at this stage. The last project phase entailed evaluating the live CM course, obtaining participant knowledge gained, analyzing the effect of improved care coordination workflow, reassessing HF 30-day readmissions, and reviewing suggestions for

improvement. Summative information assessed the novice nurse's level of CM competence by comparing it to HF 30-day readmission rates post-intervention. The education program is anticipated to increase novice nurse awareness of CM in HF. If the program is successful, there would be a 10% reduction in HF readmissions based on the enhanced collaboration among the IP team to successfully secure a safe transitional care plan. Post-CM education intervention assessment was monitored from March 2020 to June 2020.

The CM education WBS was a beneficial tool for the project leader to utilize, as it outlined the project scope and organized each task for the respective team member. Routine CM education was needed to fully grasp the concept of the NCM role to guide successful and safe transitional care. The CM education WBS served as a guide to manage tasks effectively to attain the desired project goal.

SWOT Analysis

A SWOT (strengths, weaknesses, opportunities, and threats) analysis was performed in consideration of this initiative (see Appendix F). This framework served as an essential tool to identify and assess factors that influence HF clinical outcomes. CM was effective in improving the quality and safety outcomes among HF patients.

Strengths. The chosen DNP practicum site is recognized as a leader in cardiovascular care services. The academic medical center employs highly-trained healthcare professionals experienced in caring for individuals who require HF ventricular-assist device, organ transplantation, and mechanical circulatory support. A culture of learning through a multidisciplinary approach was highly promoted at this Southern California academic medical center.

Weaknesses. The vagueness of the NCM role exists in clinical practice, especially among novice nurses. For care interventions to be effective in improving patient and safety outcomes, understanding the value of the NCM role is key. Early collaboration between the NCM, patient, family, and the IP team is essential to developing a safe discharge plan. Due to the complexity of care needed from the HF population, specialized NCMs are scarce. Demands of CM practice and responsibilities impact high turnover within the CM department, driving frequent staff shortages.

Opportunities. An external factor associated with the CM education intervention is the penalties imposed by the Centers for Medicare and Medicaid Services (CMS, 2019). An opportunity to improve clinical staff knowledge, competence, and practice through this process improvement project influenced positive outcomes for HF patients and offered a financial advantage to the healthcare organization. Evidence reports a correlation with the success of transitional CM and reduction of readmissions among the HF population to attain better health status in the outpatient setting.

Threats. A major external threat to the cardiovascular medical center is a decrease in CMS payments. The DNP practicum site is a well-respected healthcare system in Southern California and serves most HF patients in the neighboring counties. Since the integration of the Hospital Readmissions Reduction Program, reimbursements are linked to the quality of hospital care. The volume of hospital readmissions is publically reported annually and carries heavy penalties. These unattractive statistics could be damaging to the reputation of the focus healthcare system.

Budget Return on Investment

The budget estimate for the CM education program is summarized in Appendix G. The

program budget accounts for internal labor for the development and presentation phase, production (conference room use, printing materials), and miscellaneous expenses (food/beverages). Since the project leader is an internal employee at the academic medical center, there would be no direct cost associated with the project. The budget estimated for the CM education program is $4,340.

The return on investment (ROI) calculation is presented as a ratio or percentage that compares net gains to net cost (see Appendix H). ROI is a standard tool to measure the profitability of a project. The ROI is calculated by using the average cost to avoid one HF 30-day readmission and the cost of 4 months of offering a live or self-study CM education course at the estimated fiscal year.

Option 1. Option 1 involves taking no action to change the current situation, which assumes the status quo. The net return of $0 was calculated for the following: FY 2019 = $0/$11,360 = 0%, FY 2020 = $0/$12,352 = 0%, and FY 2021 = $0/$13,344 = 0%. Organizational leaders should consider opportunities for improvement to address the current state, as a 0% ROI is not an acceptable measure to decrease HF readmissions.

Option 2. Option 2 promotes the proposed intervention of implementing the live HF CM education lecture course. The following ROI calculations were reported: FY 2019 = 70.6%, FY 2020 = 56.9%, and FY 2021 = 45.2%. This option predicts an average 3-year cost savings of $215,630.40. This option provides a solution to mitigate incidents of ineffective transitional care planning that contribute to increased hospital readmissions and poor clinical outcomes (Smith, 2011).

Option 3. Option 3 is an alternative to the proposed intervention. This option is a self-study HF CM education session, with the exact course content presented as in the live lecture

course. The ROI for Option 3 yielded the following: FY 2019 = 11.6%, FY 2020 = 8.6%, and FY 2021 = 5.8%. The corresponding ROIs suggest that the project outcomes are profitable, but not lucrative to provide a significant financial return for the organization, as observed in Option 2.

All three proposed options were examined, and Option 2 proved to be the best intervention to implement. This was a viable option demonstrating its ability to generate a profitable return while positively impacting professional development and enhancing clinical outcomes. Based on the options presented, it was expected that the administrative leaders would favorably endorse Option 2, as it supports the visionary goals of nursing excellence and organizational commitment to optimizing patient health outcomes.

Responsibility / Communication Plan

The responsibility and communication matrix illustrates the activities each team member was responsible for during this project (see Appendix I). The purpose of the CM education responsibility and communication matrix was to decrease miscommunication and increase productivity, so the process improvement project is guided to successful completion. IP collaboration between the NCM and novice nurses was essential for the success of the CM education-based program design. The HF NCM provided direction to the novice nurses on the CM process, barriers to discharge, and opportunities to enhance IP collaboration. Engagement between the IP members drove enhanced communication to impact patient care delivery, resulting in better health outcomes for the individual.

Cost, Benefit-Cost, Cost-Effectiveness, and Cost Avoidance Analysis

According to Opperman, Liebig, Bowling, Johnson, and Harper (2016), a cost analysis is an initial consideration when developing an educational program to determine the project's

feasibility. To calculate the cost for the HF CM education program for novice nurses, the total costs for the education program for one FY are added and then divided by the number of novice RNs to obtain the cost per participant. The cost analysis for the following FYs was found: 2019 = $11,360, 2020 = $12,352, and 2021 = $13,344. Four scheduled live HF CM education lecture courses for 80 new graduate RNs per year would be held. With the information available, the cost analysis for each FY was determined: 2019 = $11,360/80 = $142.00, 2020 = $12,352/80 = $154.40, and 2021 = $13,344/80 = $166.80 (see Appendix J).

The benefit-cost analysis compares the HF CM education program benefits to program costs as a ratio using dollars (Opperman et al., 2016). The benefit-cost ratio is calculated by dividing the project net returns by the project costs. The live HF CM education program benefit-cost ratio is calculated as: 2019 = 1.70, 2020 = 1.57, and 2021 = 1.45. Ratios that exceed 1.0 indicate that the project will have a positive ROI and justify further assessment and/or implementation. The cost-benefit of this project is achieved by avoiding one HF readmission ($19,368).

The academic medical center reported 123 readmission cases in 2019, which accounted for $2,383,494 in HF readmission costs (CMS, 2019). In 2019, the reduction goal of 10% for HF readmissions would reflect a cost savings of $238,249 for the organization. Assuming that the HF CM education program would positively influence decreasing hospital readmission rates, the hospital would achieve a total savings of $646,914 over a period of 3 years.

The cost-effectiveness analysis compares the HF CM education program to an alternative intervention. The novice nurse may have an option of a self-study course that allows the learner an average of three hours to complete or a 60-minute live education lecture course with the same content. Both educational learning options are intended to accomplish the same outcome of

increasing knowledge of novice nurse awareness of HF CM and reducing 30-day readmissions. The cost-effectiveness analysis for the live lecture course showed to be more cost-effective ($0.59) than the self-study course ($0.90). Lastly, cost avoidance measures were assessed, and any actions that prevent future costs were considered. Some examples of cost avoidance measures would be eliminating any imposed catering/facility/print fee increases from established vendors or a modification in equipment maintenance workarounds to avoid disruptions.

Study of the Intervention

The participant group consisted of eight novice nurses assigned to provide primary nursing care on the cardiovascular units within a Southern California academic medical center. The objective of the study and participation in the project were fully disclosed to interested candidates. Voluntary participation was certified from the novice nurses prior to the delivery of the live CM education lecture course at the *Cardiovascular Boot Camp*. Following consent, novice nurses were directed to complete a demographic form that collected information regarding age, education level, gender, nursing unit assignment, and work experience. Instructions on how to complete the modified NKHFEP surveys that assessed the cardiovascular novice nurses' understanding of the NCM role, as well as confidence in IP collaboration with the NCM on HF discharge planning, were thoroughly explained by the project leader. A 20-question, 5-point Likert scale (1 = *strongly disagree* to 5 = *strongly agree*) scored survey was distributed to the study participants at the *Cardiovascular Boot Camp* before and after the education intervention. Response scores from the NKHFEP survey provided data integrity from the participants. Data collected from the participants were handled with the utmost privacy. Each participant survey was assigned a unique identifier number that was used when the surveys were entered into a password-protected Excel spreadsheet. The project leader managed all data

on the Excel spreadsheet and performed data analysis from all completed surveys retrieved from the study participants. All eight distributed surveys were returned to the project leader, achieving a 100% return rate.

