The Impact of Telephone Follow-Up Calls on 30-Day Readmissions in Older Adults Post Total Joint Replacement Surgery

A Dissertation by

Maame Osei

Brandman University

Irvine, California

Marybelle and S. Paul Musco School of Nursing and Health Professions

Submitted in partial fulfillment of the requirements for the degree of

Doctor of Nursing Practice

October 2017

Committee in charge:

Dr. Donald Beissel, DNP, CRNA, DAAPM, RN, Chair

The manuscript of Maame Osei is approved.

Donald E. Beissel

Digitally signed by Donald E. Beissel
Date: 2017.10.11 18:54:58 -05'00'

[Donald Beissel, DNP, CRNA, DAAPM, RN], Committee Chair

Dr. Patric Schine

Digitally signed by Dr. Patric Schine
DN: cn=Dr. Patric Schine, o=Brandman University, ou=Musco School of Nursing and Health Professions, email=pkline@brandman.edu, c=US
Date: 2017.10.23 14:20:51 -07'00'

[Patric Schine, DNP, FNP-BC], Committee Member

Dr. Tyke Hanisch

Digitally signed by Dr. Tyke Hanisch
DN: cn=Dr. Tyke Hanisch, o=Musco School of Nursing and Health Professions, ou=Brandman University, email=hanisch@brandman.edu, c=US
Date: 2017.10.25 14:25:32 -07'00'

[Tyke Hanisch, DNP, APRN, FNP-C], Dean

October 2017

The Impact of Telephone Follow-Up Calls on 30-Day Readmissions in Older Adults Post Total Joint Replacement Surgery

by Maame Osei

ACKNOWLEDGEMENTS

Firstly, I am extremely grateful to my Lord and Savior Jesus Christ, who has given me the opportunity to be in this position. I am in awe of the strength He gave me to obtain this doctorate degree. Being a student in this Doctor of Nursing Practice program was daunting. Nevertheless, I have been able to accomplish this goal that I had established for myself three and half years ago. I would like to greatly thank my husband, Dr. Kwasi Osei, who has been with me throughout this process. Thank you Kwasi for being my number one supporter and proof reading all my 20-page papers. I delivered two beautiful children while I was in this program and it was very difficult, but I am grateful for the joy they brought me throughout this process. Thank you Elim and Eden for your beautiful faces. I acknowledge with gratitude, Ron Nowosad (Director, Program Development, and Clinic Operations) and Kathleen Webster (Orthopedic educator and navigator) of San Antonio Regional Hospital, for the opportunity they gave me to implement my clinical scholarly project at their facility. I sincerely acknowledge Brandman University and the Marybelle and S. Paul Musco School of Nursing and Health Professions for having a well-rounded and supportive program. My sincere gratitude to Dr. Pactric Schine, the FNP program director, and Dr. Donald Beissel, my project chair, for your time in support of my education. Finally, thank you to my friends who were in this program with me and were a helping hand always—be blessed in all your endeavors.

ABSTRACT

The Impact of Telephone Follow-Up Calls on 30-Day Readmissions in Older Adults Post Total Joint Replacement Surgery

by Maame Osei

Readmission has been defined as an unplanned return to the hospital shortly after being discharged from a recent hospital stay (Harrison, Hara, Pope, Young, & Rula, 2011). The elderly, consistently have the highest rate of hospital re-admission (Robinson, Howie-Esquivel, & Vlahov, 2012). Discharge telephone follow-up (TFU) calls to patients resulting in the reduction of readmissions leads to hospital savings of approximately $1.4 million yearly (Harrison et al., 2011). For this project, I explored the healthcare issues of readmission and emergency department/urgent care visits. I investigated the impact of TFU calls by using the Agency for Healthcare Research and Quality's (AHRQ) RE-Engineered Discharge (RED) Toolkit on 30-day readmissions and emergency department (ED) visits in older adult patients post total joint replacement surgery. I implemented this clinical scholarly project on the orthopedic floor of San Antonio Regional Hospital, a 271-bed medical center located in Southern California. There was no statistically significant association between successful TFU calls and hospital readmission rate (p =.999). There was, however, a statistically significant relationship between successful TFU call made and ED/urgent care facility visit rates ($p < .001$ φ =0.638, p = .023). An increase in patient-provider communication, patient self-care knowledge, and hospital care satisfactory was also noted.

Keywords: readmission, hospital, ED, telephone, follow-up, AHRQ, red toolkit, orthopedic, joint replacement

TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

Product Manuscript Title

The Impact of Telephone Follow-Up Calls on 30-Day Readmissions in Older Adults Post Total Joint Replacement Surgery

Introduction

The consequences of hospitals and health department failure to ensure effective transition from hospital to home include adverse events and high readmission and emergency department visit rates (Agency for Healthcare Research and Quality [AHRQ], 2015). When undergoing orthopedic surgery, older adult patients often deal with multiple health issues or comorbidities, as well as having to consume multiple medications. Therefore, the idea of emergency department (ED) visits or readmission to the hospital from complications such as infection, pneumonia, unrelieved fever, or pain can be anticipated.

The AHRQ set up its RE-Engineered Discharge (RED) Toolkit to push hospitals to improve their discharge processes and reduce their readmission rate. The RED Toolkit uses telephone follow-up (TFU) calls in attempt to decrease hospital readmission rates. TFU calls allow patients the opportunity to discuss problems, receive education, and request advice as necessary (Burch & Taylor, 2012). Discharge TFU calls to patients resulting in the reduction of readmission rates could lead to hospital savings of approximately $1.4 million yearly (Harrison et al., 2011).

The purpose of TFU calls is to continue with the patients' care plan after discharge. The long-term benefit of offering this patient-centered care could lead to a decrease hospital readmission rate. Lower readmission rates could lead to a financial gain for hospitals that could be used towards research, improvement projects, modern technology, and advanced equipment purchase. Subsequently, as individual hospitals benefit from lower readmission rates, individual states, and eventually, the entire country of the United States benefits. There will be excess health care money to cover and reimburse expensive hospitalization, Medicare, and Medicaid.

Chapter 1

Background and Significance

Readmission is defined as unplanned return to the hospital shortly after being discharged from a recent hospital stay (Harrison, Hara, Pope, Young, & Rula, 2011). Even though much of the relevant literature is focused on readmission, an unplanned visit to the emergency department (ED) is often the beginning process. ED visits and admission to the hospital within 30 days of discharge have been well documented as evidence of poor healthcare practice by reimbursement agencies, including Medicare. Thirty-day readmission rates are monitored and publicly reported for use in national rankings and awards (D'Amore, Murray, Powers, & Johnson, 2011).

In the modern healthcare system, length of stay is minimized, and used as a marker of excellent health care (Bueno et al., 2010). Conversely, shortening of patient's length of stay could lead to more adverse events in the period early after discharge (Bueno et al., 2010). Therefore, discharge planning must be conducted in a thorough manner to prevent hospital readmissions (Bauer, Fitzgerald, Haesler, & Manfrin, 2009). Bauer, Fitzgerald, Haesler, & Manfrin, stated that discharge planning is the process of identifying and preparing for the patient's anticipated healthcare needs upon discharge from a healthcare facility. They assert that in order for a discharge plan to be successful, it requires a comprehensive and effective plan to meet the needs of the patient after discharge with a goal of maintaining or improving health outcomes (2009). Improved healthcare outcomes should include a reduction in the frequency of unplanned readmissions, a reduction in post-discharge complications and mortality, an increase in patient and caregiver satisfaction, and a reduction in post-discharge anxiety (Bauer et al., 2009).

An effective discharge care plan and transitional care education is imperative to achieve the goal of successful patient outcome (Bauer et al., 2009). Nevertheless, for this successful patient outcome to be accomplished, practitioners and allied caretakers must make certain that patients do not return to the hospital due to lack of proper education and teaching during hospital stay (Bauer et al., 2009). Marcus (2014) stated that most patients do not comprehend the teachings given during hospital discharge and may not be healthcare literate (2014). Likewise, physicians and nurses, at times, forget to provide a thorough teaching to the family of the elderly. Families' caregivers of elderly patients report receiving inadequate education on their loved one's medical condition and prognosis, signs of complications, physical care requirements, medications, and additional care needs such as special diets (Bauer et al., 2009).

Harrison, Hara, Pope, Young, and Rula (2011) asserted that the high readmission rates experienced in the American healthcare system are generally attributed to inadequate communication between the patient and his/her doctors at the time of discharge, and a failure of physicians to follow up after a discharge, with evidence showing that over half of patients who were readmitted to the hospital within 30 days of discharge did not visit a physician's office between the two unplanned admissions. Dilworth, Higgins, and Parker (2012) found that patients 70-80 years of age who had three or more readmissions within six months of being discharged were readmitted for social and emotional factors (feelings of loneliness, of being a burden, guilt, insecurity, and fear), as well as disease exacerbation and lack of self-management (2012).

Shortened hospital length of stay (LOS) is a marker of hospital efficiency, but may result in higher hospital readmission rates. Hospital administrators are driven to improve efficiency (as healthcare costs have outpaced reimbursement) and face incentives to reduce

LOS as part of the Medicare prospective payment system. Concurrently, there is pressure to improve quality of care, as promoted by accreditation organizations such as the Joint Commission for Accreditation of Healthcare Organizations (JCAHO) (Kaboli et al., 2012). Reduced hospital LOS not only leaves less time for healthcare workers to assess the patient and develop a comprehensive discharge plan, but it also leaves less time for the patient to recover from acute illness, thus increasing the patient's dependency level at discharge (Bauer et al., 2009).

Problem Statement

Current practice shows that most orthopedic patients are discharged one to three days post-operatively (American Association of Hip and Knee Surgeons, 2017). Most orthopedic patients are within the average age of 60-70 years old with multiple other health issues needing to be addressed during their hospital stay and upon discharge (Harrison et al., 2011). Orthopedic surgery is known to be among one of the most painful of surgeries to be experienced (Lindberg et al., 2013). Pain is the most commonly reported reason for readmission, occurring in 120 of 316 (38%) patients who were readmitted (Coley et al., 2002). This painful encounter, coupled with older age, is an experience that healthcare personnel should monitor carefully. With pain being a major aspect upon discharge, especially in the first 48 hours, other concerns— including patients' risk for fall, constipation, and medication errors—are to be anticipated (Campagna et al. 2016). Lastly, prolonged confinement of the patient to bed, where home health or physical therapy has not been properly directed, is a complication that could land the patient not only back in the hospital, but also back in surgery (Hogberg, 1975).

Historical and Societal Perspective

Over 300,000 total hip arthroplasty (THA) operations are performed in the United States annually, with Medicare paying for the majority of cases (Agency for Healthcare Research and Quality, 2015). Eight and a half percent of primary and 14.1% of revision THA patients are readmitted within 30 days of discharge (Clement et al., 2013). Additionally, in 2007, the Medicare Payment Advisory Commission (MedPAC) testified in front of the United States Congress (Subcommittee on Health) and estimated that in 2005, 17.6% of patients were readmitted within 30 days of discharge and that 76% of these readmissions were potentially preventable (National Quality Measures Clearinghouse, 2015). This resulted in $15 billion in the annual spending (Clement et al., 2013). *PR Newswire* reported that Medicare will begin charging hospitals $265,000 for each excess readmission after knee or hip replacement surgery that is above the U.S. average, which is currently 4.6% (Young, 2013). Hospitals must maintain readmission rates below 23.6% to remain profitable (Clement et al., 2013).

Incidence and Prevalence

High readmission rates among any age group is unwarranted, but it appears that the elderly consistently have the highest rate of hospital readmission (Robinson, Howie-Esquivel, & Vlahov, 2012). Readmission has been reported to be as high as 33% amongst older individuals (Dilworth, Higgins, & Parker, 2012). The elderly 65 years of age and older are twice as likely than any other age group to visit the emergency department for adverse drug events and are virtually seven times more likely to be hospitalized after an emergency visit (Robinson et al, 2012).

