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Impact of Project RED Discharge Checklist on Readmissions and Adherence to Initial Follow-Up Appointment

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Reducing readmissions has become a priority for hospitals across the country in an effort to improve care and to avoid financial penalties. The purpose of this pilot study is (a) to evaluate the impact of Project Re-Engineered discharge checklist on hospital readmissions within 30 days of discharge when compared to standard discharge instructions, (b) to evaluate adherence to the initial follow-up appointment with an outpatient provider in the trauma clinic within seven days of hospital discharge for fall patients compared to standard discharge instructions, and (c) to evaluate the impact insurance status, race, education, number of chronic illnesses present on admission, and planned post-discharge living arrangements on adherence to the initial follow-up appointment with an outpatient provider in the trauma clinic within seven days of discharge. Conducted between February 1, 2015 and October 1, 2015, this pilot study used a convenience sample (N = 50) of trauma patients admitted to a level II trauma center located in the Northeast. With respect to results, implementation of the Project Re-Engineered discharge checklist did not reduce readmissions ($p = 0.247$) or increase adherence to the initial follow-up appointment with an outpatient provider in the trauma clinic ($p = 0.248$). Demographics variables including age ($p = 0.002$) and race ($p = 0.021$) demonstrated statistical significance in reduced 30-day readmissions. Further research is needed to identify which modifications to the Project RED Discharge checklist might provide the greatest benefit to trauma patients in an effort to increase adherence to follow-up care, reduce readmissions and decrease healthcare costs.

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CHAPTER ONE: INTRODUCTION

Background and Significance

Throughout the past decade, issues regarding patient safety during care transitions have received significant attention in an effort to improve patient outcomes and minimize healthcare expenses. *Crossing the Quality Chasm,* published by the Institute of Medicine in 2001, described the current healthcare system of the United States as disorganized and multifaceted with insufficient communication amongst providers and fragmented coordination of follow-up care (Burton, 2012). In a recent study conducted for the National Institute for Health Care Reform, approximately one out of every 12 adults, age 21 years and older that is discharged from the hospital to the community is readmitted within 30 days (Sommers & Cunningham, 2011). Unfortunately, the expenses associated with hospital readmissions for those who are readmitted within 30 days of discharge add $16 billion dollars to the cost of healthcare in the United States annually and $97 billion dollars annually for those who are readmitted within one year (Sommers & Cunningham, 2011). Conclusively, these readmissions have proven detrimental to the current healthcare system in terms of both dollars spent and associated poor patient outcomes (Reducing Readmissions: Measuring Health Plan Performance, 2012).

> According to the Centers for Medicare and Medicaid Services (2014), hospital readmissions are defined as: an admission to a subsection (d) hospital within 30 days of a discharge from the same or another subsection (d) hospital. Subsection (d) hospitals, per the Social Security Act, include short term inpatient acute care hospitals excluding critical access, psychiatric, rehabilitation, long-term care, children's and cancer hospitals. Numerous studies have demonstrated that hospital readmissions within 30 days of

discharge may be categorized as either unavoidable (planned or unrelated to the primary admission) or potentially preventable (Reducing Readmissions: Measuring Health Plan Performance, 2012). Planned or unrelated readmissions are considered appropriate in certain circumstances when related to a patient's condition, such as chemotherapy administration or when unrelated to the primary admission, such as trauma. Conversely, potentially preventable readmissions are accountable for rising healthcare costs and are commonly associated with suboptimal care during the initial hospitalization, inadequate discharge planning and fragmented coordination of follow-up care and may be minimized through the delivery of quality inpatient care and improved care coordination and aftercare (Bisognano & Boutwell, 2009).

Hospital readmissions are also associated with patient characteristics and community factors including age, gender, race/ethnicity, culture, language, health literacy, socioeconomic status, health insurance status, number and severity of comorbidities, availability of community support and neighborhood location (Ladha, Young, Ng, Efron, & Haider, 2011). Although the causes of readmissions are multifactorial inadequate discharge planning and fragmented coordination of follow-up care remain the most prominent reasons for hospital readmissions (Groene, Orrego, Sunol, Barach, & Groene, 2012).

Supporting studies validate the importance of follow-up care in an effort to improve patient outcomes and reduce readmissions. Not counting emergency department visits, approximately one third of adults discharged from a hospital do not receive follow-up care from a provider within 30 days of discharge (Sommers & Cunningham, 2011). In an effort to reduce hospital readmissions for patients with heart failure through improved discharge planning, the Institute for Healthcare Improvement (IHI) and the Robert Wood Johnson Foundation (RWJF)

partnered with 10 hospitals to enhance provider and patient education, patient-centered communication and post-hospitalization care (Minott, 2008). Using an interdisciplinary team approach, discharge planning was initiated immediately after the initial admission through the utilization of inpatient providers partnering with patients, families and community-based providers. Inpatient providers used teach-back, the process of having patients repeat the instructions back in their own words to the provider, throughout the patients' hospitalization and at the time of discharge to ensure that the discharge instructions were understood (Minott, 2008). At the time of discharge, inpatient providers reconciled medications, communicated with the community-based primary care provider and made certain that a follow-up appointment was scheduled. Through the utilization of these strategies, two of the ten participating hospitals were able to reduce hospital readmission rates from over twenty percent to five percent or less (Minott, 2008).

Unfortunately, the lack of follow-up care is a significant factor in hospital readmissions and rising healthcare costs. Therefore, in an effort to reduce the number of potentially preventable hospital readmissions several interventions may be necessary if supported by the results of a needs assessment and a root cause analysis including: increased access to accurate, high-quality care, effective patient education, patient-centered discharge planning, post-hospitalization support, appropriate referrals and follow-up care and clear, concise communication with patient, caregiver and providers regarding prognosis (Bisognano & Boutwell, 2009). Other interventions have been implemented to reduce readmissions among congestive heart failure patients and include: early assessment of discharge needs, appropriate referrals, 48-72 hour post-discharge provider follow-up care for those patients identified as high-risk, early post-discharge nurse telephone call to confirm understanding of discharge plan,

medication reconciliation, improved transition process between facilities, redesign of patient education to improve patient and caregiver understanding of self-care and early identification of the learner (Bisognano & Boutwell, 2009). The utilization of advanced practice nurses has been shown to improve patient outcomes, reduce healthcare costs, increase patient satisfaction and improve communication between physicians and nurses (Morris, Reilly, Rohrbach, & Telford, 2012). Concisely, the need to improve the care transition process remains a critical factor in reducing readmissions.

As the United States embarks on its journey towards healthcare reform, it is essential that the evolution of the current system be understood. Considered one of the most prosperous nations in the world, it was not until 1929 when Dr. Justin Ford Kimball, a former school superintendent and hospital administrator at Baylor University Hospital in Dallas, Texas, established the first health insurance company in the United States. A predecessor of Blue Cross, the Baylor Plan was developed by Dr. Kimball after he recognized that many school teachers were neglecting their medical bills. Under this plan, school teachers would pay 50 cents per month in exchange for up to 21 days per year of medical services (The history of medical insurance in the United States, 2009). Although initially perceived with considerable cynicism, the Baylor Plan quickly became the pioneer for healthcare equality in the United States.

Following the Great Depression of the 1930s, the supply and demand for health coverage became more prevalent as it allowed for the consumer to be insured while providing hospitals with a secured income (The history of medical insurance in the United States, 2009). During this era of financial instability health coverage plans quickly swept the nation in an effort to reduce price competition and fulfill the changing needs of consumers. The establishment of prosperous

health insurance companies prevented the government from intervening until the creation of Medicare and Medicaid.

After more than twenty years of deliberation, on July 30, 1965 President Lyndon Johnson signed into law both Medicare and Medicaid as an amendment under Title XIX of the Social Security Act of 1935.

> *No longer will older Americans be denied the healing miracle of modern medicine. No longer will illness crush and destroy the savings that they have so carefully put away over a lifetime so that they might enjoy dignity in their later years.* --- President Lyndon Johnson (Centers for Medicare and Medicaid Services, 2014).

Under this law, Medicare would be federally funded to provide healthcare coverage for all persons over the age of 65 with inadequate or no health insurance coverage and Medicaid would be jointly funded by the federal government and individual states to provide healthcare coverage to the underprivileged members of society (Centers for Medicare and Medicaid Services, 2014).

Over the years, both Medicare and Medicaid have undergone substantial changes in an effort to fulfill the demands of the population served while controlling healthcare costs. Perhaps the most influential amendment was the Medicare Prospective Payment System (PPS) which wasintroduced by the federal government in 1983. The purpose of the PPS was to change hospital behaviors through financial incentives granted to those institutions that delivered patient care effectively, efficiently and without over utilization of resources (Lee, McClellan, & Skinner, 2013).

Under the Medicare Prospective Payment System, hospitals were no longer reimbursed according to a cost or charge basis, but rather a predetermined or fixed-payment system in which hospitals were paid according to the Diagnosis-Related Group (DRG) into which a patient was classified (Kahn, et al., 2003). The fixed-payment system provides financial incentives for hospitals to reduce both length of stay and intensity of care delivered; the question raised is whether or not the quality of care delivered is sacrificed under this new system.

Beginning in June of 2009, the Centers for Medicare and Medicaid Services (CMS) began publishing readmission data for congestive heart failure, pneumonia and acute myocardial infarction and this quickly made readmissions an important indicator of hospital quality (Harvath, 2010). Recognizing the need to improve the quality of care and revolutionize the current healthcare system, on March 23, 2010, President Barack Obama signed into law the Patient Protection and Affordable Care Act.

> The new law protects guaranteed benefits for all Medicare beneficiaries, and provides new benefits and services to seniors on Medicare that will help keep seniors healthy. The law also includes provisions that will improve the quality of care, develop and promote new models of care delivery, appropriately price services, modernize our health system, and fight waste, fraud, and abuse
>
> (Affordable care act update: implementing medicare cost savings, 2010).

One of the ways in which healthcare costs will be decreased is through the Hospital Readmissions Reduction Program; Section 3025 of the Patient Protection and Affordable Care Act (Responsible Reform for the Middle Class, 2013). Under this program CMS will reduce payments to Inpatient Prospective Payment Systems (IPPS) hospitals with readmission rates that

exceed the national average. Qualifying hospitals will be penalized by a reduction in payments across all of their Medicare admissions, not just those which resulted in readmissions. The Centers for Medicare and Medicaid Services began imposing readmission penalties in fiscal year 2013 during which time the maximum penalty was one percent of the hospital's base inpatient claims. This penalty increased to two percent in fiscal year 2014 and to three percent in fiscal year 2015 and thereafter. For penalties imposed in 2013 and 2014, CMS focused on three selected conditions: myocardial infarction, heart failure and pneumonia; additional diagnoses were added in 2015: chronic obstructive pulmonary disease (COPD) and elective hip and/or knee replacement. Therefore, reimbursement will no longer be dependent upon the quantity of services rendered, but rather on the quality of care delivered (Medicare's hospital readmissions reduction program faq, 2013).