A baseline survey was performed to assess the novice nurses' current understanding of the CM role, knowledge of the discharge planning process, and the barriers to collaboration with the NCM. The pre-survey data revealed that 75% of participants reported that they were not knowledgeable of the NCM role and were not confident in IP collaboration with the NCM on HF discharge planning. Thirty-eight percent of participants indicated that they were not aware that a safe and effective transitional care plan should be established to prevent HF readmissions.

Evidence supports the benefits of utilizing the NKHFEP survey to detect knowledge disparities in the nurses' understanding of HF (Hart et al., 2011). The rationale for using the NKHFEP questionnaire was to provide novice nurses with the opportunity to assess the level of knowledge about HF self-management principles and CM (Hart et al., 2011). Baseline data showed that novice nurses lacked knowledge in HF CM. Measures to address process and patient outcomes were examined. These outcome measures to increase novice nurse awareness in HF CM, enhance confidence in early collaboration with the NCM on discharge planning, and the impact of the education program to effect avoidable HF readmissions were believed to be effective measures in guiding professional development. The perspective of all stakeholders was considered with the outcome measures studied.

Outcome Measures

Process Outcomes

There were two process outcomes evaluated in this project. The primary outcome was to increase novice nurse awareness of CM in HF, and the secondary outcome measure was to

enhance the confidence level of early collaboration between the NCM on transitional care planning through the successful completion of the education course. With enhanced knowledge of CM and a strong focus on IP partnership with the NCM regarding discharge planning, barriers to discharge were identified, and extended length of stay was addressed to avoid negative repercussions for not only the patient but also the healthcare organization. Improving current CM processes by offering novice nurses with education to better their understanding of CM and the importance of initial collaboration on transitional care planning led to positive outcomes.

Based on the assessment that novice nurses lack the knowledge about CM, an education program was developed in collaboration with a current HF NCM and clinical social worker. Evaluation from the key stakeholders was completed to ensure that pertinent information was included in the educational session where all course material was clear and defined. A baseline survey was performed prior to the educational intervention to assess the novice nurses' current understanding of the CM role, the discharge planning process, and the barriers to collaboration with the NCM.

The live CM education lecture session was provided to the novice nurses at the *Cardiovascular Boot Camp* in February 2020. Post-surveys evaluated the effectiveness of the CM education intervention and measured the level of awareness gained by the novice nurse about CM in HF. Knowledge obtained by the novice nurse was applicable across disciplines and improved the nurse's appreciation of the responsibilities and contributions of other IP members.

Patient Outcomes

Outcome measurements that are closely monitored within the HF population are readmission and mortality rates. The tertiary outcome measure for this project was to decrease HF 30-day readmissions post-intervention. HF readmissions are a concerning clinical and

financial problem affecting healthcare organizations. This measure is reported to commercial and government payers to review hospital readmissions as a quality and financial focus. Evidence proves that transitional care services are instrumental in preventing HF readmissions (Riegel et al., 2002). There is an expectation at the academic medical center that the primary RN will identify all HF patients and then notify the CM to begin assessment for anticipated transitional care needs in order to arrange post-acute services in a timely manner. Early collaboration on discharge planning between the novice nurse and NCM is imperative so that all appropriate transitional care needs are arranged to avoid unwarranted readmissions. HF readmissions rates were monitored to find a correlation if increased novice nurse knowledge of CM influenced decreased hospital 30-day readmissions by 10% at 4 months post-CM education.

Direct cost measures related to HF readmissions remain a concern for the health system to address and improve. Outcome metrics pertaining to HF readmissions, mortality, and length of stay are carefully observed within the HF population, as these factors have a monetary impact on the patient and the health organization. Opportunities to explore strategic measures to refine current care processes to achieve optimal patient health outcomes are a priority at the macrosystem level. As previously stated, these metrics are reported to commercial and government payers to review hospital readmissions as benchmarks to achieve quality and financial goals.

Analysis

Assessment of novice nurse knowledge of the NCM role and confidence in IP collaboration with the NCM on transitional care needs among the HF population were explored. Information was harvested from the responses provided by the participant group. The modified version of the NKHFEP survey, with a Likert score format, was used to examine the impact of a

CM education-based course to improve HF readmissions. The Likert scores calculated from the completed NKHFEP surveys were used as the data to draw inferences between enhanced knowledge on HF CM and health outcomes.

Evaluation of the most appropriate statistical analysis for this study was conducted. Since there was one modest participant group ($N = 8$) and assessed under two different conditions (e.g., pre- and post-education intervention), the Wilcoxon Matched-Pairs Signed Rank Test was selected. This nonparametric statistical test was chosen to determine the magnitude of the difference in novice nurse HF CM knowledge scores between pre- and post-education intervention (Schmuller, 2020). The following assumptions of the Wilcoxon Matched-Pairs Signed Rank Test were confirmed (Schmuller, 2020):

- The dependent variable being analyzed is ordinal (e.g., 5-point Likert score scale from *strongly disagree* to *strongly agree*) and non-normally distributed.
- The paired differences are independent.
- The differences between matched-pairs can be ranked.

Applicability of the Wilcoxon Matched-Pairs Signed Rank Test was suitable to compare the observed differences between the pre- and post-education scores, based on the assumptions presented. The Wilcoxon Matched-Pairs Signed Rank Test examined the outcome measurements regarding NCM knowledge and early collaboration with the NCM on discharge planning at pre- and post-education interventions. Calculations for the Wilcoxon Matched-Pairs Signed Rank Test were performed using Microsoft Excel and did not utilize any specialized statistical software program to analyze the corresponding data. The calculation of the difference in novice nurse knowledge scores of HF CM between pre- and post-education for each set of matched-pairs was performed. Next, the differences were ranked from 1 through 7 (i.e., smallest

to largest) and the signs of the observed difference were assigned to each rank (Glen, 2020). There was one pair that showed no difference and was omitted from further analysis. Then, the sum of ranks of the negative (W^-) and positive (W^+) differences were calculated. The test statistic for the Wilcoxon Signed Rank Test is W, where the smaller of the W^- or W^+ was used as the test statistic (Glen, 2020). The final participant group (*N*), Mean (*M*), Standard Deviation (*SD*), variance, and W critical value observed test statistic were determined. Lastly, the *z*-score and the *p*-value was computed to determine if the null hypothesis should be rejected or failed to reject. The one-sided W critical value reference for $N = 7$ and level of significance ($\alpha = 0.05$) was attained from the table of critical values of W (LaMorte, 2017).

The cardiovascular QAPI reports identified HF 30-day readmissions when patients were admitted through the emergency department. The cardiovascular outcomes group assisted the project leader with generating all cause-all payer reports to extract HF 30-day readmission rates before and after the CM education intervention. These reports were prepared to exclude any patient identifier information. The effectiveness of the CM education intervention was assessed by reviewing HF 30-day readmission reports provided by the cardiovascular QAPI specialist from February 2020 to June 2020. Guidance from the cardiovascular QAPI specialist confirmed that the HF 30-day readmissions data was accurate and appropriate to reference.

Ethical Considerations

Completion of the University of San Francisco Statement of Non-Research Determination questionnaire determined that this DNP project was an EBP change project (see Appendix K). It was certified to be a process improvement initiative for novice nurses. Institutional review board approval from the academic medical center's Human Research Protections Program office was not required, as there was not any direct patient contact

associated with this project. Chart reviews were not performed by the project leader, and all data abstraction was provided as de-identified reports through the academic medical center cardiovascular outcomes group. There were no other conflicts of interest to disclose.

The University of San Francisco's core values are influenced by Jesuit principles. It is important for healthcare professionals to be guided by their moral compass when delivering care. McIntyre and McDonald (2013) implied that the ability to theorize would encourage nurses to develop a robust belief system reflective of their current practice. Caring for the whole person, *Cura personalis* is a Jesuit framework that advocates for respect and individualized attention to the whole being (University of San Francisco, 2019). The implementation of the CM education-based program demonstrates visionary change to promote a culture of learning, service, and social justice, which is consistent with Jesuit values.

Accountability of the NCM is to uphold the nursing standards and Code of Ethics established by the American Nurses Association (ANA, 2015), which signifies that a nurse's allegiance is to all patients, including advocacy for the patient's health, safety, and rights. Preservation of the whole being must be embraced by the nursing professional. It is important for nurses to care for the whole person centering on the healing of the mind, body, and soul of that individual. Each patient should be given personalized care to ensure that the whole being is valued. Acting as moral agents empowers nurses to demonstrate acts of moral courage in their practice. In alignment with the vision of the health system and reinforced by the Jesuit values, nurses must be a voice for their patients by possessing a strong nursing philosophy (Bruce, Rietze, & Lim, 2014). A nurse's mission is exemplified by their patient care approach, which is enhanced through the individual's awareness and principles (Bruce et al., 2014).