Healthcare Cost

There are many important reasons why rates of readmission for any reason are being carefully monitored, but none are more scrutinized than the financial consequences. Joint replacement was the most common hospital procedure covered by Medicare in 2013, accounting for nearly 450,000 inpatient admissions and a program-high $6.6 billion in spending. Experts believe that the rates of these procedures will grow substantially as the baby boomer population continues to age (Leigh, Carter, & Morin, 2015). In 2004, Medicare expenditures for unplanned readmissions were $17.4 billion (Harrison et al., 2011). Additionally, authors of a Commonwealth Fund report (as cited in National Quality Measures Clearinghouse, 2015) estimated that if national readmission rates were lowered to the levels of the top performing regions, Medicare would save $1.9 billion annually.

The Medicare Payment Advisory Commission (MedPAC) estimated that in 2005, 17.6% of patients were readmitted within 30 days of discharge and that 76% of these readmissions were potentially preventable; the average payment for a potentially preventable readmission was estimated to be $7,200 (2015). Lastly, the Kaiser Family Foundation asserted that Medicare penalties assessed on hospitals for readmissions will increase to $528 million in 2017, $108 million more than in 2016 (Boccuti & Casillas, 2017). This financial consequence for this preventable issue of readmission is astounding for individuals in the healthcare field. More importantly, this leads to questions of the current practice of hospital organizations.

Supporting Evidence for Advanced Practice Registered Nursing

Knowledge of the best evidence is needed to guide practice and for quality management. That knowledge must be translated into practice to improve the quality of patient care and

outcome (Melnyk & Fineout-Overholt, 2011). Quality management is implemented to provide the best care to patients. The implementation of this project will allow for efficiency of care, transparency in care, and continuous professional development, and provide evidence for recommended practice to maintain proper patient outcome (Bauer et al., 2009). Advanced practice registered nurses (APRNs) are educated to be independent and quality leaders of care and capable of influencing the healthcare system. APRNs can collaborate with stakeholders in any entity to bring about innovation that benefits patients and hospitals.

Introduction of the PICO(t) Foundation

The passage of healthcare reform—the Patient Protection and Affordable Care Act—in March 2010 has led to health providers now being penalized for high readmission rates for Medicare patients (Boccuti & Casillas, 2017). Medicare measures readmission rates for hip/knee replacement surgeries for patients 65 years and older. They monitor joint replacement readmission causes and likelihood that complications occur within a specified time period, including heart attack, pneumonia, or sepsis within seven days, surgical site bleeding, pulmonary embolism, or death within 30 days of admission; or mechanical complications or perioperative joint infection/wound infection within 90 days of admission (Medicare.gov, 2017). Hospital stakeholders are, therefore, seeking best practices to improve the patient experience and prevent readmissions. A practice that has been embraced by many healthcare providers nationwide to assist in reducing the readmission rate is TFU (D'Amore et al., 2011).

TFU calls allow patients the opportunity to discuss problems, as well as enabling the nurse to conduct an assessment and to offer advice, as necessary, benefiting both the patient and the hospital (Burch & Taylor, 2012). Although, Medicare assesses the readmission rates of patients 65 years of age and older, I have expanded its criteria to patients 50 years and

older for this project in order to explore a possible greater benefit in outcome. The formulated clinical question, also known as PICOT (population (P), intervention (I), comparison intervention (C), outcome (O), and time (T)) to implement TFU and address the problem of high readmission rates in older joint replacement patients is: In post-discharged orthopedic surgical patients 50 years and older, do post-discharge nursing TFU calls versus no nursing TFU calls decrease the rate of visits to the ED and/or hospital readmission within 30 days of discharge over a period of 60 days?

Chapter 2

Literature Review

PICOT

Harrison, Hara, Pope, Young, and Rula (2011) found that readmission rates were highest on days 2 and 3 after discharge and declined gradually from day 4 onward. A third of readmissions in the population occurred within seven days, and over half occurred within 14 days of discharge. When the intervention of TFU calls was implemented, patients who did not receive a call within 14 days after discharge were 1.3 times more likely to be readmitted to the hospital within 30 days of discharge than those who received calls (2011). Patients who receive TFU calls are also generally pleased that hospital staff took the time to contact them following discharge (2011). Nursing staff can answer questions without feeling rushed to go see the next patient, as would happen in the hospital or clinic.

Additional benefits of TFU for patients included the ability to replace some face-to-face clinic appointments. TFU led to a reduction in clinic waiting times for patients and a reduction in the number of appointments the patients had with general practitioners, thus avoiding trips to the hospital (as cited in Burch et al., 2012). Discharge TFU calls to patients could result in hospital savings of approximately $1.4 million (2011). It not only benefits the hospital, physicians, and nurses, but, mostly importantly, also benefits the patient.

Scope of the Evidence: Telephone Follow-Up Call

Dilworth, Higgins, and Parker (2012) studied the experiences of elderly individuals who were readmitted to the hospital following a recent discharge. Dilworth et al. (2012) explored the experiences and feelings the patients encountered after the discharge that potentially led to their

readmission. The participants chosen for the study were 65 years old or older and had been readmitted to the hospital within 28 days of their discharge (2012). The results of the study suggested that participants expressed being left out, feeling let down, not being cared for (2012). “Being left out” expressed the participants’ experience of not being given information, being given mixed messages, and feeling unheard and disregarded (Dilworth et al., 2012). “Being cared for” described individuals’ feeling they are better cared for in the hospital and others feeling they are better off at home (2012). Finally, “feeling let down” expressed the participants’ experience of falling through the gaps in service provision and being disappointed by services and staff (2012). Also, all participants described feeling that their return to the hospital was an unavoidable situation (2012).

Burch and Taylor (2012) followed 100 patients who had colorectal surgery under two surgeons. The purpose of the study was to identify patients’ concerns and discuss support needs following participation in the Enhanced Recovery After Surgery (ERAS) program, with data collected using nurse-led TFU calls. The purpose of these TFU calls was to ensure that patients felt supported to identify and address any needs they may have had and to ensure that appropriate care arrangements were set in place (Burch & Taylor, 2012). The results of this study indicated that patients need to be instilled with sufficient understanding and confidence to achieve and maintain the optimum level of functioning during their postoperative weeks at home (2012). Short-term side-effects and minor complications may damage patients’ self-efficacy during vulnerable times, possibly leading to readmission (2012). Lastly, TFU calls’ results indicated that patients have a diverse range of needs and queries. Therefore, TFU is useful to patients, as it provides them with the opportunity to ask questions which might

not otherwise be answered for an additional two weeks (2012).

D'Amore, Murray, Powers, and Johnson (2011) conducted an observational study to evaluate the relationship between nursing follow–up calls and readmission and satisfaction. Sampling included 10 nursing units across four hospitals selected based on their usage of nursing TFU programs (2011). The results of the study indicated that patients who receive TFU calls are less likely to be readmitted to the hospital and that TFU is a significant predictor of readmission (2011).

Harrison, Hara, Pope, Young, and Rula (2011) conducted a retrospective cohort study to determine whether telephonic outreach to ensure patient understanding of and adherence to discharge orders following a hospitalization is effective at reducing hospital readmissions within 30 days after discharge. TFU calls were used and data were analyzed from 30,272 members of a commercial health plan who were discharged from a hospital to determine the impact of the telephonic intervention. The results indicated that older age, male gender, and increased initial hospitalization LOS were associated with an increased likelihood of readmission (2011). Those who received discharge calls were associated with reduced rates of readmission; intervention group members were 23.1% less likely than the comparison group to be readmitted within 30 days of hospital discharge (2011).

Miller and Schaper (2015) found that the risk for readmission is highest in the days following the discharge and, thus, accentuated the importance of implementing TFU calls to decrease readmission. The readmission rate for patients who received the clinical nurse leader telephonic intervention was 10.7% versus 14.5% readmission rate in patients who did not receive TFU calls within 72 hours of discharge. The readmission rate within seven days of discharge was significantly lower and the rate within 30 days of discharge trended lower than

in patients who were not contacted (2015).

Scope of Evidence: RE-Engineered Discharge (RED) Toolkit

Researchers at Boston University Medical Center developed the RED Toolkit to improve patient safety and reduce hospital readmission rates. When medical personnel use the RED Toolkit, they contact patients within 72 hours of discharge. More than 500 hospitals, in 49 states and nine countries, have downloaded the RED Toolkit and nurse training manual. Krishnan and Gussin (2015) studied over 700 patients. Those patients assigned to Project RED (versus usual care) had significantly lower rates of ED visits and hospitalizations within 30 days of discharge.

The Agency for Healthcare Research and Quality (AHRQ) (2015) implemented Project RED components in another setting. The results indicated that Project RED was associated with a reduction of readmission rates (relative reduction: 36% at 30 days, compared to historical data). Patients who received the RED experienced a 30% lower rate of hospital utilization within 30 days of discharge compared to patients who received usual care. One readmission or ED visit was prevented for every seven patients receiving the RED intervention (AHRQ, 2015).

Mitchell et al. (2016) recruited 10 hospitals from different regions of the United States and implemented the RED Toolkit for up to one year. Eight out the 10 hospitals reported improvement in 30-day readmission rates after RED implementation. The eight hospitals reported a 0.5% (the national average reduction in readmissions) or greater reduction in 30-day all-cause readmissions for Congestive Heart Failure, Pneumonia, and Acute Myocardial Infarction (2016).

Adams et al. (2014) conducted a quality improvement project using the methodology outlined by Joint Commission Resources-Hospital Engagement Network and Project RED to redesign the discharge process, reduce hospital 30-day all-cause readmission rates, and improve patient/family involvement in the discharge process. During the four-month project, readmissions were reduced by 32% (rate of 7.12), with positive patient and family perceptions of their discharge process (2014).

Nacogdoches Memorial Hospital, a 216-bed Level III trauma center in Nacogdoches, Texas, saw 30-day all-cause readmissions drop from 18.6 percent to 16.6 percent in the six-month period after implementing the RED toolkit. According to AHRQ (2015), the RED toolkit helped reduce the hospital's readmission rate and built momentum among stakeholders to improve the patient discharge process.

Synthesis of the Evidence

Some healthcare providers discharge patients and never follow up on them until the patient attends a follow-up appointment with their primary care provider, which could be about two weeks, a month, or even two months from the discharge date. TFU interactions are not billable to patients or their insurance, but is recommended by industry experts as a means to improve continuity of care and provide customer feedback to frontline staff (D'Amore et al., 2011). Since nearly one third of readmissions occur within a week of discharge, the ability to reach a discharged patient quickly is paramount to the overall success of the telephonic intervention (Harrison et al, 2011). Therefore, the use of the RED toolkit is an effective intervention to help decrease the frequency of readmissions.

Synthesis of the above evidenced-based research depicts that older adults are most affected by high readmission rates (Robinson, Howie-Esquivel, & Vlahov, 2012). Secondary,

they depict that discharge TFU calls allow for patients to express their needs and concerns, and allow for nursing education (Burch & Taylor, 2012). Finally, they depict that TFU calls reduce readmission rates within 30 days of discharge (Harrison et al., 2011). The implication of these evidenced-based re allows for their application to achieve patient satisfaction. The possibility of providers using this information to assess the patient's needs and expectations on admission or as part of the discharge planning may alleviate negative experiences in the hospital and those that lead to readmission (Burch & Taylor, 2012).

Conceptual/Theoretical Framework

All patients' healthcare needs must be met both during inpatient stay and upon arrival at home after discharge to avoid readmission and ED/urgent care visits. This is similarly suggested by the theory of the hierarchy of needs. Maslow's hierarchy of needs theory is a form of humanistic theory developed in psychology. The humanistic theory emphasizes a person- centered approach and stresses holistic health, wellness, complementary medicine, and health promotion (Butts & Rich, 2011). Maslow's hierarchy of human needs theory holds that much of human behavior is motivated by unsatisfied needs and that lower-level needs must be satisfied before higher-level needs can be addressed (Hayhoe, 2004). The theory suggests that individuals must first have their physiological needs satisfied, and then, the needs of safety, love, and belonging, then the psychological needs for self-esteem to follow (Butts & Rich, 2011).

Once all other needs have been met, individuals can fulfill their need for self-actualization (Boeree, 2006). The physiological needs include food, oxygen, and water. The safety and security needs include feeling free from fear and anxieties. The love and belonging needs include having friends and personal relationships. The esteem needs include feeling the

need for respect of others, attention, dignity, independence, confidence, and competence. Finally, self-actualization needs include the desire to be all that one can be, being the most complete and the fullest one can be. According to Maslow, fulfilling the first four levels of the hierarchy gives patients the best chance to achieve the level of self-actualization (Zalenski & Raspa, 2006).