Statement of the Problem

According to the National Trauma Data Bank 2014 Annual Report, fall-related injuries are the leading cause of unintentional deaths nationwide accounting for 42% of all trauma admissions with injuries increasing in children under the age of seven and adults over the age of 75 (American College of Surgeons, 2013). A retrospective cohort study of 1,352 adults over theage of 65 was conducted at Harborview Medical Center (HMC) in Washington to determine readmission rates and long-term mortality of the elderly who had suffered a ground-level fall (Ayoung-Chee, McIntyre, Ebel, Mack, McCormick, & Maier, 2014). Twenty-six percent of the patients had at least one extremity fracture, 6.9% had an isolated hip fracture and 51% of the patients had a traumatic brain injury (TBI). One hundred sixty-three patients (12.1%) passed away in the hospital. Of those who survived to discharge, 51.1% were discharged to a skilled nursing facility, 32.8% were discharged home independently, 5.9% were discharged home with

services and 4.7% were discharged to an acute rehabilitative facility (Ayoung-Chee, McIntyre, Ebel, Mack, McCormick, & Maier, 2014). On average, those discharged to an acute rehabilitative facility had more severe injuries, compared to those discharged to a skilled nursing facility or home with services. Despite this finding, those discharged to a skilled nursing facility had a threefold greater risk of 1-year mortality compared to those discharged to home without services (Ayoung-Chee, McIntyre, Ebel, Mack, McCormick, & Maier, 2014). Unfortunately, one-year mortality for the entire study population was 33.2% with patients discharged to a skilled nursing facility having a 31.3% mortality rate. Almost half of the patients discharged from the hospital were readmitted during the four-year study period; 154 patients were readmitted within 30 days and 403 within one year of injury (Ayoung-Chee, McIntyre, Ebel, Mack, McCormick, & Maier, 2014). Those patients who required admission to the intensive care unit during initial hospitalization were more likely to be readmitted when compared to those not admitted to the intensive care unit. In summary, unintentional falls are the leading cause of fatal and nonfatal injuries among older adults with evidence that elderly patients experience greater morbidity and mortality after a traumatic event (Ayoung-Chee, McIntyre, Ebel, Mack, McCormick, & Maier, 2014). Although trauma is not presently one of the conditions impacting hospital readmission penalties, given that nearly 35% of all trauma patients have government-assisted funding as the primary payment source, it is not unreasonable to assume that trauma could become one of the conditions that impacts reimbursement (Morris, Reilly, Rohrbach, & Telford, 2012). Undoubtedly, as the Centers for Medicare and Medicaid Services continues to focus on reducing hospital readmissions and decreasing healthcare costs, the economic consequences of post-discharge settings need to be considered (Ayoung-Chee, McIntyre, Ebel, Mack, McCormick, & Maier, 2014).

Although former studies have identified disparities in access to post-discharge services for trauma patients, few have specifically addressed adherence to follow-up care. A retrospective study was conducted at Jacobi Medical Center in New York, where all trauma service discharges of patients 18 years of age and older were reviewed for a two-year period. Findings revealed that of the 1,818 discharges included in the analysis, only 564 (31%) were compliant with follow-up care (Stone, Marsh, Cucuzzo, Reddy, Teperman, & Kaban, 2014). It was also discovered that those patients discharged to home were nearly twice as likely to be compliant with follow-up care after discharge despite being uninsured when compared to those patients discharged to rehabilitation facilities (Stone, Marsh, Cucuzzo, Reddy, Teperman, & Kaban, 2014). Findings from this suggest that the trauma clinic may be a critical means of follow-up care for trauma patients and perhaps critical for improving long-term outcomes.

A similar retrospective review was performed at a 575-bed, Level II trauma center located in Fort Wayne, Indiana on 799 patients discharged by the trauma service. Of those patients, 566 (70.8%) had follow-up care in the trauma clinic with 233 who had failed to follow-up (Aaland, Marose, & Zhu, 2012). Further analysis in this study revealed that of those who failed to follow-up, 36.8% were secondary to internal factors (i.e. recommendation for follow-up care was not documented on the discharge instructions) with the remaining 63.2% the result of external factors of which were not defined in this study (Aaland, Marose, & Zhu, 2012). Comparably, in an effort to increase follow-up care of trauma patients with an outpatient provider in the trauma clinic, reduce readmissions within 30-days of discharge and identify potential barriers to follow-up care of trauma patients, this pilot study was performed.

Theoretical Framework

First identified in 1966, The Donabedian Model provides a conceptual framework for the examination of health services and the evaluation of quality care (Appendix E). Born in Beirut, Lebanon on January 7, 1919, Avedis Donabedian, a physician and professor, became known as the founding father of health care quality. According to Donabedian, information regarding quality of care can be gathered from three categories: structure – the context in which care is delivered; process – the manner in which health care providers and consumers communicate; and outcome – the influence of healthcare on the health status of patients' and populations (Best & Neuhauser, 2013). Donabedian strongly believed in the importance of healthcare structure recognizing it as the driving force for care processes and ultimately health outcomes. Donabedian defined structure as the unique characteristics of an organization, provider qualifications and modern accreditation and quality organizations such as the Joint Commission on Accreditation of Health Care; each of which serves as the foundation of his framework and the primary force for process change and improved health care outcomes (Glickman, Baggett, Krubert, Peterson, & Schulman, 2007).

Similar to the Donabedian Model of structure-process-outcome, Afaf Ibrahim Meleis, a nurse, sociologist and theorist, developed the middle-range Theory of Transitions (Appendix F). According to Meleis, human beings are constantly experiencing periods of transition that are either "initiated by events beyond the individual's control or sought after deliberately through events such as marriage, migration, career change, or cosmetic surgery" (Meleis, 2010). Consequently, Meleis believed that transitions pertaining to health or illness or the patterns of response manifested in health-related behaviors are encompassed in the domain of nursing.

Defined as "a passage or movement from one state, condition, or place to another" the noun "transition" is derived from the Latin word *transire*, meaning to go across. Therefore,

transition is a "passage from one life phase, condition, or status to another, is a multiple concept embracing the elements of process, time span, and perception" (Meleis, 2010). Meleis identified five characteristics of transition: (1) process, (2) disconnectedness, (3) perception, (4) awareness, and (5) patterns of response.

> ***Process:*** *Whether the event that causes the transition is anticipated or not; and whether the event is short or long term, transition is a process. Its beginning and end do not occur simultaneously; there is a sense of movement, a development, a flow associated with it.* ***Disconnectedness:*** *Loss of familiar reference points, incongruity between expectations based on the past and perceptions dictated by the present, and discrepancy between needs and the availability of, as well as access to, means for their satisfaction.* ***Perception:*** *Meanings attributed to transition events vary between persons, communities, and societies, and thus influence outcome.* ***Awareness:*** *Transition is a personal phenomenon, not a structured one.* ***Patterns of Response:*** *Patterns arise out of the observable and non-observable behaviors during process of transition* (Meleis, 2010).

The concept of transition is congruent with the philosophy of holistic health in which periods of transition are viewed as both a process and a means to achieve a desired outcome to promote continuity across time and the dimensions of a person (Meleis, 2010). Both of these concepts are influential in follow-up care and optimization of the trauma patient. Recovery is multifactorial and includes both the physical and psychological well-being of an individual for a person will not transition to a different phase of care until balance is achieved.

The Donabedian Model of structure-process-outcome and the Theory of Transition have inspired the development of the proposed theory: the Cycle of Care Initiative; developed by the author of this paper. The proposed theory identifies four phases of health care: (1) prevention, (2) intervention, (3) recuperation, and (4) sustentation (Appendix G). The phase of prevention includes health maintenance initiatives in which efforts are made to prevent illness and injury. Once an illness is identified or an injury occurs, the intervention phase of health begins. The phase of intervention includes acute care and management of an illness or an unanticipated injury. Once discharged from an acute care facility, the phase of recuperation begins. This phase of care entails the care delivered by a long-term acute care (LTAC) facility, subacute care facility, acute rehabilitative facility, home health services (nursing, physical therapy, occupational therapy) or community provider. Upon completion of the recuperation phase, the phase of sustentation begins. During this phase of health care one will be maintained at the newly determined state or health; for although recuperation has been achieved, an individual will never return to a pre-illness state of health. In summary, the Cycle of Care Initiative demonstrates the belief that healthcare is a cycle that follows a sequence of events from the phase at which it begins. Ideally, a person is maintained in the preventive phase for as long as possible through adherence to recommended screening and healthy life choices. However, a person is continuously moving through the four phases of care in an effort to achieve balance and well-being. Both the Donabedian Model of structure-process-outcome and the Theory of Transitions are complimentary of the Cycle of Care Initiative for healthcare outcomes are influenced by nursing and structure as well as other disciplines and individual caregivers to achieve a desired outcome.

Research Questions

The research questions for the proposed study are:

1. Will the Project RED discharge checklist reduce 30 day hospital readmissions for patients admitted after a fall when compared to standard discharge instructions?
2. Will the Project RED discharge checklist increase adherence to the initial follow-up appointment with an outpatient provider in the trauma clinic within seven days of discharge for fall patients compared to standard discharge instructions?
3. What is the impact of insurance status, race, education, number of chronic illnesses present on admission, and planned post-discharge living arrangement on adherence to the initial follow-up appointment with an outpatient provider in the trauma clinic within seven days of discharge?

Key Terms and Variables of Interest

Readmission:

Conceptual Definition: According to the Centers for Medicare and Medicaid Services (2014), readmission is defined as an admission to a subsection (d) hospital within 30 days of a discharge from the same or another subsection (d) hospital. Subsection (d) hospitals, per the Social Security Act, include short term inpatient acute care hospitals excluding critical access, psychiatric, rehabilitation, long-term care, children's and cancer hospitals (CMS, 2014).

Operational definition: For the proposed study, readmission will be measured as an admission to the hospital within 30 days of discharge from the same hospital.

Follow-up care:

Conceptual Definition: Follow-up care, defined by the Institute for Healthcare Improvement (2014), is timely aftercare post-hospitalization; attending a follow-up appointment with an outpatient practitioner within seven days of discharge from a hospital (Improvement in 7- and 30- day aftercare appointments, 2014).

Operational Definition: For the purpose of this study, follow-up care will be defined as attendance of a follow-up appointment with an outpatient provider in the trauma clinic within seven days of hospital discharge.

Project Re-Engineered Discharge (RED) Checklist:

Conceptual Definition:

Project Re-Engineered Discharge (RED), defined and developed by a research group at Boston University Medical Center, develops and tests strategies to improve the hospital discharge process in an effort to reduce hospital readmissions (Jack, et al., 2009). The Re-Engineered intervention is founded on 12 mutually reinforcing components:

1) Ascertain need for and obtain language assistance as needed

2 Make appointments for follow-up medical appointments and post discharge tests/labs

3) Plan for the follow-up of results from lab tests or studies that are pending at discharge

4) Organize post-discharge outpatient services and medical equipment

5) Identify the correct medicines and a plan for the patient to obtain and take them

6) Reconcile the discharge plan with national guidelines

7) Teach a written discharge plan the patient can understand

8) Educate the patient about his or her diagnosis

9) Assess the degree of the patient's understanding of the discharge plan

10) Review with the patient what to do if a problem arises

11) Expedite transmission of the discharge summary to clinicians accepting care of the patient

12) Provide telephone reinforcement of the discharge plan

(Jack, Paasche-Orlow, Mitchell, & Forsythe, 2013)

Operational Definition: For the proposed study, a checklist will be completed by a clinician on the day of discharge from the hospital to review the following: discharge diagnosis, wound and/or drain care, diet, discharge medications, pre-arranged post-hospitalization services and provider information including specialty, office location, telephone number and importance of follow-up care.

Fall:

Conceptual Definition: According to the World Health Organization, a fall is defined as an event which results in a person coming to rest inadvertently on the ground or floor or other lower level (World Health Organization, 2012).

Operational Definition: For the purpose of this study, a fall will be defined as any event that results in a person coming to rest inadvertently on the ground or floor resulting in either a positive or negative loss of consciousness as reported by the patient, caregiver or emergency medical personnel.

Cycle of Care Initiative:

Conceptual Definition: Belief that healthcare is a cycle in that it follows a sequence of events from the phase in which it begins; (1) prevention, (2) intervention, (3) recuperation, and (4) sustentation. Operational Definition: There are four phases of care: (1) prevention: the act of preventing; includes health maintenance initiatives in which efforts are made to prevent illness and injury, (2) intervention: the act or process of intervening; acute care and management of an

illness or unanticipated injury, (3) recuperation: recovery of an illness or injury; care delivered immediately following discharge from an acute care facility, and (4) sustentation: to support or maintain; during this phase of care one will be maintained at the newly determined state of health.