Section IV: Results

Results

This project assessed if a CM education program enhanced the novice nurses' knowledge of HF CM and confidence to begin timely NCM collaboration on discharge planning. The assessment phase was performed from November 2019 to December 2019. The organizational assessment included the following: reviewed FY 2019-2020 hospital goals and HF 30-day readmission rates, conducted staff surveys and interviews, observed current CM practices, collected pre-intervention data, identified gaps, and developed an action plan.

The development of all tasks and activities to implement the CM education-based project was conducted from January 2020 to February 2020. The project leader identified novice nurses as the desired participant group. In partnership with the key stakeholders, the project objectives, learning outcomes, course content, delivery approach, and evaluation methods were established.

The project leader collaborated with the cardiovascular clinical nurse educators to include the live CM education lecture session in the *Cardiovascular Boot Camp* agenda. Advertisement of the CM education course and ensuring participation attendance from all novice nurses was also organized through the cardiovascular clinical education team. The project leader obtained consent from the novice nurse participants, distributed pre-surveys, delivered the education training, obtained immediate feedback from post-surveys, and filed education completion documentation. Implementation of the CM education course was initiated in February 2020.

Evaluation of the CM course, obtaining participant knowledge gained, analyzing the effect of improved care coordination workflow, reassessing HF 30-day readmissions, and reviewing suggestions for refining the course content and delivery were completed at this phase. In response to the alarming rise in coronavirus cases, modifications to the delivery of the live

CM education lecture course was discussed with stakeholders. Cancellations of a series of scheduled *Cardiovascular Boot Camp* sessions were made in accordance with changes to organization policies prompted by the coronavirus pandemic. An alternative plan to the live CM education lecture course led to further consideration to transition into a self-study HF CM education model in response to the pandemic. The novice nurse would have an option of a self-study course that would allow the learner 3 hours to complete via a web-based learning management system for training and professional development. Both educational learning platforms are intended to accomplish the same outcome of increasing knowledge of novice nurse awareness of HF CM and reducing HF 30-day readmissions. This alternative training design was supported by stakeholders but suspended until there was an adequate control of the coronavirus cases. Comprehensive data examined the novice nurses' level of CM competence by comparing it to HF 30-day readmission rates post-intervention, which was monitored from February 2020 to June 2020.

Results concluded that prior to the intervention, 75% of participants self-reported that they possessed no knowledge of the NCM role and had little confidence in early NCM collaboration. Thirty-eight percent of participants stated they were aware that an effective and safe transitional care plan should be established prior to discharge for HF patients. Participant scores increased by 33% after the NCM education intervention, illustrating that novice nurse awareness of CM in HF had been 100% achieved. A significant increase from pre-intervention CM knowledge and confidence level of NCM collaboration scores to post-intervention knowledge and confidence level of NCM collaboration scores was evaluated. Data analysis discovered an important relationship with NCM knowledge and early collaboration with the NCM at pre- and post-intervention ($p < .05$). The Wilcoxon Matched-Pairs Signed Rank Test

revealed a significant difference in the novice nurses' HF CM knowledge scores between pre-education and post-education, $N = 7$, $z = 2.37$, $p = .018$. It was identified that one matched-pair showed no difference and therefore eliminated from further analysis. There is sufficient evidence to imply that the *M* observed difference in HF CM knowledge scores are different between pre- and post-education. The HF 30-day readmission rate was 26% at pre-intervention (February 2020). The HF 30-day readmission rate at 4 months post-intervention was 23%. Therefore, a 12% reduction in HF readmissions was observed, based on the enhanced collaboration among the IP team to successfully secure a safe transitional care plan. A comprehensive results table is found in Appendix L.

There were two process outcome measures investigated in this DNP project. The primary process outcome measure assessed was the level of novice nurse awareness of HF CM through the successful completion of the education program. Additionally, the secondary process outcome measure examined was the confidence level of early collaboration between the NCM and novice nurse on transitional care planning. Baseline data from pre-surveys assessed the novice nurses' current understanding of the CM role and confidence level of IP collaboration with the NCM to establish an appropriate transitional care plan to prevent readmissions. Upon completion of the delivery of the live CM education lecture course to the novice nurses at the February *Cardiovascular Boot Camp*, post-surveys concluded that 100% of participants enhanced their knowledge about the NCM role and CM in HF.

The patient outcome measure for this project examined if there was a correlation between increased knowledge of establishing transitional care plans to decreased HF readmissions post-intervention. Riegel et al. (2002) reported that transitional care services were successful in preventing avoidable HF readmissions. HF 30-day readmission rates were monitored post-

intervention, and it was confirmed that there was a correlation associated with increased novice nurse knowledge of CM that impacted hospital 30-day readmissions by 12% at the termination of this process improvement project.

The coronavirus pandemic hindered the recruitment of novice nurse cohorts and delivery of the live CM education lecture course at scheduled *Cardiovascular Boot Camps* for FY 2019-2020. The unintended consequence of the pandemic led to a small participant group of eight novice nurses to garner a larger set of data collection and analysis. All relevant data were obtained, and no missing data were found to affect the results.

Section V: Discussion

Summary

The project successfully achieved the aim to enhance awareness of CM in HF among novice nurses through a CM education-based program. The objective was to increase knowledge of the NCM role, to promote IP collaboration with the NCM on transitional care planning of HF patients, and to decrease HF readmission rates by 10% at the end of June 2020. Effective communication and collective discharge planning with an IP approach were imperative to decreasing avoidable readmissions. The rationale supported by this DNP project was to break down healthcare silos that threaten to prevent health systems from delivering optimal patient-centered care. Breaking down silos empowers organizations to provide evidence-based care practice, resulting in an efficient and reliable healthcare system. The CM education program shaped the delivery of optimal care practice, resulting in improved working relationships and the overall health of the patient.

Results yielded that prior to the intervention, 75% of participants self-reported that they lacked knowledge of the NCM role and possessed minimal confidence in early NCM collaboration. An increase in participant scores by 33% after the NCM education intervention demonstrated that novice nurse awareness of CM in HF had been attained. Data analysis found a meaningful relationship with novice nurse awareness of HF CM knowledge and early collaboration with the NCM at pre- and post-intervention ($p < .05$). The Wilcoxon Matched-Pairs Signed Rank Test inferred that the *M* observed difference in novice nurses' HF CM knowledge scores were significantly different between pre- and post-education, $N = 7$, $z = 2.37$, $p = .018$. Furthermore, HF readmissions decreased by 12% at the end of June 2020, which

supported the validity that enhanced collaboration among the IP team was required to secure an individualized transitional care plan to satisfy the patient's post-acute needs.

The success of the project was primarily based on the receptiveness and engagement of all stakeholders to support opportunities for professional growth to guide clinical practice to improve the well-being of the HF patient. All project members fully supported this education initiative and understood the benefits that the project goals had, which aligned with the mission of the health system. An alternative delivery approach for the live CM education lecture course emerged as a strategic, innovative response to the coronavirus pandemic. The dissemination plan is to present a comprehensive project summary report of key findings to all stakeholders via virtual conference. An additional consideration for the project leader will be the intent to publish in a peer-reviewed nursing journal to disseminate study findings at the global level.

Implications for advanced nursing practice are to leverage the core competencies developed for nursing change agents to act as healthcare advocates to eliminate barriers associated with improving care processes. The advanced practice nurse leader is in a dynamic position to influence change at the organizational, federal, state, and local levels regarding health policy issues. Emerging nurse leaders are at the forefront to bridge the gaps between advocacy for change and provisions to the quality of care practice.

Interpretation

Advancements in healthcare have been challenged with a demand to increase the level of excellence of care delivered to a clinically complex patient population. An IP education EBP approach to embracing opportunities for professional growth and improve daily care practice to garner overall health outcomes for the HF population was explored. The development and execution of an IP education model focused on increasing the knowledge of CM and IP

collaboration for transitional care planning between the NCM and novice nurses to reduce avoidable HF 30-day readmissions produced favorable results. The tremendous impact that IP education has on novice professionals was to increase awareness of IP roles and responsibilities, effective communication, and positive impact on patient and process outcomes. According to Homeyer et al. (2018), novice professionals trained in an IP approach were observed to have better IP collaborative practice competencies compared to others without IP education. The promising results from this project strengthen evidence-based research where an IP education model is valuable for new healthcare graduates. The project assumptions made were:

1. Participants provided authentic and honest responses to the CM knowledge level.
2. Participation in the study was voluntary and there was a genuine willingness to participate.
3. Delivery of the live CM education lecture course was conducted in a consistent and reliable manner.

