DEVELOPMENT AND EVALUATION OF A NURSE PRACTITIONER-DIRECTED POST-DISCHARGE TELEMEDICINE VISIT INITIATIVE IN A PRIMARY CARE PRACTICE

An Evidence-Based Scholarly Project

Submitted to the College of Health Professions

in Partial Fulfillment of the

Requirements for the Degree

Doctor of Nursing Practice

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Wilmington University

December 2021

Wilmington University
College of Health Professions
Doctor of Nursing Practice Program

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Title: Development and Evaluation of a Nurse Practitioner-Directed Post-Discharge Telemedicine Visit Initiative in a Primary Care Practice

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Reducing hospital readmissions, a priority of the Affordable Care Act reform. Creating interventions that reduce readmissions is a concern of policy makers as doing as these interventions are a priority in the Affordable Care Act. The status quo allowed patients to schedule an office visit independently, as a discharge notification was not received by providers. This DNP project reviewed other literature regarding admission using the transitional care model as the theoretical foundation to track an intervention deployed to reduce 30-day readmissions at Abbydek Family Medical Practice P.C. Discharged patients completed telemedicine visits with a nurse practitioner 5 days after their discharge with an accompanying office visit 2 weeks post-discharge. The reasons for 30-day readmission rates were evaluated before and after the intervention, and the pre-implementation rate for readmission was measured before and after the implementation of the telemedicine-based follow-up plans. Pre-implementation readmission rates were drawn from a 3-month period before project intervention. The statewide database was used to identify patients and these patients were contacted to schedule a telemedicine visit within 5 days and an office visit within 2 weeks of discharge. The results revealed that the 30-day readmission rate decreased from 25% to 6%. 5 days telemedicine intervention rate increased from 0% from 11% after implementation. Office visit follow-up improved from 58% prior to the intervention to 69% in the post-implementation. These findings indicate that adding a televisit within 5 days of an unplanned hospital

discharge and an office visit within 14 days of discharge did have positive outcomes among the target population: readmission decreased, length of time from discharged to readmission increased, and office follow-up rates were double the originally established benchmark. This increase in access to care during the transitional period can keep patients healthy and avoid the pitfalls often found when patients do not follow up after discharge

Keywords: transitional care model, 30-day readmission rates, telemedicine, readmission

ACKNOWLEDGMENTS

First, I want to thank my God and Savior Jesus Christ for leading me and guiding me through this journey to obtain my doctoral degree. I humbly await His guidance and direction as I use this degree for his purposes. Extreme gratitude is owed to my husband, children, mother, my brother and his family; for their constant support throughout my nursing journey. Mummy, thanks for co-signing on my initial student loan after I got laid off at my job; without that co-sign, my nursing career would have ended. Thank you to all my three children: Lola, my inhouse editor, Abraham, my biggest fan, and Annamarie, for being you. I love you all, and I am grateful for your understanding when mummy had to go and study on the weekends instead of spending more time with you.

Special thanks to Dr. Emmanuel Fashakin for his support, mentorship and guidance both at work and home. Emmanuel, I learnt a lot from you the last couple of years, and it made me a stronger person. Thanks to the entire office staff at Abbydek Family Medical Practice P.C., my work family: Ray Rezano, Tanisha, Nancy, Deirdre, Xhadi, Kayla, Alexandra, Marge, and JJ. Thank you to all who assisted and encouraged me. A big thank you to all my extended family members and friends who encouraged and supported me in keeping me focused throughout this DNP journey. You all know who you are and are too many for me to name one by one.

I cannot say enough about my project chair, my coach, my cheerleader, Dr. Joanne Fletcher, who was always encouraging, pushing, and leading me along this DNP project. Thank you, my project team member, Dr. Victoria Blucher, who always made time to answer any question big or small. I will always be grateful for your readiness without any hesitation to work with me.

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ABBREVIATIONS

ABBYDEK – Abbydek Family Medical Practice Public Corporation

APRN – Advanced Practice Registered Nurse

COPD – Chronic Obstructive Pulmonary Disease

DNP – Doctor of Nursing Practice

EBP – Evidence Based Practice

HIE - Healthix Information Exchange System (HIE) Encounter Notification Service

HRRP -- Hospital Readmissions Reduction Program

NP – Nurse Practitioner

PCP – Primary Care Provider

PICOT – Population, Intervention, Comparison, Outcome, and Time

RCT – Randomized Controlled Trials

RN – Registered Nurse

TCM – Transitional Care Management

CHAPTER ONE

THE PROBLEM

In the past decades, an increase in people's life expectancy in the United States has resulted in significant epidemiological changes, such as a growing number of people with single or comorbid diagnoses for a variety of chronic diseases. Consequently, there is a profound change in the demand for medical care services in terms of quantity and quality. Further, as the number of beds for patients with acute diseases were reduced, unplanned hospital readmissions are increased (Casalini et al., 2017). The increasing number of unplanned readmissions was associated with the need to provide better treatment for the underlying health conditions, reflecting the sharp change increase in hospitalization (Casalini et al., 2017). These readmissions incidences have a significant place on the healthcare systems and the patient, as they result in increased morbidity and mortality (Busse, 2010; Brunner-La Rocca et al., 2020).

Hospital readmissions within 30-days of hospital discharge pose an economic burden to patients and clinics as well as creating stressful encounters which clinics and researchers continue to seek out ways to reduce through best practices (Alper et al., 2018). It is well-established that unplanned readmissions within 30-days after discharge pose an economic burden to the patient and healthcare system, with healthcare costs of approximately $15 million to $20 million spent on readmissions (Alper et al., 2018). The reasons associated with increasing readmissions are not mainly linked to the interventions used but due to the preexisting or underlying comorbid conditions. The cost of hospitalizations due to readmissions in the healthcare system, thus, indicate the need for proper clinical management to reduce such rates. The existence of multiple diseases

influences the treatment pattern since one condition can adversely affect the other; hence the pattern of readmissions can become complex (Busse, 2010; Brunner-La Rocca et al., 2020). As a result of the complex nature of readmissions, there has been a shift to focus on reducing them in the creation of policy that reduces spending and increases the quality of care.

According to Centers for Medicare and Medicaid Services, the Readmissions Reduction Program (HRRP) was created under the Affordable Care Act, which mandated incentives be provided in order for the healthcare field to begin or further expedite the process of working towards reducing hospital readmissions (Wadhera et al., 2019). Readmissions may reflect fragmented post-discharge care or inadequate health care transitions; hence follow-up practices after discharge may help reduce hospital readmissions. Clinical evidence demonstrated that outpatient or post-discharge follow-up can be an effective solution to reduce hospital readmissions (Jackson et al., 2015; Mwachiro et al, 2019). Outpatient follow-up within 7 days of hospital discharge may result in a meaningful reduction of readmission risk for patients. Timely post-discharge follow-up has been proposed as the key clinical strategy to reduce hospital readmissions (Jackson et al., 2015).

Problem Description

Readmissions after hospital discharge pose significant negative impacts on the patient, health system, and caregivers. Patients readmitted within 30 days of a discharge from hospitals have a poor quality of care and consequently poor clinical outcomes (Baldwin, et al, 2018). Moreover, the increased cost of readmissions imposes a significant burden on the healthcare system. It is well-described that hospital

readmissions after hospital discharge have become costly, with Medicare spending an excess of $17 billion annually (Ballard et al., 2018). Following the passing of HRRP, health care systems and facilities are at higher risk of receiving reduced financial payment by the Centers for Medicare and Medicaid Services as a result of elevated readmission rates (Baldwin et al., 2018). Hospitals have had to exert the necessary efforts to reduce rates of hospital readmissions, including clarifying discharge summaries of patients, reducing health complications during the initial admissions of patients, and promoting care coordination among primary care physicians (Ballard et al., 2018). These interventions are targeting ways to reduce hospital readmissions that occur within 30 days. However, Ballard et. al (2018) have noted that despite the hospitals' efforts to reduce readmission rates within 30-days, a lack of information exists to establish the relative clinical efficacy of an individual practice intervention in reducing hospital readmission following patient discharge. This imposes a rapid development and implementation of a new and innovative health strategy in primary care to determine its effectiveness in reducing hospital readmissions after discharge.

Uncovering the impact of timely primary care follow-up on hospital readmissions post discharge is the focus of the present study. The project will examine the effects of primary care follow-up on 6-week hospital readmissions. The project aimed at improving post-hospital appointments to promote the quality of patient care.

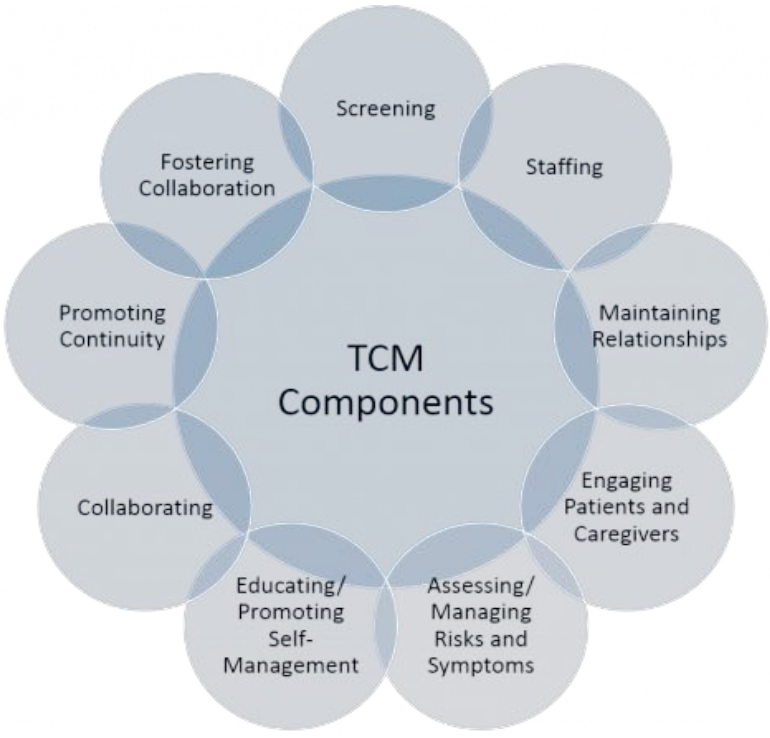
Rationale

Primary care practices have been studied to examine their impacts in reducing hospital readmissions after discharge (Bricard & Or, 2019). Timing and intensity of clinical intervention in primary care after patient discharge from hospital can reduce the

risk of readmissions. Primary care interventions across hospitals help reduce readmission in outpatient services (Bricard & Or, 2019). The interventions are crucial in transitional care practices, especially during emergency department visits. Interprofessional transition of care services related to post-discharge and primary care follow-ups have been shown to have a significant effect on readmissions post-discharge from a hospital (Otsuka et al., 2019). This DNP project was guided by the transitional care model (TCM), which is an evidence-based and nurse-led model aimed at improving patient and health outcomes and quality of life among older patients (Naylor et al., 2018). See TCM model in figure 1 below:

Figure 1:

TCM Model



The TCM mandates nurses and other healthcare providers deliver high-quality care to achieve improved clinical outcomes while reducing the cost of care (Naylor et al., 2017). The TCM serves as the theoretical basis of the DNP project to determine the tremendous effects of primary follow-up on hospital readmissions. The TCM components that are key to guide this study and serve as the variables of this DNP project are as follows: engagement among caregivers and patients, the ensuring of care which is continued beyond the hospital to the home, and the coordination of services related to doctor-recommended care (Naylor et al., 2017; Pauly et al., 2018). Other important variables include a collaboration between nurses, caregivers, and patients, assessment and management of disease symptoms and health risks, education and self-management practices, and maintenance of patient-caregiver relationship (Naylor et al., 2017; Pauly et al., 2018).

Nurses' roles in transitional care services are crucial to the success of these transitions; hence, these roles should be empowered to promote quality improvement in health care systems. Nurses are mandated to provide affordable access to health services and evidence-based care to patients with chronic diseases as they transition to other health care settings (Brunner-La Rocca et al., 2020); thus, the TCM is a theoretical foundation of the DNP project used to determine the effects of health care continuity through primary care follow-up after hospital discharge on readmission rates and risks. The present DNP project assumed that increasing primary care follow-ups would result in a reduction of hospital readmissions within 30 days of discharge. The project assumed that readmissions would be reduced within 6 weeks.

Specific Aims

The DNP project aimed to determine if primary follow-up by registered nurses reduced readmissions within 6 weeks when compared to the usual practice of hospital visits. Establishing the impacts of primary follow-up care were aimed at improving post-hospital appointments to promote the quality of patient care.

Thus, the PICOT question of the DNP project is: In-hospital discharged patients, how does timely primary care follow-up, when compared to the current state of hospital visits affect hospital readmission in 6 weeks?

Population (P) – Hospital discharged patients

Intervention (I) – Primary care follow-up

Comparison (C) – Current state

Outcome (O) – Readmission

Time (T) – 6 weeks

The key focus of the DNP project is to implement primary-care follow-up over a period of 6 weeks with an intention to reduce readmissions rates. This project will add to the growing body of research supporting the usefulness of timely primary-care follow-up in terms of helping reduce readmissions after discharge from a hospital. In order to measure the effectiveness of this project, data analysis of the results will be completed.

Definitions of Terms

The following conceptual and operational definition of terms were used throughout the project:

- **Follow-Up**

Follow-up care is an essential element of the TCM that focuses on providing care to patients over time through regular clinical checkups after completing disease treatment (National Cancer Institute, 2021). For the present DNP project, follow-up care will be defined as care that is provided after discharge from a hospital stay that results in minimizing rates of readmission.

- **30-day Readmission**

The variable 30-day readmission of a discharge refers to readmission within 30 days of all-cause hospital admissions that are unplanned (Andreasen et al., 2019). For this DNP project, 30-day readmission consisted of the number of patients readmitted to the same or another health care facility for additional medical assistance.