Summary

In brief, hospital readmissions are frequently associated with inadequate discharge planning and fragmented coordination of follow-up care from the prior hospitalization**.** Therefore, in an effort to improve patient outcomes, reduce hospital readmissions and decrease healthcare costs, it is essential that the current hospital discharge process be transformed. The purpose of this pilot study is (a) to evaluate the impact of Project RED discharge checklist on hospital readmissions within 30 days of discharge when compared to standard discharge instructions, (b) to evaluate adherence to the initial follow-up appointment with an outpatient provider in the trauma clinic within seven days of hospital discharge for fall patients compared to the standard discharge instructions, and (c) to evaluate the impact insurance status, race , education, number of chronic illnesses present on admission, and planned post-discharge living arrangements has on adherence to the initial follow-up appointment with an outpatient provider in the trauma clinic within seven days of discharge.

CHAPTER TWO: LITERATURE REVIEW AND THEORETICAL FRAMEWORK

Literature Review

As the United States continues to reform the current healthcare system, considerable attention has been given to hospital readmissions in an effort to deliver quality care, improve patient outcomes and decrease healthcare expenses. Hospital readmissions are frequently associated with inadequate coordination of care, ineffective communication, absence of follow-up care and discrepancies between pre and post hospitalization treatment regimens (Bisognano & Boutwell, 2009). Although current literature suggests that improving care transitions, including discharge instructions, coordination of follow-up care and communication amongst inpatient and outpatient providers may reduce hospital readmissions, limited studies have investigated the impact of a pre-discharge clinician checklist on hospital readmissions within 30 days of discharge and adherence to the initial follow-up appointment with an outpatient provider in trauma clinic within seven days of discharge from the hospital for patients admitted after a fall when compared to the standardized discharge instructions.

According to the World Health Organization (2014), falls are the second leading cause of accidental or unintentional deaths worldwide with an estimated 424,000 fatalities annually. Although death rates are highest among adults over the age of 60, the greatest number of morbidities occur in children aged 15 years or younger, young adults aged 15 to 29 and adults aged 65 or older with approximately 37.3 million falls requiring medical attention each year (World Health Organization, 2014). As the population continues to age, the number of falls and the cost associated with the management of fall-related injuries will pose an increased financial burden for the United States healthcare system. According to the Centers for Disease Control and Prevention (2014), in 2011, emergency departments treated 2.4 million nonfatal fall-related injuries among older adults with more than 689,000 of these patients requiring hospitalization. On average, the hospitalization cost for a fall-related injury is $34,294 with costs continuing to

rise. In 2010, the United States spent $30 billion on direct medical care associated with fall injuries for adults aged 65 and older. It is estimated by 2020, the annual direct and indirect cost of fall-related injuries could reach $67.7 billion dollars annually (Centers for Disease Control and Prevention, 2014). Undoubtedly, falls continue to pose a significant concern for the United States healthcare system.

It is hypothesized that the intervention group will have fewer 30-day readmissions than the control group; the intervention group will have increased adherence to the initial follow-up appointment with an outpatient provider in the trauma clinic within seven days of discharge for those patients admitted after a fall when compared to the control group. Furthermore, it is hypothesized that within the intervention group, those who are insured by Medicaid will have a greater number of 30-day readmissions and will be less likely to adhere to the initial follow-up appointment with an outpatient provider in the trauma clinic within seven days of discharge when compared to those who are insured by Medicare as barriers to follow-up care have been identified amongst those insured by Medicaid. Additionally, it is hypothesized that those discharged to a facility (Long-term acute care, sub-acute care or acute rehabilitative care) will be more likely to be readmitted within 30 days of discharge and less likely to adhere to the initial follow-up appointment with an outpatient provider in the trauma clinic within seven days of discharge when compared to those discharged to home independently or with skilled home health services.

In this chapter, the purpose of this study and methods employed for the theoretical literature review will be discussed. The conceptual model and theoretical frameworks that will be used for this study include the Donabedian Model of Quality Care, Theory of Transitions and the Cycle of Care Initiative. The development and components of these frameworks and theories

will be explored and application of the each will be discussed. Chapter 2 will also review the current literature that addresses hospital readmissions and care transitions related to improved patient outcomes and adherence to follow-up care. Literature discussing current expenses associated with hospital readmissions and hospitalizations associated with falls will be reviewed. The need for improved discharge planning and coordination of post-discharge care will be explored.

Methods for the Theoretical Literature Review

The search engines used for the literature review include PubMed, Cumulative Index to Nursing and Allied Health Literature (CINAHL), OVID, and Cochrane. Keywords included: Project RED, readmissions, transitions of care, falls, discharge planning, continuity of care, nurse practitioners, quality of care, Afaf Meleis, Theory of transition, Donabedian model of quality care, Centers for Medicare and Medicaid Services; hospital readmission reduction program, costs associated with hospital readmissions, readmission penalties, trauma patients

Purpose

The purpose of this pilot study is (a) to evaluate the impact of Project RED discharge checklist on hospital readmissions within 30 days of discharge when compared to standard discharge instructions, (b) to evaluate adherence to the initial follow-up appointment with an outpatient provider in the trauma clinic within seven days of hospital discharge for fall patients compared to standard discharge instructions, and (c) to evaluate the impact insurance status, race, education, number of chronic illnesses present on admission, and planned post-discharge living arrangements has on adherence to the initial follow-up appointment with an outpatient provider in the trauma clinic within seven days of discharge.

Theoretical Framework

First developed in 1966, The Donabedian Model of Quality Care provides a framework for evaluating the quality of health care. Born on January 7, 1919 in Beirut, Lebanon, Avedis Donabedian attended the American University of Beirut from 1936 to 1944 where he received a Bachelor of Arts degree in 1940 and a Doctor of Medicine degree in 1944 (Best & Neuhauser, 2013). Upon completion of his medical degree, Donabedian worked as a general practitioner in Jerusalem and Beirut until 1954, when he fled to the United States to seek refuge (Sunol, 2000). Donabedian continued his studies at Harvard University and graduated magna cum laude with a Masters in public health in 1955. He then began his career as a professor at New York Medical College where he taught preventive medicine from 1957 to 1961 prior to being recruited by The University of Michigan School of Public Health where he served as a distinguished professor of public health until his retirement in 1989 (Best & Neuhauser, 2013). After a prolonged battle with prostate cancer, Avedis Donabedian, world-renowned "father of quality assurance and poet" passed away on November 9, 2000 (Best & Neuhauser, 2013).

Immediately after its publication in 1966, *Evaluating the Quality of Medical Care,* became known as the paramount framework in health services research in which the quality of health care measures were divided into a triad: structure, process and outcome (Perides, 2003). Although the definition of quality assurance is complex Donabedian strongly believed that it ought to be defined; for quality is ever changing and should never be completely acceptable. According to Donabedian, 'continuous improvement' defines quality of care for the demands of health care professionals paired with the expectations of patients are everlasting (Perides, 2003).

Avedis Donabedian believed that quality is comprised of two elements: an understanding of the science and technology of health care and the ability to integrate that knowledge into practice. Through this principle The Donabedian Model of Quality Care was created as a means of defining the healthcare triad of structure, process and outcome (Glickman, Baggett, Krubert, Peterson, & Schulman, 2007). Structure is defined as the numerous factors that influence the environment in which care is delivered. This includes the actual facility, equipment, provider qualifications, organizational framework and most modern accreditation and quality organizations such as the Joint Commission on Accreditation of Health-Care Organizations; the foundation of process and outcome (Glickman, Baggett, Krubert, Peterson, & Schulman, 2007). These elements determine how providers and patients in a health care system behave (Chen, Kunitake, Lawson, Ryoo, & Ko, 2011). Process is defined as the synopsis of all actions that comprise healthcare. This includes preventive care, diagnosis, treatment, patient education, and the manner in which care is delivered (Chen, Kunitake, Lawson, Ryoo, & Ko, 2011). Lastly, outcome encompasses all the effects of healthcare on patients or populations, including changes to health status, behavior, knowledge, patient satisfaction and health-related quality of care (Chen, Kunitake, Lawson, Ryoo, & Ko, 2011). The Donabedian Model of Quality Care demonstrates the relationship between structure, process and outcome in which each component is influenced by the previous component; creating a codependent relationship. Evaluation of the advanced practice nurse can be performed through the application of this model: (1) the setting in which the advanced practice nurse delivers care (structure), (2) the clinical service delivered by the advanced practice nurse (process), and (3) the influence of the service provided by the advanced practice nurse on the patient (outcome) (Gardner, Gardner, & O'Connell, 2013). The Donabedian Model of Quality Care supports the eight essentials of Doctoral Education or

Advanced Nursing Practice: Essential I: Scientific Underpinnings for Practice demonstrates how the Doctoral prepared Advanced Practice Nurse is able to translate and apply knowledge quickly and effectively to benefit patients in the daily demands of practice environments. Essential II: Organizational and Systems Leadership for Quality Improvement and Systems Thinking demonstrate the importance of doctoral level knowledge and skills consistent with nursing and health care goals to eliminate health disparities and to promote patient safety and excellence in practice. Essential III: Clinical Scholarship and Analytical Methods for Evidence-Based Practice supports the fact that although nurses recognize the importance of discovering new phenomena and applying evidence-based knowledge to practice, the doctoral prepared advanced practice nurse is able to conduct research and apply findings to practice in an effort to improve patient outcomes. Essential IV: Information Systems/Technology and Patient Care Technology for the Improvement and Transformation of Health Care discuss the manner in which the doctoral prepared advanced practice nurse is proficient in information systems/technology to support and improve patient care and the healthcare delivery system. Essential V: Health Care Policy for Advocacy in Health Care discusses the importance of the Doctoral prepared Advanced Practice Nurse to develop and change policy at an institutional, state and national level. Essential VI: Interprofessional Collaboration for Improving Patient and Population Health Outcomes emphasizes how the Doctoral prepared Advanced Practice Nurse serve as leaders who play an essential role in developing interprofessional teams to improve patient care and outcomes. Essential VII: Clinical Prevention and Population Health for Improving the Nation's Health and Essential VIII: Advanced Nursing Practice states that the Doctoral Prepared Advanced Practice Nurse is prepared to practice in a variety of settings and specialties within the domain of nursing.

All of these eight essentials are encompassed within the Donabedian Model of Quality Care to transform structure, process and outcome and deliver quality care and reduce healthcare costs.

Donabedian recognized the importance of healthcare structure and considered it to be the foundation for care processes and ultimately health care outcomes. Organizational characteristics of culture, leadership, and an interdisciplinary team approach serve as the fundamental principles of structure and drive process change for quality improvement (Glickman, Baggett, Krubert, Peterson, & Schulman, 2007). The Donabedian Model of Quality Care has become the most widely used framework for quality improvement initiatives in health care. A recent study conducted to evaluate the impact of structure-process-outcome on trauma care concluded trauma centers that perform well in terms of structure also perform well during the clinical process, which leads to a favorable influence on patient outcomes (Moore, Lavoie, Bourgeois, & Lapointe, 2015). Therefore, in an effort to improve quality and outcome, structure and process must be manipulated.

Empiric Literature Review

Factors Associated with High Readmission Rates

Reducing readmissions has become a priority for hospitals across the country in an effort to lessen the financial burden associated with this accountability measure. Despite the fact that both federal and state organizations recognize the importance of reducing hospital readmissions several obstacles remain including poor communication amongst healthcare providers and the misalignment of financial incentives. The current fee-for-service payment system not only "encourages patient admissions, but also cultivates "silos" (isolated departmental or institutional entities) amongst healthcare providers which creates barriers to effective communication and

care coordination across care settings" (Lacker, 2011). Nonetheless efforts can be made to reduce hospital readmissions and create a holistic and cost-effective care-delivery healthcare system.