With a 33% increase in participant scores after the delivery of the CM education intervention, the level of CM knowledge and confidence with IP collaboration achieved a reduction in HF 30-day readmissions by 12%. These findings imply that the impact of a CM education-based course to increase novice nurse awareness of NCM knowledge and early collaboration with the NCM at pre- and post-intervention is reassuring. Based on the Wilcoxon Matched-Pairs Signed Rank Test, the *M* observed difference in novice nurses' HF CM knowledge scores were significantly different between pre- and post-education, $N = 7$, $z = 2.37$, $p = .018$. Data analysis revealed that participant pre- and post-education knowledge scores are not equal to one another. Thus, there is adequate findings to illustrate that there is a considerable difference between the pre- and post-education knowledge scores.

There were no differences found between observed and anticipated outcomes. The desired participant group of novice nurse professionals were appropriate to consider for the CM education intervention as they are essential healthcare workers who would greatly benefit from additional training and education for professional growth. The process and patient outcomes presented for this project were successfully achieved within the context setting.

Costs related to HF readmissions are a problem for the health system to tackle and improve. Outcome metrics pertaining to readmissions, mortality, and length of stay were closely examined within the HF population. These areas of concern have a monetary impact not only for the patient but for the health organization as well. Opportunities to explore novel measures to refine current care processes to achieve the desired outcomes were endorsed by the academic medical center. If the HF CM education program can be sustained to afford a minimum reduction of hospital readmission rates by 10%, then the health system would project to observe a total cost savings of $646,914 over the next three years.

Nurse executives are fundamental leaders to guide healthcare practice by pioneering quality and process improvement initiatives. The implementation of the live CM education lecture course for new graduate nurses illustrated encouraging results for the refinement of the existing orientation program as it impacted outcome measures, professional development, and performance. The evidence presented calls for nurse leaders to influence key stakeholders to use evidence-based education methods to not only improve but uphold the highest standards in clinical processes and patient outcomes at the institutional level. It is essential for novice professionals to feel empowered by organizational and nursing leadership for a successful transition into their clinical role during their first year of practice. IP education is a proven

approach for novice healthcare professionals to effectively expand clinical competence and knowledge.

The project findings suggested that there is an association between IP collaboration and overall health outcomes among the HF population. Shared governance with the intent to improve the well-being of the community will transpire by crossing boundaries to foster partnerships. As previously stated, boundary spanning in healthcare can eradicate silos and reinforce connections between IP teams. This conceptual framework was supported by the reassuring results seen through the implementation of the CM education-based program for the novice nurse. The program shaped the mode of best care practice, enhanced clinical knowledge, improved working relationships, and patient outcomes.

Limitations

The process improvement project had the following limitations: (a) small participant group to partake in education intervention course, (b) relevance of the information to impact clinical practice of other interdisciplinary teams (e.g., physical therapists or occupational therapists), and (c) applicability of results to influence non-academic medical centers. Due to the effect of the coronavirus pandemic, the *Cardiovascular Boot Camps* that included the live CM education lecture course to novice nurse cohorts were canceled or postponed until further notice, affecting voluntary participation in the education intervention. The eight novice nurse participants afforded a modest response for pre- and post-survey completion, which led to obtaining a less vigorous construct of analytical data to examine. Although other IP disciplines would greatly benefit from enhancing CM knowledge, the emphasis on nursing influence was explored. All other disciplines were excluded from the intervention. As primary members of the IP care team, novice nurses are classified as essential frontline healthcare workers caring for

these high-risk patients. It was suitable to consider the target audience of new graduate nurses for the CM education program. Lastly, results obtained from this project were not implemented at private or community-based hospitals. Future research to incorporate the CM education course within other IP new graduate orientation programs and continuing education for seasoned nurses is warranted and should be considered.

Conclusion

HF readmissions remain a national problem and influence the rise in healthcare expenses among adults. Transitional care interventions and discharge planning with an IP approach are considered valuable factors to improve patient health outcomes. Understanding the importance of the NCM role and early IP collaboration to coordinate transitional care services for HF patients is imperative.

CM is a specialized clinical practice designed to coordinate and manage patient care (White & Hall, 2006). CM is effective for improving the quality of care among HF patients post-hospitalization. Awareness of the NCM role and transitional care process will afford the novice nurse confidence in IP collaboration on meeting the discharge needs of the patient. The implementation of a CM training program to enhance IP collaboration on discharge planning demonstrated to be useful for the novice nurse. Gaining enhanced knowledge about the NCM role and creating strong IP relationships promoted collaboration of effective HF CM interventions by the novice nurse and offered a sense of belonging to the care team.

Other IP disciplines were excluded from the intervention despite relevancy to the group. These key IP members would greatly benefit from increasing awareness of CM knowledge and confidence level with NCM collaboration on transitional care planning to prevent unnecessary readmissions. Additional research to assess for knowledge of HF CM among these other

important IP contributors and seasoned nurses is essential and recommended for further consideration. A strong partnership with the IP team will substantially affect clinical outcomes for chronically ill patients requiring complex care services.

IP education is a valuable method for the novice nurse to expand clinical skills and competency. As a new member of the IP care team, novice nurses must establish trusted relationships with their patients and successfully collaborate with the care team to excel in practice. Literature supported the implementation of an IP education program to address the clinical understanding of the NCM and how the reduction of HF readmissions correlates to better health outcomes within the HF population.

There are various challenges for the viability of the CM education program which includes: (a) a deficient number of experienced HF NCMs qualified to teach staff and (b) limited financial resources to fund this specialized course. Despite these identified barriers, the opportunity for professional development and enhanced care practice justifies the need to move forward with launching a standardized IP education program in every institution. The potential for transformation to influence other healthcare settings based on the benefits of a CM education-based course was shown to be effective and financially advantageous.

The successful transition from a novice to a seasoned nurse is greatly influenced by team and organizational support. Supportive relationships encourage confidence in IP collaboration and promote opportunities for engagement among other clinical disciplines. The growth of the novice nurse is dependent on a combination of continued education and experience. The legacy of nursing practice is found in our novice nurses, and investing in their future is a valued commitment to their professional development.

Section VI: Other Information

Funding

There are no sources of funding regarding the support of this DNP project to disclose.

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Section VIII: Appendices

Appendix A. Evaluation Table

Citation	Purpose of Study	Design/Method	Sample/Setting	Study Findings	Appraisal Rating
Clarkson et al. (2017)	Assess the impact of a HF education-based program on hospital readmissions.	Retrospective case-control study design	106 NYHA function class II/III HF patients (53 female and 53 male participants). Acute care hospital in Northeast FL.	There is a significant correlation among patients who attended HFU for continued outpatient education and a decrease in readmissions (χ^2 [1, N = 106] = 5.68, p = .02).	Good Quality-Level III
Cockerham et al. (2011)	Effectiveness of post-orientation education program (POEP) for novice nurses to increase knowledge, improve confidence, develop trusting relationships with colleagues.	Qualitative, phenomenology	18 newly hired nurses (NHN) during their first year of practice at a general pediatric unit within a Magnet-certified, urban, academic, tertiary hospital.	The POEP expanded the clinical knowledge of the NHNs, build confidence, and foster trusting relationships and among care partners. The innovative program enhanced quality care delivery and provided ongoing support to NHNs for success during their first year of practice.	Good Quality-Level III
Driscoll et al. (2015)	Effectiveness of a hospital-wide diversion plan to improve communication and collaboration to decrease internal diversions.	Quality improvement, cyclic method	600-bed academic, tertiary care specialty hospital. Neuroscience service line.	Enhanced IP collaboration minimized internal diversions and improved patient flow, while increasing patient safety.	Good Quality-Level V
Ehrlich et al. (2012)	Gain an understanding of the difference between usual chronic condition care and the work of chronic condition care coordination.	Qualitative, thematic analysis	Ten general practitioners and six RNs (N = 16) who provided CM to patients with complex chronic conditions in practicing in an Australian healthcare setting.	Four themes were identified to describe the process of CM: 1) moving beyond usual practice by spanning boundaries, 2) relationship-based care, 3) agreed roles and routines among relevant parties, and 4) committing to chronic condition CM.	Good Quality-Level V
Gray et al. (2013).	Identify the areas where role confusion and uncertainty are present in NCM.	Qualitative, phenomenology	NCMs (N = 25) practicing in small East Coast medical outpatient clinics.	NCMs experienced role confusion with time resource, capabilities, and various individual roles. In addition,	Good Quality-Level III