The application of Maslow's hierarchy of needs theory in practice requires the use of the nursing process of assessing, diagnosing, planning, implementing, and evaluating. After assessment has occurred, patients' diagnoses, and health needs are placed in stages according to Maslow's hierarchy of needs. The application of Maslow's theory allows for addressing and implementation of the most important health issues and for the accomplishment of proper interventions. This theory, when applied properly, allows for holistic, patient-centered care. Nevertheless, with early discharge and shortened LOS in the hospital, some patients may be discharged home not having all their needs met (2009). As with the hierarchy of needs, when any part of a patient's physiological, safety, belonging, love, and esteem needs are not met during their stay in the hospital, they are unable to reach the level of self-actualization, during which patients obtain confidence and independence in their health and life (Zalenski & Raspa, 2006).

Even when all patient's needs are met upon admission, there are times when the hierarchy of needs cannot be met at home upon discharge and patients are left feeling the need to come back to the hospital (Dilworth et al., 2012). For example, it is important for patients to receive their need of proper healthy foods, be surrounded by family or loving care takers, and feel safe from the fear of fall while they are in the hospital, but it is also important that providers make sure that these continue upon discharge. The idea of patient-centered care

engraved in Maslow's theory should not end at the hospital, but should continue in the patient's home upon discharge, thereby reducing the patient's need for readmission.

Chapter 3

Methodology

Overview

I will provide a statement of purpose of the quality improvement project, provide a description of the project's target sample, and details of the inclusion and exclusion criteria for recruitment. I will also provide details of the sample size for the project, the instrumentation used in the project, the data collection method, the project process, data analysis, limitations of the project, and summarize the chapter.

Purpose Statement

My purpose for this CSP was to explore the effectiveness of TFU calls in reducing 30-day readmissions and post-hospital ED visits for older post-orthopedic surgery adults. TFU calls allow patients the opportunity to discuss problems and nurses to conduct assessments and offer advice, as necessary, thereby benefiting both the patient and the hospital (Burch & Taylor, 2012). The AHRQ's RED Toolkit was used to direct the telephone interaction. The results of this project could contribute to the improvement of patient-centered care in reducing complications post-discharge after surgery. The project results could also lead to reductions in medical costs, increased patient satisfaction with medical care, increase patient-practitioner communication and prevent hospitals or healthcare providers from being penalized for high readmission rates.

Population

The population of interest for this CSP included orthopedic patients. Generally, patients who are undergoing a joint replacement surgery, which, for this project, includes only total hip and total knee arthroplasty. All joint replacement patients could potentially be included

in this project, but to carry out the goal of this project, and to aid in reducing readmission rates among older adults, I recruited only patients 50 years of age and older. The results of this project could be applied generally to all orthopedic patients, as they could contribute to improved transitional care provided to patients' post-discharge.

Clinical Scholarly Project Sample

To accomplish my purpose for implementing this project, I selected the sample from the general orthopedic patient population. To select those orthopedic patients who would be included in the project sample, the surgical educator and I informed all the surgical patients during pre-surgery education class about the post-discharge telephone call and the CSP. I read the participants' bill of rights to each patient and gave them the written informed consent form. The surgical educator and I informed patients about the interaction that would occur on either post-discharged (after home arrival from the hospital) day 2 or 3, and on post-discharged day 30. Potential study participants who met the inclusion criteria, signed informed consents that were handed to them, in agreement to the project's requirements. Finally, the surgical educator placed those patients whom consented on a list on the hospital electronic medical database, which I had personal access to.

Participant Inclusion Criteria

CSP participant inclusion criteria included the following:

- 50 years of age or older at the time of admission to the orthopedic unit for surgery.
- Patient was willing and able to consent to the project.
- Patient had a telephone number to be contacted at post discharge.
- Patient had total joint replacement that included total hip or knee surgery.
- Patient was discharged only to home.

- Patient was alive, alert, oriented to person, place, things, and date.
- Patient was an English language speaker.
- Patient agreed to take part in TFU calls.
- Patient attended a pre-op surgical orientation class before surgery.

Participant Exclusion Criteria

CSP participant exclusion criteria included the following:

- Patient could not and would not consent to participate in the project.
- Patient had no telephone access.
- Patient was discharged to hospice or nursing home care.
- Non-English speaking.

Sample Size

The convenient sample size of the project was 64 participants.

Intervention

The project intervention was a TFU call which could be initiated by a hospital-based health professional (medical, nursing, social work, case manager, community improvement coordinator, etc.) to a patient who was discharged to his/her home. For this project, the supportive-educative telephone program was an interactive program involving information exchange between patients and a doctor of nursing practice candidate. The program was designed to assist patients to gain post-discharged healthcare knowledge and ask questions as necessary, thereby decreasing their need to visit the ED for nonemergent issues. Patients are also encouraged to call the surgeon when needed.

The main goal was to help recovering patients solve medical issues before they would eventually need to visit the ED or be re-hospitalized. The first call was made early in the first

week (48 to 72 hours) after discharge. Patients were phoned between the hours of 10:00 a.m. and 2:00 p.m. Many patients were reached after only the first call attempt, while others were reached after the fifth call attempt, which was the maximum allowed. Patients were also contacted 30 days after discharge to follow up and assess their health status and hospital reutilization status. A script guided the content of the follow-up calls to ensure consistency between calls. Patients were asked questions like how they had been feeling since returning home, pain level, if they had any questions regarding follow-up appointments, if they were able to obtain their pain and other prescribed medications, if they had experienced any medication- related side-effects, and if they had any other questions or concerns that needed to be addressed.

Instrumentation

AHRQ granted permission for the use of the current version of the RED Toolkit [AHRQ Publication No. 12(13)-0084] for this project (see Appendix A). I used the AHRQ's RED Toolkit to direct the patient telephonic interaction. The toolkit contains a patient-version script that directs in the verbal assessment of patients. The purpose of the RED Toolkit is to effectively prepare patients and families for the patient's hospital discharge, improve patient and family satisfaction, and decrease hospital readmission rates (AHRQ, 2015). This post-discharge follow- up phone call allows the patient's questions, and misunderstandings—including discrepancies in the discharge care plan—to be identified and addressed, as well as any concerns from caregivers or family members. Callers review each patient's health status, medicines, appointments, home services, and plan for what to do if a problem arises (AHRQ, 2015). I also created a 30-day evaluation questionnaire to assess whether patients visited

the ED or were readmitted to the hospital within 30 days post-discharge.

Data Collection

I reviewed participants' charts for demographic information in the hospital electronic medical record, and documented that information in a Microsoft Excel spreadsheet. I also reviewed documented answers from project participants' RED Toolkit scripted questionnaire and the 30-day post-discharged questionnaire on individual de-identified demographic collection forms (see Appendix B). I created the demographic collection form to document patient demographic data and later organized the data on a Microsoft Excel spreadsheet. The information documented included age, gender, race, surgery type, medical and surgical history, pain level, family support, living status, BMI, a1c, call attempts, patient's health status, patient's problems with medicines, appointment status, patient's post-discharge actions, and follow-up actions taken (see AHRQ, 2015). I also used TFU calls interviews to collect other data not documented in the patient's medical chart.

Data Collection Process (see Appendix C).

- The data collection process was as follows: I selected project participants who met the CSP inclusion criteria and signed written consent forms from a list of discharged orthopedic surgical patients on the hospital's Electronic Medical Record (EMR). I contacted patients 2 or 3 days post-discharge from an office at San Antonio Regional Hospital. During the first telephonic interaction, I read a scripted verbal consent form over the phone, in effort to remind participants of the project once again. Participants once again gave consent verbally on the telephone. I used a standardized RED toolkit script to ask patients questions about surgical and post-discharge experience

regarding medication adherence, complications, pain management, signs of infection, etc. I relayed any unsettling questions, worrisome or immediate issues that patients needed solved to the surgical educator/navigator to immediately follow up. I contacted patients again at 30 days post-discharge to assess their readmission status and recorded their answers and demographic information on the de- identified demographic collection form. Lastly, I completed the data sorting at the end of each week in a private conference room at the hospital and documented it on a flash drive. At the end of each project day, I locked the flash drive and all CSP paper work in a designated specified cabinet in the surgical educator/navigator's office.

Independent Review

As part of this CSP, I took an online short educational program from the National Institutes of Health (NIH) website. The NIH Office of Extramural Research provides short educational courses on protecting human research participants. The course explained how human participants should be treated with care and protected from any personal, physical, emotional, or medical harm. This is part of the Brandman University requirement for the Institutional Review Board (IRB) approval process for a project to be accepted for implementation. The San Antonio Regional Hospital IRB also reviewed and approved the project for implementation.

Assurance of Confidentiality

The Health Insurance Portability and Accountability Act **(**HIPAA) Privacy Rule established the conditions under which protected health information may be used or disclosed by covered entities for research purposes. All personnel associated with the project, and the project process complied with all guidelines to protect the privacy and confidentiality

of participants' protected health information (PHI). I documented all data collected during the project implementation on a private storage drive and locked that drive in a designated cabinet. I complied to assure all documentation were de-identified in nature. Finally, the project coordinator of San Antonio Regional Hospital also verified my Health Insurance Portability and Accountability (HIPAA) training certification before allowing me to have access to their EMR.

Informed Consent

I gave potential project participants a written informed consent form to read and sign during their pre-operative education class (required by the hospital for elective all joint replacement patients to partake before surgery). Patients were only allowed to sign this form after I gave them a detailed explanation of the project. The benefits and risks associated with participation in this project were included in the informed consent form and explained to patients before they consented to participate. Participants were also read a verbal consent and asked to verbally agree once again to the project participation on the first telephone interaction. This was necessary, due to the TFU portion of this project and the fact that some participants may have forgotten they had agreed to this project before their surgery.

Project Design

I devised this scholarly clinical project to follow a quantitative experimental design. I measured readmission rates by assessing 30-day readmission status. San Antonio Regional Hospital reported their previous months' and year's readmission rates as part of this project for possible comparison. I also observed the national joint replacement readmission rates. Finally, I deemed TFU by way of the RED Toolkit, to be of reliable methodological quality for this project.

Data Analysis

The Surgical Navigator in the Orthopedic Department of San Antonio Regional Hospital followed the 64 patients who met the inclusion criteria for participation in this project between February 8, 2017 and May 10, 2017. I analyzed the data collected during this project using the Statistical Package for the Social Sciences (SPSS) statistical analysis software. I performed a Fisher's exact test for association between successful TFU calls made and hospital readmission rates and ED/urgent care visit rates. I tested two regression models for both of the independent variables (IV) "Number of initial call attempts" and "Number of call attempts within 30 days of discharge" and both of the dependent variables (DV) "Readmission" and 'ED/Urgent care Visit."

Limitations

There were limitations to this project due to the sample size of only 64 patient participants. Another limitation was that the project protocol only called for hip and knee arthroplasty patients, and did not include patients who had shoulder, ankle, or spine surgery. Finally, I was unable to reach some patients on the 30-day TFU call for reassessment, therefore, I removed them as participants from the project.

Summary

The purpose of the discharged TFU call is to continue with the patient's care plan even after discharge. This intervention attempted to assist patients by meeting their healthcare needs through TFU calls. Patients who were called were not placed in any danger and did not encounter any ethical implications. I kept all patient information strictly confidential. Also,

there was no to minimal risk of patients being harmed through receiving additional surgical care education through telephonic contact. The additional education provided to patients provided a benefit, as it aimed to improve quality of care and reduce readmission rates.

Chapter 4

Results

Participants

Of the 64 participants in this project, 25 (39.1%) were male and 39 (60.9%) were female. Participant age ranged from 52 years to 84 years, with mean M = 65.38 and standard deviation SD = 8.622. The majority of participants (57.8%) were Caucasian, 31.3% were Hispanic, 7.8% were African American, 1.6% were Asian, and 1.6% were of multiple ethnicities. Twenty-eight percent of participants had a high school diploma, 40% attended some two-year college, 12% had a Bachelor's degree, 1% had a Master's degree, 1.6% had a doctorate degree, 3.1% had less than a high school degree, and 14.3% declined to answer this question. Patient's Body Mass Index (BMI) (M = 30.10, SD = 5.001) ranged between 14 and 40. Glycated Hemoglobin levels (HbA1c) (M = 5.66, SD = .481) ranged between 5 and 8. There were 60 non-readmissions, four readmissions, and 9 ED visits in total. Tables 1-6 depict this information (see Appendices D and E).