Although hospitals are currently receiving the spotlight for reducing readmissions, there are several influential factors along the care continuum that have been associated with readmissions including: poor communication, fragmented exchange of information between inpatient and outpatient providers, as well as Primary Care Providers and specialists, incomplete medication reconciliation upon discharge, premature discharge, inadequate allocation of resources or information on discharge, discharge to inappropriate settings (Minott, 2008). Readmissions may also occur as a result of an adverse event during the primary hospitalization, non-adherence to the recommended plan of care, absence of social support and poor coordination of follow-up care (Minott, 2008). Similarly, language barriers, differences in health literacy, socioeconomic status and race/ethnicity have also been recognized as causative factors of hospital readmissions (Ladha, Young, Ng, Efron, & Haider, 2011). Regardless of the causes most commonly associated with hospital readmissions, quality improvement initiatives to refine care transitions and reduce hospital readmissions must be implemented (Bisognano & Boutwell, 2009).

According to a study published in the Journal of the American Medical Association, the days immediately following discharge constitute an exceedingly vulnerable period as a result of changes in current treatment (Hernandez, et al., 2010). Precise and timely communication between providers is essential for promoting patient safety and satisfaction, continuity of care and appropriate consumption of community resources (Kripalani, LeFevre, Phillips, Williams, Basaviah, & Baker, 2007). Concisely, quality improvement initiatives demonstrate that

comprehensive patient and caregiver education, utilization of an interdisciplinary team approach, care coordination during the post-acute phase, early post-discharge follow-up care and proactive end-of-life discussions have been shown to reduce hospital readmissions (Bradley, et al., 2012).

Numerous studies have demonstrated that the current hospital discharge process is a source for error which frequently results in hospital readmissions. The World Health Organization has encouraged research in this area in an effort to increase accuracy during transitions of care and improve the communication process during patient care handover (Groene, Orrego, Sunol, Barach, & Groene, 2012). Several interventions that address the currently flawed hospital discharge process include: delivery of accurate and high-quality care; effective patient education; patient-centered discharge planning; post-hospitalization community support; appropriate follow-up care and clear, concise communication with patient, caregiver and providers regarding prognosis (Bisognano & Boutwell, 2009). Inadequate handover practices at the time of discharge are also associated with hospital readmissions, poor patient outcomes and increased healthcare costs. Current findings demonstrate poor communication between inpatient providers and community-based primary care providers at the time of discharge and state that the discharge summary serves as the primary means of communication. Unfortunately, the discharge summary is not always done in a timely manner and may lack pertinent information and the recommended follow-up care (Finn, et al., 2011). Further findings demonstrate that patients and their caregivers are expected to take on significant responsibilities in the handover process which may contribute to errors particularly for those with language and health literacy barriers and poor family support (Groene, Orrego, Sunol, Barach, & Groene, 2012). Other interventions have been implemented to reduce readmissions for those patients with congestive heart failure including: early assessment of discharge needs, appropriate referrals, 48 to 72 hour

post-discharge provider follow-up with high-risk patients; early post-discharge nurse telephone call to confirm understanding of discharge plan, medication reconciliation, improved transition process between facilities, redesign of patient education to improve patient and caregiver understanding of self-care and early identification of the learner (Bisognano & Boutwell, 2009).

A study published in the Journal of the American College of Cardiology, identified several things that can be implemented to reduce hospital readmissions including medication reconciliation, early post-discharge follow-up appointments and improved patient education so that patients are able to recognize signs that require emergent care (Walker, 2012). Dovetail Health, a readmission prevention company in Needham, Massachusetts piloted a study to reduce readmissions amongst congestive heart failure patients. Under this trial, a specially trained pharmacist case manager visited patients in their homes within 48 to 72 hours of discharge to perform a home safety evaluation, assist with coordination of follow-up care, medication reconciliation and identification of potential risks for readmission (Walker, 2012). As a result of the implementation of this program, nearly 90% of these patients were able to avoid a 30-day readmission.

Hospital readmissions within 30-days of the initial discharge are most commonly associated with poor transition of care between the hospital and outpatient setting (Showalter, Rafferty, Swallow, DaSilva, & Chuang, 2011). Current literature suggests that patients frequently have a poor understanding of their diagnosis, medications and recommended follow-up care at the time of discharge. Therefore, by improving coordination of care, a number of hospital readmissions may be preventable (Showalter, Rafferty, Swallow, DaSilva, & Chuang, 2011).

According to the Centers for Medicare and Medicaid Services (CMS) more than 13% of hospital readmissions are avoidable; result of an incomplete treatment or mismanagement of the initial problem, poor coordination of care, incomplete discharge planning or inadequate access to care (Goldfield, et al., 2008). Effective October 1, 2012, CMS began reducing Medicare payments for Inpatient Prospective Payment System (IPPS) hospitals with excess readmissions (Showalter, Rafferty, Swallow, DaSilva, & Chuang, 2011). Similarly, the Centers for Medicare and Medicaid Services has proposed utilization of precise discharge instructions with emphasis on diagnosis, problem list, medication reconciliation, laboratory/diagnostic imaging pending at the time of discharge and contact information for the provider of record (Showalter, Rafferty, Swallow, DaSilva, & Chuang, 2011). Although such procedures are presently being implemented, additional studies are warranted to determine the impact of individualized discharge instructions on hospital readmissions and patient outcomes.

It is estimated that one out of every four adults in the United States has basic or below basic health literacy (Heinrich, 2010). Health literacy is of continued and increasing concern for healthcare professionals as it has been identified as the primary cause of health disparities and delayed advancements in preventive healthcare strategies (Carmona, 2006). According to a report by the University of Connecticut, fifteen percent of Connecticut residents are considered to have low health literacy which results in an additional six billion dollars annually in healthcare expenses (Low health literacy costs Connecticut six billion dollars a year in additional health care expenditures, 2006).

Groene, et al. (2012) explored the clinical handover practices of healthcare professionals in an effort to identify similarities (Groene, Orrego, Sunol, Barach, & Groene, 2012). Findings from this qualitative study concluded that communication amongst providers was most

commonly performed via referral or the discharge summary; resulting in a lack of personal contact and an increased likelihood of overlooking critical information. Healthcare professionals responsible for coordinating follow-up care stated "patient referral information is often limited and frequently does not include information on nursing requirements or the socio-economic situation at home, which is important to anticipate and could have implications for preventing problems after discharge" (Groene, Orrego, Sunol, Barach, & Groene, 2012). Conclusively, prompt and precise handover of pertinent information regarding diagnostic findings, treatment, complications, consultations, pending laboratory studies and follow-up care needed at the time of discharge may improve continuity of care and ultimately improve patient outcomes, reduce readmissions and decrease healthcare costs (Kripalani, LeFevre, Phillips, Williams, Basaviah, & Baker, 2007).

In an effort to improve patient and caregiver preparedness for discharge, promote patient safety and reduce hospital readmission rates the Agency for Healthcare Research and Quality (AHRQ) together with the National Heart, Lung, and Blood Institute (NHLBI) funded a project to reengineer the hospital discharge process (The Agency for Healthcare Research and Quality, 2013). After more than seven years of process mapping, risk assessment, root cause analysis, qualitative analysis and research, project RED (Re-Engineered Discharge) was launched.

Developed and introduced by Dr. Brian Jack and Boston University Medical Center, Project RED was founded on 12 components of discharge that were proven to increase patient satisfaction and reduce re-hospitalizations (Jack, et al., 2009). A randomized controlled trial of 749 participants was conducted to determine the effect of a nurse discharge advocate and a clinical pharmacist on hospital utilization after discharge. Eligibility criteria included English-speaking patients, 18 years of age or older who were admitted to a general medical service in an

urban, academic hospital in Boston Medical Center, Boston, Massachusetts. Participants had to have access to a telephone, be able to comprehend the study details and the consent process in English and have plans to be discharged to the community (Jack, et al., 2009). Those patients who were admitted from a skilled nursing facility or other hospital, transferred to a different hospital service prior to enrollment, admitted for a planned hospitalization, were on hospital precautions or suicide watch or were deaf or blind were ineligible (Jack, et al., 2009). This reengineered hospital discharge program was piloted on 749 English-speaking hospitalized adults in an effort to decrease the readmission rate for patients diagnosed with congestive heart failure. A nurse discharge advocate worked closely with patients during their hospitalization to arrange follow-up appointments, reconcile medications and conduct patient education with an individualized instruction booklet that was sent to their primary care provider at the time of discharge. Additionally, a pharmacist called patients two to four days after discharge to reinforce the discharge plan and review medications. Results of this study demonstrated that participants in the intervention group had a lower rate of hospital utilization than those receiving usual care ($p = 0.009$). Results of this study demonstrated that the RED intervention decreased hospital utilization (both emergency department and readmissions within 30 days of discharge) by thirty percent with an average hospital utilization cost savings of $412 per discharge. Furthermore, intervention group participants reported seeing their Primary Care Provider for follow-up within 30 days and reported higher levels of preparedness for discharge (Jack, et al., 2009). The Agency for Healthcare Research and Quality (AHRQ) has since contracted with Boston University Medical Center to further develop a Project RED toolkit so that other hospitals, particularly those serving diverse populations, could replicate RED and reduce hospital readmissions nationwide (Jack, Paasche-Orlow, Mitchell, & Forsythe, 2013).

Although former studies have shown that the establishment of a comprehensive discharge plan by advanced practice nurses reduces readmission rates in elderly patients, Naylor, et al. (1999), performed a randomized clinical trial to determine the benefits of advanced practice nurses on follow-up care of elders at risk for poor outcomes (Naylor, et al., 1999). A total of 363 patients (186 in the control group and 177 in the intervention group) were enrolled in the study. Those in the control group received routine discharge planning per the hospitals protocol for adult patients whereas those in the intervention group received a comprehensive discharge plan and follow-up care that extended from hospital admission through 4 weeks after discharge (Naylor, et al., 1999). Eligibility criteria included patients aged 65 or older, hospitalized between August 1992 and March 1996 and had one of several medical and surgical reasons for admission. By week 24 after the initial hospital discharge, participants in the control group were more likely to be readmitted at least once when compared to those in the intervention group (37.1% vs. 20.3%). Additionally, those patients in the control group had a greater percentage of readmissions (6.2% vs. 14.5%) and the control group also had a greater number of hospital days per patient (1.53 vs. 4.09). Findings from this study demonstrate that the implementation of a comprehensive discharge plan and home follow-up care through 4 weeks following discharge by an advanced practice nurse reduced readmissions, time to first admission, healthcare costs and patient satisfaction for high-risk hospitalized elders (Naylor, et al., 1999).

Another significant factor that contributes to hospital readmissions is poor follow-up care. Recent studies have identified the following barriers as to why patients do not adhere to follow-up appointments: limited public transportation, inadequate social support, financial constraints, language barriers, lack of trust in provider, difficulty scheduling appointments, extended wait time at appointments, inadequate healthcare coverage and high cost of

prescriptions and diagnostic studies (Goins, Williams, Carter, Spencer, & Solovieva, 2005). Additional studies confirm that those patients with a clear understanding of the importance of follow-up care and the role in which their Primary Care Provider plays in the management of their condition were more likely to seek follow-up care following discharge from the hospital (Yang, Zwar, Vagholkar, Dennis, & Redmond, 2010). A study conducted by Sacks et al., assessed adherence to follow-up in a trauma clinic post-discharge. Findings revealed that despite the fact that those discharged to home were more likely to be uninsured, these patients were more likely to be compliant with follow-up care in a clinic after discharge when compared to those discharge to a rehabilitation center (Stone, Marsh, Cucuzzo, Reddy, Teperman, & Kaban, 2014). Findings from these studies demonstrate the importance of patient communication and education in an effort to increase adherence to follow-up care, improve patient outcomes and reduce healthcare costs (Qureshi, Asha, Zahra, & Howell, 2012).