			Valid RN license.	conflict and misperception on multi-facet role and responsibility of NCM.	
Heckman et al. (2018)	Develop a sustainable and effective IP HF care process in long-term care (LTC).	Mixed-methods design	Convenience sample of two units of two LTC facilities in South Central Ontario, Canada.	EKWIP-HF was feasible. HF knowledge and IP collaboration improved.	Good Quality-Level IIIb
Hellwig et al. (2003)	Explore the meaning of advocacy from the NCM's view.	Qualitative, descriptive, phenomenology	NCMs (*N* = 7) from two New Jersey Hospitals. Experienced NCM (2 years or more in CM). Inpatient RN female CMs only. BSN or MSN graduate.	Patient advocacy is the focus of the NCM. Five categories emerged to describe the meaning of advocacy from the NCM's perspective: 1) Advocacy Perspective, 2) Taking Care of Business, 3) Being a Veteran, 4) Barriers and Facilitators, and 5) Feelings Related to the Work of Advocacy.	Good Quality-Level III
Joo & Huber (2014)	Examine the effectiveness of CBCM programs in improving patient outcomes.	Integrative review guided by Whittemore & Knafl (2005) methodology	18 articles selected and appraised. RN or NCM led intervention. Transitional care interventions duration of 6 weeks to 4 years. Chronic disease patients.	CBCM decreased hospital access outcomes, especially readmissions and increased cost effectiveness, patient outcomes, and satisfaction.	Good Quality-Level V
MacDonald et al. (2009)	Examine the competency knowledge of professional role of others and its associated behavioral indicators, especially as these relate to the interprofessional education of nursing students.	Qualitative study guided by Grounded Theory approach.	Canadian healthcare professionals involved with interprofessional practice (*N* = 24).	Six key competencies of interprofessional collaboration for patient-centered practice was identified. Knowledge of the professional role of others was found to be the most significant with improving clinical practice and well-being of the patient.	Good Quality-Level III
Pfaff et al. (2013)	Evaluate barriers and facilitators to new graduate nurse engagement in IP collaboration.	Integrative review guided by Whittemore & Knafl (2005) methodology	26 articles selected and appraised. New graduate nurse relationships focused on IP collaboration. North American care settings.	New graduate nurse barriers to IP collaboration were individual (self-confidence, knowledge, experience, or communication), team, and leadership factors.	Good Quality-Level V

Pfaff et al. (2014)	Explore new graduate nurse confidence in IP collaboration.	Mixed-methods, cross-sectional descriptive survey	New graduate nurses (*N* = 514) practicing at acute, community, and long-term care facilities in Ontario, Canada.	New graduate nurses reported increased confidence were based on new graduate nurse development as well as team and leadership support.	Good Quality-Level IIIb
Riegel et al. (2017)	Validate the value of telephonic transitional CM in lowering hospital admissions, improving health-related quality of life (HRQL) and despair in HF Hispanic patients.	Quantitative-Experimental/ RCT	Hispanic HF inpatients (*N* = 134) were enrolled from two Southern California Hospitals and randomized to receive telephonic care intervention (*N* = 69) or routine care (*N* = 65). Mexican descent. Elderly adults: 65 years old or older. Men or women. English or Spanish speaking. Acute care.	No significant group differences were found in HF readmissions (usual care: 0.49 ± 0.81 [CI 0.25-0.73]; intervention: 0.55 ± 1.1 [CL 0.32-0.78] at 6 months). No group differences were found in readmission rates, hospital days, costs, mortality, HRQL, or depression. Telephonic transitional CM was not adequate to improve patient outcomes in HF Hispanic patients.	Good Quality-Level I
Riegel et al. (2002)	Assess the effectiveness of telephonic transitional CM intervention on resource use in chronic HF patients.	Quantitative RCT	Patients (*N* = 358) from two Southern California Hospitals assigned to receive 6 months of telephonic care intervention (*N* = 130) or routine care (*N* = 228) based on the group their provider was randomized. HF diagnosed patients. Practicing cardiology or internal medicine physician. Acute care.	HF hospitalization rate was lower in the intervention group at 3 months (45.7%, *p* = .03) and 6 months (47.8%, *p* = .01), hospital days (*p* = .03), multiple readmissions (*p* = .03), and costs (45.5 %, *p* = .04). Increase in patient satisfaction in the intervention group.	Good Quality-Level I
Thoma & Waite (2018)	Examine NCM experiences within an acute care international healthcare system on early collaboration with multidisciplinary team on discharge planning.	Qualitative, descriptive	NCMs (*N* = 8) who practiced in a German teaching hospital. Seven women participants and one male participant. Ages 30-45.	Patient advocacy is important for effective collaboration between NCM, patient, and care team to establish a safe discharge plan. Significant themes that emerged were professional competency of the NCM as self-valued or valued by peers, shared collaboration between CM and patients, as well as identification of barriers to discharge.	Good Quality-Level III

Appendix B. Nurses' Knowledge of Heart Failure Self-Management Education Principles Survey

We would like to assess your education needs related to instructing patients about self-management of heart failure and knowledge of case management.

Instructions: Please answer each question by placing an **X** in the answer box that most reflects how much you 1 = strongly disagree to 5 = strongly agree with the following statements.

Need More Info on Subject	Statement	Strongly Disagree	Disagree	Neither Agree or Disagree	Agree	Strongly Agree
	1. Patients with heart failure should drink plenty of fluids each day.	1	2	3	4	5
	2. As long as no salt is added to foods, there are no dietary restrictions for patients with heart failure.	1	2	3	4	5
	3. Coughing and nausea/poor appetite are common symptoms of advanced heart failure.	1	2	3	4	5
	4. Patients with heart failure should decrease activity and most forms of active exercise should be avoided.	1	2	3	4	5
	5. If the patient gains more than 3 pounds in 48 hours without other heart failure symptoms, they should not be concerned.	1	2	3	4	5
	6. Swelling of the abdomen may indicate retention of excess fluid due to worsening heart failure.	1	2	3	4	5
	7. If patients take their medications as directed and follow the suggested lifestyle modifications, their heart failure condition will not return.	1	2	3	4	5
	8. When patients have aches and pains, aspirin and non-steroidal anti-inflammatory drugs (NSAIDs like Ibuprofen) should be recommended.	1	2	3	4	5
	9. It is OK to use potassium-based salt substitutes (e.g. No-Salt or Salt Sense) to season food.	1	2	3	4	5
	10. If patients feel thirsty, it is OK to remove fluid limits and allow them to drink.	1	2	3	4	5

	11. When a patient adds an extra pillow at night to relieve shortness of breath, this does not mean that the heart failure condition has worsened.	1	2	3	4	5
	12. If a patient wakes up at night with difficulty of breathing, and the breathing difficulty is relieved by getting out of bed and moving around, this does not mean that the heart failure condition has worsened.	1	2	3	4	5
	13. Lean deli meats are an acceptable food choice as part of the patient's diet.	1	2	3	4	5
	14. Once the patient's heart failure symptoms are gone, there is no need for obtaining daily weights.	1	2	3	4	5
	15. Patients with a weight gain of 3 pounds in 5 days without symptoms should notify their heart failure physician.	1	2	3	4	5
	16. Patients with a new onset or worsening fatigue should notify their heart failure physician.	1	2	3	4	5
	17. Patients with a new onset of worsening leg weakness or decreased ability to exercise should notify their heart failure physician.	1	2	3	4	5
	18. I am knowledgeable of the nurse case manager role and their responsibilities.	1	2	3	4	5
	19. I am confident on interprofessional collaboration with the nurse case manager on heart failure discharge planning.	1	2	3	4	5
	20. I am aware that an effective and safe transitional care plan should be established to prevent heart failure 30-day readmissions.	1	2	3	4	5