Successful Telephone Follow-Up on Readmission

Of the 64 project participants, 60 (93.8%) were successfully contacted (answered their phones both initially and at 30 days) and four (6.2%) were not successfully contacted (did not answer their phones). Of the 60 patients who were successfully contacted, four (6.7%) were readmitted to the hospital. These four patients readmitted to the hospital had received the TFU call. In contrast, the four participants who were not successfully contacted were not readmitted to the hospital (see Table 7, Appendix F). Thus, 56 (87.1%) participants were both successfully contacted and not re-hospitalized. There was no statistically significant association between successful TFU calls and hospital readmission rate (see Table 8, Appendix F).

Successful Telephone Follow-Up on ED/Urgent Care Visit

Of the 64 project participants, nine (14.1%) visited an ED or urgent care center for healthcare and 55 (85.9%) did not. Of the nine patients who visited ED/urgent care, four (44.4%) were not successfully contacted. Of the nine patients who visited ED/urgent care, five (55.6%) had successful telephonic interaction (see Table 9, Appendix G). There was a statistically significant relationship between successful TFU call made and both ED and urgent care facility visit rates ($p < .001$ $\varphi = 0.638$, $p = .023$) (see Tables 10 and 11, respectively; Appendix G).

Call Attempts

The number of initial call attempts to patients ($M = 1.41$, $SD = .812$) ranged from 1 to 5 and the number of call attempts to each patient at the 30-day call back ($M = 1.78$, $SD = 1.045$) ranged from 1 to 5 (see Table 3, Appendix D). I conducted a binary logistic regression to address whether the number of telephone call attempts decreased hospital readmission or ED visit rates. I tested two regression models for both of the two DVs, "Readmission" and" ED Visit" with both of the IVs, "Number of initial call attempts" and "Number of call attempts within 30 days." Tables 12 and 13 (Appendix H) depicts the coefficients and odd ratios for both of the two IVs, as well as 95% confidence intervals for the odd ratios.

An assumption of logistic regression is that there needs to be a linear relationship between the continuous IVs and the logit of the DV. To test this, I used the Box-Tidwell test by creating interaction terms for the two IVs and their natural logarithm. The resulting interaction terms were not found to be statistically significant in either binary logistic models and, therefore, indicated no violation of the linearity assumption (see Table 14, Appendix H).

Effect of Number of Call Attempts on Readmission Rate.

The overall model was a good fit, as assessed by a non-significant Hosmer and Lemeshow test (χ^2 (4) = 4.486, p = .344). The overall model, however, was not statistically significant (χ^2 (2) = 2.169, p = .339). For every one-unit increase in the number of attempts to call the patient after discharge from the hospital, the odds of re-admission increased by 1.780 times; however, these results were not statistically significant (p = .208). For every one-unit increase in the number of attempted calls at the 30-day follow up, the odds of re-admission increased by 1.416 times; however, these results were not statistically significant (p = .475).

Effect of Number of Call Attempts on ED/ Urgent Care Visits

The overall model was a good fit, as assessed by a Hosmer and Lemeshow test (χ^2 (4) = 6.912, p = .141); however, the overall model was not statistically significant (χ^2 (2) = 2.438, p =.296). For every one-unit increase in the number of attempts to call the patient after released from hospital, the odds of ED visit increased by 1.507 times; however, these results were not statistically significant (p = .350). For every one-unit increase in the number of attempted calls at the 30-day follow-up, the odds of emergency department visits increased by 1.668 times; however, these results were not statistically significant (p = .225).

Hospital Data

The national recommended readmission rate for 30-day readmission for total joint surgery is less than 4.6% (Hospital for Special Surgery, 2015). The reported San Antonio Regional Hospital's (SARH) 30-day readmission rate for total joint surgery prior to this CSP was 2.8%, which is below the national average of 4.6%. Although the stakeholders of this hospital have been implementing effective readmission reduction strategies like pre-operative education class and earlier doctor follow-up appointments in 2014, the hospital stakeholders wanted to take this project on to possibly lower the readmission rate even more. The duration

of this project process was 90 days for implementation and data collection, with the dates being from February 8, 2017 to May 10, 2017. I obtained San Antonio Regional Hospital's previous estimated 30-day all-cause readmission rates to compare it to the results of this project**.** The estimated San Antonio Regional Hospital's readmission results from the same duration timeframe during 2016—February 2016 to April 2016—was 1.8% (two elderly patients were readmitted). This result, however, includes all ages and patients discharged to nursing homes and other alternative locations. Also, this project's readmission rate resulted from *n*=64 project participants, whereas the hospital-calculated rate resulted from is *n*=109 participants. Table 15 (see Appendix I) depicts this information.

To be more specific, the readmission rate in 2016 for total knee arthroplasty (TKA) was 2.6% and total hip arthroplasty (THA) was 1.6%, respectively. In comparison, according to the hospital's statistical estimate, the results of this CSP indicated that the all-cause 30-day readmission rate for total knee replacement was 1.7% and 5.3% for total hip replacement (see Table 15, Appendix I). Nevertheless**,** these hospital results included all patients, including all ages, Spanish speakers, and nursing home discharged patients.

Patient Findings

Of the 64 participants, 41 (64%) had total knee arthroplasty and 23 (36%) had total hip arthroplasty. Participants' BMI ranged between 14 and 40 (M = 30.10, SD = 5.001). HbA1c levels ranged between 5 and 8 (M = 5.66, SD = .481). Of the 60 participants who were successfully phoned, 19 (31%) had not started physical therapy (PT) or made an appointment to start it. These patients had to be instructed on how to make an appointment and when to schedule it. Some patients also wanted their scheduled PT location switched to a nearby location, which delayed their PT starting date. Eighteen percent of the participants

stated that they experienced uncontrolled pain management. These patients needed a new pain medication or to be reeducated on how to effectively take the pain medication for better pain control.

Twenty-eight percent of participants claimed they experienced constipation issues that lasted about three days to one week. Some patients stated they took their stool softeners, but they did not help, while others did not remember to take their stool softeners. Patients were educated on taking stool softeners twice daily, eating fruits and vegetables, drinking fluids, and taking fiber. Sixteen percent of the patients said they did not have adequate family or friend support in their healing process. These patients did not yield to the hospital's recommended support system rule stating that such support was necessary for at least two weeks. They had difficulty getting around, moved around less, and performed fewer of their recommended exercises. They also complained of higher pain levels due to the lack of a helping hand at home, and were performing activities of daily living on their own.

This was the first joint surgery for 36 (56%) of the participants. Only two patients (3.1%) stated that they were smokers, but were trying to quit. Patient home medication list post-surgery, including the newly prescribed medications, ranged between 2 and 22 (M=8.167, SD=4.097) medications. Patients were reminded to check their blood pressure (BP) while taking both their BP medication and their pain medication. Patient pain level or experience at the initial TFU call ranged between 0 and 10 (M= 3.83, SD= 2.513). Patient pain level or experience at the 30-day TFU call ranged between 0 and 6 (M= 1.983, SD= 1.645). Ninety-nine percent of the participants stated that they attended their first scheduled follow-up appointment with their surgeon.

Ten (15%) participants complained of hospital discharge issues including unrelieved pain and drainage/blood in dressing before discharge. Twenty-two (35%) participants stated that they experienced complications after arriving home from the hospital. These issues included nausea and vomiting from pain medication intolerance, low-grade fever, unrelieved pain, constipation, back pain, weakness, leg clamping, dysuria, and discharge from the wound site. All these issues were addressed on the phone and patients were directed to call the surgeon's office for more advice or for a change in care.

Participants had medical diagnoses of hyperlipidemia, thyroid issues, depression, gastroesophageal reflux disease (GERD), hypertension diabetes mellitus, CHF, cancer, gastritis, chronic pain, arthritis, previous stroke, prostate problems, and urine retention. There were four readmissions. Of the four patients readmitted, one (25%) died from pneumonia and congestive heart failure complications. One patient (25%) was readmitted for infection and excessive wound drainage two weeks after discharge. One patient (25% was readmitted for a kidney stone. The last patient (25%) was readmitted for gallstones and bowel obstruction. There were five other ED visits, including those who were readmitted. Reasons included unrelieved vertigo, surgical site bleeding, uncontrollable nausea and vomiting, and fear of leg infection due to the appearance of surgical bruising and swelling.

Outcome Measures

This project measured four outcomes: 1) clinical outcomes, 2) communication outcomes,

3) patient satisfaction outcomes, and 4) patient self-knowledge outcomes.

Readmission/Emergency Department/Urgent Care Visit Outcome.

The overall readmission outcome showed no statistically significant relationship between successful call made and hospital readmissions. Of the 60 patients who were

successfully contacted, four (6.7%) were readmitted to the hospital. In comparison, when observing this CSP's PICO(t) question, patients who did not receive this intervention a year ago, in the same timeframe as this project, had the readmission rate of 1.8% (see Table 15, Appendix H). Nevertheless, there was a statistically significant relationship between successful calls made and ED/urgent care visits ($p < .001$ $\varphi = 0.638$, $p = .023$). The RED Toolkit also measured success by the following: 1) all-cause readmissions (admission >24 hours) within 30 days of discharge = 6.7%; 2) all-cause emergency department visits within 30 days of discharge = 13%; and 3) all- cause urgent care visits within 30 days of discharge = 0%.

Communication Outcome.

The AHRQ set up the RED Toolkit to improve communication between patients and healthcare providers. Its purpose was to eliminate barriers of communication that lead to readmission. The RED Toolkit defined successful implementation of this outcome as a greater than 50% participant response approval outcome. This outcome was measured by asking participants during the 30-day TFU call about their experience with the TFU calls and if they improved their communication with healthcare providers. During the TFU calls, patients were given the opportunity to ask questions, describe their symptoms, and express their concerns and needs. Patients were also directed to the orthopedic navigator for problem solving when required. Miscommunications, misunderstandings, and unanswered questions during inpatient care and during discharge were resolved during the telephone calls. The need to switch PT locations, medications, and appointment dates were also resolved during the telephonic interaction. Finally, patients were directed and given the surgeon's office telephone number and address to contact him/her when necessary. This outcome was successful in improving connections with primary care and other providers. Fifty-nine participants (92%) were happy

with their communication with the healthcare team, including how quickly they could reach providers and receive assistance.

Patient Satisfaction Outcome.

Forty-five participants (71%) stated that their surgical goals were met, meaning they had a successful surgery. Alternatively, 19 participants (29%) stated that their surgical goals had not been met yet. At the initial follow-up call to patients, 51 (80%) were satisfied with their hospital stay and care. When asked the same question at the 30-day follow up, 61 participants (96%) were satisfied with their hospital care. The RED Toolkit also measure patient satisfaction by: 1) the percentage who rated the hospital a 9 or 10 on a 1-to-10 scale = 97%; 2) the percentage who would probably recommend the hospital to friends and family = 97%; 3) the percentage who reported nurses always or usually treated them with courtesy and respect = 97%; and 4) the percentage who reported that their doctors always or usually treated them with courtesy and respect = 97%.

Knowledge for Self-Management Outcome.

An important objective of the RED is to teach patients how to take care of themselves when they get home (AHRQ, 2015). The post-discharge TFU call provides an opportunity to monitor whether teaching done in the hospital was received and understood. It also gives the same opportunity to observe whether participants practiced the teaching and reinforcement education completed on the initial call (AHRQ, 2015). The RED Toolkit's knowledge outcome measures include the percentage of patients who reported an increase in healthcare knowledge, as follows: 1) the percentage who correctly reported during the post-discharge TFU call the reason for their hospital visit = 100%; 2) the percentage who correctly reported during the post-discharge TFU call the symptoms to watch out for or things to do for their condition = 92%; and

3) the percentage who correctly reported during the post-discharge TFU call how to take their medicines = 94%.