A pretest-posttest experimental design was conducted to determine follow-up care of trauma patients noted to have non-trauma related incidental findings on Computed Topography (CT) scan. The intervention for this study consisted of notifying the Primary Care Provider (PCP) of each incidental finding via email or postal letter rather than an untimely discharge summary. In conclusion, Primary Care Providers that were notified via email or postal letter of the need for follow-up care regarding a non-trauma related incidental finding on CT scan following a traumatic event yielded a 91% follow-up rate after discharge (Yeh, et al., 2013). A retrospective chart review of 500 consecutive patients was conducted at a level 1 trauma center to further evaluate the frequency and follow-up of incidental findings on CT scans for trauma patients. Of the 500 charts identified for review, only 480 charts were available. Incidental findings were noted in 211 of 480 charts with only 27% of patient charts had mention of the

incidental finding in the discharge summary, documentation of an in-hospital workup or had documentation of a referral for follow-up care and further evaluation (Munk, Peitzman, Hostler, & Wolfson, 2010). A significant number of trauma patients who undergo CT imaging are diagnosed with potentially serious incidental findings. A retrospective chart review of 3092 charts demonstrated 2264 incidental findings; 990 were reported as type 1 – requiring urgent evaluation with 1274 reported as type 2 – requiring further monitoring but non-urgent evaluation (Barrett, et al., 2009). Further evaluation revealed 631 of the type 1 incidental findings were concerning for neoplasm which included 196 pulmonary nodules, 99 liver, 36 renal, 23 brain and 11 breast masses (Barrett, et al., 2009). Therefore, as the current healthcare system continues to focus on the delivery of high quality care, improved patient outcomes, reduced hospital readmissions and decreased healthcare costs, it is essential that communication between hospital and community providers and patients and caregivers be accurate and timely.

In 2003, the Accreditation Counsel for Graduate Medical Education initiated the first mandate to restrict residents to 80 hours of duty per week with restricted overnight call hours and an approved number of days off per month. In July of 2011, further restrictions were implemented including the prohibition of calls greater than 16 hours for first year residents (Morris, Reilly, Rohrbach, & Telford, 2012). With the reduction in resident availability, non-physician providers have become more prevalent in a variety of settings including acute care facilities. Current studies demonstrate that advanced practice nurses have the potential to improve continuity of care, improve quality of care delivered, reduce readmissions, enhance provider and clinician communication and reduce healthcare expenses (Morris, Reilly, Rohrbach, & Telford, 2012). Additional studies show how the utilization of advanced practice nurses on trauma services can reduce length of stay, positively impact discharge planning and provide cost-

effective, comprehensive medical care that is complimented by a holistic nursing approach (Jarrett & Emmett, 2009).

Summary

Numerous studies have demonstrated the potential barriers to follow-up care, the importance of reducing hospital readmissions and the role in which advanced practice nurses play in improving patient outcomes and reducing healthcare costs. The purpose of this pilot study is (a) to evaluate the impact of Project RED discharge checklist on hospital readmissions within 30 days of discharge when compared to standard discharge instructions, (b) to evaluate adherence to the initial follow-up appointment with an outpatient provider in the trauma clinic within seven days of hospital discharge for fall patients compared to the standard discharge instructions, and (c) to evaluate the impact insurance status, race, education, number of chronic illnesses present on admission, and planned post-discharge living arrangements has on adherence to the initial follow-up appointment with an outpatient provider in the trauma clinic within seven days of discharge.

CHAPTER THREE: METHODS

Review of Purpose

The purpose of this pilot study was (a) to evaluate the impact of Project RED discharge checklist on hospital readmissions within 30 days of discharge when compared to standard discharge instructions, (b) to evaluate adherence to the initial follow-up appointment with an outpatient provider in the trauma clinic within seven days of hospital discharge for fall patients

compared to the standard discharge instructions, and (c) to evaluate the impact insurance status, race, education, number of chronic illnesses present on admission, and planned post-discharge living arrangements has on adherence to the initial follow-up appointment with an outpatient provider in the trauma clinic within seven days of discharge.

Hypotheses

Hypothesis 1: The intervention group will have fewer 30-day readmissions than the control group for those patients admitted to the hospital after suffering from a fall within 72 hours of presentation to the hospital.

Hypothesis 2: The intervention group will have increased adherence to the initial follow-up appointment with an outpatient practitioner in the trauma clinic within seven days of discharge for those patients admitted after a fall than the control group.

Hypothesis 3: Demographic variables of insurance status, race , education, number of chronic illnesses present on admission, and planned post-discharge living arrangements will impact adherence to the initial follow-up appointment with an outpatient provider in the trauma clinic within seven days of discharge.

Design

This pilot study used a posttest only control group design in which eligible study participants were randomly assigned to either the control group (N = 25) or the intervention group (N = 25). In an effort to minimize bias, allocation concealment was implemented through rolling enrollment (Polit & Beck, 2012). Study eligibility was reviewed prior to randomization to minimize the possibility of group assignment affecting outcomes. The 12 Components of Re-

Engineered Discharge (Appendix A), the Pre-Discharge Clinician checklist (Appendix B) and evaluation of the Pre-Discharge Clinician checklist (Appendix C) were implemented on the intervention group. Additional variables including age, race, gender, education, insurance status, number of chronic illnesses present on admission, living arrangements at the time of presentation to the hospital and planned post-discharge living arrangements were evaluated for potential impact on readmissions and adherence to the initial follow-up appointment with an outpatient provider in the trauma clinic within seven days of discharge.

Setting

This study was conducted at a large, urban, teaching hospital with a level II trauma center located in the Northeast. According to the American College of Surgeons a level II trauma center is able to initiate definitive care for all injured patients and includes the following elements of care:

> *24-hour immediate coverage by general surgeons, as well as coverage by the specialties of orthopedic surgery, neurosurgery, anesthesiology, emergency medicine, radiology and critical care; Tertiary care needs such as cardiac surgery, hemodialysis and microvascular surgery may be referred to a Level I Trauma Center; Provides trauma prevention and continuing education programs for staff; Incorporates a comprehensive quality assessment program* (American Trauma Society, 2014).

The American College of Surgeons Trauma Quality Improvement Program (TQIP) data for the study institution was reviewed for the three calendar years 2013, 2014 and 2015. Hospital admissions for both observational and inpatient level of care admissions associated with falls ranged between 850 and 1000.

Sample

This pilot study used a convenience sample (N = 50) of trauma patients admitted to the institution between February 1, 2015 and October 1, 2015. Eligible participants included adults, hospitalized for either observational or inpatient care after a fall within 72 hours of presentation to the emergency department. The treatment group received the intervention from either the principal investigator or the co-principal investigator of this pilot study. Those initially admitted to the surgical intensive care unit were eligible to participate in this study. Individuals admitted for attempted suicide were excluded from this study.

Protection of Human Subjects

IRB approval was achieved through the University of Connecticut, Storrs, Connecticut and the hospital at which this study was conducted. Recruitment of eligible participants occurred at any point during the hospitalization by the principal or co-principal investigator. Eligible participants were asked to participate in the study by the principal or co-principal investigator and verbal consent was obtained. Control patients received standard discharge instructions and the intervention group received standard discharge instructions plus modified Project RED instructions; referred to as the Pre-Discharge Clinician Checklist.

Table 1

Standard Discharge Instructions	Project RED Checklist	Modified Project RED Checklist
• Written in English	• Written material translated as needed	• Written material translated as needed
• Follow-up appointment scheduled after discharge	• Follow-up appointment scheduled prior to discharge	• Follow-up appointment scheduled prior to discharge
• Pending results frequently not identified	• Pending results and plan for review identified	• Pending results and plan for review identified

• Post-discharge services and medical equipment obtained prior to discharge	• Post-discharge services and medical equipment obtained prior to discharge	• Post-discharge services and medical equipment obtained prior to discharge
• Post-discharge medications reconciled by provider (doses may or may not be included)	• Post-discharge medications (purpose, correct administration, potential side effects) and plan to obtain each medication reviewed with patient	• Post-discharge medications (purpose, correct administration, potential side effects) and plan to obtain each medication reviewed with patient
• Discharge plan for each diagnosis compared to the national guidelines	• Discharge plan for each diagnosis compared to the national guidelines	• Discharge plan for each diagnosis compared to the national guidelines
• Discharge plan is written by the provider	• Create an "easy-to-understand" discharge plan for the patient	• Create an "easy-to-understand" discharge plan for the patient
• Educate patient about diagnosis	• Educate patient about diagnosis	• Educate patient about diagnosis
• Discharge instructions are handed to patient and assumed to be understood	• "Teach-back" used to assess patient understanding of discharge plan	• "Teach-back" used to assess patient understanding of discharge plan
• Providers office number listed on discharge instructions	• Patient instructed on how to contact primary care provider	• Patient instructed on who to contact should a problem arise
• Discharge Summary sent to primary care provider, consulting provider if requested or sent by the discharging provider	• Discharge summary faxed to primary care provider, consulting provider within 24 hours of discharge	• Discharge summary faxed to primary care provider, consulting provider prior to discharge from the hospital
• No telephone call provided	• Telephone call placed within 3 days of discharge to reinforce discharge plan	• Telephone call placed within 3 days of discharge to reinforce discharge plan

Procedure

Prior to the initiation of this study, eight informational sessions were held by the principal investigator for all research participants. Participants included in the informational sessions were the unit nurse manager, assistant nurse manager, case manager, unit pharmacist, unit registered dietician, registered nurses, nursing assistants, members of the surgical trauma team including surgeons, physician assistants and advanced practice nurses as well as the chief nursing officer.

A copy of the Project RED study along with the modified Project RED discharge checklist was provided for all attendees. These informational sessions were held at various times and days over a 14-day period (January 4, 2015 to January 17, 2015) in an effort to capture all research participants. Total participation was 82% for all information informational sessions. A co-principal investigator was utilized in an effort to extend coverage and ability to recruit eligible participants. The co-principal investigator was trained by the principal investigator in an effort to decrease variability and increase reliability of this study.

Potential Risks and Benefits

The risks associated with this pilot study were minimized in the following ways: anonymity was maintained through random assignment of study participants with subjects having a 50/50 chance of being assigned to either the control group or the intervention group. Data was monitored according to the medical record number of each study participant and stored in a password protected database accessible only by the principal investigator. Once data collection was completed, the medical record number was removed so that Protected Health Information (PHI) could be better protected. Those who were randomly assigned to the control group received standard hospital discharge instructions and those who were randomly assigned to the intervention group received both standard hospital discharge instructions and the pre-discharge clinician checklist.

Instruments

Potential participants were identified and recruited from the trauma surgical inpatient service between February 1, 2015 and October 1, 2015. Eligibility was then reviewed by the principal or co-principal investigator of this study and eligible participants were then recruited.

The treatment group received the intervention from either the principal investigator or the co-principal investigator of this pilot study. The 12 Components of Re-Engineered Discharge (see Appendix A for the 12 Components of Project RED), the Pre-Discharge Clinician checklist (see Appendix B for the modified Project RED discharge checklist), evaluation of the Pre-Discharge Clinician checklist (see Appendix C for the evaluation form for the Pre-Discharge Clinician checklist), and the demographic form (see Appendix D for the demographic form) were implemented on the intervention group (Table 1). Once enrolled those assigned to the control group received usual care compared to those assigned to the intervention group. The demographic form was completed for all participants regardless of group assignment. The intervention group received care per Appendix A, Appendix B, Appendix C and Appendix D; all of which were implemented by either the principal investigator or the co-principal investigator at any point during hospitalization. The variables noted on Appendix D were chosen as a result of prior studies which demonstrate age, race/ethnicity, insurance status and post-discharge living arrangements impact hospital readmissions within 30 days of discharge and patient outcomes.

Data management

Collected data was reviewed for completeness. Missing data was determined to be missing at random and was systematically treated by regression substitution. In 17 instances, data was not available for participant educational level. The data was organized into a Microsoft Excel spreadsheet and then entered into IBM-SPSS (Statistical Package for the Social Science) statistics software version 20.