- **Unplanned Readmissions**

Unplanned 30-day readmissions represent a very important benchmark for health care facilities to monitor in order to establish their performance and should be a very important goal for the health care services in terms of both quality of care and reducing costs related to waiting until inpatient care is required (Casalini et al., 2017). In the DNP project, unplanned readmissions refer to unscheduled or subsequent hospitalizations of patients to the same healthcare facility within 30-days of hospital discharge from the same facility.

- **Primary Care**

Primary care is a medical service provided in the community or society which attempts to ensure health, wellbeing and the equitable distribution of resources to all patients for health promotion and to prevent diseases through effective treatment (World Health Organization, 2021). For the present DNP project, primary care refers to

outpatient health services provided to patients living at their homes after discharge from a hospital facility.

Chapter Summary

Hospital readmissions remain a global health problem that affects population health. Primary care interventions implemented by nurses or other healthcare professionals are needed. The implementation of a well-organized and timely follow-up care plan may help work to reduce or slow increasing readmission rates in hospital facilities. The present DNP project documents the implementation of a primary care follow-up plan that is timely and aimed at examining the effectiveness and efficacy in terms of working to reduce avoidable readmissions within a 6-week implementation period.

Chapter one of the DNP project introduced background information on readmissions and the need for primary care interventions to reduce readmission rates or risks. Problem description, rationale, and specific aims of the DNP project related to hospital readmission were presented in the chapter. Next, the chapter introduced a brief discussion on the theoretical framework which guided the project. The TCM was introduced as the theoretical framework with specific variables. Also, the chapter outlined the PICOT question and the purpose of conducting the DNP project. Finally, definitions of terms as used in the DNP project were presented. Chapter two of the evidence-based DNP project will provide a review of the literature. In the chapter, extensive analysis and synthesis of the existing body of knowledge or literature are presented.

CHAPTER TWO

REVIEW OF RELATED LITERATURE

Search Strategy

The literature search for this research was conducted using reputable nursing databases to conduct a comprehensive literature search, specifically Academic Search Premier, ProQuest, Cumulative Index to Nursing and Allied Health Literature, and Cochrane Database of Systematic Reviews. Further, Google Scholar and manual review and search of reference lists or bibliographies of the identified studies were used to find additional articles for reviews. To find appropriate articles or studies, search terms were formulated and were further combined to develop researchable keywords including: *hospital readmission, primary care, unplanned readmissions, follow-up, transitional care, hospital visit, hospital discharge, reducing readmission rates, and primary care follow-up care*. Boolean operator "AND" was used to combine the search terms and come up with researchable keywords. For instance, follow up "AND" hospital readmissions, hospital discharge "AND" readmission rates. Based on the search terms and keywords developed, selection criteria were found necessary to retrieve pertinent articles from the databases. Inclusion and exclusion criteria were developed to help find the relevant and necessary articles from the nursing databases.

For inclusion criteria, articles or studies published between 2017 and 2021 were eligible for the review. Moreover, English language articles, full-text articles, and PICOT question relevant articles with a focus on primary care follow readmission hospital discharge, and clinical evidence applying the TCM as the evidence-based model. Also,

the search focused on peer-reviewed articles and journal articles addressing the PICOT question.

For exclusion criteria, the search limited the studies to those published before 2015, studies that used languages other than the English language, and those that were presented in subtracts format on non-full-text articles. Further, articles not related to the PICOT question, such as blogs and magazines, conference proceedings, including dissertations and theses, were excluded.

EBP Model

The Ohio State University Evidenced Based Practice (EBP) Model suitable for the DNP project is the Transitional Care Model (TCM). The model would serve as the theoretical framework of the project. TCM was introduced by Mary Naylor as the evidence-based model aimed at improving clinical outcomes and quality of life among people, including older adults and their caregivers (Naylor et al., 2018). The model highlights the importance of the roles of nurses in promoting the quality of care and good outcomes among patients and caregivers. According to Naylor et al. (2018), nurses are required to reduce the cost of medical care, especially for the vulnerable population such as the elderly (Naylor et al., 2018).

TCM is guided by core elements, which entail the transition of medical care services from hospital to homes, screening at-risk patients for specific health conditions, and high dependence on advanced registered practice nurses in designing and implementing clinical interventions (Naylor et al., 2017; Pauly et al., 2018). According to Paul et al.(2018) the model is also guided by the key elements of promoting continuity of care through the involvement of clinicians on care episodes from hospital to patient's

home, coordination of care among medical practitioners and across the healthcare facilities, fostering collaboration among nurses, caregivers, and patients, maintenance of strong patient-caregiver relationship, support of patient and caregiver engagement, management of symptoms and health risks, and self-management practices. Based on such core elements or variables, TCM was a suitable EBP model to promote care continuity from hospitals to homes and care coordination to reduce hospital readmissions.

The TCM model was a suitable theoretical framework for the DNP project to systematically assess health care continuity through the collaboration of healthcare professionals in providing care through primary care follows up from the hospital to home among the selected patients. The model served as a guide to evaluate or establish assess the effects of primary care follow-up practices on hospital readmissions after discharge compared to the current state of hospital visits. The model helped evaluate goal attainment on the effectiveness of primary care follow-up as a nursing EBP intervention to reduce hospital readmissions within 30-days of discharge. The model provided clear statements of the behavioral outcomes attained with respect to hospital readmissions among in-hospital discharge patients within three months. The model was appropriate for the DNP project because of its ease of use as a guide to compare the existing evidence from various clinical research studies and the projects' findings on primary care follow-up and hospital readmissions. The model fitted the project because it investigated the effectiveness of clinical intervention implemented by advanced practice nurses to reduce the rate and risks of hospital readmissions following patient discharge. The model is directed towards improving the way adult patients can transition through healthcare facilities and providers after their hospital discharge. This model provided an in-depth

understanding of the topic and a broader knowledge of primary care follow-up and its relation to hospital readmission.

Available Knowledge

In the US, over 35 million hospital discharges are reported, with a majority of patients experiencing frequent rehospitalization or readmissions, which pose an economic burden to the healthcare system (Alper et al., 2018). It is well established that due to readmission, healthcare systems use between $15 and $20 billion every year, which poses a financial problem to the healthcare system (Alper et al., 2018). The increasing cases of readmissions in healthcare settings could be associated with poor care coordination between the primary care providers and the health care setting.

Existing evidence demonstrates that after hospital discharge, very few patiens follow-up with their physicians, and approximately half of patients in Medicare services readmitted within 30 days have not followed up with their primary care providers after discharge (Gilmore-Bykovskyi et al., 2018). The main causes of readmissions after hospital discharge include the existence of chronic diseases, lack of clear discharge instructions, such as, health information on medication, warning signs of patients' worsening conditions, failed handoffs, lack of follow-up, complications associated with clinical procedures, and adverse drug events (Alper et al., 2018). Consequently, transitional care interventions have been proposed to be effective in reducing health problems, including hospital readmissions.

Clinical studies have been conducted to determine the need for transitional care interventions after hospital discharge to reduce readmission risks. For instance, some studies have examined the effects of transitional care as the coordination and ideal

communication care services to reduce patients' risk for readmissions after discharge from the hospital (Ballard et al., 2018; Ridwan et al., 2019). The studies indicated that transitional care enhances care delivery after hospital and can reduce 30-day readmissions across health care settings (Ballard et al., 2018).

Readmissions after hospital discharge are preventable following the implementation of evidence-based interventions in healthcare settings. The existing body of knowledge illustrates that approximately one-quarter of 30-day readmissions after discharge are preventable, but many are traced to a lack of post-discharge follow-up (Wiest et al., 2019). It is indicated that timely follow-up after hospital discharge with primary care professionals, including clinical nurse specialists, a physician, physician assistant, or a nurse practitioner as permitted under the state law, may improve the care transitions of patients and minimize the risks and rates of readmission through patient education, medication reconciliation, and by reviewing discharge plan of patients (Wiest et al., 2019). The assumption that readmissions are preventable indicates the opportunity for the healthcare system to contain costs and improve the quality of care delivered to patients.

Riverin et al. (2018) discussed that timely outpatient follow-up after hospital discharge is a key element of the contemporary clinical effort to improve care coordination and address health issues of readmissions. In-person visits to primary care settings indicate an opportunity to manage health care after hospitalization. Patients who visit their physicians after they are discharged may find the opportunity to ask questions after admission, and the professional can monitor and address concerns associated with

the patients' transition from the facility to their homes or community (Riverin et al., 2018).

Based on the literature search and review conducted on the PICOT question of the DNP project, themes emerged from the articles that were used to discuss the question. The themes were transitional care, hospital readmission, optimal timing of physician visits, and readmission rates. The themes in regard to the topic of the DNP project are discussed in the subsequent sections.

Transitional Care

Researchers have conducted systematic reviews and meta-analysis on data from randomized controlled trials to examine the effects of transitional care interventions among patients with chronic obstructive pulmonary disease (COPD) in regarding their readmissions to the hospital (Ridwan et al., 2019). The emergent data from the RCTs included: patient discharge, COPD, and transitional care, patient transfer, continuity of care, care transition, and patient discharge. Thirteen studies were selected and labeled as effective because of the quality of their research design and the high level of evidence the studies presented (Ridwan et al., 2019). The reviewed studies supported that transitional care with telephone follow-up was effective in reducing readmission in patients with COPD. The studies revealed that the duration of the telephone follow-up intervention and the type of care providers influenced the efficacy of transitional care in reducing readmissions (Ridwan et al., 2019)

Chen et al. (2019) found similar results after conducting a retrospective cohort study of discharged patients less than 19 years old who had been discharged from the emergency department at the test site. Staff nurses conducted a telephone follow-up with

discharged patients to assess the clinical symptoms and their return to hospital visits. The study showed that follow-up communication via phone call after hospital discharge was probably a useful method to target high-risk patients for readmission to the emergency department. The study was unable to determine the extent to which telephone follow-up reduces readmissions among pediatrics.

Another retrospective study examined the impact of transitional care on hospital readmissions based on the relationship between receiving transitional care from interprofessional primary care teams as opposed to non-interprofessional teams (Haj-Ali et al., 2020). The study sampled 778 physician groups and showed no significant differences in readmission rates before and after transitional care intervention among them. (Haj-Ali et al., 2020).

Contradicting findings were presented in a qualitative study by Walraven et al. (2020) which explored the perceptions of 20 healthcare professionals on the effects of transitional care with interprofessional collaboration between primary and secondary care practices on preventable readmissions. The study revealed that healthcare providers perceived interprofessional collaboration to be effective in reducing preventable readmissions. The study indicated that proper means of communication between interprofessional teams and collaboration was necessary to improve in-hospital medication reviews, which would helped reduce readmission risks (Walraven et al., 2020). The contradicting findings regarding the effects of interprofessional collaboration during transitional care practices after hospital discharge could be attributed to the different research methodologies used and the study sample.

Mwachiro (2019) documented hospital readmission among 83 patients who received or not a follow up call between 24 to 48 hours. Mwachiro (2019) examined the effects and effectiveness of post-discharge follow-up in reducing 30-days readmissions after being discharged from the hospital from neurosurgery service. The researchers examined weekly discharge reports to determine whether patients received follow-up calls within 24 to 48 hours after discharge. The study showed that patients who received post-discharge follow-up from initial admissions had longer out-of-hospital stays than those who did not receive. The study indicated that post-discharge follow-up significantly improved the length of patients' time out of the hospital, reflecting the effectiveness of follow-up in minimizing readmissions risks (Mwachiro et al., 2019).

Similarly, Diplock et al. (2017) studied transitional care after hospital discharge and readmissions rates through RCT. The study compared transitional care with usual care in reducing readmissions after hospital discharge. The study sample entailed patients aged 18 years and over with medical and non-elective surgical admissions in the past 12 months. The study revealed that patients who had a successful transition from health care facility to home care with multidimensional transitional care intervention showed reduced readmission rates. There was a reduced number of readmissions in the emergency department, reduced readmissions to the intensive care unit, and increased days out of hospital (Diplock et al., 2017).

Three studies supported the use of multiple transitional care interventions to reduce readmission after discharge (McFeely et al., 2019; Riverin et al., 2017; Zozaya-Monohon, & Corona, (2017).). In a retrospective review by McFeely et al. (2019), the impacts of varying short frailty and risk-prediction instrument in predicting readmission within 30

days of discharge, length of hospital stay, and mortality. The sample pulled for the study included patients 70 years old and older who was attending the emergency department. The study disclosed the clinical efficacy of multidimensional transitional care interventions in predicting 30-day hospital readmissions after discharge. However, the study showed that among the instruments assessed, none was accurate in predicting 30-day hospital readmissions.

Riverin et al. (2017) completed a study, which had the objective of explaining transitional care strategies, including team-based primary care delivery models to reduce readmissions after hospital discharge. The sample was 312,377 patients discharged after initial or index admissions. Patients were enrolled in team-based primary care practices, and lower rates of emergency department visits not related to 30-days readmission were observed. There were no significant differences in the readmissions rate observed, suggesting the need for more intensive or targeted efforts to validate the findings (Riverin et al., 2017). A study by Zozaya-Monohon & Corona, (2017) that examined a multidisciplinary approach that involving the collaboration of healthcare providers and patients supported the understanding that multidisciplinary primary care after hospital discharge reduced readmission rates.