Chapter 5

Discussion

Readmission/ ED Visit

There were two observations noted. When most of the patients went to the ED, it was over the weekend when telephonic interaction did not occur, and education was not possible to inform them of the normalcy of their symptoms. Four patients who went to the ED ended up being admitted because their symptoms were serious, and it was their last option. Observation review shows that many more patients would have gone to the ED for preventable issues if they were not phoned, as five patients visited the ED for preventable and advisable issues over the weekend, when telephonic intervention was not available. This shows that the educational aspect of the telephone interaction was beneficial, as it helped participants recognize the difference between grave urgent symptoms and expected postoperative findings.

Those successfully contacted who visited the ED, were readmitted for a serious condition, making their attempt necessary and unpreventable. The four readmitted patients had unavoidable reentry to the hospital and TFU calls could not have been a benefit. The one patient who died from pneumonia started PT late (two weeks after discharged), because he did not want to go to the location offered by the hospital. He was also obese with a BMI of 34 and AIC of 6.3. He was diabetic, had hypertension, congestive heart failure (CHF), hyperlipidemia, depression, and insomnia. The second patient was readmitted to the hospital for a one-week stay for infection and excessive wound drainage two weeks after discharge. The patient was obese and had a BMI of 40, but with an A1C of 4.7. This patient had depression, GERD, thyroid issues, and hyperlipidemia. The third patient was readmitted for a kidney stone with a BMI of 29 and AIC of 5.4.

The patient experienced a fever episode of 101.4 for two days before the initial call, during which he disclosed a normal temperature. He had GERD, hyperlipidemia, and hypertension.

The last patient was readmitted for gallstones and bowel obstruction. This patient had a BMI of 26 and A1C of 5.6. This patient and family stated that they were not prepared for discharge and needed a home nurse, which was not provided. The patient had GERD and prostate cancer. All these factors must be considered when comparing the previous year's hospital readmission rate to this project's readmission results. It can be stated that patient comorbidities, readmission risk factors, discharge problems, BMI, AIC, age, and inpatient care were different from the comparison group of the previous year and influenced this project's readmission rate. Preventable ED visits and readmissions might be influenced by both the quality of inpatient care and the quality of transitional care. Even so, improved, and effective inpatient care might be one of the answers to reducing unpreventable and unavoidable readmissions.

> "For Medicare patients, hospitalizations can be stressful; even more so when they result in subsequent readmissions. While many readmissions are unavoidable, researchers have found wide variation in hospitals' readmission rates, suggesting that patients admitted to certain hospitals are more likely to experience readmissions compared to other hospitals" (Boccuti & Casillas, 2017, p.1).

When focusing on Medicare and the Affordable Care Act's Hospital Readmission Reduction Program (HRRP), which looks to reward or punish hospitals for readmissions for patients 65 years and older, only one patient belonging to this group was re-admitted in this project. The patient was 70 years old. In the previous year's comparison group, two

patients were in this group, as they were aged 67 and 69 years old. The project was effective in decreasing readmission in this group, which lowered San Antonio's risk of being on the list of likely hospitals to re-admit Medicare patients. This means that San Antonio is less likely to be financially penalized due to the results of this project.

Root Cause Analysis

A benefit of this project was identifying subsets of causes of readmission, minimal issues that led to readmission. Having the opportunity to speak and verbally interact with patients when they should provide self-care allows them to truthfully express their healthcare needs. Structured interviews via TFU with patients revealed common causes of readmission or common concerns for patients that could lead to readmission. The analysis revealed that many patients were readmitted and visited the ED due to pneumonia, wound infection, excessive wound drainage, bowel obstruction, uncontrollable nausea and vomiting, and patients mistakenly identifying leg bruising and swelling as infection.

The new concept reported by Mednick et al. (2014) associated obesity as an independent prognostic factor for hospital readmission, objectified by a high BMI (greater than 40), with twice the risk of readmissions in obese patients than in those of "normal" weight. The procedure of total hip arthroplasty in a patient with a BMI above 40 is more demanding for the surgeon, with more difficulties to avoid soft tissue damage, more surgical time and patient bleeding, and increased risk of thromboembolism (Lamo, 2015). A high BMI with a high AIC and other medical health conditions, coupled with joint replacement surgery, might lead to a higher re- admission status.

Of the 60 patients who were successfully phoned, 19 (31%) had not started PT or made an appointment to start it. Waiting to begin PT could lead to stiffness of the surgical knee or hip. TFU was needed to encourage these patients to schedule appointment for PT mostly three to five days after surgery and call home health if they did not hear from them. This was to ensure that patients continued to perform their activities and exercises to prevent infection and stiffness, which could lead to readmission. The results indicated that patient pain level at the initial TFU call and patients' pain experience in the first 30 days should be dealt with promptly to prevent readmission. Some patients visited the ED for uncontrolled pain and intolerance to pain medications. Patients who experienced issues with their pain medications stated that they did not agree with the medication they would take at home or did not know the side effects of it on their body. Some patients experienced nausea and vomiting and expressed rather being in pain than taking the medication, this indicated that patients and their doctor, or patients and their nurse, might need to communicate effectively regarding the patient's discharge pain medication options and agree on them. This includes asking patients which medications they had taken before for pain and which medications were effective and caused fewer side effects. Hospitals have been effective in asking patients about medications they are allergic to. The recent fear in pain medication abuse and pain medication dependence could lead to improper pain control, especially after a painful surgery.

Additionally, patient and family concerns during discharge should be taken into consideration. One patient was discharged even after he and his aging wife had anxiety about going home without home healthcare or additional help. The wife stated that she requested home healthcare before her husband was discharged, but never received the help because of issues with her medical insurance. The patient was readmitted for small bowel obstruction.

Finally, many of the patients who visited the ED were unqualified to be there, but so, they were treated and released. Many patients went to the ER for swelling and bruises, which were normal effects of the surgery. They were then diagnosed with cellulitis of the leg after ruling out deep vein thrombosis (DVT). This practice leads to unnecessary antibiotic prescriptions. Patients might benefit from seeing pictures of what they might experience, in terms of the bruising and swelling, so they do not rush to the ED. This project and the root cause analysis of its findings could allow stakeholders to identify target problem areas and the opportunity to apply education or apply quality improvement strategies in that area.

Implications for Optimized Care

Reducing or eliminating avoidable hospital readmissions is an opportunity to improve quality care and reduce costs in the healthcare system. TFU calls allow for hospital leaders to assess, prioritize, implement, and monitor strategies to reduce avoidable ED visits and readmissions (Jencks et al., 2010). According to Jencks et al (2010), monitoring readmissions allows hospitals the opportunity to redesign care to support patients.

TFU calls, when implemented with the RED Toolkit, improve hospital outcomes only if stakeholders can review the results and decide to act upon it (AHRQ, 2015). When patient responses to telephone call areas for improvement are identified, continuous quality improvement methods can be implemented to improve care delivered by individual providers, units, and systems. TFU calls have not been shown to have any adverse effects as an intervention, therefore, TFU calls may be beneficial in discharge planning activities.

Implications for Advanced Practice Registered Nursing

Research is defined as a search for knowledge in a systemic and scientific pattern (Nolan & Behi, 1995). In research, an individual uses different methods and designs to search for the unknown or search for additional information that could be translated into practice. Chism (2013) defined evidence-based practice as "disciplines of healthcare that processed empirically with regard to the patient and reject more traditional protocols" (p. 63). Knowledge of the best evidence is needed to guide clinical practice; that knowledge must be translated into practice to improve patient care and outcome (Melnyk & Fineout-Overholt, 2011). Evidence derived from research is used in practice instead of continuing with what had been done in the past in practice that had no proven result.

As an APRN, one must be able to understand evidence and implement it into healthcare to improve patient outcome. An evidence-based intervention project as a CSP leads practitioners to analyze, evaluate, translate, and implement research into practice. TFU calls while using the RED Toolkit is an evidence-based research intervention that is implemented for practice with the intention that the same results can be experienced. APRNs are taught to implement research into practice and this CSP is an example. APRNs can implement existing knowledge in their workplace to bring about change.

Theme

The two themes in this CSP were readmission and TFU calls. These two entities are both complicated and when combined to observe how they relate, they become even more complicated. Readmission affects many patients and is costly to the healthcare system. The MedPAC estimated that in 2005, 17.6% of hospital patients were readmitted within 30 days of

discharge and that 76% of these readmissions were potentially preventable; the average payment for a potentially preventable readmission was estimated at approximately $7,200 (as cited in National Quality Measures Clearinghouse, 2015). Preventable readmission hurts both patients and the hospital and, therefore, need to be a focus of healthcare research. Finally, many patients have never complained of too much attention from their doctor or healthcare providers. In fact, the exact opposite is usually the case. Consequently, TFU calls should be valuable in improving healthcare provider communication with patients.

Limitation

One limitation for this project was participant age. The age inclusion criteria did not allow all ages as part of the project. Therefore, comparing the readmission results of pre-project and post-project might be inaccurate. Also, comparison is far more difficult since project participants and pre-project surgical patients have different comorbidities that might affect their readmission status. Additionally, the RED Toolkit recommends an implementation period of six months to one year to truly observe its effect in lowering readmission rates to the hospital. Nevertheless, because of the limited time frame of this project, which was a total of 90 days, the RED Toolkit's full benefit might be partial. Finally, the exclusion criteria, leaving non-English speakers and those not discharged to home from the project limited the readmission findings and the noting of the actual hospital readmission rate during the project time frame.

Dissemination

It is imperative to recognize that the results of a CSP always have applications beyond the immediate practice setting (Zaccagnini & White, 2010). An important expectation of a CSP is the ability to translate research into practice and the ability to repeat what is being

translated in practice. It is imperative that doctoral candidates share the knowledge learned through implementation of projects. The implementation process and results of this CSP will first be disseminated through an oral presentation in the academic setting in front of academic scholars of Brandman University in an online defense. Dissemination of the results will also occur with stakeholders of San Antonio Regional Hospital during the month of September in 2017 in a form of a planned PowerPoint presentation during a hospital meeting. The stakeholders —the orthopedic navigator and educator, the orthopedic surgeons, the orthopedic nurses, and the research coordinator—will be notified of the benefits of the project. Finally, the results of this CSP will be disseminated through the Brandman University Leatherby library under Clinical Scholarly Manuscripts and future plans for dissemination include publishing the findings in a peer-reviewed nursing journal.

Sustainability

San Antonio Regional Hospital, where this CSP was implemented, was interested in keeping the project and, therefore, has continued with TFU as part of their community health improvement projects (CHIPs). The CHIP coordinator and orthopedic navigator could use hospital volunteers to make telephone calls to patients and follow up after surgery. I was extremely grateful to be able to train and hand off the project to nursing and medical student volunteers.

Incorporating Doctorate of Nursing Practice Essentials

The American Association of Colleges of Nursing (AACN) (2006) articulated eight essential competencies for all nurses practicing at the graduate level. These eight essentials are foundational outcome competencies that are deemed fundamental for all DNP graduates to

complete regardless of one's specialty (Chism, 2013). These essentials prepare the DNP graduate for practice and the growing workforce with the foundational knowledge needed. As a DNP graduate, these essentials must be applied to the required CSP and to one's future practice as a nurse practitioner.

The first of the AACN's essentials, "scientific underpinnings for practice," describes the scientific foundations of nursing practice, which are based on the natural and social sciences (2006). Preparation to address current and future practice issues requires a strong scientific foundation for practice. DNP graduates possess a wide array of knowledge gleaned from the sciences and the ability to translate that knowledge quickly and effectively to benefit patients (2006). The foundation of nursing science is especially important in caring for patients because the nursing process requires an in-depth assessment, diagnosing, planning, implementing, and evaluation of the patient's health problems. Practitioners must be able to use nursing theories, concepts, and the biology of the human body when caring for a patient. This will allow the practitioner to understand the disease processes and how to better treat it.

Understanding of the human body and its biology allows practitioners to distinguish between illness and health. Practitioners must care for the patient as a whole—physically, emotionally, and mentally—and must understand the phenomena behind it to give proper care. Scientific underpinnings for practice was applied to this project, as I used evidence-based research as the background and reasoning for the project. The intervention of telephonic calls was based on the evidence that when follow-up calls were implemented, patients who did not receive a call within 14 days after discharge were 1.3 times more likely to be readmitted to the hospital within 30 days of discharge, than those who received calls (Harrison et al., 2011).