Analysis

The purpose of this pilot study was (a) to evaluate the impact of Project RED discharge checklist on hospital readmissions within 30 days of discharge when compared to standard discharge instructions, (b) to evaluate adherence to the initial follow-up appointment with an outpatient provider in the trauma clinic within seven days of hospital discharge for fall patients compared to standard discharge instructions, and (c) to evaluate the impact insurance status, race, education, number of chronic illnesses present on admission, and planned post-discharge living arrangements have on adherence to the initial follow-up appointment with an outpatient provider in the trauma clinic within seven days of discharge.

The research questions for the proposed study are:

1. Did the Project RED discharge checklist reduce 30 day hospital readmissions for patients admitted after a fall when compared to the standard discharge instructions?

The first research question was analyzed using a 2-sample test for quality of proportions with continuity correction to compare two independent random samples. The following assumptions were made: the data was continuous and the two samples were independent; there was no relationship between the two samples. The confidence level used for this study was 95%.

2. Did the Project RED discharge checklist increase adherence to the initial follow-up appointment with an outpatient provider in the trauma clinic within seven days of discharge for fall patients compared to standard discharge instructions?

The second research question was analyzed using Fisher's Exact Test for count data with a 95 percent confidence interval. Although valid for all sample sizes, the Fisher's exact test was

used secondary to the small sample size and the need to determine whether the proportions for one nominal variable are different among values of the other variable.

3. Did insurance status, race, education, number of chronic illnesses present on admission, and planned post-discharge living arrangement impact adherence to the initial follow-up appointment with an outpatient provider in the trauma clinic within seven days of discharge?

The third research question was analyzed using logistic regression to evaluate the following demographics: age, race, gender, education, insurance status, number of chronic illnesses present on admission, living arrangements at the time of presentation to the hospital and planned post-discharge living arrangements and their impact on readmissions and adherence to the initial follow-up appointment with an outpatient provider in the trauma clinic within seven days of discharge from the hospital.

Summary

This pilot study: (1) evaluated the impact of Project RED discharge checklist on hospital readmissions within 30 days of discharge when compared to standard discharge instructions, (2) evaluated adherence to the initial follow-up appointment with an outpatient provider in the trauma clinic within seven days of hospital discharge for fall patients compared to standard discharge instructions, and (3) evaluated the impact insurance status, race, education, number of chronic illnesses present on admission, and planned post-discharge living arrangements have on adherence to the initial follow-up appointment with an outpatient provider in the trauma clinic within seven days of discharge.

Although numerous studies have evaluated the importance of reducing hospital readmissions amongst various populations, few have assessed the importance of implementing a

standardized discharge process on trauma patients in an effort to reduce readmissions and increase adherence to follow-up care. The objectives of this pilot study were to demonstrate statistical significance between the control group and the intervention group and validate the impact of Project RED discharge checklist on hospital readmissions within 30-days of discharge and adherence to the initial follow-up appointment with an outpatient provider in the trauma clinic within seven days of discharge for patients admitted after a fall.

CHAPTER FOUR: RESULTS

In this chapter, the sample is described and the results of data analysis are presented. The findings are discussed according to the purpose of this study to (a) evaluate the impact of Project RED discharge checklist on hospital readmissions within 30 days of discharge when compared to

standard discharge instructions, (b) evaluate adherence to the initial follow-up appointment with an outpatient provider in the trauma clinic within seven days of hospital discharge for fall patients compared to standard discharge instructions, and (c) evaluate the impact insurance status, race, education, number of chronic illnesses present on admission, and planned post-discharge living arrangements has on adherence to the initial follow-up appointment with an outpatient provider in the trauma clinic within seven days of discharge.

Results

A total of 50 patients (31 females and 19 males) were enrolled in this pilot study (Table 2). Eligible participants were identified and recruited by the principal or the co-investigator and were randomly assigned to either the control or intervention group.

Table 2

Characteristics	Control N (%)	Intervention N (%)	*p* value	X^2	Total N (%)
Gender			0.758	0.0945	
Females	16 (32.0)	15 (30.0)			31 (62.0)
Males	9 (18.0)	10 (20.0)			19 (38.0)
Race					
Non-Hispanic	20 (40.0)	17 (34.0)	0.021		37 (74.0)
Hispanic	3 (6.0)	10 (20.0)			13 (26.0)
Age			1.000	0.000	
18-59	8 (16.0)	5 (10.0)			13 (26.0)
60-69	4 (8.0)	2 (4.0)			6 (12.0)
70-79	7 (14.0)	9 (18.0)	0.002		16 (32.0)
80-89	2 (4.0)	6 (12.0)			8 (16.0)
90-100	4 (8.0)	3 (6.0)			7 (14.0)
Characteristics	Control N (%)	Intervention N (%)	*p* value	X^2	Total N (%)
Education					
Unknown	15 (30.0)	2 (4.0)			17 (34.0)
Other	3 (6.0)	9 (18.0)			12 (24.0)
< HS	3 (6.0)	6 (12.0)			9 (18.0)
Insurance					
Medicare	17 (34.0)	19 (38.0)			36 (72.0)

Medicaid	6 (12.0)	8 (16.0)			14 (28.0)
Prior to Hospitalization					
Home Independently	23 (46.0)	18 (36.0)			41 (82.0)
Other	2 (4.0)	7 (14.0)			9 (18.0)
Post Discharge					
Subacute Care Facility	5 (10.0)	14 (28.0)			19 (38.0)
Other	14 (28.0)	5 (10.0)			19 (38.0)
Home with Services	6 (12.0)	6 (12.0)			12 (24.0)
Chronic Illnesses					
≤ 3	16 (32.0)	10 (20.0)			26 (52.0)
≥ 4 or ≤ 6	6 (12.0)	7 (14.0)			13 (26.0)
≥ 7	3 (6.0)	8 (16.0)			11 (22.0)
Readmissions within 30 days					
	4 (8.0)	7 (14.0)	0.247		11 (22.0)
Follow-up within 7 days	2 (4.0)	3 (6.0)	0.248		5 (10.0)

Findings

The majority of participants were female (62.0%) (Table 2). The age range was 28-99 years for this convenience sample with 71 being the median age. The race of this sample was predominantly Non-Hispanic (74.0%).

The vast majority (82%) of participants was living at home independently prior to their presentation to the hospital. Following care, participants were discharged to a subacute care facility (38.0%), to other arrangements (38.0%), or to home with services (12.0%).

Of the total sample, 11 (22.0%) participants were readmitted to the hospital within 30 days of discharge ($p = 0.247$). In the control group, there were four readmissions initially discharged to home with services. There were seven (14.0%) readmissions in the intervention group, initially discharged to a subacute care facility. Of those who were readmitted, only one

followed up within seven days of discharge and was in the intervention group. In total 10.0% of study participants followed up within seven days of discharge ($p = 0.248$).

Research Question 1:

Will the Project RED discharge checklist reduce 30 day hospital readmissions for patients admitted after a fall when compared to standard discharge instructions?

The first research question was analyzed using the 2-sample test for quality of proportions with continuity correction. Implementation of the Project RED discharge checklist did not reduce readmissions ($p = 0.247$) for patients admitted following a fall when compared to the standard discharge instructions.

Research Question 2:

Will the Project RED discharge checklist increase adherence to the initial follow-up appointment with an outpatient provider in the trauma clinic within seven days of discharge for fall patients when compared to standard discharge instructions?

The second research question was analyzed using Fisher's Exact Test for Count Data with a 95% confidence interval. Implementation of the Project RED discharge checklist did not increase adherence to the initial follow-up appointment with an outpatient provider in the trauma clinic within seven days of discharge from the hospital for patients admitted after a fall ($p = 0.248$) when compared to the standardized discharge instructions.

Research Question 3:

What is the impact of insurance status, race, education, number chronic illnesses present on admission, and planned post-discharge living arrangements on adherence to the initial follow-up appointment with an outpatient provider in the trauma clinic within seven days of discharge?

The third research question was analyzed using logistic regression once assumptions were met. A logistic regression was performed to ascertain the impact of insurance status, ethnicity, education, number of chronic illnesses present on admission, and planned post-discharge living arrangements on adherence to the initial follow-up appointment with an outpatient provider in the trauma clinic within seven days of discharge from the hospital and to hospital readmission within 30 days. Due to the large number of variables, the first model was not significant. The following demographic variables were shown to negatively affect readmission rates, age ($p = 0.002$) and race ($p = 0.021$) Non-Hispanic demonstrating statistical significance.

The mean age for readmissions was 73 which demonstrated a negative correlation between age and readmissions within 30 days of discharge. Of the 11 (22.0%) readmissions ten were Non-Hispanic which demonstrated a negative correlation between Non-Hispanic and readmissions within 30 days of discharge. In total 5 (10.0%) of study participants followed-up within seven days of discharge with four being Non-Hispanic which demonstrated a negative correlation between Non-Hispanic and adherence to initial follow-up care.

Conclusion

This study investigated the impact of the Project RED discharge checklist on both 30-day readmissions and adherence to the initial follow-up appointment with an outpatient provider in the trauma clinic within seven days of discharge for patients admitted following a fall. There

were no significant differences between the groups in reducing 30 day readmissions ($p = 0.247$) or adherence to the initial follow-up appointment ($p = 0.248$). Demographics including age over 55 years and race demonstrated statistical significance in reduced 30-day readmissions. Although planned post-discharge living arrangements correlated with increased 30-day readmissions and reduced adherence to the initial follow-up appointment within seven days of discharge, findings were not statistically significant.

CHAPTER FIVE: DISCUSSION

Introduction

The purpose of this study was to evaluate the impact of Project RED discharge checklist on hospital readmissions within 30 days of discharge and adherence to the initial follow-up appointment with an outpatient provider in the trauma clinic within seven days of discharge for those age 18 years and older, hospitalized for either observational or inpatient level of care after a fall within 72 hours of presentation. This chapter will provide a summary of the study, identify limitations and discuss implications for practice, education, policy and future studies.

Evaluation of Conceptual/Theoretical Framework

The Donabedian Model chosen as the conceptual framework for this pilot study demonstrated how information about quality care can be drawn from three categories: structure, process and outcome. According to Donabedian, structure describes the context in which care is delivered including the hospital building, participatory staff and equipment used; process describes the interactions between a patient and provider throughout the delivery of healthcare; and outcome refers to the effect of healthcare on the health status of a patient and population (Kobayashi, 2010). For the purposes of this pilot study, structure referred to a variety of settings including the hospital where the modified Project RED discharge checklist was implemented as well as the trauma clinic and the setting in which post-discharge care was provided. Process was identified by the interaction between the principal or co-principal investigator and the participants in both the control group and the intervention group. It is important to remember that care does not end upon discharge from the hospital, rather it continues until one has achieved their optimal level of function following an illness or unanticipated event.

Although similar studies have demonstrated that changes in structure and process directly impact outcome for trauma patients, the process of care has been shown to be the most influential (Hoogervorst, VanBeeck, Gosling, Bezemer, & Bierens, 2013). Standard guidelines

of care for this population including timing of triage and trauma activation improve overall outcomes as indicated by decreased mortality and improved patient outcomes (Hoogervorst, VanBeeck, Gosling, Bezemer, & Bierens, 2013). Findings from this pilot study demonstrate the need for further research to determine the barriers to follow-up care and factors associated with readmissions within 30 days of discharge for the trauma population. Once identified a standard discharge checklist and process of care can be designed and piloted to assess the impact on adherence to follow-up care and readmissions within 30 days of discharge.

Along with the Donabedian Model of structure-process-outcome, the middle-range nursing Theory of Transitions was used as the theoretical framework for this pilot study. According to Meleis, human beings are constantly experiencing periods of transition that are either "initiated by events beyond the individual's control or sought after deliberately through events such as marriage, migration, career change, or cosmetic surgery" (Meleis, 2010). Both the Donabedian Model and the Theory of Transitions are supportive of this pilot study and would be utilized again without hesitation. The Donabedian Model demonstrates how outcome is directly related to structure and process. Although the process for this pilot study was standardized, the structure was not supportive as evidenced by the lack of bedside nursing response and involvement. The Theory of Transitions supports the role in which nursing plays in helping an individual 'transition' through the phases of care. According to Meleis, transition is a process regardless of whether or not the event is anticipated. Furthermore, she believed that perception and response influence outcome. Therefore, a holistic approach is essential to improve outcome.