Three other studies examined the effects of primary care follow-up on 30-days readmissions after hospital discharge. The studies revealed that transitional care with patient-centered medical homecare was necessary to reduce readmissions after hospital discharge (Garrison et al., 2017, Gopalan et al., 2018). Garrison et al (2017) studied 14,663 adult primary care patients. The study showed reduced admission rates. Transitional care with follow up medication reconciliation after hospital discharge affects

readmissions (Gopalan et al., 2017). These authors reviewed 40,048 Medicare beneficiaries admitted to the healthcare facility for acute myocardial infarction, heart failure, or pneumonia examined the relationship between mental illness, medication changes, and outpatient visits after hospital discharge. The study revealed that the possibility of readmissions increased when medication was added or dropped than when there are no medication changes. The study indicated that an increase in outpatient visits with medication changes thus increased the risks of readmission (Gopalan et al., 2018).

Existing evidence also supports transitional care with coordination and communication between healthcare professionals in reducing readmission rates. Knutsen Glette et al. (2019) conducted a qualitative study with 15 hospital physicians to determine their perceptions of professional communication and discharge processes and readmissions. Based on the physicians' perceptions, the study disclosed that communication and coordination among healthcare providers in primary healthcare service after hospital discharge may have improved the reduction in readmissions.

Similar findings were found in a mixed-method explanatory sequential study, which explored the impacts of communication and relationship among healthcare professionals during transitional or continuity of care on readmission rates among African-Americans (Valente et al., 2020). The study disclosed the clinical benefits of communication and relationship during the continuity of care for patients as they transitioned from healthcare facilities to their homes. The study showed that effective communication between primary care providers and a good patient-physician relationship facilitated coordination of care from hospital to homes after discharge. Such

communication and relationship facilitated proper disease management, reduced primary care visits, and, hence, reduced rates of readmission (Valente et al., 2020).

A retrospective cohort study was undertaken by Lam et al. (2018) with 214 patients who attended a primary care appointment to investigate appointment attendance with primary care providers with telephone follow-up. The study showed that primary care appointments through telephone follow-up within 1week of discharge did not have a significant association with reduced readmissions. The study suggested the need for timely follow-up and care coordination, especially for patients who are poorly connected to the health care system, which may reinforced the possibility of reducing readmissions after discharge (Lam et al., 2018).

Moorin et al. (2020) completed a retrospective cohort study with 254,140 patients, which observed the relationship between general practitioner regularity and high use hospitalization between July 2005 and June 2009. The study revealed that high general practitioners' regularity was associated with a reduced possibility of high use of hospitalization (Moorin et al., 2020). This study indicated that frequent or regular follow-up appointments with general practitioners reduced the likelihood of high readmission in primary care.

Otsuka et al. (2019) studied the impact of an interprofessional transition of care on 30-day readmissions among patients discharged between 2013 and 2014. The scholars focused on follow-up visits with an interprofessional healthcare team to examine whether the practice reduces readmission rates. Data were collected, and comparisons were made between the patients scheduled for a hospital follow-up and those who did not receive the follow-up care. This study showed a decline in readmission rates from 16.97% to 9.28%

for those in the follow-up group, while readmission rates did not change (19.39%) for those who did not receive follow-up (Otsuka et al., 2019).

Pugh et al., (2021) study results was supported by the findings of a more recent study that observed the effects of the evidence-based process in preventing readmission rates. The study examined the efficacy of evidence-based transitional care services on the risks of readmission rates. This study also showed that transition care processes lowered the risk for readmission rates and suggested the need for further reduction with the implementation of new strategies, including transitional care with patient discharge planning.

The need for discharge planning was supported in another study that investigated the association between impatient discharge planning and all-cause 30-day and same-hospital readmissions (Henke et al., 2016). Patients aged 18 years and over hospitalized for heart failure, acute myocardial infarction, total or joint arthroplasty, or pneumonia were used as the study sample. The study found lower 30-day hospital readmissions and high admission rates for same-hospital readmissions following the inpatient discharge planning.

A cross-sectional observational study by Uitvlugt et al. (2020) set out to explain the transitional care with medication relatedness and preventability of readmission from patients' perspectives. The sample included patients aged 18 years and older readmitted to different medical departments after the first admission. The study revealed that medication-relatedness reduced preventable readmission. This study showed the efficacy of transitional care intervention based on medication relatedness and potential preventability of readmissions but lacked detailed information on the effects of the

intervention after discharge from the initial admission. This study thus suggested that preventive interventions during transitional care are necessary to reduce hospital readmissions, but further research is needed to validate the effectiveness.

There were contradicting findings from assumed study on the efficacy of transitional care services in reducing hospital readmission after discharge. Van Spall et al. (2019) studied the transitional care interventions of assigning provider nurse-led self-care patient education, a family physician follow-up appointment, structured hospital discharge summary, and structured nurse home visits among 2,494 adult patients admitted due to heart failure. The participants were randomly selected from 10 hospitals in Ontario, Canada. The primary outcomes of the study were composite all-cause readmissions and emergency department visits. From the findings, significant differences in composite all-cause readmission and emergency department visits between patients on transition care program and those on usual care were not observed. This lack of transitional care service intervention did not improve the reduction in readmission rates and emergency department visits. The contradicting findings across the studies could be attributed to differences in the study design used and the sample. These varied results reflect the need for further research to validate the findings on the effectiveness of transitional care interventions on readmission risks.

Optimal Timing of Physician Visit

Reviewed studies showed timely follow-up care in influencing readmission after hospital discharge. Wiest et al. (2019) examined timely follow-up within 7 days of discharge and its effects on hospital readmission. A cohort study of 1,531 adult Medicaid patients discharged from hospitals in Camden, New Jersey, was completed, and the

intervention included a 7-Day Pledge program that focused on primary care follow-up appointments. The primary outcomes of the study were the number of hospital discharges and 30-day readmissions. The secondary outcome was a number of hospital discharges and 90-day readmissions. The study found the rates of 30-day and 90-day readmission were lower for patients with primary care visits within 7 days of discharge. The study suggests that timely follow-up within 7 days of hospital discharge was effective in reducing readmissions.

Similar findings were echoed by Carmel et al. (2017) in a retrospective review that examined rapid primary care follow-up and hospital readmissions. The sample included patients referred to primary care from the emergency department through a rapid-access-to-primary-care program. The study outcome was preventable hospital readmissions. A rapid primary care follow-up by emergency physicians helps prevent readmission of patients, and emergency department revisits. The study suggested that a rapid primary care follow-up program was an effective mechanism when involving patients in discharge planning to reduce the risks of readmissions.

Riverin et al. (2018) completed a study on the optimal timing of follow-up through in-person physician visits after discharge from the hospital and reduction in readmissions. The sample included older adults or elderly patients with chronic conditions. The study compared the outcomes of patients who received in-person physician visits and those who did not get physician visits within 7 days. Post-discharge follow-up prevented many readmissions in patients with in-person physician visits within 7 days. These results indicates that optimal timing of follow-up with physician visits after hospital discharge prevents and reduces readmission rates.

DeCaporale-Ryan et al. (2017) conducted a study to investigate the use of a 7-week team-based service delivery model to offer biopsychosocial care to patients discharged from the hospital. The study included 17 patients who were assessed to determine their 30 and 90-days readmission after hospital discharge. The study was aimed to providing better insights into a therapeutic plan with follow-up care after discharge. The study revealed that a 7-week behavioral model reduced hospital readmission after discharge.

Opposing evidence was found in a study by Murtaugh et al. (2017) that compared a timely physician visit within 1 week of discharge and early intensive home health nursing. The study focused on the effects of the two treatments in reducing hospital readmissions in patients hospitalized with heart failure and discharged for home care. The study showed no significant effects of the two treatments in reducing hospital readmission. However, the study suggested the need for early primary care follow-up immediately after discharge to reduce patient readmissions.

Shen et al. (2017) also undertook a retrospective cohort study to determine the association between follow-up visits after hospital discharge and 30-day readmission risks. The sample included 7,1231 patients enrolled in the healthcare plan after discharge. The study revealed that follow-up with primary care clinicians within a period of 7 days after hospital discharge was associated with reduced risks of 30-day readmissions.

Chapter Summary

Chapter two reviewed the existing literature with a focus on the scope of primary care follow-up and readmission rates and the theoretical framework that guided this study particularly. The chapter described appropriate themes including transitional care,

optimal timing of physician visits, and readmission rates. The chapter provided an in-depth explanation of the DNP topic based on the information presented by different scholars. Almost all articles reviewed in the chapter supported the efficacy of primary follow-up in reducing hospital readmissions. However, conflicting findings were observed in some studies. Chapter three of the DNP project will provide an in-depth description of the study interventions, context, measures, and ethical concerns that were undertaken in this DNP project.

CHAPTER THREE

METHODOLOGY

Context

This DNP project was completed at the Abbydek Family Medical Practice Public Corporation (ABBYDEK) a primary care practice with three providers (one medical doctor, one physician assistant, and one nurse practitioner) that served all age patients in the five boroughs of New York City. Multiple area hospitals serve the practice's patients, including community hospitals and large academic medical centers. The adult patients of the practice had multiple chronic illnesses of varying severity. The adult patients were the only ones selected for this project. There was a mixture of Medicare, commercial insurance, medical assistance, and self-pay patients. Primary care patients who underwent an unplanned emergency room and hospital admission were eligible to participate in this project.

The pre-implementation 30-day readmission rate for the practice before implementing the project was 25%, which is above the national average for Medicare of 16.9 % in 2018 (Weiss and Jiang, 2021). Before the implementation of this project's intervention, it was ascertaining patients' hospital admittance was challenging so that they could be contacted for follow-up appointments. The established practice placed responsibility on the patients to contact the office upon admission to schedule a follow-up 7 to 14 days after discharge. Because the responsibility was on the patient to schedule the follow-up visit, it was hard to know how many patients fell through the cracks in the process.

Intervention(s)

Study of the Intervention(s)

The present projects intervention was developed grounded in the best evidence drawn from literature which investigated 30-day readmissions, qualities of advanced nursing practice, the available technology, and intervention methods of the Naylor model. Throughout the intervention period, hospital encounters were downloaded as a list from the Healthix Information Exchange System (HIE) Encounter Notification Service. This free database was a live alert system that was provided in New York to participating hospitals and supportive services via an online health information exchange portal (Healthix Information System for our Patients [HIE], n.d.). A daily list of patients who arrive in the emergency department for care or are admitted for inpatient care in the hospitals in the practice's catchment area in the New York City and Long Island was generated. This list was sorted to identify patients who discharged from an inpatient hospital stay or emergency room admission that was unplanned. Patients who were discharged from a planned admission, such as a surgical procedure, were excluded. Patients were also excluded if the reason for admission was pregnancy-related since the practice does not manage pregnancy care at the facility involved with this DNP project.

The intervention for this project reversed the status quo and required discharged patients be contacted to schedule a telemedicine visit within 5 days and an office visit within 2 weeks. Patients required access to technology to use the web portal, so their access was screened for before their discharge. Staff assisted with enabling their patients' applications to access the web portal by inputting a valid email address and generated password. If patients could not schedule an online appointment due to a lack of

technology access, staff scheduled a time for a 30-minute telephone call with the nurse practitioner. Efforts to contact the patient continued daily until the appointment was completed.

As discharge was being process, staff requested hospital records for the nurse practitioner with a discharge summary to ensure the nurse was equipped with the patient history prior to the visit. All information was kept on secure servers. Records were pulled for hospital discharges, discharge diagnoses, and demographic data. ABBYDEK servers provided a secure network to store and use the data for this project. As there was sensitive patient data, all data was managed in a way that abided by the HIPPA guidelines for protection. Access to servers was limited and all terminals in the facility were password protected.

During the telemedicine appointment, the following were discussed with the patient:

1. The cause of admission and health status since discharge,
2. The instructions and advice from the facility were reviewed,
3. The information about medication acquisition and adherence were discussed,
4. The need for home health services, equipment, medications, follow-up diagnostic testing, and education are assessed,
5. The need to be seen by a specialist as needed; Referral was given as needed,
6. The office schedule was verified for a 7 to 14 days transitional care office visit, and
7. The Nurse Practitioner or Medical Assistant need to ensure patient has appropriate contact information to call the office as needed for any problems.

Upon the completion of the telemedicine appointment, the NP performed any additional services as needed for the patient in collaboration with the team (a physician, medical assistant, nurse case manager, or others) to provide the patient with complete services including ordering medication or arranging home health services.

At the scheduled office visit within 2 weeks after hospital discharge, the following items were reassessed:

1. The health status since last televisit or hospital discharge,
2. The medication plan for adherence,
3. The test results and reports were reviewed,
4. The need to assess the home health services, equipment, medications, lab work, education needs, or specialist referral,
5. The need to answer any questions or patient's current symptoms,
6. The need to arrange short-term follow-up as needed
7. The need to ensure patient has appropriate contact information to call the office as needed for any problems.

Measures

Analysis

Before and after the intervention, 30-day readmission percentage rates were calculated. Descriptive statistics were also examined and included age, gender, race, the day of the week of discharge, primary discharge diagnosis, admission facility, insurance type, telemedicine visit follow-up attendance, and office visit follow-up attendance. Length of time from discharge to office visit follow-up was collected. Concerning

readmitted patients, the same data was collected, as was the length of time from discharge to readmission.

Budget

Appendix E contains the complete details of the budget for this project. No capital expenditures were required, as it was added into the existing workflow. The HIE database was a free service in the state of New York. The personnel required for the project included a medical assistant, medical secretary, and nurse practitioner. Both tele-visits and office visits were scheduled for 30 minutes each. Each admitted patient would potentially have two encounters with the NP. A charge of $100.00 per month $2 per for telemedicine visit billed to the practice by the EMR provider, eClinicalWorks. Users occur no charge for the Healthix database usage (Xhadi Gjana, Billing Manager, personal communication, August 7, 2021).

Ethical Considerations

The participants in this project merely followed through with their regular care, as it was conducted as part of their usual care routine after leaving the facility. So, no consent for the study was not required for each participant. The project was submitted to the Human Subjects Review Committee at Wilmington University College of Health Professions and approved prior to implementation.