The second essential, "organizational and systems leadership for quality improvement and systems thinking," states that preparation in organizational and systems leadership at every level is imperative for DNP graduates to impact and improve healthcare delivery and patient care outcomes (Chism, 2013). "The advance nurse practice includes an organizational and systems leadership component that emphasizes practice, ongoing improvement of health outcomes, and ensuring patient safety" (AACN, 2006, p. 10). Practitioners must be skilled in working within organizational and policy arenas and in the actual provision of patient care (AACN, 2006).

Practitioners must be able to advise, plan, and lead the development of health promotion programs within communities and participate in the design, implementation, and evaluation of evidence-based, age-appropriate professional standards and guidelines for care (AACN, 2010). Taking a leadership role is part of applying this essential during the implementation phase of this CSP. The leadership role of guiding and directing this CSP to obtain the likely result was an important part of possibly improving healthcare delivery and the quality of healthcare.

The third essential, "clinical scholarship and analytical methods for evidence-based practice," states that scholarship and research are the hallmarks of doctoral education. DNP graduates are in a distinctive position to merge nursing science, practice, human needs, and human caring. Specifically, the DNP graduate is expected to be an expert in the evaluation, integration, translation, and application of evidence-based practices (Chism, 2013). It is important for a practitioner to be able to critically appraise the existing literature and other evidence to determine and implement the best evidence for their practice.

As practitioners, using evidence-based clinical guidelines to guide practice is

especially imperative. Evidence-based literature can be used to design, direct, and evaluate quality improvement methodologies to promote safe, timely, effective, efficient, equitable, and patient- centered care (AACN, 2006). Clinical guidelines are especially beneficial to practice due to the fact that knowledge is constantly changing and using evidence-based information for treatment and for education is a form of advocating for the patient's best interest and outcome.

For this CSP, I translated evidence-based research into practice, as research based on TFU calls was used to guide the project implementation. The RED Toolkit used for the intervention is an evidenced-based tool, which was evaluated for validity and reliability before implementation. Implementing this CSP required the evaluation and synthesis of evidence regarding telephonic calls and their benefit to the healthcare system.

The fourth essential, "information systems/technology and patient care technology for improvement and transformation of health care," states that DNP graduates must be experts in utilizing information technologies to support practice leadership and clinical decision making (Chism, 2013). Almost all hospitals/clinics use some sort of computer and technology system in the care of patients, documentation, and to store patient information. For this CSP, I used technology to analyze and evaluate the results of the intervention. I used technology to store data and patients' personal information to avoid violating HIPAA regulations. I also used the hospital's electronic medical record in major aspects of the project, including for participant selection.

The fifth essential, "healthcare policy for advocacy in health care," asserts that "knowledge and skills related to healthcare policy are central to nursing practice and therefore essential to the DNP graduate" (Chism, 2013). Practitioners can proactively engage

in the development and implementation of healthcare policies at all levels, including, local, state, regional, federal, and international levels (AACN, 2006). For this CSP, I used TFU calls post orthopedic discharge to educate patients to aid in the prevention of ED visits and hospital readmission. This was an example of advocating for patients and forming new policies for better patient outcomes.

The sixth essential, "interprofessional collaboration for improving patient and population health outcomes," states that DNP graduates must be prepared to facilitate collaboration and team building, both participating in the teamwork and assuming leadership roles when necessary (Chism, 2013). Practitioners should have the goal of using all necessary resources possible to achieve the patient's optimal health outcome. Resources include collaborating with medical staff or nonmedical staff to develop treatment and policies to benefit patients.

For this CSP, I was successful at collaborating with the orthopedic medical/surgical floor and the management team to hopefully prevent readmission of the patients. A form of collaboration is a DNP candidate collaborating with a hospital to bring about a positive outcome. Also, I collaborated with the research team and the orthopedic navigator at the hospital to implement this project. Another collaboration occurred directly with the patients, in collecting data and providing patient education.

The seventh essential, "clinical prevention and population health for improving the nation's health," states that nursing has foundations in health promotion and risk reduction and is, therefore, positioned to have an impact on the health status of people in multiple settings (Chism, 2013). Practitioners must be leaders in health promotion, health protection, and disease prevention when caring for patients. Health promotion includes the ability to

assess the impact of family, community, and environment, including economic, work, institutional, school, and living environments on an individual's health status. This will also address and promote the national goal for *healthy people 2020* (Zaccagnini & White, 2010). By conducting this CSP, I initiated the goal of preventing ED visits and readmission through the use of TFU calls.

Finally, the eighth essential, "advanced nursing practice," specifies that, "all DNP graduates are expected to demonstrate refined assessment skills and base their practice on the application of biophysical, psychosocial, behavioral, sociopolitical, cultural, economic, and nursing science as appropriate in their area of specialization" (AACN, 2006, p. 16). For this CSP, I translated research into practice to possibly benefit patients and the hospital.

Zaccagnini and White (2014) stated that:

> DNP graduates hold promise for investigating and solving some of the vexing problems facing our healthcare system and delivering the highest level of nursing practice. As knowledge workers, nurses can no longer rely on tradition and task orientation as their substantive base. Rather, they need facility with obtaining and maintaining the most current and evidence-based knowledge to inform their practice (Zaccagnini & White, 2014, p.26).

The title of DNP allowed for the application of expert knowledge from the nursing field and for delivery of the best care possible to my patients during the implementation of this project.

Recommendations

TFU is a great intervention for hospitals in possibly reducing readmissions and hospital reutilization, but other factors may need to be controlled to have the best outcome.

It may be beneficial to explore potential factors, including comorbidities not associated with joint surgery that may have influenced patient readmissions. Finally, perhaps a larger scale sample size, with a project design that runs for a longer time frame up to one year might explore a better result.

Conclusion

Many patients who were readmitted to the hospital as I implemented this project were readmitted based on factors that making a phone call could not have prevented. For example, infections, unexplained pain, excessive bleeding or leaking, nonstop vomiting and nausea. All precautions must be taken in the hospital to prevent these issues before a patient leaves the hospital. Nevertheless, TFU might benefit by preventing unnecessary ED/Urgent care visits more than readmissions. Readmission prevention starts from the time a patient enters the hospital for care. When inpatient care is up to par, and discharge instructions are given accordingly, TFU calls may benefit patients. The results of this CSP, as well as the comparison to the previous year's readmission rate, indicated that the interventions of TFU through the use of the RED Toolkit did not significantly reduce readmission rates. Nevertheless, these results should not cause other hospitals and medical agencies to hesitate to implement this intervention, especially, when the complete clinical results and impact could be experienced at the end of the year and allied outcomes could also be experienced. This intervention has been shown to be effective by multiple agencies, and the limitations of this project did not aid in revealing its impact to reduce readmission in this case.

References

Adams, C., Stephens, K., Whiteman, K., Kersteen, H., & Katruska, J., (2014). Implementation of the Re-Engineered Discharge (RED) Toolkit to Decrease All-Cause Readmission Rates at a Rural Community Hospital. Quality Management in Health Care, 23(3), 169-177. doi: 10.1097/QMH.0000000000000032

Agency for Healthcare Research and Quality (2013a). How CMS Measures the "30-Day All Cause Rehospitalization Rate." Retrieved from http://www.ahrq.gov/professionals/systems/hospital/red/toolkit/redtool-30day.html

Agency for Healthcare Research and Quality (2013b). How to Conduct a Post-Discharge Follow-Up Phone Call. Retrieved from http://www.ahrq.gov/professionals/systems/hospital/red/toolkit/redtool5.html

Agency for Healthcare Research and Quality (2015). AHRQ's RED Toolkit Inspires Improved Patient Discharge at Nacogdoches Memorial Hospital. U.S. Department of Health & Human Services. Retrieved from https://www.ahrq.gov/policymakers/case-studies/201501.html

American Association of Colleges of Nursing (2006). The essentials of doctoral education for advanced nursing practice. Retrieved from https://www.aacn.nche.edu/publications/position/DNPEssentials.pdf

American Association of Colleges of Nursing (2010). Adult-Gerontology Primary Care Nurse Practitioner Competencies. Retrieved from http://www.aacn.nche.edu/geriatricnursing/adultgeroprimcareNPcomp.pdf

American Association of Hip and Knee Surgeons (2017). Total Knee Replacement. Retrieved

from http://www.aahks.org/care-for-hips-and-knees/do-i-need-a-joint-replacement/total-knee-replacement/

Bauer, M., Fitzgerald, L., Haesler, E., & Manfrin, M. (2009). Hospital discharge planning for frail older people and their family. Are we delivering best practice? A review of the evidence. Journal of Clinical Nursing, 18(18), 2539-2546. doi: 10.1111/j.13652702.2008.02685.x

Bernatz, J. T., Tueting, J. L., & Anderson, P. A. (2015). Thirty-Day Readmission Rates in Orthopedics: A Systematic Review and Meta-Analysis. PLoS ONE, 10(4), e0123593. Retrieved from http://doi.org/10.1371/journal.pone.0123593

Bernatz, J. T., Tueting, J. L., Hetzel, S., & Anderson, P. A. (2016). What Are the 30-day Readmission Rates Across Orthopaedic Subspecialties? Clinical Orthopaedics and Related Research, 474(3), 838–847. Retrieved from http://doi.org/10.1007/s11999-015-4602-5

Boccuti, C., & Casillas, G. (2017). Aiming for Fewer Hospital U-turns: The Medicare Hospital Readmission Reduction Program. Kaiser Family Foundation. Retrieved from http://www.kff.org/medicare/issue-brief/aiming-for-fewer-hospital-u-turns-the-medicare-hospital-readmission-reduction-program/

Boerre, G. (2006). Abraham Maslow. Personality Theories. Retrieved May 30, 2008. Retrieved from http://webspace.ship.edu/cgboer/maslow.html

Bueno, H., Ross, J., Wang, Y., Chen, J., Vidán,M., Normand, S., Curtis, P., Drye, E., Lichtman, J., Keenan, P., Kosiborod, M., Krumholz, H. (2010). Trends in Length of Stay and Short-term Outcomes Among Medicare Patients Hospitalized for Heart Failure, 1993-

2006. JAMA. 303(21), 2141–2147. doi:10.1001/jama.2010.748

Burch, J., & Taylor, C. (2012). Patients' need for nursing telephone follow-up after enhanced recovery. Gastrointestinal Nursing, 10(4), 51-58.

Butts J. B, & Rich K. L. (2011). Philosophies and Theories for Advanced Nursing Practice. Sudbury, MA: Jones and Bartlett Learning.

Campagna, s., Delfina, M., D'Oulx, A., Paradiso, R., et al. (2016). Postoperative Pain, an Unmet Problem in Day or Overnight Italian Surgery Patients: A Prospective Study. Pain Research and Management. 2016:1-8. doi:10.1155/2016/6104383

Chism, L. A. (2013). The Doctor of Nursing Practice: A Guidebook for Role Development and Professional Issues. Burlington, MA: Jones and Bartlett Learning.

Clement, R. C., Derman, P. B., Graham, D. S., Speck, R. M., Flynn, D. N., Levin, L. S., & Fleisher, L. A. (2013). Risk factors, causes, and the economic implications of unplanned readmissions following total hip arthroplasty. Journal of Arthroplasty, 28(8), 7-10. doi: 10.1016/j.arth.2013.04.055

D'Amore, J., Murray, J., Powers, H., & Johnson, C. (2011). Does Telephone Follow-up Predict Patient Satisfaction and Readmission? Population Health Management, 14(5), 249-255. doi: 10.1089/pop.2010.0045

Dilworth, S., Higgins, I., & Parker, V. (2012). Feeling let down: An exploratory study of the experiences of older people who were readmitted to hospital following a recent discharge. Contemporary Nurse: A Journal for the Australian Nursing Profession, 42(2), 280-288. doi: 10.5172/conu.2012.42.2.280

Garrett, K. E. (2009). The Measurement of Health Care Performance: A Primer for Physicians. Retrieved from https://brandman.blackboard.com/bbcswebdav/pid-6874681-dt-content rid-9220535_2/courses/HP-201521-DNPU-706 HP3/Measurement%20of%20Health%20Care%20Performance.pdf

Harrison, P. L., Hara, P. A., Pope, J. E., Young, M. C., & Rula, E. Y. (2011). The impact of post-discharge telephonic follow-up on hospital readmissions. Population Health Management, 14(1), 27-32. doi: 10.1089/pop.2009.0076

Hayhoe, G. (2004, May). Why We Do the Things We Do. Technical Communication, pp. 181,182. Retrieved May 30, 2008, from Academic Search Premier database.