Although numerous projects are presently being implemented to improve the quality of care delivered in the acute care setting, little has been done to close the gap on care transitions

(Grafft, McDonald, Ruud, Liesinger, Johnson, & Naessens, 2010). Some of the ways in which care transitions have been improved is through the identification of potential barriers to care, vulnerable populations and health inequities (Riley, 2012). Recognizing the importance of follow-up care and hypothesizing hospital readmissions are not solely the result of poor quality care in the acute care setting the Cycle of Care Initiative was developed. According to the proposed theory, care is a cycle in that it follows a repeated sequence of events defined by four phases of care: prevention, intervention, recuperation, and sustentation. Ideally, care begins in the prevention phase with the establishment of a primary care provider and compliance with recommended preventive care. Unfortunately, with the current healthcare system of the United States with limited access and rising costs, care is frequently initiated in the intervention phase of care rather than the prevention phase. Once an individual is no longer requiring acute inpatient care he/she will transition to the recuperation phase. During this phase, one will transition to home independently, home with services, or to a facility to promote his/her maximum level of function. Once this goal has been achieved one enters into the sustentation phase; the final phase of the cycle of care. During this phase a person is sustained at his/her newly achieved level of function for a person who has recovered from an illness will never be the same as he/she was prior to onset of the illness or unanticipated event. Consequently, that person will be sustained at their current level of health with a repeated sequence of events through the remaining phases of care.

The Cycle of Care Initiative defines the four phases of care and demonstrates care as a cycle that follows a sequence of events from the phase at which it begins. Current studies have demonstrated the importance of timely, efficient and effective care in an effort to improve transitions of care across the continuum (Naylor & Keating, 2008). Transitional care is

especially important for the older adult with multiple chronic conditions and treatment regimens. Evidence suggests inadequate provider communication and coordination of post-discharge services is associated with adverse events, poor patient satisfaction and high readmission rates for this growing population (Naylor & Keating, 2008). Similarly, a multidisciplinary team at the University of Colorado Health Sciences Center in Denver conducted a pilot study designed to encourage patients and caregivers to assume a more active role during transitions of care (Naylor & Keating, 2008). An advanced practice nurse served as the "transitions coach" teaching the patient and caregiver the skills needed to promote care across the continuum. Findings from this study showed a lower all-cause readmission rate through 90-days after discharge and a mean hospital cost of approximately $500 less when compared to control patients (Naylor & Keating, 2008). The University of Pennsylvania has been testing and refining an Advanced Practice Nurse transitional care model in which high-risk patients, defined as 'cognitively intact older adults with a variety of medical and surgical conditions who are transitioning from hospital to home' are followed by and Advanced Practice Nurse who assumes primary responsibility for optimizing each patient during hospitalization and designing a follow-up plan of care post-discharge (Naylor & Keating, 2008). This model has demonstrated increased patient satisfaction, reduced hospital readmissions and decreased healthcare costs.

Study Limitations

There are several limitations that should be considered when interpreting the results of this study. Sampling method and sample size limit the generality of this data. First and foremost, in an effort to identify a need for practice change, a convenience sample was used for this study with eligible participants recruited from a single medical/surgical nursing unit which may have caused sampling bias, non-representation of data and the inability to draw concrete

conclusions. The timing of recruitment also contributed to sampling error. Recruitment of eligible participants was performed predominantly on weekdays during the daytime hours when the principal or co-principal investigator were available; eligible participants on some weekends and holidays were not enrolled secondary to lack of availability of the principal or co-principal investigator. Nonetheless, the patents admitted on weekdays are representative of the vast majority of admissions. Likewise, those admitted on the weekends or holidays frequently remained inpatient for three nights or more which increased capturing of all eligible participants. Additional limitations included a small sample size and sampling from a large, urban, teaching hospital with a level II trauma center located in the Northeast. The acuity of patients cared for at a level II trauma center is more severe than those cared for at a level III or non-credential trauma center.

Although eight informational sessions were held by the principal investigator of this study for all research participants prior to initiation of this study, there was limited support by the registered nurses providing bedside care for the study participants. This proved to be a potential barrier to this study despite support from administration and approval for a dedicated discharge registered nurse to assist with the implementation of this role hospital-wide. When the bedside nurses were questioned as to why there was such reluctance, the response heard was that the role of the discharge nurse could be completed by the bedside nurse for the documentation necessary as a result of the electronic medical record did not save time for the bedside nurse. Unfortunately, with the utilization of an electronic medical record there were limitations to the timing in which certain components of the Project RED discharge checklist could be implemented as discharge medications and plan for follow-up are not reconciled by the provider

until the day of discharge. This also contributed to the lack of support by the bedside registered nurse.

In comparison to Project RED which included only English-speaking adults, language spoken was not an eligibility criteria which may have impacted the results of this study, despite efforts to overcome potential language barriers.

Further limitations include the large number of variables evaluated to assess the impact on hospital readmissions within 30 days of discharge and adherence to the initial follow-up appointment with an outpatient provider in the trauma clinic within seven days of discharge. Although prior studies have shown that race/ethnicity, insurance status and socioeconomic status influence patient outcomes and likelihood to follow-up, future studies would limit the number of demographic variables studied at one time.

Practices for Quality Improvement

Implementation of this pilot study led to nearly a 15% improvement in both the Hospital Consumer Assessment of Healthcare Providers and Systems (HCAHPS) and Press Ganey Survey results during the first 30-days of this pilot study. As a result of these scores, and discussion of the need to increase provider access and care access to vulnerable patient populations, hospital administrators encouraged the implementation of this pilot study and granted approval for three full-time positions dedicated to the Cycle of Care Initiative; (1) Engagement Specialist, (2) Discharge Registered Nurse, and (3) Care Transition Advanced Practice Nurse. The Engagement Specialist is a non-licensed, bilingual (English and Spanish) individual, who serves as the patient navigator. This individual establishes care of the patient either at the time of presentation to the general surgery clinic or following admission to the general surgery/trauma

inpatient service. The Engagement Specialist partners with the providers of the general surgery/trauma service and assists with coordination of preoperative and postoperative care including scheduling of preoperative risk stratification, scheduling of follow-up appointment prior to discharge from the hospital, post-discharge appointment reminder telephone calls, assistance with eliminating barriers to follow-up care (transportation, time of appointment financial concerns), assists with obtaining of prescriptions and the establishment of a primary care provider. The Discharge Nurse, who served as the co-principal investigator of this pilot study; was a Masters prepared registered nurse responsible for the implementation of the Project RED discharge checklist for inpatient surgical patients prior to discharge. This individual educates the patient about his/her diagnosis, identifies the correct medications and ensures the patient understands the discharge plan and medication regime as well as what to do if a problem arises. In an effort to increase access to an outpatient provider and reduce hospital readmissions, the Care Transition Advanced Practice Registered Nurse is a board certified Family Nurse Practitioner who serves as the primary follow-up provider for general surgery/trauma population. A follow-up appointment is scheduled within seven days of discharge from the hospital to improve transition of care, improve patient outcome, provide continuity of care and reduce healthcare costs. This individual also serves as the liaison for those discharged to a facility or home with services and serves as a primary care provider for those who do not have a primary care provider. Once care has been established with a primary care provider, through the assistance of the Engagement Specialist, the Care Transition Advanced Practice Nurse 'transitions' the care of the patient to the newly established primary care provider via telephone and remains an advocate for both the patient and provider.

In conclusion, the roles of the Engagement Specialist, Discharge Registered Nurse and Care Transition Advanced Practice Nurse fulfill all four phases of care in the Cycle of Care Initiative. Although further research is needed to evaluate the impact this role has had on patient satisfaction, readmissions and healthcare costs, the need for continuity of care and accurate and timely provider handoffs was identified. Shortly after the completion of this pilot study, the role of the discharge nurse was eliminated for the responsibilities of this role were found to be repetitive of those performed by the bedside nurse.

Implications for Future Studies

One of the purposes of this pilot study was to evaluate the impact of the Project RED discharge checklist on adherence to the initial follow-up appointment which included the scheduling of the appointment prior to discharge. A qualitative study needs to be conducted to determine the barriers to follow-up care and then developing a standardized discharge process for the trauma population in an effort to reduce readmissions and increase adherence to follow-up care. Further research is needed to assess whether or not educating both the patient and caregiver on the importance of adherence to follow-up appointments and the role in which a Primary Care Provider plays in recuperation increases compliance and reduces readmissions. Not included in the current pilot study, but worthy of future investigations are the impact the Engagement Specialist and the Care Transition Advanced Practice Nurse have on patient satisfaction, reduced hospital readmissions and decreased healthcare costs. It is likely that the role of the Discharge Nurse can be learned by the bedside nurse as this role may be repetitive with the advanced utilization of the electronic medical record. The role of the Engagement Specialist has become part of a three year pilot study to evaluate the impact of this role on

hospital readmissions, emergency department visits and adherence to follow-up care for the general surgery/trauma population. If the findings of this pilot study demonstrate statistical significance, this role will be implemented hospital-wide. Further research is needed to evaluate the impact the Care Transition Advanced Practice Nurse has on quality care, patient and provider satisfaction, reduced readmissions, decreased healthcare costs and increased hospital-revenue. Finally additional research is needed to identify which modifications to the Project RED Discharge checklist might provide the greatest benefit to trauma patients in an effort to increase adherence to follow-up care, reduce readmissions and decrease healthcare costs.

Implications for Practice

The implementation of the Project RED Discharge Checklist is a means of improving and standardizing the current hospital discharge process which has proven to be flawed. Numerous studies have demonstrated that poor care transitions increase the likelihood of preventable readmissions and contribute to rising healthcare costs. In comparison to the Project RED discharge checklist, standard discharge instructions recommend that the patient call and schedule a follow-up appointment rather than ensuring a follow-up appointment is scheduled prior to discharge from the hospital. Post-discharge medications and care may be unclear for a medication may be marked as reviewed simply by instructing the patient to resume prior medications. Other differences include the admission and discharge diagnoses are coded according to ICD-10 which proves challenging for those with low health literacy. Lastly, the importance of follow-up care and the plan for follow-up of results or studies that are pending at the time of discharge is not a component of the standardized discharge instructions. Therefore, standardization of the hospital discharge process may prove beneficial to improving patient outcomes and reducing healthcare costs.

Additional implications for practice include the development of a means for increasing accurate and timely provider communication to ensure appropriate follow-up care. One of the proposed means for achieving this goal would be the utilization of a confidential provider voicemail or email where providers can communicate with one another in a timely and effective manner without relying on message interpretation via the receptionist or medical assistant. Collaboration between inpatient and community-based providers, skilled nursing facilities, rehabilitative facilities and other healthcare professionals is essential for the delivery of quality care and may prove beneficial for reducing adverse events, medication errors and mismanagement of incidental findings.

Implications for Policy

Fall and injury prevention continues to be a challenge for caregivers and healthcare providers. Fall-related injuries account for up to 15% of hospital readmissions within 30 days of discharge. A recent study shows trauma resulting from a fall is the often the most common cause of morbidity and mortality for individuals who sustain a fall (Currie, 2008). Although hospitals are currently being held accountable for reducing readmissions, it is important for policymakers to recognize that this epidemic is multifactorial and should be the responsibility of all system providers, not a single entity (Minott, 2008). Policymakers should continue to focus healthcare efforts on the development of policies that will create a collaborative healthcare system to promote quality care and reduce healthcare costs. Hospital readmissions can be reduced through the standardization of electronic medical records, improved communication between inpatient and community-based providers and increased access to healthcare providers (Minott, 2008). Policymakers must partner with providers and institutions in an effort to change the culture of

the currently fragmented healthcare system and promote one that is focused on preventive medicine and care coordination so that readmissions are reduced for all populations, not just Medicare and Medicaid recipients.