Appendix C. Gap Analysis

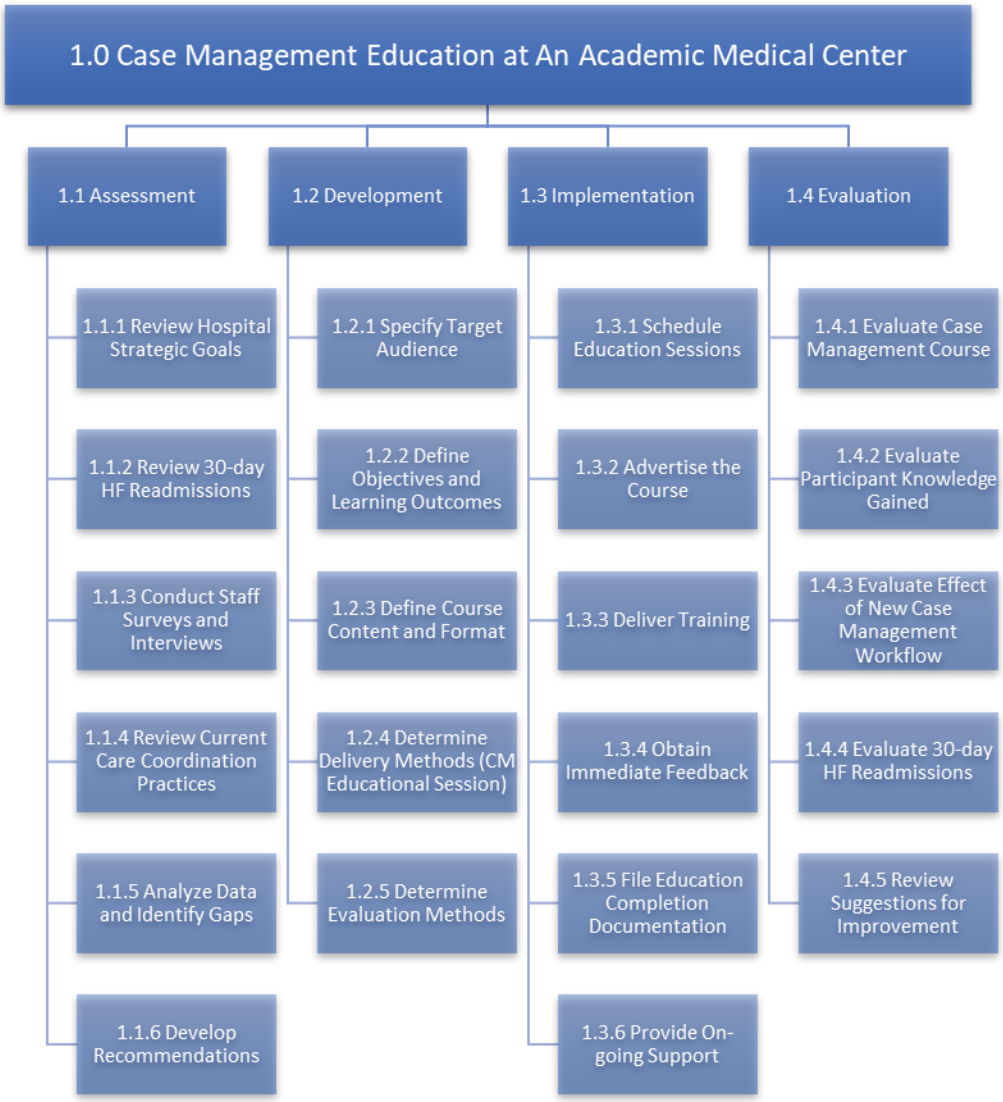
Current State	Desired State	Identified Gap	Gap Due to Knowledge	Methods Used to Identify Clinical Practice Gap
Novice RNs are unfamiliar with the NCM role and the discharge planning process.	Novice RNs will gain a better understanding of the NCM role and the discharge planning process.	Novice RNs have not been properly educated on the NCM role and process to initiate discharge planning.	Novice RNs are unfamiliar of NCM duties and lack confidence to initiate early collaboration with NCM on discharge planning needs.	Needs assessment demonstrate that 75% of novice RNs lack knowledge about the NCM role and how to initiate collaboration with the NCM on discharge planning needs.

Appendix D. Gantt Chart

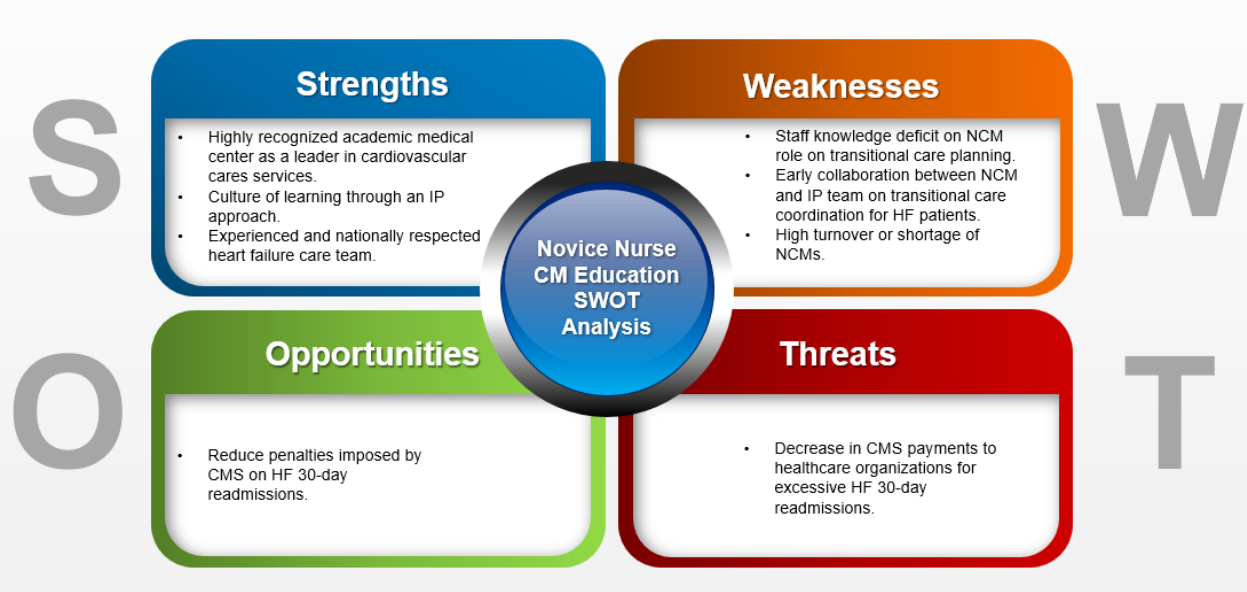
	2019												2020											
Case Management Education Program for Novice Nurses	**JAN**	**FEB**	**MAR**	**APR**	**MAY**	**JUNE**	**JULY**	**AUG**	**SEPT**	**OCT**	**NOV**	**DEC**	**JAN**	**FEB**	**MAR**	**APR**	**MAY**	**JUNE**	**JULY**	**AUG**	**SEPT**	**OCT**	**NOV**	**DEC**
Semester 1: Spring 2019																								
Establish AMC Leadership Preceptorship	X	X	X	X																				
Organizational Analysis of AMC				X	X																			
Completion of CM Education Program WBS				X	X																			
Semester 2: Summer 2019																								
Confirmation of AMC Practicum Site					X	X																		
Meeting with AMC Preceptor and Stakeholders					X	X	X	X																
Organizational Analysis of AMC						X	X	X																
Affiliation Agreement Approval between USF and AMC							X	X																
Completion of Proposed Project Evaluation Plan								X																
Semester 3: Fall 2019																								
Affiliation Agreement Approval between USF and AMC								X	X	X														
Create CM Education Program SWOT Analysis									X	X														
Meeting with AMC Preceptor and Stakeholders									X	X	X	X												
Assess Current CM Standard of Work Practice/Processes										X	X	X												
Selection of Cardiovascular Novice Nurse Cohort											X	X												
Interprofessional Collaboration on CM Education with CNEs, HF NCM, and Clinical Social Worker											X	X												
Semester 4: Spring 2020																								
Establish AMC Team Members													X											
Determine Course Objectives and Learning Outcomes													X	X										
Review HF 30-Day Readmission Rates Pre-CM Education													X	X										
Define Course Content and Format													X	X										
Determine Delivery Methods													X	X										
Determine Evaluation Methods													X	X										
CM Education Program Team Meetings													X	X	X	X	X							
Schedule Education Program and Enrollment													X	X										
Advertise Live CM Education Lecture Session													X	X										
Distribute Pre-Test NKHFEP Surveys														X										
Deliver Live CM Education Lecture Session to Novice Nurse Cohort														X										
Obtain Immediate Feedback From Participants														X										
Distribute Post-Test NKHFEP Surveys														X										
File Education Documentation														X										
Evaluation of CM Education Program															X	X	X							

Semester 5: Summer 2020																								
Meeting with AMC CM Project Members																	X	X	X	X				
Evaluation of CM Education Program																	X	X						
Data Collection of CM Education Program Results																		X	X	X				
Evaluation of CM Education Program Results																		X	X	X				
Data Analysis of CM Education Program																			X	X				
Provide On-Going CM Support to Participants																	X	X	X	X				
Semester 6: Fall 2020																								
Meeting with AMC CM Project Members																				X	X	X	X	X
Evaluation of CM Education Program Results																				X	X	X		
Data Analysis of CM Education Program																				X	X	X		
Evaluation of Present CM Standard of Work Practice/Processes																				X	X	X		
Evaluation of Post-CM Education																				X	X	X		
Provide On-Going CM Support to Participants																				X	X	X	X	X
Review HF 30-Day Readmission Rates Post-CM Education																				X	X	X		
Review Project Improvement Recommendations																				X	X	X		
Completion of DNP Project																				X	X	X	X	X

Appendix E. Work Breakdown Structure



Appendix F. SWOT Analysis



Appendix G. Budget Estimate

Personnel Expenses		
DNP Candidate (Project Leader)		$0
Program Manager/QAPI Specialist	4.0 x $60	$240
Cardiovascular Data Analyst	3.0 x $40	$120
Cardiovascular Nursing Director	3.0 x $80	$240
Cardiovascular Nursing Educator	6.0 x $60	$360
Cardiovascular Case Manager	13.0 x $60	$780
Cardiovascular New Graduate RN	1.0 x $40 (20 participants)	$800
Subtotal Personnel Expenses		**$2,540**
Program Expenses		
Printing Materials/Supplies		$500
Meeting Expenses		$500
Catering/Food		$800
Subtotal Program Expenses		**$1,800**
Total Program Costs		**$4,300**