Chapter Summary

Chapter three presented the methodology of the study including the eligibility requirements for participants which included unplanned emergency room or hospital admission were eligible to participate in this project. Pre-implementation 30-day readmission rate of the practice before implementing the project was 25%, slightly

above than the 20% Medicare national average. The project was added into the existing workflow on site, and discharged patients were contacted to schedule a tele-visit within 5 days of discharge and an office visit within 14 days of discharge. Crucial descriptive data was collected and kept for later analysis. The budget was developed to ensure that no capital expenditures were required for the DNP project and that patients' insurers were billed appropriately.

CHAPTER FOUR

RESULTS

Sample Characteristics

The project took place over a 3-months period from September 25, 2021, through December 6, 2021. Patients had an unplanned hospital admission during this time and were discharged home. Patients who were discharged to a skilled nursing facility, assisted living, or rehabilitation center were excluded for the project. There was one patient admitted for a pregnancy-related problem who was not included in this project since the practice does not manage pregnant patients. Statistical analysis for this project was performed using IBM Statistical Package for Social Sciences version 27. Demographics were reported with frequencies and percentages. Fisher exact tests were used for inferential statistics.

A pre-implementation group of patients was used for comparison which included patients aged 18 and over who experienced an unplanned hospital admission between July 25, 2020 and October 31, 2020, and the actual office visit used was between September 14, 2020 and October 23, 2020 (6 weeks). An actual total of N = 1,985 patients were seen in the ABBYDEK. in a 6 weeks' time frame prior to the intervention. Of these1,985 pre-implementation group patients seen, 12 patients were discharged from the emergency room or inpatient hospital. The majority of patients discharged were male (n=9, 75%), Black (n=5, 42%), and presented with an integumentary condition (n=4, 33%). The average age was 54 years old (SD =15.6) as shown in Table 1. Wednesday was the most frequent day of discharged (n=3, 25%), and then majority were on Medicare (n=4, 33%) while also receiving medical assistance (n=4, 33%).

A total of *N* = 2,289 patients were seen in the Abbydek Family Medical Practice P.C. in a 6-week time frame after the implementation of 5 days televisit intervention and 14 days office visit for the post-implementation group, of these 2,289 patients, 35 were discharged from emergency room or inpatient hospital. The average age was 49.7 years (*SD* = 18.4) as shown in Table 1 below.

Table 1

Standard Deviation for Age in Groups

AGE					
	N	Minimum	Maximum	Mean	Std. Deviation
Pre-implementation Group	12	28	79	54	15.606
Post-implementation Group	35	20	85	49.71	18.374

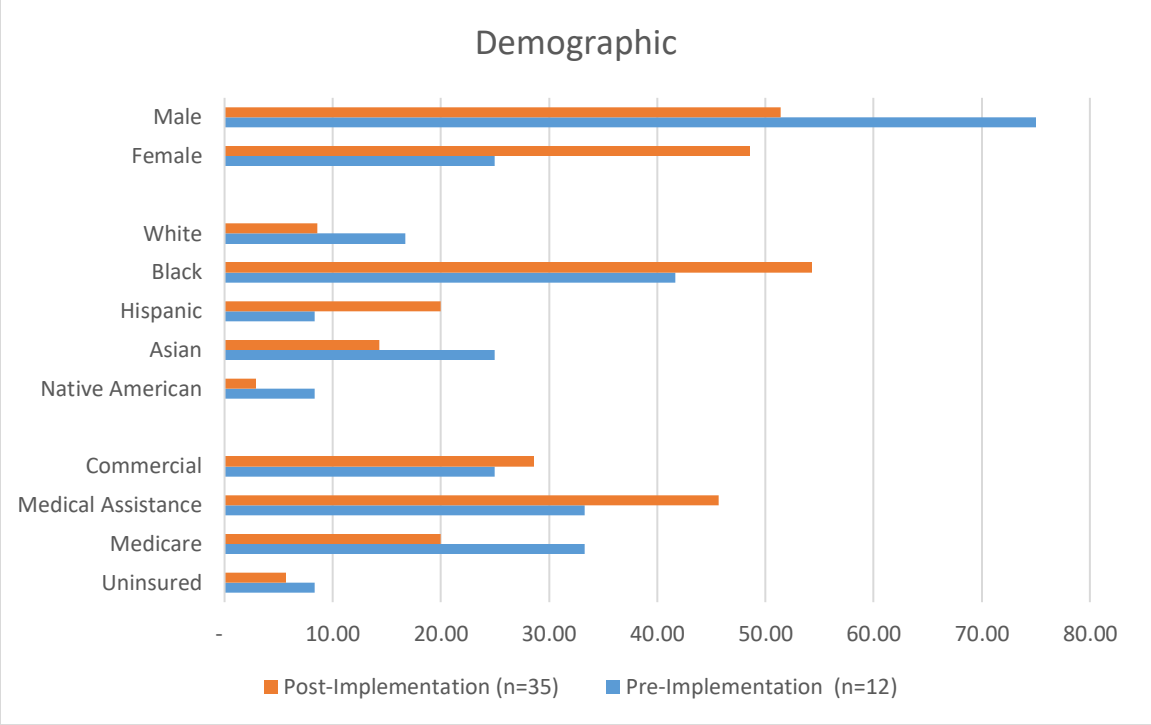
The majority of the patients had Medicare and medical assistance insurance for the pre-implementation, while medical assistance insurance is the majority for the post-implementation. The majority of patients discharged for both pre-implementation and post-implementation were male (n=18, 51%), and Black (n=19, 54%) as shown in Figure 1 below.

	Pre-implementation (n=12)	**Post-implementation (n=35)**
Uninsured	8.30	5.7
Medicare	33.30	20
Medical Assistance	33.30	45.7
Commercial	25.00	28.6
Asian	25.00	14.3
Black	41.70	54.3

Hispanic	8.30	20
Native American	8.30	2.9
White	16.70	8.6
Female	25.00	48.6
Male	75.00	51.4

Figure 2

Demographic Characteristics Comparison



Results

Upon initiation of the project, the HIE encounter notification services database was consulted daily. Patients who had inpatient discharges that were unplanned were contacted to schedule a telemedicine visit or telephone call within the first 5 days as well as an office visit within 14 days of the discharge.

A total of 35 discharge events occurred during the implementation period. There were 2 readmissions to the hospital within 30 days, yielding a readmission rate of 6%,

compared to 25% (n=3) which was the pre-implementation readmission rate from the previous year. In this post-implementation group, 69% (n=24) rescheduled an office visit compared to 58% (n=7) in the pre-implementation group and rescheduled an office visit within 14 days.

Importantly, in this post-implementation, 11% (n=4) completed a televisit whereas 89% (n=31) did not, compared to pre-implementation group in which none of the patients completed a televisit. At the conclusion of the intervention, the four patients that completed tele-visits were not readmitted (100%), compared to the 29 patients (94%) that did not receive a televisit. However, the two patients (6.5%) that did not complete a televisit were those that were readmitted.

Due to a small sample size, a Fisher's exact test was run. A chi-square test for association was not conducted. All expected cell frequencies were less than five. There was no statistically significance in proportions, $\chi 2\ (1) = .6$, $p = .782$ as shown in Table 2 below. Because this was a 2 x 2 table, Fisher's Exact Test was run and confirmed the Pearson Chi-Square results with a p-value of 0.782.

Table 2

Pearson's Chi-Square and Fisher's Exact Test, Readmission Rate

	Value	**df**	**Asymptotic Significance (2-sided)**	**Exact Sig. (2-sided)**	**Exact Sig. (1-sided)**
Pearson Chi-Square	0.274[a]	1	0.601		

Fisher's Exact Test				1.000	0.782
a. 3 cells (75.0%) have expected count less than 5. The minimum expected count is 0.23.					
b. Computed only for a 2x2 table					

Day of the Week

Wednesday (33%) was the most common day of discharge in the pre-implementation group. The author was unable to get the discharged dates for two visits because patients followed up months later. In the post-implementation, however, Monday was the most frequent day of discharge (n=10, 29%) as shown in Figure 2 above and Table 3 below.

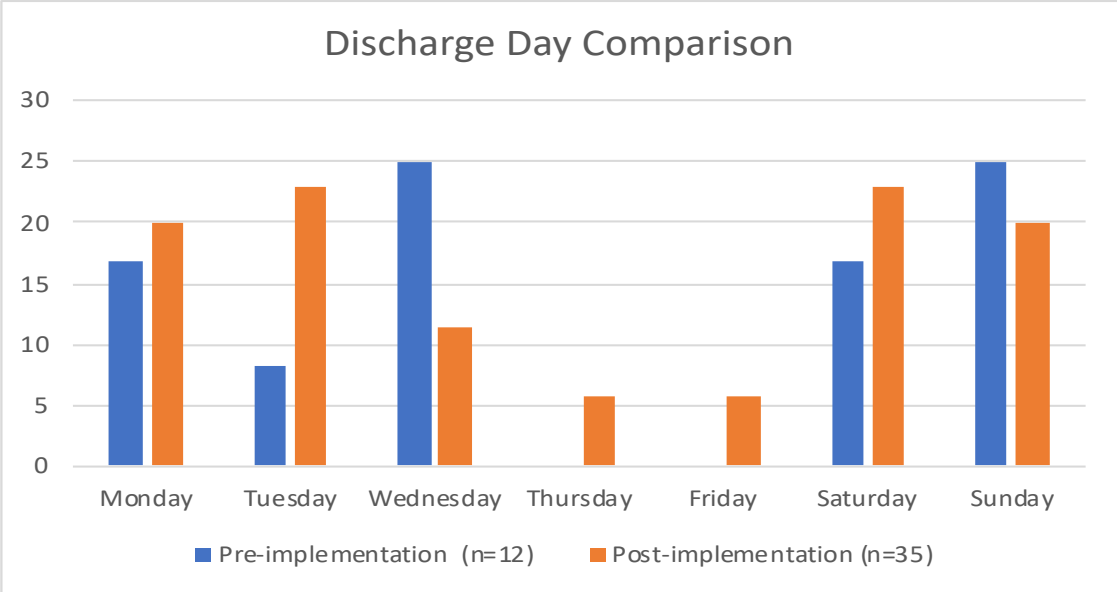
Table 3

Discharge Day Comparison

Discharge Day	Pre-implementation Group (n/%)	Post-implementation (n/%)
Monday	2/17%	10/29%
Tuesday	1/8%	2/6%
Wednesday	3/33%	4/11%
Thursday	0/0%	2/6%
Friday	0/0%	2/6%
Saturday	1/8%	8/23%
Sunday	2/17%	7/20%

Figure 3

Day of Week of Discharge, Pre-implementation Versus Post-implementation



HIE Database

Overall, in the post-implementation, 35 of 35 patients (100%) were in the HIE database. In the pre-implementation group, Zero of 12 patients (100%) were found in the database. None of the readmitted patients in the pre-implementation group were found in the HIE database, but 100% of the readmitted patients for the post-implementation were found in HIE.

A chi-square test for association was conducted between readmission and the patient's identification by the HIE database as shown in Table 4 below. There was a statistically significant association, $\chi 2\ (1) = 3.496$, $p = .097$. However, because two cells had expected counts of less than five, the reported statistical significance was not reliable. Fisher Test was done.

Table 4

Pearson Chi-Square Test for Patients in HIE Database

	Value	**df**	**Asymptotic Significance (2-sided)**	**Exact Sig. (2-sided)**	**Exact Sig. (1-sided)**

Pearson Chi-Square	3.496[a]	1	.062		
Fisher's Exact Test				0.097	0.097
a. 2 cells (50.0%) have expected count less than 5. The minimum expected count is 1.28.					
b. Computed only for a 2x2 table					

Televisit

The pre-implementation group did not do complete a single televisit, hence the 5 days televisit implementation. Televisit were scheduled and completed by four out of 35 (11%) patients in the post-implementation whereas 31out of 35 (89%) patients did not schedule or complete a televisit. At the conclusion of the intervention, those who received a televisit (n=4) were not readmitted (100%) compared to the 31 patients (89%) that did not receive a televisit. Of these 35 discharges, two (6%) patients were readmitted within 30 days. However, the two patients that did not complete a televisit were those that were readmitted.

Office Visits Within 14 days

Review of data in the pre-implementation group showed that only seven (58%) patients had an office visit follow-up within 14 days. Only two out of three readmitted patients in the pre-implementation group had an office follow-up visit. In the post-implementation, 24 (69%) compared to pre-implementation seven (58%) patients had office visit follow-up within 14 days. One out two readmitted patients in the post-implementation that had 5 days intervention had an office visit follow-up within 14 days. The other readmitted patient refused both 5 days televisit intervention and office visit within 14 days.

Discharge Diagnosis

Discharge diagnoses in the pre-implementation group presented with an integumentary condition (n=4, 33%) or cardiac (n=2, 17%), respiratory (n=2, 17%), or musculoskeletal conditions (n=2, 17%) (see Table 5 and Figure 3 below). The discharge diagnoses in the post-implementation presented with a respiratory condition (n=7, 20%) or cardiac (n=6, 17%), gastro-intestinal (n=6, 17%), or musculoskeletal condition (n=6, 17%). In the post-implementation (see Table 5 and Figure 3 below), the two patients (6%) that were readmitted had the same diagnosis (cardiac and male) upon readmission. In the pre-implementation group, the three (25%) patients were readmitted with different discharge diagnoses, including that were cardiac, GI, and integument.