Hogberg, A. (1975). Orthopedic nursing. Preventing orthopedic complications... part 2. RN, 38, 34-37.

Hospital for Special Surgery (2015) Hip and Knee Readmission Rates. Retrieved from https://www.hss.edu/quality-hip-knee-readmission rates.asp

Jack, B., Paasche-Orlow, M., Mitchell, S., et al. (2013). An overview of the Re-Engineered Discharge (RED) Toolkit. Agency for Healthcare Research and Quality, 12(13)-0084.

Kaboli, P. J., Go, J. T., Hockenberry, J., Glasgow, J. M., Johnson, S. R., Rosenthal, G. E., Vaughan-Sarrazin, M. (2012). Associations between reduced hospital length of stay and 30-day readmission rate and mortality: 14-year experience in 129 veterans' affairs hospitals. Annals of Internal Medicine, 157(12), 837-845. doi: 10.7326/0003-4819-157-12-201212180-00003

Krishnan, J. A., Gussin, H. A., Prieto-Centurion, V., Sullivan, J. L., Zaidi, F., & Thomashow, B. M. (2015). Integrating COPD into Patient-Centered Hospital Readmissions Reduction

Programs. Chronic Obstructive Pulmonary Diseases (Miami, Fla.), 2(1), 70–80. Retrieved from http://doi.org/10.15326/jcopdf.2.1.2014.0148

Lamo-Espinosa, J., & Pascual-Roquet Jalmar, E. (2015). Hospital readmission rates following primary total hip arthroplasty: present and future in sight. Annals of Translational Medicine, 3(Suppl 1), S38. Retrieved from http://doi.org/10.3978/j.issn.2305-5839.2015.03.33

Lindberg, M. F., Grov, E. K., Gay, C. L., Rustøen, T., Granheim, T. I., Amlie, E., & Lerdal, A. (2013). Pain characteristics and self-rated health after elective orthopaedic surgery - a cross-sectional survey of Clinical Nursing, 22(9/10), 1242-1253. doi: 10.1111/jocn.12149

Marcus, C. (2014). Strategies for improving the quality of verbal patient and family education: a review of the literature and creation of the EDUCATE model. *Health Psychology and Behavioral Medicine*, *2*(1), 482–495. http://doi.org/10.1080/21642850.2014.900450

Medicare.gov (2017). Complication rate for hip/knee replacement patients. Hospital Compare Retrieved from https://www.medicare.gov/hospitalcompare/Data/Surgical-Complications-Hip-Knee.html

Melnyk, B. M., & Fineout-Overholt, E. (2011). Evidence-based practice in nursing and healthcare: A guide to best practice (2nd ed.). Philadelphia, PA: Lippincott Williams & Wilkins Miller, D., & Schaper, A. (2015, January-March). Implementation of a follow-up telephone call process for patients at high risk for readmission. Journal of Nursing Care Quality, 30(1), 67-70. Retrieved from http://dx.doi.org/10.1097/NCQ.0000000000000069

Mistiaen, P., & Poot, E. (2006). Telephone follow-up, initiated by a hospital-based health professional, for post-discharge problems in patients discharged from hospital to home. Cochrane Database of Systematic Reviews (4).

Mitchell, S. E., Martin, J., Holmes, S., van Deusen Lukas, C., Cancino, R., Paasche-Orlow, M., Jack, B. (2016). How Hospitals Reengineer Their Discharge Processes to Reduce Readmissions. Journal for Healthcare Quality: Official Publication of the National Association for Healthcare Quality, 38(2), 116–126. Retrieved from http://doi.org/10.1097/JHQ.0000000000000005

National Quality Measures Clearinghouse (2015). Measure summary: Total hip arthroplasty and/or total knee arthroplasty: hospital-level 30-day, all-cause, risk-standardized readmission rate following elective primary THA and/or TKA. Agency for Healthcare Research and Quality (AHRQ). Retrieved from https://www.qualitymeasures.ahrq.gov/summaries/summary/49200/total-hip-arthroplasty-tha-andor-total-knee-arthroplasty-tka-hospitallevel-30day-allcause-riskstandardized-readmission-rate-rsrr-following-elective-primary-tha-andor-tka

Nolan, M., & Behi, R. (1995). What is research? Some definitions and dilemmas. British Journal Nursing, 4(2), 111-115.

Osei-Anto, M. Joshi, A. M. Audet et al. (January 2010). Health Care Leader Action Guide to Reduce Avoidable Readmissions. Health Research & Educational Trust, The Commonwealth Fund, and the John A. Hartford Foundation.

Purvis, L., Carter, E., & Morin, P. (2015). Impact of the Medicare Hospital Readmission Reduction Program on Hospital Readmissions Following Joint Replacement Surgery.

AARP Public Policy Institute, 107:1-8. Retrieved from http://www.aarp.org/content/dam/aarp/ppi/2015/hospital-readmission-rates-falling-among-older-adults-receiving-joint-replacements.pdf

Ramkumar, N. P., Chu, T. C., & Harris, D. J. (2015). Causes and Rates of Unplanned Readmissions After Elective Primary Total Joint Arthroplasty: A Systematic Review and Meta-Analysis. The American Journal of Orthopedics, 44(9), 397-405. Retrieved from http://www.mdedge.com/amjorthopedics/article/102204/arthroplasty/joint-replacement/causes-and-rates-unplanned-readmissions

Re-Engineered Discharge (RED) Toolkit (2017). Agency for Healthcare Research and Quality. U.S. Department of Health & Human Services. Retrieved from http://www.ahrq.gov/professionals/systems/hospital/red/toolkit/index.html

Robinson, S., Howie-Esquivel, J., & Vlahov, D. (2012). Readmission Risk Factors after Hospital Discharge Among the Elderly. Population Health Management, 15(6), 338-351. doi: 10.1089/pop.2011.0095

Tamura-Lis, W. (2013). Teach-Back for Quality Education and Patient Safety. Urologic Nursing, 33(6), 267-298. doi: 10.7257/1053-816X.2013.33.6.267

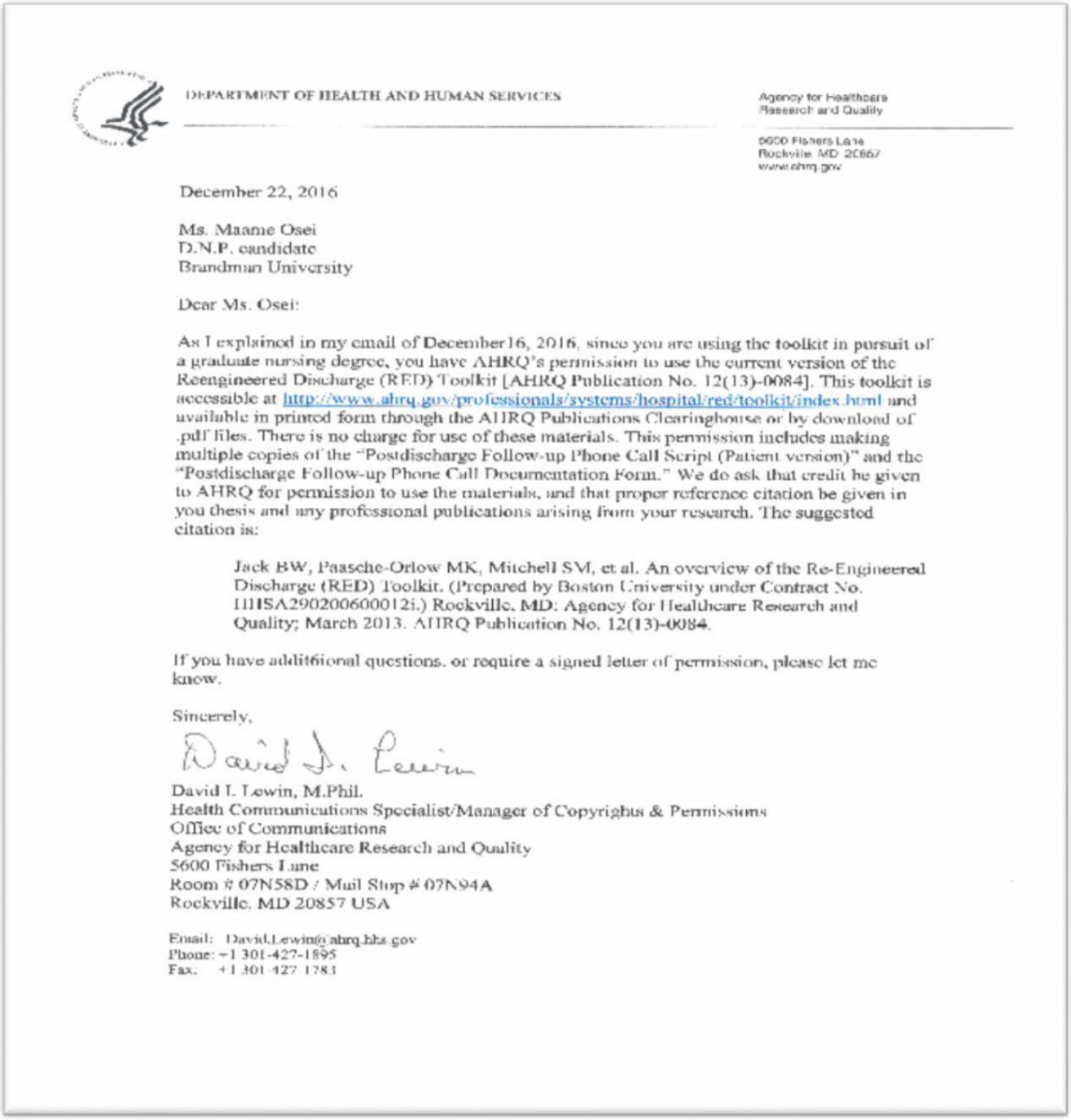
Young, B., (2013). Joint Replacement Readmission Penalty $265,000. Retrieved from http://ryortho.com/breaking/joint-replacement-readmission-penalty-265000/

Zaccagnini, M., & White, K. (2014). The doctor of nursing practice essentials: A new model for advanced practice nursing (2nd ed.). Sudbury, MA: Jones and Bartlett.

Zalenski, R., & Raspa, R. (2006, October). Maslow's Hierarchy of Needs: A Framework for Achieving Human Potential in Hospice. Journal of Palliative Medicine, 9(5), 1120-1127. Retrieved May 30, 2008. doi:10.1089/jpm.2006.9.1120

Appendix A

Letter of Permission to Use RED Toolkit



DEPARTMENT OF HEALTH AND HUMAN SERVICES

Agency for Healthcare Research and Quality

5600 Fishers Lane
Rockville, MD 20857
www.ahrq.gov

December 22, 2016

Ms. Maame Osei
D.N.P. candidate
Brandman University

Dear Ms. Osei:

As I explained in my email of December16, 2016, since you are using the toolkit in pursuit of a graduate nursing degree, you have AHRQ's permission to use the current version of the Reengineered Discharge (RED) Toolkit [AHRQ Publication No. 12(13)-0084]. This toolkit is accessible at http://www.ahrq.gov/professionals/systems/hospital/red/toolkit/index.html and available in printed form through the AHRQ Publications Clearinghouse or by download of .pdf files. There is no charge for use of these materials. This permission includes making multiple copies of the "Postdischarge Follow-up Phone Call Script (Patient version)" and the "Postdischarge Follow-up Phone Call Documentation Form." We do ask that credit be given to AHRQ for permission to use the materials, and that proper reference citation be given in you thesis and any professional publications arising from your research. The suggested citation is:

> Jack BW, Paasche-Orlow MK, Mitchell SM, et al. An overview of the Re-Engineered Discharge (RED) Toolkit. (Prepared by Boston University under Contract No. HHSA290200600012i.) Rockville, MD: Agency for Healthcare Research and Quality; March 2013. AHRQ Publication No. 12(13)-0084.