Appendix H. Return on Investment

Key Performance Outcome: Heart Failure 30-Day Readmissions	FY 2019	FY 2020	FY 2021
Average Cost	$19,368	$19,368	$19,368
Total Cases	123	111	100
Total Readmission Costs	$2,382,264	$2,149,848	$1,936,800
Total Live Lecture NGRN CM Education Costs	$11,360	$12,352	$13,344
Total Self-Study NGRN CM Education Costs	$17,360	$17,832	$18,304
Net Difference between Self-Study and Live Lecture Course	$6,000	$5,480	$4,960
Benefit-Cost Analysis Live Lecture	1.70	1.57	1.45
CEA-Live	$0.59	$0.64	$0.69
Benefit-Cost Analysis Self Study	1.12	1.09	1.06
CEA-Self Study	$0.90	$0.92	$0.95
Reduction Goal	10%	10%	10%
Savings	$238,226.40	$214,984.80	$193,680.0
Return on Investement Live Lecture Course: (Total Benefit-Total Cost)/(Total Cost) * 100	*70.6%*	*56.9%*	*45.2%*
Return on Investement Self-Study Course: (Total Benefit-Total Cost)/(Total Cost) * 100	*11.6%*	*8.6%*	*5.8%*

Appendix I. Responsibility/Communication Matrix

Name	Role	Responsibility	Communication Method
DNP Candidate (Project Leader)	Project Manager	Conduct literature review, identify gap in current clinical practice, collaborate with organizational leadership to develop a standardized CM process to assist with reducing HF 30-day readmissions	In-person/virtual meetings and emails
CNO	Support and collaboration	Provide support and approval for project	In-person/virtual meetings and emails
CAO-CM	Support and collaboration on CM discharge planning process and education course	Provide support and approval for process	In-person/virtual meetings and emails
Cardiovascular Center Nursing Leadership	Support and collaboration on CM education program	Provide support for process and guidance	In-person/virtual meetings and emails
Quality Improvement Leadership	Support and collaboration on CM education program	Provide support for process and guidance	In-person/virtual meetings, presentation, and emails
Cardiovascular Clinical Nurse Educator	Support and guide on CM education program	Provide support for process and guidance	In-person/virtual meetings and emails
Cardiovascular Center RN Case Manager	Support, collaboration, and present at CM education program	Provide support for process and present at CM education program	In-person/virtual meetings, presentation, and emails
New Graduate RNs	Support and engagement in the CM education program	Collaboration on CM discharge planning process and CM education program	In-person meetings/virtual, presentation, and emails

Appendix J. Cost-Benefit Analysis

Heart Failure Case Management Education Program for New Graduate Registered Nurses (NGRN)-Live Lecture Course	FY	2019	FY	2020	FY	2021
Personnel Costs						
Internal Labor Costs for Course Development	**Hours**	**Rate**	**Hours**	**Rate**	**Hours**	**Rate**
Clinical Nurse Educator	6.0	$60	6.0	$62	6.0	$64
RN Case Manager	12.0	$60	12.0	$62	12.0	$64
Subtotal	18.0	**$1,080**	18.0	**$1,116**	18.0	**$1,152**
Internal Labor Costs for Course Presenters	**Hours**	**Rate**	**Hours**	**Rate**	**Hours**	**Rate**
RN Case Manager	1.0	$60	1.0	$62	1.0	$64
Subtotal	1.0	**$60**	1.0	**$62**	1.0	**$64**
Production and Material Costs		**Costs**		**Costs**		**Costs**
Conference Room		$500		$550		$600
Educational Materials/Supplies (Printing)	$5/80 units	$400	$6/80 units	$480	$7/80 units	$560
Subtotal		**$900**		**$1,030**		**$1,160**
Miscellaneous Costs		**Costs**		**Costs**		**Costs**
Food/Beverages	$10/80 NGRNs	$800	$11/80 NGRNs	$880	$12/80 NGRNs	$960
Subtotal		**$800**		**$880**		**$960**
Total Cost		**$2,840**		**$3,088**		**$3,336**

Heart Failure Case Management Education Program for New Graduate Registered Nurses (NGRN)-Self Study Course	FY	2019	FY	2020	FY	2021
Personnel Costs						
Internal Labor Costs for Course Development	**Hours**	**Rate**	**Hours**	**Rate**	**Hours**	**Rate**
Clinical Nurse Educator	6.0	$60	6.0	$62	6.0	$64
RN Case Manager	12.0	$60	12.0	$62	12.0	$64
Subtotal	18.0	**$1,080**	18.0	**$1,116**	18.0	**$1,152**
Internal Labor Costs for Course Presenters	**Hours**	**Rate**	**Hours**	**Rate**	**Hours**	**Rate**
RN Case Manager	1.0	$60	1.0	$62	1.0	$64
Subtotal	1.0	**$60**	1.0	**$62**	1.0	**$64**
Miscellaneous Costs	**Hours**	**Rate**	**Hours**	**Rate**	**Hours**	**Rate**
NGRN (80 Participants)	1.0	**$3,200**	1.0	**$3,280**	1.0	**$3,360**
Subtotal	1.0	**$3,200**	1.0	**$3,280**	1.0	**$3,360**
Total Cost		**$4,340**		**$4,458**		**$4,576**

Appendix K. Statement of Non-Research Determination

Student Name: Emily Trefethen

Title of Project:

An Education Program for Novice Nurses to Increase Case Management Knowledge

Brief Description of Project:

Heart Failure (HF) is one of the costliest cardiovascular diseases in the United States. It is the main reason for adult hospitalizations and a leading contributor to the rise in healthcare costs. Case Management (CM) is effective for improving quality and safety outcomes among HF patients. Transitional care interventions and discharge planning with a multidisciplinary approach are considered valuable factors in decreasing HF admissions.

Evidence has demonstrated the success of the nurse care manager (NCM) role for supporting people with chronic diseases like HF. However, the vagueness of the NCM role exists in clinical practice. For care interventions to be effective with improving patient and safety outcomes, understanding the value of the NCM role is key. There is a correlation between the success of transitional care interventions and collaboration with the NCM to effectively attain better health effects.

Early collaboration between NCM, patient, family, and the interprofessional team is essential to developing a safe discharge plan. It is important to emphasize that a successful discharge plan can be acquired through patient and family collaboration to attain desirable health results. Implementation of a live CM education lecture course for novice nurses is anticipated to effectively increase awareness of the NCM role, enhance confidence of IP collaboration with the NCM pertaining to HF discharge planning, and decrease HF 30-day readmissions.

A) Aim Statement:

To increase knowledge of the NCM role, to promote IP collaboration with the NCM on transitional care planning of HF patients, and to decrease HF readmission rates by 10% at 4 months post-implementation of the CM education program.

B) Description of Intervention:

The vagueness of the NCM role exists in clinical practice. For care interventions to be effective with improving patient and safety outcomes, understanding the value of the NCM role is key. There is a correlation between the success of transitional care interventions and collaboration with the NCM to effectively attain better health effects. Early collaboration between NCM, patient, family, and the interprofessional team is essential to developing a safe discharge plan. It is important to emphasize that a successful discharge plan can be acquired through patient and family collaboration to

attain desirable health results. Implementation of a live CM education lecture course for novice nurses is anticipated to effectively increase knowledge of the NCM role, enhance confidence of IP collaboration with the NCM pertaining to HF discharge planning, and decrease HF 30-day readmissions.

The CM education-based program will be designed to offer cardiovascular novice nurses at a large academic medical center with better knowledge of the NCM role and emphasize the importance for early collaboration on discharge planning for HF patients to avoid unnecessary admissions. Consent from participants will be obtained prior to data collection. After obtaining consent, the proposed live CM education lecture session will be delivered during the Cardiovascular Boot Camp.

C) How will this intervention change practice?

Implementation of a live CM education lecture course for novice nurses is anticipated to effectively increase knowledge of the NCM role, enhance confidence of IP collaboration with the NCM pertaining to HF discharge planning, and decrease HF 30-day readmissions.

D) Outcome measurements:

There are two process outcome measures and one patient outcome measure that will be evaluated in this DNP project. The primary process outcome will assess the level of novice nurse awareness of HF CM through the successful completion of the CM education program. Additionally, the secondary process outcome will examine the confidence level of early collaboration between the NCM and novice nurse on transitional care planning. The tertiary outcome for this process improvement project is to decrease HF 30-day readmissions post-intervention.

To qualify as an Evidence-based Change in Practice Project, rather than a Research Project, the criteria outlined in federal guidelines will be used:
(http://answers.hhs.gov/ohrp/categories/1569)

☐ This project meets the guidelines for an Evidence-based Change in Practice Project as outlined in the Project Checklist (attached). Student may proceed with implementation.

☐ This project involves research with human subjects and must be submitted for IRB approval before project activity can commence.