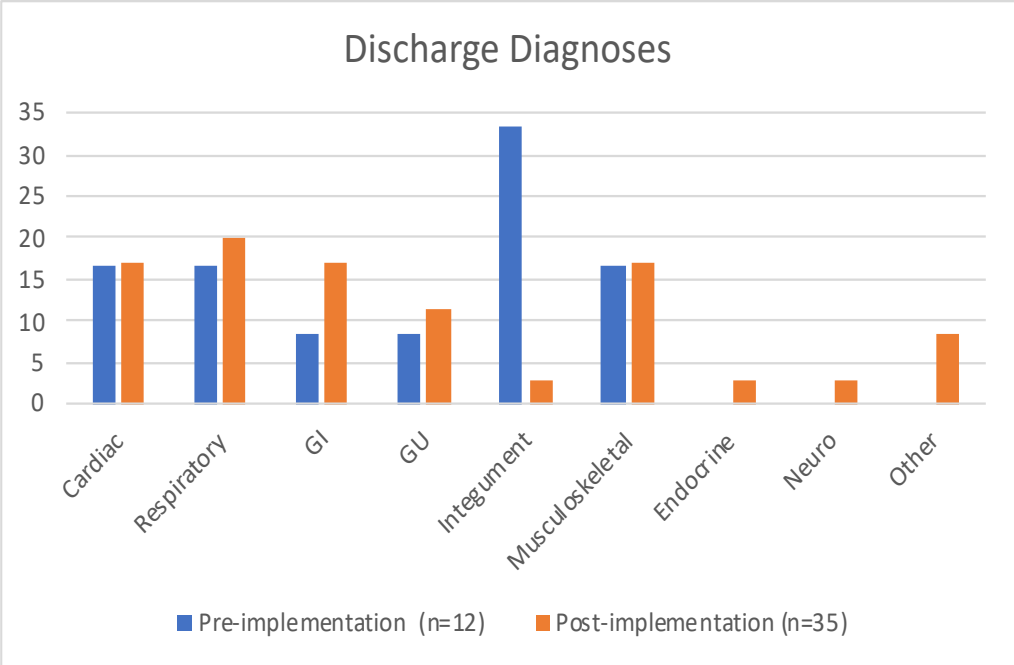
Table 5

Discharge Diagnosis Breakdown

	Pre-implementation		**Post-implementation**	
Diagnosis Category	Original Dx	Readmission Dx	Original Dx	Readmission Dx
Cardiac	16.7%	16.7%	17.1%	17.1%
Respiratory	16.7%	16.7%	20%	20%
GI	8.3%	8.3%	17.1%	17.1%
GU	8.3%	8.3%	11.4%	11.4%
Integument	33.3%	33.3%	2.9%	2.9%
Musculoskeletal	16.7%	16.7%	17.1%	17.1%
Endocrine	0%	0%	2.9%	2.9%
Neuro	0%	0%	2.9%	2.9%
Other	0%	0%	8.6%%	8.6%

Figure 4

Initial Discharge Diagnosis, Pre-implementation versus Post-implementation



Average Number of Days from Discharge to Readmission

The average number of days from discharge to readmission for the pre-implementation group was 17 days, and the average number of days from discharge to readmission for the post-implementation group was 12 days. It was desired to compare the proportion of those readmitted to a facility between the post-implementations. Due to small sample sizes and not meeting the assumptions of minimum count per cell, again, a Fisher's exact test was run.

In total, three out of the 12 (25%) patients were readmissions in the pre-implementation group, whereas two out of the 35 (6%) readmissions were in the post-implementation. All data considered, there was still no significant difference in proportions, p = .097 as shown in Table 4 above.

Cost Analysis

In a study by the Agency for Healthcare Research and Quality, the average cost of one readmission for a patient who receives Medicare was $15,500, $14,100 for each Medicaid patient, and $16,400 for a commercially insured patient (Weiss & Jiang, 2021). Using these figures for each admission in the pre-implementation group, coming to an understanding of the economic cost of readmissions was possible. As seen below in Table 6, the cost of readmissions in the pre-implementation group shows there was a cost of $42,300 for the readmissions. In the post-implementation, this cost was $28,200. Therefore, a cost savings of $14,100, or a 19.9% reduction of costs to insurance payers was the economic difference between the two groups (see Table 6).

Table 6

Overview of Readmission Cost by Insurance Type

		# Patients		**Cost Per Admission**	
Insurance Type	Cost Per Admission	Pre-implementation	Post-implementation	Pre-implementation	Post-implementation
Commercial	$ 16,400	0	0	$ -	$ -
Medical Assistance	$ 14,100	3	2	$ 42,300.00	$ 28,200.00
Medicare	$ 15,500	0	0	$ -	$ -
Total		3	2	$ 42,300.00	$ 28,200.00

Table 7 below also shows the total overview of the DNP project result:

Table 7

Overview of the project result

Project Result	Pre-implementation (n=12)	Post-implementation (n=35)
5 days televisit Intervention	0	11%
14 days office follow up	58% (n=7)	69% (n=24)
30 days Readmission	25% (n=3)	6% (n=2)
Average Readmission Days	17.3 days	12 days
Cost	42300	28200
Gender	Male (n=9)	Male (n=18)
Race	Black (n=5)	Black (n=19)
Diagnosis	Integumentary (n=4)	Respiratory (n=7)
Mean Age	54	49.21
Insurance	Medicaid (n=4) / Medicare (n=4)	Medicaid (n=16)
HIE	0%	100%
Discharge Day	Wednesday (n=3)	Monday (n=10)

Chapter Summary

This chapter presented a description of the sample population for the two groups in the project: the pre-implementation group that was used for comparison and the group that experienced the intervention. Descriptive statistics were presented for the two groups. Results were also reviewed for each variable that was analyzed, and statistical analyses were performed as stated. A cost savings estimate was also presented. Also see Table 7 for the overview of the project result data showing comparison of pre-implementation and post-implementation.

CHAPTER FIVE

DISCUSSION AND IMPLICATIONS

Interpretation

The main objective of the DNP project was to decrease the 30-day readmission rate in adults, and implementing this evidence-based intervention lowered it to 6% from 25%, compared to national Medicare readmission rate of 16.9%. This finding is not reflective of enough data to be statistically significant, but its clinical significance, especially concerning pandemic conditions, was very clinically significant especially considering the pandemic conditions. Clinical significance has yet to have standard created to measure things that have great significance in clinical practice. According to Dahlberg et al. (2020),

> "Clinical significance is defined by many parameters, including the observed effect size, primary end point, safety profile, financial toxicity, quality of life, availability of a companion diagnostic for identification of patients likely to benefit the most, demographics of the enrolled population, treatment adherence, crossover, and many others."

Benchmarks like reducing readmission rates translate to fewer patients being readmitted, conservation of healthcare resources, improved safety, a decrease in provider handoffs, a reduction in errors related to medications and communication, and an overall optimization of the implementation of the patients' treatment plan.

A significant impact in cost savings was demonstrated by the project, as there was a 20% reduction in cost in the post-implementation group that had the 5 days televisit intervention during the 6 weeks it was in place. A clinically significant outcome of using

the televisit intervention for patients after discharge was 69% from 58% rate of office follow-up within 14 days. Televisits were completed by four of the 35 patients (11%) who scheduled them, and all 35 patients were identified in the HIE database.

In patients that were discharged from unplanned hospital admissions, timely follow-up with a provider decreased readmissions and improve outcomes as patients. Telephone calls alone had not been shown by the evidence reviewed to reduce readmissions, so the intervention for this project used a targeted, bundled approach. Discharged patients of the practice site were actively sought out with the assistance of the HIE database and contacted for follow-up for both a televisit and office visit. Both visits were performed by an advanced practice nurse, which allowed for early assessment and intervention, thereby maximizing the effectiveness of the visit for the patient. Use of an APRN-led intervention was modeled after the Naylor TCM, which has been shown to improve outcomes after hospital discharge.

In the pre-implementation patients in the practice were asked to make follow-up visits by the hospital when they were discharged, but the data revealed that 0% of patients made televisit appointments. The intervention targeted checking HIE database to identify discharges and reaching out to them within 5 days for a televisit or telephone call from the APRN. Using an APRN, the assessment could be completed at that time for any medication issues, continuing health problems, or need for home care, all of which could be completed with minimal delay since the APRN could initiate orders. This method was superior to having an office assistant or even registered nurse complete the phone calls, which is also consistent with the literature. Unfortunately, only 11% (n=4) completed the televisit with the APRN in pre-implementation, because the patient called to schedule for

televisit with the APRN, 31 patients (89%) refused televisit. They came in for office visit within 14 days. During the televisit or scheduling time, patients were also scheduled to come to the office for a follow-up, and as a result, 69% of the patients complied in the post-implementation. Use of the HIE database made an impact in identifying patients who were discharged in the post-implementation (100%). In the pre-implementation group, 100% of admitted patients were not recognized by the database upon retrospective review.

After reviewing the aggregate data, a list of risk factors for readmissions based on the sample population included the following:

- risk of readmission was greatest in patients greater than 85 years old;
- medical assistance patients were readmitted more than those with other insurances;
- whites and Asian were readmitted more than non-whites;
- males were readmitted more than females;
- the average age of the readmitted patient was 55;
- patients were readmitted on average 12 days after discharge;
- half of the readmitted patients did not have office visit follow-ups.

Limitations

The biggest limitation of this project was the size of the sample (12 in the pre-implementation group versus 35 in the post-implementation) and the small group of readmissions in each group (three and two readmissions respectively) meant that drawing generalized conclusions was not from the results. With only five readmissions in both groups, the data overall was too small to justify any statistical analyses.

Another limitation was the sample population, which was primarily Black male patients with respiratory conditions receiving medical assistance, so it is not known if these interventions would apply to other populations that maybe particularly more vulnerable.

Another limitation of this project was that it did not compare the exact same time periods. Seasonal variability could have affected hospital admissions. For example, the pre-implementation group looked at admissions between July 25 and October 25, 2020, which was over the summer and early fall months. These months are traditionally lower for admissions even with the covid 19 pandemic, although the actual office visit for comparison was from September 14, 2020 to October 23, 2020 (6 weeks). The intervention period occurred from September 25, 2021to December 6, 2021, which was during the fall, and this period is the beginning of cold, flu and covid 19 season, when more patients were typically admitted to the hospital. Another was the HIE database as the fact that patients would not appear on the database list for pre-implementation patients was not anticipated.

The project was labor-intensive and required a great deal of time spent by the APRN in contacting patients, obtaining daily list of discharge patients from HIE, assigning each patient to APRN or medical assistance to call for televisit appointment, completing televisits with each patient, and tracking down needed documents like discharge summaries. Much of this time was not reimbursable as most patients had Medical assistance insurance are capitated, and as televisits were not a reimbursable benefit for this population as they were for commercial and Medicare due to covid 19 pandemic.

The project only included patients discharged to home from an acute care facility, not those that were discharged to psychiatric facilities, skilled nursing facilities, or other rehabilitation facilities. Therefore, it is not known how this intervention would affect or apply to patients discharged to those settings.

Implications for Advanced Nursing Practice

Lowering readmissions should be of primary concern for practitioners facing numerous challenges negotiating the current public healthcare crisis, and at this stage preventing unnecessary readmissions and at the time of this study, preventing unnecessary readmissions was likely on the minds of every nurse, doctor, and hospital staff member in a very serious way. Telehealth technology may be a way to ensure the patient is checked on, and serious issues can be prevented while simultaneously saving valuable time and healthcare resources in addition to providing better service to patients. The value of transitional care via telemedicine cannot be understated, as at this time more than ever before, as medicine includes numerous public policy challenges and market environments to negotiate. Reducing waste of these healthcare resources has becomes a critical goal of policy creation. Telemedicine follow-ups and making nurses and staff reach out more frequently for appointments that can be done from home, marks a transition in practice that is unlike anything seen in reality. Intervention and action can occur repeatedly throughout the patients' experience to simply provide a better service experience in a less invasive and time-consuming way for all involved.

The informal and non-specific, great thing about this project during the intervention stage was that almost all the patients came in for office follow-up visits, which allowed the APRN to intervene again at another point in the discharge period.

During this visit, the patient's condition could be reassessed, medications could again be reconciled, home health could be evaluated, results of testing could be reviewed, and treatment plans could be evaluated and reinforced. Patient satisfaction was not directly measured during this project, because many of the patients did not want televisit and preferred coming to the office. The patients receiving the televisit anecdotally reported their satisfaction, until they were told they needed to make another appointment for office visit. At some point the patient said that they were too busy or that there was no point in another visit. Patients did show appreciation for being contacted by the office but prefer office visits instead of the televisit intervention, which is important in reinforcing the APRN-patient relationship.

As previously stated, phone calls alone did not make much of a difference in the readmission rate, but the post-discharge calls may benefit populations who were hard to reach and have traditionally met barriers to accessing health care. Integrating methods to identify high-risk patients and to target interventions appropriate for them by using risk prediction models or tools may be of value. Transitional care methods and interventions remain an important research topic in the future. This project lent support to the value of APRNs in primary care practice, consistent with the literature. APRNs provide critical support in hospitals, and with their help, hospitals can explore best practices of transitional care to ensure patients' have the resources they need to recover well and in the safety of their own homes via comprehensive discharge planning.

Plan for Sustainability

Sustainability is critical in a healthcare environment, and as such should be the concern of any DNP project. Sustainability refers to being able to maintain the project

goals and objectives to continue to the desired end (United States Department of Labor, n.d.). This DNP project documented the implementation of a telemedicine visit with a patient within 5 days of an unplanned hospital discharge combined with an office visit within 14 days of discharge. The hypothesis was that this intervention would reduce the 30-day readmission rate of patients to the hospital. This project was essential because frequent readmissions cause increased health care costs, negatively impacted the quality of care, and harmed the patient's experience with the healthcare team.

This project was supported by numerous stakeholders seeking to address the increasing rates of readmission in hospitals (United States Department of Labor, n.d.), which made sustaining this project easier to continue. Physicians, nurses, and staff in the practice supported this research based on their understanding of its importance for the practice's population health and their commitment to keeping patients out of the hospital. Existing policy was to see patients for walk in sick visits whenever possible, so continued efforts to reduce potential admissions or emergency department visits was in alignment with current practice.