If you have additional questions, or require a signed letter of permission, please let me know.

Sincerely,

David I. Lewin, M.Phil.
Health Communications Specialist/Manager of Copyrights & Permissions
Office of Communications
Agency for Healthcare Research and Quality
5600 Fishers Lane
Room # 07N58D / Mail Stop # 07N94A
Rockville, MD 20857 USA

Email: David.Lewin@ahrq.hhs.gov
Phone: +1 301-427-1895
Fax: +1 301-427-1783

Appendix B

Demographic Information Collection Form

(Completed during telephone interaction on post-discharge day 2 or 3)

Patient Name: Discharge Date: Called Date-

Gender: Male Female Other 30-Day call back-

Age:_____ -50-60 years 61-70 years 71 -80 years 81+

Race:_____ Caucasian African American Hispanic Asian

Marital Status:_____Married Single

Primary Language_____

Education level:_____ High school College/Associate's Bachelor's Master's Post-grad

Living Arrangements:_____Alone Family Friends

Type of surgery:_____ TKA THA PARTIAL/UNI SHOULDER LEFT RIGHT REVISION

First joint surgery: Yes No

Surgeon's name: First Appt date: Home/PT Appt: Yes No Date _____

Medical Conditions:

Heart disease

Diabetes

Lung disease

Other disorders

Smoker? Yes No

How many medications are you taking_____Pain level now_____Constipation_____

BMI_____A1c_____

Exercise per week_____

Return for care (not on scheduled follow-up date): Number_____ER visit Urgent Care Readmission.
Where_____

Reason for return:_____Bleeding Infection Constipation Stiffness Fall Swollen Clot Pain

Did you attend the pre-op education surgical class?_____

Call#_____1 2 3

Were all your goals met for surgery? How was the hospital experience?_____

POST-DISCHARGE DAY 30 FOLLOW UP

Return for care (not on scheduled follow-up date): Number_____ER visit Urgent Care Readmission. Where_____

Reason for return:_____Bleeding Infection Constipation Stiffness Fall Swollen Clot Pain

Call#_____1 23

Appendix C

Post-Discharge Telephone Follow-Up Call Using RED Toolkit

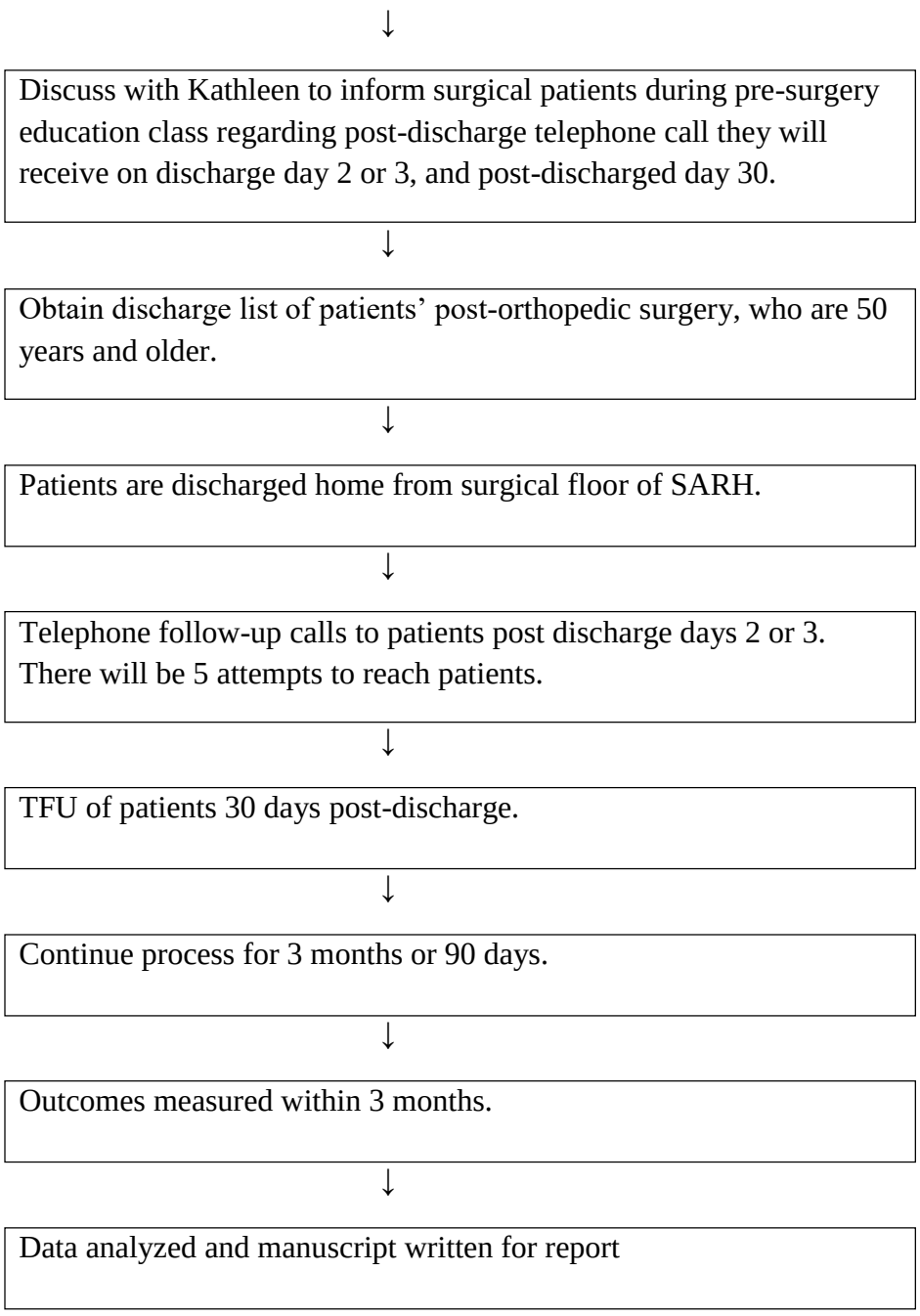


Figure 1. Project implementation process.

Appendix D

Participant Demographics

Table 1

Gender

	Frequency	Percent	Valid Percent	Cumulative Percent
Male	25	39.1	39.1	39.1
Female	39	60.9	60.9	100.0
Total	64	100.0	100.0	

Table 2

Race

	Frequency	Percent	Valid Percent	Cumulative Percent
African American	5	7.8	7.8	7.8
Asian	1	1.6	1.6	9.4
Caucasian	37	57.8	57.8	67.2
Hispanic	20	31.3	31.3	98.4
Multiple Eth.	1	1.6	1.6	100.0
Total	64	100.0	100.0	

Table 3

Descriptive Statistics

	n	Minimum	Maximum	Mean	Std. Deviation
Age	64	52	84	65.38	8.622
BMI	60	14	40	30.10	5.001
A1C	56	5	8	5.66	.481
# Initial Call Attempts	59	1	5	1.41	.812
# Call Attempts (30 days)	60	1	5	1.78	1.043

Table 4

Successful Calls Made

	Frequency	Percent	Cumulative Percent
No	4	6.3	6.3
Yes	60	93.8	100.0
Total	64	100.0	

Appendix E

ED/Urgent Care and Readmission Frequencies

Table 5

Emergency Department/ Urgent Care

	Frequency	Percent	Valid Percent	Cumulative Percent
No	55	85.9	85.9	85.9
Yes	9	14.1	14.1	100.0
Total	64	100.0	100.0	

Table 6

Re-admissions

	Frequency	Percent	Valid Percent	Cumulative Percent
No	60	93.8	93.8	93.8
Yes	4	6.3	6.3	100.0
Total	64	100.0	100.0	

Appendix F

Successful Call Made Impact on Re-admission

Table 7

*Successful call made * Readmit Crosstabulation*

			Readmit		Total
			No	Yes	
Successful call made	No	Count	4	0	4
		Expected Count	3.8	.3	4.0
	Yes	Count	56	4	60
		Expected Count	56.3	3.8	60.0
Total		Count	60	4	64
		Expected Count	60.0	4.0	64.0

Table 8

Chi-Square Tests

	Value	def.	Amp. Sig. (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)
Pearson Chi-Square	.284[a]	1	.594		
Continuity Correction[s]	.000	1	1.000		
Likelihood Ratio	.534	1	.465		
Fisher's Exact Test				1.000	.767
Linear-by-Linear Association	.280	1	.597		
N of Valid Cases	64				

a. 3 cells (75.0%) have expected count less than 5. The minimum expected count is .25.
b. Computed only for a 2x2 table

Appendix G

Successful Call Made Impact on Rate of ED Visits

Table 9

*Successful call made * EDurgentcarevisit Crosstabulation*

			ED Visit /Urgent Care		Total
			No	Yes	
Successful call made	No	Count	0	4	4
		Expected Count	3.4	.6	4.0
	Yes	Count	55	5	60
		Expected Count	51.6	8.4	60.0
Total		Count	55	9	64
		Expected Count	55.0	9.0	64.0

Table 10

Chi-Square Tests

	Value	do	asp. Sig. (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)
Pearson Chi-Square	26.074[a]	1	.000		
Continuity correction	19.041	1	.000		
Likelihood Ratio	17.560	1	.000		
Fisher's Exact Test				.000	.000
Linear-by-Linear Association	25.667	1	.000		
N of Valid Cases	64				

a. 2 cells (50.0%) have expected count less than 5. The minimum expected count is .56.
b. Computed only for a 2x2 table

Table 11

Chi-Square Tests association between successful call made and ED and Readmission

		Value	Approx. Sig.
Nominal by Nominal	Phi	-.638	.000
	Cramer's V	.638	.000
N of Valid Cases		64	

Appendix H

Impact of Call Attempts Number on Re-admission and ED Visit Rates

Table 12

Variables in the Equation
Dependent Variable: Re-admission

	B	S.E.	Wald	df	Sig.	Exp(B)	95% C.I.for EXP(B)	
							Lower	Upper
NumberOf30Call Attempts	.348	.487	.511	1	.475	1.416	.545	3.678
InitialCallAttempt	.577	.459	1.582	1	.208	1.780	.725	4.373
Constant	-4.251	1.384	9.432	1	.002	.014		

Table 13

Variables in the Equation
Dependent Variable: Emergency Department Visit

	B	S.E.	Wald	df	Sig.	Exp(B)	95% C.I.for EXP(B)	
							Lower	Upper
NumberOf30Call Attempts	.512	.421	1.474	1	.225	1.668	.730	3.810
InitialCallAttempt	.410	.439	.874	1	.350	1.507	.638	3.560
Constant	-4.070	1.291	9.940	1	.002	.017		

Table 14

Testing of Linearity Assumption: Box – Tidwell Approach

		Sig.	Exp(B)	95% CI.for EXP(B)	
				Lower	Upper
Dependent Variable					
Re-Admission	LN_30DayCallAttempts by NumberOf30CallAttempts	.413	.040	.000	87.277
	InitialCallAttempt by LN_InitailCallAttemp	.503	.250	.004	14.414
ED Visits	LN_30DayCallAttempts by NumberOf30CallAttempts	.290	.031	.000	19.397
	InitialCallAttempt by LN_InitailCallAttemp	.611	.364	.007	17.860

Appendix I

San Antonio Regional Hospital Re-Admission Findings

Table 15

Project Surgery Results and Hospital Comparison by Timeframe

	2016	**Feb-Apr 2016 Comparison**	**Dec 2016-Jan 2017 30-day pre-project**	**Feb-Apr 2017 Project Timeframe**	**2017-Project Timeframe**				
	Jan-Dec				Feb	Mar	Apr	YTD	Goal
Knee Replacement 30-day Re-admission Rate	2.6%				3.8%	0.0%	0.0%	1.7%	<4.6%
Cases	6				1	0	0	1	
Hip Replacement 30-day Re-admission Rate	1.6%				0.0%	7.1%	5.9%	5.3%	<4.6%
Cases	2				0	1	1	2	
Total Joint Replacement 30-day Re-admission Rate	2.8%	1.8%	1.3%	6.7%					
Cases	8	2	1	4					
Number of Surgeries		109	78	60					