Comments:

EVIDENCE-BASED CHANGE OF PRACTICE PROJECT CHECKLIST *

Instructions: Answer YES or NO to each of the following statements:

Project Title: An Education Program for Novice Nurses to Increase Case Management Knowledge	**YES**	**NO**
The aim of the project is to improve the process or delivery of care with established/ accepted standards, or to implement evidence-based change. There is no intention of using the data for research purposes.	**X**	
The specific aim is to improve performance on a specific service or program and **is a part of usual care**. ALL participants will receive standard of care.	**X**	
The project is **NOT** designed to follow a research design, e.g., hypothesis testing or group comparison, randomization, control groups, prospective comparison groups, cross-sectional, case control). The project does **NOT** follow a protocol that overrides clinical decision-making.	**X**	
The project involves implementation of established and tested quality standards and/or systematic monitoring, assessment or evaluation of the organization to ensure that existing quality standards are being met. The project does **NOT** develop paradigms or untested methods or new untested standards.	**X**	
The project involves implementation of care practices and interventions that are consensus-based or evidence-based. The project does **NOT** seek to test an intervention that is beyond current science and experience.	**X**	
The project is conducted by staff where the project will take place and involves staff who are working at an agency that has an agreement with USF SONHP.	**X**	
The project has **NO** funding from federal agencies or research-focused organizations and is not receiving funding for implementation research.	**X**	
The agency or clinical practice unit agrees that this is a project that will be implemented to improve the process or delivery of care, i.e., **not** a personal research project that is dependent upon the voluntary participation of colleagues, students and/ or patients.	**X**	
If there is an intent to, or possibility of publishing your work, you and supervising faculty and the agency oversight committee are comfortable with the following statement in your methods section: *"This project was undertaken as an Evidence-based change of practice project at X hospital or agency and as such was not formally supervised by the Institutional Review Board."*	**X**	

ANSWER KEY: If the answer to **ALL** of these items is yes, the project can be considered an Evidence-based activity that does NOT meet the definition of research. **IRB review is not required. Keep a copy of this checklist in your files.** If the answer to ANY of these questions is **NO**, you must submit for IRB approval.

*Adapted with permission of Elizabeth L. Hohmann, MD, Director and Chair, Partners Human Research Committee, Partners Health System, Boston, MA.

STUDENT NAME (Please print):

Emily Trefethen

Signature of Student: Emily Trefethen DATE: 08/05/2019

SUPERVISING FACULTY MEMBER (CHAIR) NAME (Please print):

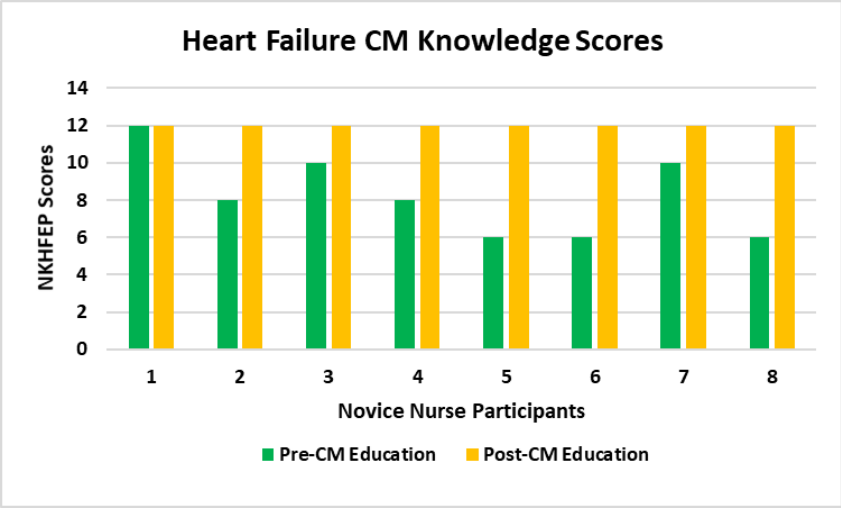
Signature of Supervising Faculty Member (Chair):
DATE

Appendix L. Results

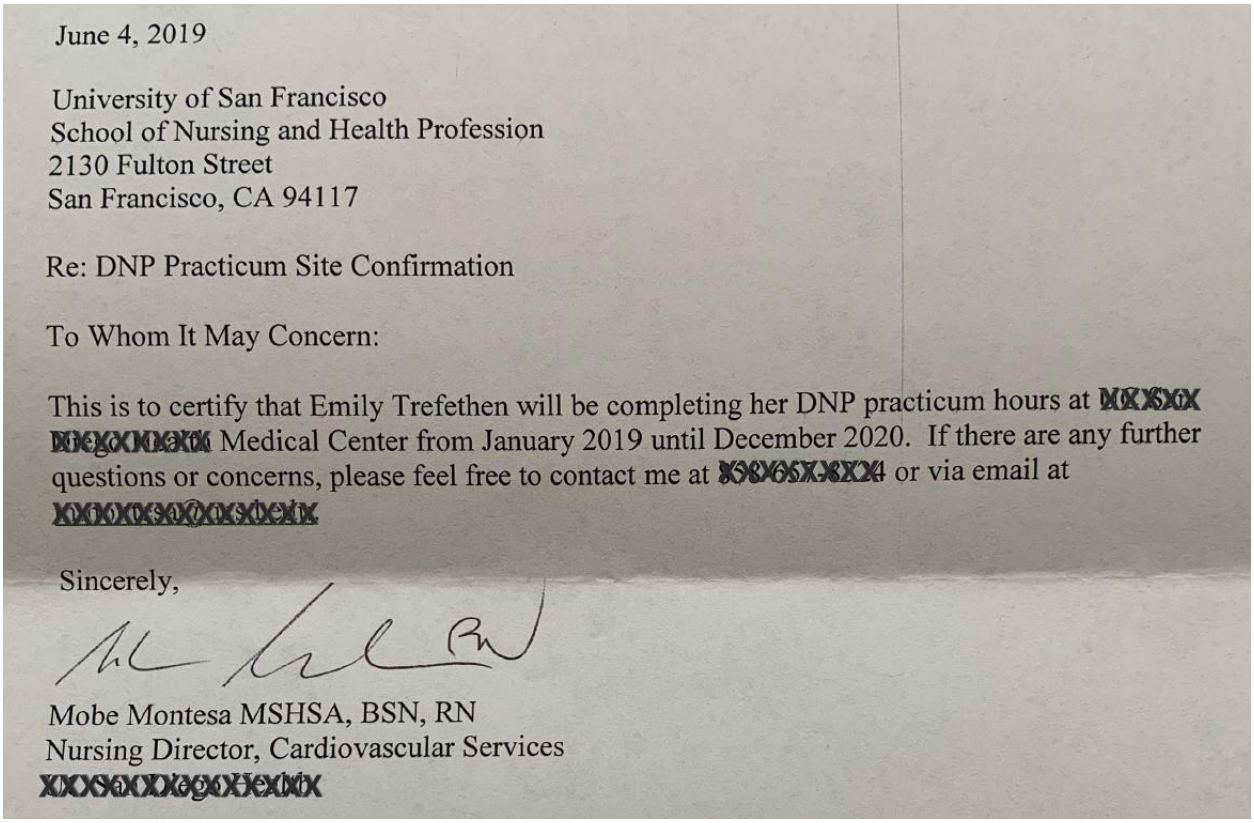
ID	Pre-CM Education	Post-CM Education	Difference
020720_1	12	12	0 *Omitted from Analysis
020720_2	8	12	4
020720_3	10	12	2
020720_4	8	12	4
020720_5	6	12	6
020720_6	6	12	6
020720_7	10	12	2
020720_8	6	12	6

Rank	ID	Differences in Order	Sign
2	020720_3	2	+
2	020720_7	2	+
4	020720_2	4	+
4	020720_4	4	+
7	020720_5	6	+
7	020720_6	6	+
7	020720_8	6	+

Wilcoxon Matched-Pairs Signed Rank Test Calculations			
W^+	30	W^-	0
α	0.05	tails	1
W	0	$W_{critical\ value\ reference}$	4
N	7	$W_{critical\ value\ observed}$	2.35
M	14	*z-score*	2.37
Variance	35.0	*p* -value	0.018
SD	5.92	*Statisically Significant*	Yes



Appendix M. Letter of Support from Organization



June 4, 2019

University of San Francisco
School of Nursing and Health Profession
2130 Fulton Street
San Francisco, CA 94117

Re: DNP Practicum Site Confirmation

To Whom It May Concern:

This is to certify that Emily Trefethen will be completing her DNP practicum hours at [redacted] Medical Center from January 2019 until December 2020. If there are any further questions or concerns, please feel free to contact me at [redacted] or via email at [redacted]

Sincerely,

Mobe Montesa MSHSA, BSN, RN
Nursing Director, Cardiovascular Services
[redacted]

Appendix N. PDCA Plan

Plan	Do	Check	Act
Enhance understanding of the NCM role and improve discharge planning process to decrease HF readmissions.	Implement a CM education program to new graduate RNs from January 2020 to March 2020.	Measure effectiveness of CM education intervention through increased knowledge of CM among new graduate RNs and HF readmission rates.	If the intervention is successful, then the HCO will incorporate the CM education program into their orientation process. If the CM education program fails to increase awareness of CM in new graduate RNs, then a needs assessment will be performed to develop an alternative intervention plan.