Reducing the number of visits also eased issues related to the rising costs of healthcare in America. Ensuring patients were managing well at home was important, this admission of possibility really isn't a statement of what was to conduct a phone call to check in or via telehealth technology in a way that reduced the burden of cost in terms of time as well as the patients' schedule. Chronic readmission was treated differently via insurers to reduce the cost for chronic readmission resulting from varying diagnoses, such as, acute myocardial infarction, heart failure, pneumonia, and COPD exacerbation (Centers for Medicare & Medicaid Services, 2018). This DNP project was built into

existing workflows and required minimal effort in terms of the data collection. As an intervention, it would be easy to sustain over time to monitor readmission rates.

Application of the AACN DNP Essentials

DNP Essential I was used to implement nursing knowledge obtained from clinical evidence; TCM introduced by edge Mary Naylor. TCM theory was used to determine the nature and significance of health and health care delivery phenomena to reduce hospital readmission and evaluate outcomes. The DNP Essential II and III were used to implement, improve and integrate primary care follow-up to reduce hospital readmission; analyzing the cost-effectiveness of practice initiatives accounting for risk and improvement of health care outcomes; use existing data from various government website such as Agency for Healthcare Research and Quality, and gathered data from other EBP nursing research. DNP Essential IV, using TCM, helped integrate and analyze electronic medical records to determine clinical improvement of hospital readmissions within 3 months, which lead to new health care policy (DNP Essential V) that was used during the implementation stage of the project.

The DNP Essential VI was evidenced by using TCM which showed that continuous team-based collaborative care between the PCP, patients, staff and other external professionals ensured safety and wellbeing of patients, because successful PCP follow-up after hospital discharge improved patients' outcomes. TCM used clinical prevention to reduce hospital readmission related to the community and socioeconomic dimensions of health (DNP Essentials VII).

Finally, DNP Essentials VIII, showed that TCM was an advanced nursing practice because it educated and guided individuals (PCP) or groups (medical practice specialist)

through complex health and situational transitions for reducing hospital readmission and use conceptual and analytical skills in evaluating the links among practice, organizational, population, fiscal, and policy issues to reduce hospital readmission.

Conclusion

Chapter Summary

Hospital readmissions were an ideal benchmark for measurement to review how efficient and effective medical staff were at empowering the patient through follow-up appointments and the gather of information about self-care to ensure they did not have to be readmitted at a later date. Hospital readmissions are also a target for measuring continuous improvement at hospitals established by the ACA and are likely to remain at the forefront of interventions targeting improvement. A solid technological should be the backbone of data-driven efforts to monitor and measure these benchmarks and reveal the effectiveness of interventions like the one used in the present DNP project. As telemedicine is spreading widely, more and more should be done to ensure that, beyond patients' preference, these methods of patient communication are effective. The results of this study, while not generalizable or statistically significant, reveal that the results could still have meaning that can be use in a clinical setting.

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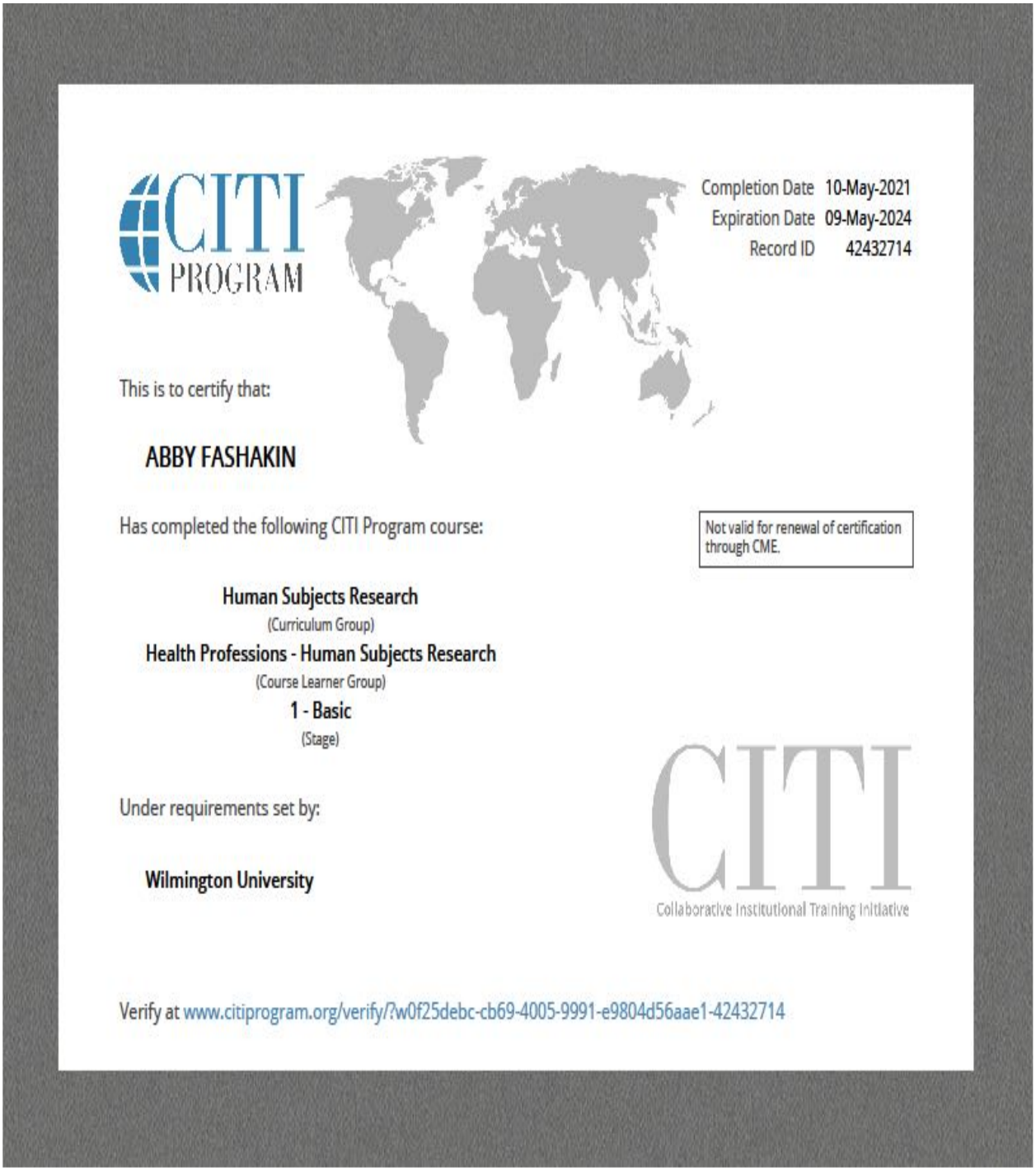
Appendix A

Certificate of Completion



Appendix B

Human Subject Review Committee (HSRC)

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Complete This Worksheet Prior to Completing This Form

Purpose: The purpose of this worksheet is to provide support for making Quality Improvement Project determinations when there is uncertainty regarding whether the quality activity contains Human Subjects.

Directions: For a proposed DNP project to be classified as containing only Quality Improvement activities—which permits use of the DNP HSRC form—answers to all of the questions in the worksheet must be 'TRUE' for each activity proposed in the DNP project. If one or more answers is 'FALSE', the project requires completion of the HSRC standard form and committee review.

TRUE	FALSE	
☒	☐	The intent of the proposed activity is to assess and/or improve the quality of a practice, product or program to ensure established educational, clinical or program service standards are met or best evidentiary practices attained.
☒	☐	No activity proposed provides less than standard of care, services or instruction to participants.
☒	☐	No practice, product or program changes proposed are experimental and no test interventions or research questions are added that go beyond established or evidentiary best practice.
☒	☐	The proposed activity does not: (1) include a 'control group' in whom care, products, services or educational instruction are intentionally withheld to allow an assessment of its efficacy or (2) assign participants to receive different procedures, therapies or educational instruction based on a pre-determined plan such as randomization.
☒	☐	The proposed activity does not involve the prospective evaluation of a drug, procedure or device that is not currently approved by the FDA for general use (including "off-label" indications).
☒	☐	The proposed activity does not test an intervention or add research questions that go beyond established evidentiary best practice and/or are intended to generate generalizable knowledge.
☒	☐	The proposed activity would not increase harm—physical, psychological, social or economic—than would normally be encountered by the individual if s/he was not participating in this activity.
☒	☐	The lead person on the project has organizational responsibility and authority to recommend or impose a corrective action plan based on the outcome(s) of the activity, as applicable.
☒	☐	Interpretation of the data or any feedback to those who would benefit from the findings will not be deliberately delayed.
☒	☐	The proposed activity has merit and will likely be conducted regardless of any possibility of publication or presentation that may result from it.

Adapted from Rutgers HRP-309 (2017) with permission from Judith Neubauer, PhD.

DNP Project Information

Title of DNP Project (12 to 15 words maximum):

Implementation of a Primary Care Nurse Practitioner Telemedicine Intervention to Reduce 30-day Hospital Readmission

Problem Description:
Provide a short summary of the clinical practice problem you will address with your DNP project. What is the gap in practice and what evidence will you be translating to practice?

The purpose of this project is to implement an intervention in primary care practice to determine if it affects unplanned readmission to the hospital within 30 days of discharge. The PICOT question is: In patients age18 and over, who are discharged from the hospital from an unplanned admission, does the addition of a telemedicine visit by a nurse practitioner within the first five days of discharge, followed by an office visit within 14 days of discharge, impact 30-day readmission rates when compared to current practice of an office visit within 14 days of hospital discharge?

Hospital readmission rates have become transparent under the Affordable Care Act. Bricard and Or (2019) showed that early post-discharge follow-up with primary care reduced the 28-day readmission rate by almost 50%, noting that patients who utilize their primary care provider have lower odds of readmission in general. While geographical disparities contribute indirectly to readmission rates, interventions that improve communication between acute care facilities and primary care are crucial to reduce readmissions and develop individualized treatment plans (Bricard & Or, 2019).

About 35 million patients are discharged from acute care facilities in the United States every year. The cost of unplanned readmissions is 15 to 20 billion dollars annually (Alper et al., 2018), thus preventing avoidable readmissions has the potential to profoundly improve both the quality of life for patients and the financial wellbeing of health care systems. Among Medicare beneficiaries requiring readmission within 30 days of discharge, only 50 percent had seen a clinician for a follow-up visit (CMS, 2021).

In 2013, Medicare implemented payment incentives for follow-up appointments within 7 and 14 days of discharge to further emphasize that timely follow-up after discharge helps to reduce readmission rates. Numerous studies have shown that early outpatient follow-up is associated with lower readmission rates for heart failure, pediatric asthma, sickle cell disease, and chronic obstructive pulmonary disease (Jackson, et al., 2015).

The big question is what is the optimal time interval between hospital discharge and the first primary care follow-up visit? Several studies have evaluated the association between rates of readmission and scheduled outpatient follow-up post-hospitalization (Greenwald et al., 2021).

Timely follow-up visits post hospitalization with the patient's primary care provider is very important, as sometimes patients do not quite understand their discharge instructions and a familiar provider can better explain their diagnosis and coordinate their care appropriately. According to Shen et al., (2017) any follow-up visit with a primary care provider within 7 days of discharge was associated with a lower risk for 30-day readmission for the patient. Patients who also received follow-up calls post-discharge had significant improvements in the length of time out of hospital compared to those that did not receive a follow-up call post-discharge (Mwachiro, Baron-Lee & Kates, 2019).

Early outpatient follow-up is a key component of transitional care models that have been successful in reducing readmission rates, such as the Care Transitions Intervention, the Transitional Care Model, Project RED, and Better Outcomes by Optimizing Safe Transitions (Jackson, et al., 2015). It is often difficult to get a timely appointment with the patient's own primary care provider, and transitional care clinics help to fill this void. Patients are often overwhelmed by pages and pages of discharge instructions, medication changes, and follow up appointments with specialists. Having follow up within a few days of discharge often helps to improve patient's understanding of discharge instructions, medication instructions, and helps to reduce readmission rates.

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Shen, E., Koyama, S. Y., Huynh, D. N., Watson, H. L., Mittman, B., Kanter, M. H., & Nguyen, H. Q. (2017). Association of a dedicated post–hospital discharge follow-up visit and 30-

day readmission risk in a medicare advantage population. JAMA internal medicine, 177(1), 132-135. Retrieved from https://doi.org/10.1001/jamainternmed.2016.7061

External Projects

If the DNP project will involve other organizations, it may be necessary to obtain permission from these organizations prior to collecting data. Some organizations have Institutional Review Boards (IRBs), and it may be necessary to obtain formal approvals from these IRBs. In other cases, a document from an appropriate organizational executive specifically approving the DNP project would be sufficient. The DNP student is responsible for determining what type of approval is required and obtaining the approval.

In cases where approval from Wilmington University's HSRC is required as a precondition to obtaining approval from another organization, the HRSC's approval will be provisional, requiring the additional step of obtaining DNP project approval documents from other organizations before receiving full approval from Wilmington University's HSRC.

If the DNP project involves other organizations, please answer these questions.

	YES	NO
Do these organizations require approval by their IRBs?	☐	☒
Has IRB approval been obtained? If **YES**, please attach the approval to this submission	☐	☐
Have other permission documents been obtained? If **YES**, please attach the approvals to this submission.	☒	☐

Other relevant information or comments:

Organizational approval letter is attached

Population Information

Population: Gender(s) ALL Age(s) 18 and over Race/ethnicity(ies) All

PICOT Question:
Include the PICOT Question in a complete sentence and then break down each section, Population -; Intervention -; Comparison -; Outcome -; Time -. Include sufficient detail so that someone unfamiliar with the project would understand all aspects of the proposed DNP project.

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PICOT-

original one. Intervention group are readmitted patients that were most likely readmitted to the same facility, with the same diagnosis as the original one,

How many participants (patients, providers, etc.) are anticipated for the DNP project?

1. Approximately 42 participants are expected, although, the exact number will depend on how many patients are admitted to the hospital during the project implementation phase.
    a. Average of 7 discharged patients per week multiplied by 6 weeks equals to 42 patients.

How will participants be selected for participation? (from PICOT question)

Participants will be recruited from patients of the project location primary care practice who are discharged from the hospital after an unplanned inpatient admission for any reason.

What are the procedures that the participants will undergo in the proposed DNP project including the physical location and duration of participation? Provide a step-by-step outline of the project from start to finish. **Attach a copy of all DNP instruments, e.g., surveys, questionnaires, interview questions, etc. (if being utilized):**

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1. Patients who are discharged from the hospital after an unplanned admission will be contacted by the practice medical assistants to set up a telemedicine visit with the nurse practitioner within 5 days of discharge.
2. And an office visit within 14 days after discharge.
3. The medical assistant would advise patient to bring in their discharge documents.
4. Discharge documents would be scanned to the practice certified electronic medical record. All the practice computers in the office are password protected.
5. During the visits, the following would be addressed:

TELEMEDICINE VISIT	OFFICE VISIT
Reason for the admission and health status since discharge	Health status since discharge
Medication reconciliation	Medication reconciliation
Instructions and recommendations from hospital	Review of test results and reports and address any questions or symptoms the patient has
Assessment of the need for home health services, equipment, medications, education needs, f/u diagnostic testing or specialist referral	Assessment of the need for home health services, equipment, medications, education needs, lab work, or specialist referral
Schedule or verification of 14 days transitional care office visit	Arrangement of short-term f/u based on patients' condition, compliant and acuity
Instruct patient to call office or on-call provider for any problems	Instruct patient to call office or on-call provider for any problems

6. The DNP project would be conducted as part of the patient's usual care and therefore will not require the consent of the participants.

Confidentiality and Security

Select **YES** to certify that:

	YES	N/A
Procedures have been taken to ensure that individuals cannot be identified via names, digital identifiers (e.g., email address, IP address), images or detailed demographic information.	☒	☐
Code to name association data/information is securely and separately stored. (Participants are given codes and the codes are securely stored separately from their answers.)	☒	☐
All data is maintained in encrypted and/or password protected digital/electronic files.	☒	☐
Individually identifiable information will be securely maintained for three years past the completion of the research, and then destroyed rendering the data unusable and unrecoverable.	☒	☐

Describe the procedures you are taking to maintain anonymity, confidentiality, or information security.

The project will be conducted in conjunction with the patient's usual medical care. The data will be kept, which will include records of patients with hospital discharges, discharge diagnoses, and demographic area throughout the intervention period. Data will be saved on the secure server in the office of Abbydek Family Medical Practice, P.C. where the electronic record also resides. HIPAA will be maintained. Data would be kept for a minimum of three years after the date of creation or date or date of the last encounter, whichever is later.

DNP Protocol

Does this DNP project involve?

	YES	NO
Prisoners, probationers, pregnant women (if there is a medical procedure or special risk relating to pregnancy), fetuses, the seriously ill or mentally or cognitively compromised adults, or minors (under 18 years) as participants	☐	☒
The collection of information regarding sensitive aspects of the participants behavior (e.g., drug, or alcohol use, illegal conduct, sexual behavior)	☐	☒
The collection or recording of behavior which, if known outside the research, could place the participants at risk of criminal or civil liability or could be damaging to the participant's financial standing, employability, insurability, or reputation	☐	☒
Procedures to be employed that present more than minimal risk[1] to participants	☐	☒
Deception	☐	☒
Possible or perceived coercion (e.g., a concern in power relationships such as teacher/student, employer/employee, senior/subordinate)	☐	☒
Benefits or compensation to participants (beyond the general benefits of the knowledge to be gained or small gifts/lottery prizes)	☐	☒
A conflict of interest (e.g., the researcher's material or other interests may bias collection, interpretation, or use of data)	☐	☒

If you answered "**NO"** to all of the questions please proceed to the next page.

If you answered "**YES"** to any of the questions, provide evidence that you have taken the training module or modules that relate to this risk and discuss what you learned about reducing the risk from the training in the textbox below and/or by attaching the evidence to this document.

Click here to enter text.

[1] Minimal risk means that the probability and magnitude of harm or discomfort anticipated in the proposed research are not greater than those ordinarily encountered in everyday life or during the performance of routine physical or psychological examinations or tests

WILMINGTON UNIVERSITY

WILMINGTON UNIVERSITY
HUMAN SUBJECTS REVIEW COMMITTEE (HSRC) HSRC-13

Obligations of DNP Student

Any substantive changes made to the DNP protocol must be reported to and reviewed by your college's HSRC representative(s) prior to implementation of such change. Any complications, adverse reactions, or changes in the original estimates of risks must be reported at once to the HRSC chairperson before continuing the project.

Select **YES** to certify that:

	YES
DNP data will be retained for a minimum of three years past the completion of the project in accordance with federal regulations	☒
The DNP student will submit document and form revisions and updates, as appropriate	☒
The DNP student will submit a renewal petition if the data collection has not been completed within one year of the most recent HSRC approval*	☒

* **Note**: HSRC approval expires after one year, requiring renewal of the HSRC Protocol

The DNP student's signature below certifies that he/she has (a) read and understands the obligations as a DNP student, (b) DNP project approval expires one year after the final approval date shown on page 1, and (c) that the information contained in and submitted with this HSRC protocol is accurate and complete.

DNP Student

Print name: Abby Fashakin

Signature: [signature] Date: 6/16/2021

Obligations of the DNP Project Chair

The DNP Project Chair has two major obligations. First, the DNP Project Chair must ensure the DNP Student completes all relevant training courses. Second, the DNP Project Chair must ensure the DNP Student submits all document and form revisions and updates, as appropriate for the research.

The DNP Project Chair's signature below certifies that he/she has (a) read and understands the obligations as a DNP Project Chair and (b) that the information contained in and submitted with this HSRC protocol is accurate and complete.

DNP Project Chair

Print name: Joanne Fletcher, EdD, MSN, RN, ACM-RN

Signature: Joanne Fletcher, EdD, MSN, RN, ACM-RN Date: 6/16/2021

WILMINGTON UNIVERSITY
HUMAN SUBJECTS REVIEW COMMITTEE (HSRC) H

PROTOCOL REVIEW

This section is to be completed by the HSR Committee.

DNP Student: Abby Fashakin

Date Submitted: 7/5/2021

The protocol and attachments were reviewed:

The proposed DNP project is approved as:

☒ Exempt ☐ Expedited ☐ Full Committee ☐ Provisional (see External Projects section)

The proposed DNP project was approved pending the following changes:

☐ See attached letter

☐ Resubmit changes to the HSRC chairperson

The proposed DNP project was disapproved:

☐ See attached letter for more information.

	YES	N/A
The HSRC representative sent a copy of the HSRC Protocol to the VP of Academic Affairs for research requiring access to Wilmington University students, employees, or data.	☐	☒

HSRC Chair
or Representative Angela Herman, DNP, RN
Printed Name

Signature

Angela Herman, DNP, RN

Date 7/6/2021

Appendix C

Project Site Approval Letter

ABBYDEK FAMILY MEDICAL PRACTICE P.C.

MEDICAL DIRECTOR: EMMANUEL O. FASHAKIN, M.D.

PROVIDERS

EMMANUEL O. FASHAKIN, M.D.

ABBY N. FASHAKIN, RNP-C

RAY REZANO, RPA-C

REPLY TO OFFICE LOCATIONS

☐ 1. 7838 PARSONS BLVD, FLUSHING, NY 11366
TEL: (718) 591 - 1600

☐ 2. 105-20 JAMAICA AVE, RICHMOND HILL, NY 11418
TEL: (718) 849 - 0702

☐ 3. 656 PENNSYLVANIA AVE, BROOKLYN, NY 11207
TEL: (718) 342 - 2446

CENTRAL FAX: (718) 591 – 0265.

Dear Wilmington University Human Subjects Committee,

Abby Fashakin has permission to complete her DNP project titled "Implementation of a Primary Care Nurse Practitioner Telemedicine Intervention to Reduce 30-day Hospital Readmission" at Abbydek Family Medical Practice, P.C.

If you have any questions, please do not hesitate to contact me.

Very truly yours,

Emmanuel O. Fashakin, M.D., FAAFP
Medical Director

Your Family Deserves a Family Physician!

Appendix D

HRSC Approval Letter

WILMINGTON UNIVERSITY

July 7, 2021

Abby Fashakin

Dear Abby,

Wilmington University's Human Subjects Review Committee (HSRC) is pleased to inform you that your Doctor of Nursing Practice project proposal ***Implementation of a Primary Care Nurse Practitioner Telemedicine Intervention to Reduce 30-day Hospital Readmission*** was reviewed on ***July 6, 2021***. The project was categorized as ***Exempt*** and meeting the requirements of a quality improvement intervention. Your signed HSRC form is attached.

Now that your DNP project has been approved by the HSRC, there are multiple elements with which you must comply. Wilmington University adheres strictly to these regulations:

1. You must conduct your DNP project exactly as it was approved by the HSRC.
2. Any additions or changes in procedures must be approved by the HSRC before they are implemented.
3. You must notify the HSRC promptly of any events that affect the safety or well-being of subjects.
4. You must notify the HSRC promptly of any modifications to your DNP project or other responses that are necessitated by any events reported in items 2 or 3.
5. Your approval is provisional if you require Institutional Review Board approval from your organization. Once organizational approval has been obtained, please submit your signed approval and completed IRB application to DNP Administrative Assistant via email.

The HSRC may review or audit your project at random or for cause. In accordance with Wilmington University policy, the HSRC may suspend or terminate your DNP project if your project has not been conducted as approved and/or if other difficulties are detected.

While not under the purview of the HSRC, DNP students are responsible for adhering to US copyright law when using existing scales, survey items, and other works in the conduct of research/DNP projects.

In conclusion, you have developed an interesting evidence-based practice project aligned with the AACN DNP Essentials (2006). This is an important project for healthcare practices now and in the future. Best wishes for continued success.

Sincerely,

Angela Herman, DNP, RN
HSRC Committee Representative
Chair, Health Sciences Program
Assistant Professor
College of Health Professions

Aaron Sebach, PhD, DNP, MBA, AGACNP-BC, FNP-BC, NP-C, CLNC, CNE, CNEcl, SFHM
Chair, DNP Program
Associate Professor
College of Health Professions

COLLEGE OF HEALTH PROFESSIONS
31 Reads Way, New Castle, Delaware 19720

Appendix E

DNP Budget

DNP Project Budget: NP-Led Telemedicine Intervention to Reduce 30-day Readmission Rates

This DNP project will examine the effect of an intervention led by a nurse practitioner on readmissions to the hospital within 30-days. This project will utilize evidence-based transitional care interventions that reduce rehospitalization rates and support patients and their families in the discharge planning process. The following are details of the budget for this project.

PICOT Question: In patients over age 18 who are discharged from the hospital after an unplanned admission, does the addition of a telemedicine visits by a nurse practitioner within the first 5 days of discharge, followed by an office visit within 14 days of discharge, impact 30-day readmission rates when compared to current practice of an office visit within 14 days of hospital discharge?

General Information

There is no capital expenditure required for this project, as the project will be a part of the existing practice workflow at Abbydek Family Medical Practice P.C in Queens and Brooklyn, New York. This is a three-provider mixed primary care practice. The workflow involved includes the following steps:

1. During the intervention period, obtain a daily list of hospital encounters from the Healthix Information Exchange System (HIE) Encounter Notification Service. This database is a **free** real-time alert system that is offered in Maryland in

partnership with participating hospitals and ambulatory providers through a health information exchange online portal to which the practice subscribes (Healthix Information System for our Patients [HIE], n.d.). A list is generated daily of patients who present to emergency rooms for care or who are admitted as inpatients in the hospitals in the practice's catchment area in the New York City and Long Island.

2. Determine patients who were discharged from an inpatient hospital admission that was unplanned. Patients will be excluded if they are discharged from planned admission for a surgical procedure.
3. Assign the list of discharged patients to medical office assistant who will contact all patients to schedule a telemedicine visit within five days and an office visit within 14 days. Medical office assistant also provides check in/check out procedures after visits and collection of copays, updates of insurance information and contact information. Medical office staff will also request hospital records and put them in the patient chart. Estimated clerical time involved is 20 minutes for each admitted patient.
4. Each visit to be scheduled for 30 minutes with the nurse practitioner.
5. For all visits, the medical assistant will obtain and document information in the chart, including the reason for visit, medication reconciliation, update patient problem list, allergy history, social history, medical history, surgical history, hospitalization history, assess the need for medication refills, and ensure hospital records are present. Estimated medical assistant time involved is 15 minutes per visit.

6. Each patient admitted for an inpatient visit will have two encounters with the NP at the office, which include a telemedicine encounter and an inpatient office visit, each scheduled for 30 minutes.
7. There is a charge of $100.00 per month $2 per for telemedicine visit billed to the practice by the EMR provider, eClinicalWorks. There is no charge for the Healthix database use (Xhadi Gjana, Billing Manager, personal communication, August 7, 2021).
8. Telemedicine reimbursement charges are the same as standard evaluation and management (E&M) codes (Xhadi Gjana, Billing Manage, personal communication, August 7, 2021).
9. The in-office visit will be coded with transitional care code for visits within 14 days (Xhadi Gjana, Billing Manage, personal communication, August 7, 2021).

Budget Information

Reimbursement Rates for Office Visits:

E & M Code	Medicare	Abbydek	Average	Visit Type
99214	$132.94	$126.79	$129.87	30-minute Telemedicine Visit
99496	$287.52	$237.11	$262.32	30-minute Transitional Care w/in 14 days

Personnel Costs (Average Hourly Rate):

Type	Hourly Rate

Nurse Practitioner (Salary.com, 2021)	$64.93
Medical Assistant (MedAssistantEDU.org, 2021)	$21.39
Medical Office Assistant (Indeed, 2021)	$20.00

10.

Overhead Costs:

Overhead includes items such as total support staff cost (salary and benefit), taxes, insurance, building rent and maintenance, office supplies, medical supplies, information technology (EHR, billing system, telephone system, servers, etc.), etc. and were estimated (99MGMT, 2018) and calculated based on average monthly patient volume data of the practice.

Estimated Monthly Overhead	**$96,000.00**
Average # Monthly Patient Visits	1580
Average Overhead Cost/Visit	$60.76

Income and Expenses

The following is the breakdown of reimbursement income and expenses for each encounter with a patient that is scheduled for both a 5-day telemedicine visit and a 14-day office visit after an unplanned inpatient admission.

Income	Average Per Admitted Patient
Telemedicine Visit	$129.87
Hospital Follow-up Office Visit	$262.32
Total Income Per Patient	**$392.19**

Expenses	
NP Time (2 visits x 30 min each)	$64.93
Med Assistant (2 visits x 15 min each)	$21.39
Clerical Staff (20 min per patient)	$6.66
eClinicalWorks Fee (Telemedicine Visit)	$2.00
Overhead Cost (2 Visit @ $60.75/each)	$121.52
Total Expenses Per Patient	**$216.50**
NET Profit	**$175.69**

Projections

Estimates are that the population is expected to increase by 15.2% from 2010 to 2025 and that the average number of visits to primary care doctors will increase from 1.6 to 1.66 in 2025 due to the aging of the population (Blucher V (2019), Petterson et al., 2012). This translates to approximately 1% per year during this period. However, it is impossible to predict how this will translate to the number of patients who are admitted to the hospital over the next several years. Some estimate that as the population ages and increases, and the population with health insurance remains the same, the volume of inpatients should grow. However other forces may affect the growth. Many initiatives are emerging in healthcare economics at present which may impact hospital admissions negatively, but also positively impact the health of the population. It is always better to keep patients out of the hospital, and with the

primary care provider whenever possible. Some factors that may affect the rate of hospital admissions include improved chronic disease management, patient-centered medical homes, accountable care organizations – all of which decrease acute care use (Blucher V (2019), Valentine & Masters, 2017). There are also economic incentives which shift care to less costly settings emerging (Blucher V (2019), Valentine & Masters, 2017).

Therefore, the projections assume a modest 1% increase per year. Note that 2021 includes only 90 patients, as the project will not be implemented until the final quarter of the year.

Income	**Average Per Admitted Patient**	**2021 Projection (90 Patients)**	**2022 Projection (294 patient)**	**2023 Projection (297 patients)**	**2024 Projection (301 patients)**
Telemedicine Visit	$129.87	$11,688.30	$38,181.78	$38,571.39	$39,090.87
Hospital Follow-up Office Visit	$262.32	$23,608.80	$77,122.08	$77,909.04	$78,958.32
Total Income Per Patient	**$392.19**	**$35,297.10**	**$115,303.86**	**$116,480.43**	**$118,049.19**
Expenses					
NP Time (2 visits x 15 min each)	$64.93	$5,843.70	$19,089.42	$19,284.21	$19,543.93
Med Assistant (2 visits x 15 min each)	$21.39	$1925.10	$6288.66	$6352.83	$6438.39
Clerical Staff (20 min / patient)	$6.66	$599.40	$1958.04	$1978.02	$2004.66
eClinicalWorks Fee (Telemedicine Visit)	$2.00	$180.00	$588.00	$594.00	$602.00
Overhead Cost (2 visit @ $60.75/each)	$121.52	$10,936.80	$35,726.88	$36,091.44	$36,577.52
Total Expenses Per Patient	**$216.50**	**$19,485.00**	**$63,651.00**	**$64,300.50**	**$65,166.50**

NET Profit	**$175.19**	**$15,812.10**	**$51,652.86**	**$52,179.93**	**$52,882.69**

References:

Blucher, V. (2019). Development and evaluation of a primary care nurse practitioner-directed telemedicine program to reduce 30-day hospital readmission rates. Retrieved June 28, 2021, from https://www.proquest.com/openview/c8f411b3481b9802313ef0c90c54dbd1/1?pq-origsite=gscholar&cbl=18750&diss=y

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Valentine, S., & Masters, G. (2017). Healthcare forecast 2017: Top trends driving board strategic priorities. Retrieved from

https://nrchealth.com/resource/healthcareforecast-2017-top-trends-driving-board-strategic-priorities/

Appendix F

Data Collection for Post-implementation

INITIAL ADMITTING FACILITY	FNAME	LNAME	DOB	AGE	GENDER	RACE	DATE OF INDEX DISCHARGE	DAY OF WEEK (INDEX ADMIT)	PRIMARY DISCHARGE DX (INDEX ADMIT)	Diagnosis Category (INDEX)	INSURANCE TYPE	READMIT?30?	READMISSION DATE	READMIT W/IN 30 DAYS?	READMISSION FACILITY	PRIMARY DX (READMIT)	Diagnosis Category (READMIT)	DATE PT CONTACTED TO SCHEDULE	TELEVISIT SCHEDULED	TELEVISIT DONE?	14- DAY OFFICE VISIT SCHEDULED	OFFICE VISIT DONE	
VFP	A		11/14/41	19	1	1	9/29/21	WEDNESDAY		8	8	1	2		2			9/29/21		2	2	2	PT REFUSED TELEVISIT AND/OR OFFICE V/
AVHMC	N	P	12/31/68	52	1	4	10/11/21	MONDAY		2	2	1	1	10/17/21	1	VFP	ASTHMA	2	10/29/21		2	2	2	PT REFUSED TELEVISIT AND/OR OFFICE V/
KCHC	C	R	12/31/21	84	1	1	9/27/21	MONDAY		2	2	1	2		2				9/29/21		2	2	2	UNABLE TO REACH PT/ WRONG PHONE N
NELLI CORE LAB	K	U	1/6/00	21	1	2	9/30/21	THURSDAY		4	4	1	2		2				9/30/21		2	2	2	PT REFUSED TELEVISIT AND/OR OFFICE V/
QUEENS	C	B	4/13/66	55	2	2	10/4/21	MONDAY		2	2	1	2		2				10/5/21		2	10/5/21	1	
VFP	J	E	7/8/56	65	1	1	10/4/21	MONDAY		1	1	1	2		2				10/5/21		2	2	2	PT REFUSED TELEVISIT AND/OR OFFICE V/
VFP	M	E	12/1/00	20	1	7	10/4/21	MONDAY		8	8	4	2		2				10/5/21		2	2	2	PT REFUSED TELEVISIT AND/OR OFFICE V/
MSMC	P	H	9/11/62	59	1	2	10/3/21	SUNDAY		8	8	1	2		2				10/4/21		2	2	2	PT REFUSED TELEVISIT AND/OR OFFICE V/
VFP	J	C	6/7/93	28	2	3	10/2/21	SATURDAY		11	11	1	2		2				10/4/21		2	2	2	PT REFUSED TELEVISIT AND/OR OFFICE V/
AVHMC	B	H	9/24/74	43	2	1	10/1/21	FRIDAY		1	1	1	2		2				10/4/21		2	1	1	
MSMC	R	A	1/1/77	44	2	4	10/2/21	SATURDAY		11	11	1	2		2				10/4/21		2	2	2	PT REFUSED TELEVISIT AND/OR OFFICE V/
FMC	J	G	12/2/95	25	1	2	10/2/21	SATURDAY		3	3	1	2		2				10/4/21		2	2	2	PT REFUSED TELEVISIT AND/OR OFFICE V/
KCHC	N	G	1/4/59	62	1	4	10/9/21	SATURDAY		1	1	1	2		2				10/12/21		2	10/12/21	1	
LIJ	R	T	2/18/57	64	2	4	9/26/21	SUNDAY		8	8	1	2		2				9/26/21	9/28/21	9/26/21	10/1/21	1	
LIJ	R		10/13/88	12	1	2	9/27/21	MONDAY		8	8	1	2		2				9/28/21		2	10/1/21	1	
VFP	J	C	1/13/64	57	2	1	10/6/21	WEDNESDAY		3	3	1	2		2				10/12/21		2	10/12/21	1	
NWH	L	J	6/1/43	78	2	2	10/17/21	SUNDAY		1	1	1	2		2				10/15/21		2	10/28/21	1	
VFP	B	C	10/20/47	74	1	1	10/9/21	SATURDAY		1	1	1	2		2				10/12/21		2	10/12/21	1	
LIJ	K		5/14/64	57	2	1	10/10/21	SUNDAY		3	3	4	2		2				10/12/21		2	10/12/21	1	
MH	T	R	4/5/04	17	2	1	10/10/21	SUNDAY		11	11	1	2		2				10/12/21		2	10/12/21	1	
SINAI	S	T	9/14/83	38	1	1	10/11/21	MONDAY		2	2	1	2		2				10/13/21		2	10/13/21	1	
BH	J	D	11/29/79	41	1	3	9/30/21	THURSDAY		2	2	1	2		2				10/14/21		2	1/14/21	1	
NWH	A	A	1/18/60	61	2	2	10/9/21	SATURDAY		1	1	1	2		2				10/16/21		2	10/16/21	1	
BQMH	E	Z	2/1/04	85	1	1	10/8/21	FRIDAY		6	6	1	2		2				10/20/21		2	10/20/21	1	
JHMC	T	B	4/26/63	58	1	1	10/20/21	WEDNESDAY		5	5	2	2		2				10/21/21	10/21/21	1	10/27/21	1	
KCHC	I		12/7/80	40	2	2	9/28/21	TUESDAY		8	8	1	2		2				10/21/21		2	10/22/21	1	
VFP	J	G	8/14/68	53	2	1	10/25/21	MONDAY		3	3	1	2		2				10/26/21		2	10/26/21	1	
LIJ	S	C	7/11/79	42	1	2	10/20/21	WEDNESDAY		3	3	1	2		2				10/27/21		2	10/28/21	1	
BH	J	B	5/27/61	60	2	2	10/24/21	SUNDAY		9	9	1	2		2				10/28/21		2	10/28/21	1	
MHE	S	B	2/24/96	25	2	2	10/24/21	SUNDAY		4	4	3	2		2				10/28/21	10/28/21	10/28/21	10/29/21	1	
KCHC	M	S	11/11/59	61	1	1	10/23/21	SATURDAY		4	4	1	2		2				10/27/21		2	10/28/21	1	
MSMC	M	H	11/25/04	16	2	2	10/18/21	MONDAY		2	2	3	2		2				10/27/21	10/27/21	10/27/21	2	2	
MMC	F	H	11/11/60	60	2	4	10/18/21	MONDAY		3	3	2	2		2				10/29/21		2	10/29/21	1	
MSMC	B	A	11/7/59	61	2	1	10/19/21	TUESDAY		4	4	1	2		2				10/29/21		2	10/29/21	1	
QUEENS	A	G	3/30/62	59	1	1	10/16/21	SATURDAY		2	2	2	1	11/2/21	1	QUEENS	COPD EXACERBATION	2	11/3/21		2	11/4/21	1	
																							1	
																							1	

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Appendix G

Data Collection for Pre-implementation

INITIAL ADMI	FNAME	LNAME	DOB	AGE	GENDER	RACE	DATE OF INDEX DISCHARGE	DAY OF WEEK (INDEX ADMIT)	PRIMARY DISCHARGE DX (INDEX ADMIT)	Diagnosis Category (INDEX)	INSURANCE T	READMITTED	READMISSIO N DATE	READMIT W/IN 30 DAYS?	READMISSIO N FACILITY	PRIMARY DX	Diagnosis Category (READMIT)	DATE PT CONTACTED TO SCHEDULE	TELEVISIT SCHEDULED	TELEVISIT DON	14-DAY OFFICE VISIT SCHEDULED	OFFICE VISIT DONE
BH	R	A	11/12/88	32	2	2	9/4/20	WED	1	1	1	2		2							9/14/20	9/14/20
NYP	N	N	10/20/65	55	1	4	9/15/20	SUN	8	8	2	2		2							9/16/20	9/16/20
FHMC	Y	M	5/1/93	28	1	5	8/31/20	MON	5	5	4	2		2							9/16/20	9/16/20
JHMC	M	W	7/14/56	64	1	2	9/7/20	MON	2	2	2	1	9/15/20	1	JHMC	2	2				9/19/20	9/19/20
QUEENS	S	M	4/14/87	33	2	3	9/9/20	WED	4	4	1	2									9/17/20	9/17/20
	S	J	5/25/41	79	2	2			2	2	3	2										9/17/20
KCHC	C	G	9/7/64	56	1	2	9/5/20	SAT	3	3	1	2									9/18/20	9/18/20
FH	R	B	1/17/69	51	1	2			5	5	3	2										9/25/20
NYP	B	N	12/11/54	65	1	4	9/5/20	WED	5	5	2	1	9/22/20	1	NYP	5	5				10/10/20	10/10/20
JHMC	R	N	12/11/54	65	1	4	9/29/20	TUE	1	1	2	1	10/28/20	1	NWH	1	1					11/6/20
JHMC	S	B	5/21/58	63	1	1	7/25/20	SUN	8	8	3	2										9/21/20
JMHC	T	B	4/26/63	58	1	1	9/18/20		5	5	3	2									9/28/20	9/28/20