Implications for Education

Recognizing the importance of delivering quality care, improving patient outcomes and reducing hospital readmissions, programs of study must be redesigned so that the culture of the current healthcare system can change. Efforts should be made for all providers to understand the importance of preventive medicine and the importance of utilizing an interdisciplinary healthcare team to achieve quality care. Providers must be taught the importance of effective and timely communication and the importance of care transitions to reduce readmissions and lower healthcare costs.

Conclusion

Reducing readmissions has become a priority for hospitals across the country in an effort to avoid financial penalties associated with this outcome measure for quality improvement. Although multifactorial, hospital readmissions are frequently associated with inadequate discharge planning and fragmented coordination of follow-up care. Implementation of Project RED discharge checklist for those patients admitted after a fall did not demonstrate a reduction in hospital readmissions or adherence to the initial follow-up appointment with an outpatient provider in the trauma clinic within seven days of discharge from the hospital. Further research is needed to evaluate which trauma population might receive the greatest benefit from timely follow-up care and patient education regarding the importance of follow-up care in an effort to

improve care transitions, increase adherence to follow-up care, reduce readmissions and decrease healthcare costs.

Appendix A

Components of Re-Engineered Discharge (RED)

RED Component	DE Responsibilities
1. Ascertain need for and obtain language assistance.	• Find out about preferred languages for oral communication and written materials. • Determine patient and caregivers' English proficiency • Arrange for language assistance as needed, including translation of written materials.
2. Make appointments for follow-up medical appointments and post discharge tests/labs.	• Determine primary care and specialty follow-up needs. • Find a primary care provider (if patient does not have one) based on patient preferences: gender, location, specialty, **health plan** participation, etc. • Determine need for scheduling future tests. • Make appointments with input from the patient regarding the best time and date for the appointments. • Instruct patient in any preparation required for future tests and **confirm** understanding. • Discuss importance of clinician appointments and labs/tests. • Inquire about traditional healers and assure that traditional healing and conventional medicine are complementary. • **Confirm** that the patient knows where to go and has a plan about how to get to appointments; review transportation options and address other barriers to keeping appointments (e.g., lack of day care for children).
3. Plan for the follow-up of results from lab tests or studies that are pending at discharge.	• Identify the lab work and tests with pending results. • Discuss who will be reviewing the results, and when and how the patient will receive this information.
4. Organize post-	• Collaborate with the case manager to ensure that durable medical

discharge outpatient services and medical equipment.	equipment is obtained. • Document all contact information for medical equipment companies and at-home services in the AHCP. • Assess social support available at home. • Collaborate with the medical team and case managers to arrange necessary at-home services.
5. Identify the correct medicines and a plan for the patient to obtain and take them.	• Review all medicine lists with patient, including, when possible, the inpatient medicine list, the outpatient medicine list, the outpatient pharmacy list, and what the patient reports taking. • Ascertain what vitamins, herbal medicines, or other **dietary supplements** the patient takes. • Explain what medicines to take, emphasizing any changes in the regimen. • Review each medicine's purpose, how to take each medicine correctly, and important side effects. • Ensure a realistic plan for obtaining medicines is in place. • Assess patient's concerns about medicine plan.
6. Reconcile the discharge plan with national guidelines.	• Compare the treatment plan with National Guidelines Clearinghouse recommendations for patient's diagnosis and alert the medical team of discrepancies.
7. Teach a written discharge plan the patient can understand.	• Create an AHCP, the easy-to-understand discharge plan sent home with patient. • Review and orient patient to all aspects of AHCP. • Encourage patients to ask.
8. Educate the patient about his or her diagnosis.	• Research the patient's medical history and current condition. • Communicate with the inpatient team regarding ongoing plans for discharge. • Meet with the patient, family, and/or other **caregivers** to provide education and to begin discharge preparation.
9. Assess the degree of the patient's understanding of the discharge plan.	• Ask patients to explain in their own words the details of the plan (the teach-back technique). • May require contacting family members and/or other **caregivers** who will share in the care-giving responsibilities.
10. Review with the patient what to do if a problem arises.	• Instruct on a specific plan of how to contact the primary care provider (PCP) by providing contact numbers, including evenings and weekends. • Instruct on what constitutes an emergency and what to do in

	cases of emergency.
11. Expedite transmission of the discharge summary to clinicians accepting care of the patient.	• Deliver discharge summary and AHCP to clinicians (e.g., PCP, visiting nurses) within 24 hours of discharge.
12. Provide telephone reinforcement of the Discharge Plan.	• Call the patient within 3 days of discharge to reinforce the discharge plan and help with problem-solving. • Staff DE Help Line. Answer phone calls from patients, family, and/or other **caregivers** with questions about the AHCP, hospitalization, and follow-up plan in order to help patient transition from hospital care to outpatient care setting.

Appendix B

Pre-Discharge Clinician Checklist

1. Determine Patient/Caregivers' Preferred Language	
a. Arrange for language assistance, including translation of written materials as needed	
2. Schedule follow-up care appointments a. Establish primary care provider (if patient does not already have one) b. Schedule all necessary post-discharge diagnostic studies c. Discuss the importance of follow-up care d. Discuss barriers to follow-up care (including transportation, childcare)	
3. Identify pending laboratory studies a. Discuss who will be reviewing the results and how the patient will receive this information	
4. Collaborate with case management to ensure necessary at-home services are arranged and durable medical equipment is obtained a. Document contact information for home health agency and durable medical equipment companies (if applicable) b. Identify at-home/community social support	
5. Medication reconciliation a. review the purpose of each medication, how to take each medication correctly and potential side effects b. Ensure a realistic plan for obtaining prescriptions	
6. Compare the discharge plan of care with the National Guidelines Clearinghouse recommendations for each diagnosis	
7. Create a patient/caregivers' easy-to-understand discharge plan to be sent home with the patient a. Address patient/caregivers questions regarding the discharge plan of care	
8. Educate the patient about his/her diagnosis (partner with the primary team)	
9. Assess the patient/caregivers' understanding of the discharge plan of care a. 'Teach-back technique' (ask the patient/caregivers' to explain in his/her own words the details of the discharge plan of care	
10. Review with the patient/caregivers' what to do if a problem arises a. Instruct on who to contact, including evenings, weekends and holidays b. Ensure valid contact telephone number is listed on discharge plan of care	
11. Ensure prompt transmission of the discharge summary to clinicians	

accepting care of the patient on discharge (primary care provider, consulting specialists, home health agency, skilled nursing facility)	
12. Provide telephone reinforcement of the discharge plan a. Call the patient within 3 days of discharge to reinforce the discharge plan of care and assist with the answering of questions regarding follow-up care	

Adapted and Modified from Project RED

Appendix C

Evaluation of the Pre-Discharge Clinician Checklist

1. How many minutes did you spend completing this checklist?

   _____

2. Was this tool user-friendly?

   a. Yes

   b. No

3. Did the patient appear receptive to this checklist?

4. What things do you feel might be beneficial to add to this pre-discharge clinician checklist?

Appendix D

Demographics

MR# _____

Gender

Male □ Female □

Race/Ethnicity:

Caucasian/White □

Black/African American (non-Hispanic) □

Asian or Pacific Islander □

Latino/Hispanic □

Native American □

Asian Indian □

Puerto Rican □

Other (specify) _____

Education:

Less than HS □

HS graduate with some college □

Bachelor degree □

HS graduate □

Associate degree □

Master degree or higher □

Insurance Status:

Medicare □

Medicaid □

Self-Pay/Uninsured □

Other □

Number of Chronic Illnesses Present on Admission: _____

Living Arrangements at Time of Presentation to the Hospital:

Home Independently □ Home with Services □

Subacute Care Facility/Skilled Nursing Facility □

Acute Rehabilitative Center □ Long-Term Acute Care Facility □

Planned Post-Discharge Living Arrangements:

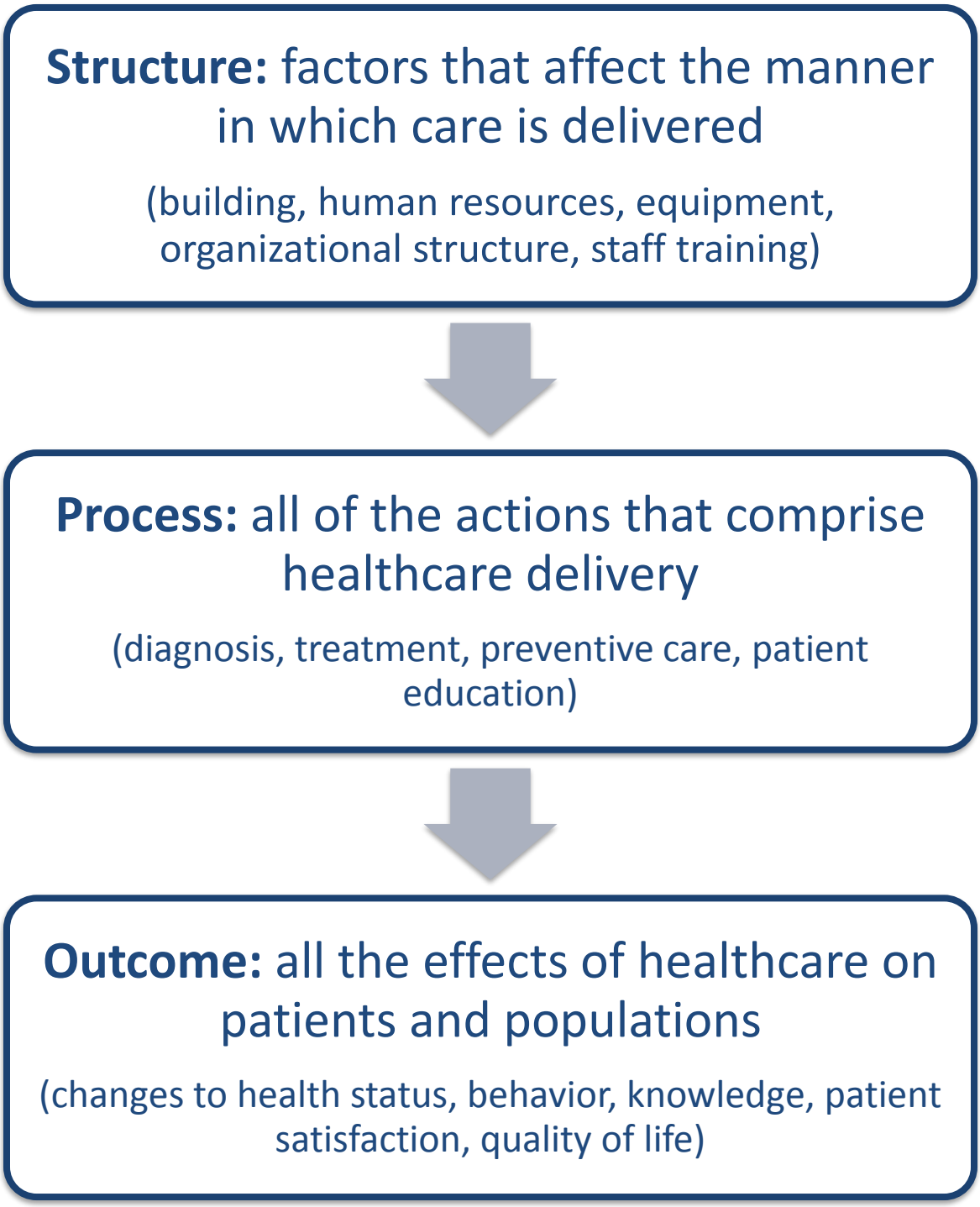
Home Independently □ Home with Services □

Subacute Care Facility/Skilled Nursing Facility □

Acute Rehabilitative Center □ Long-Term Acute Care Facility □

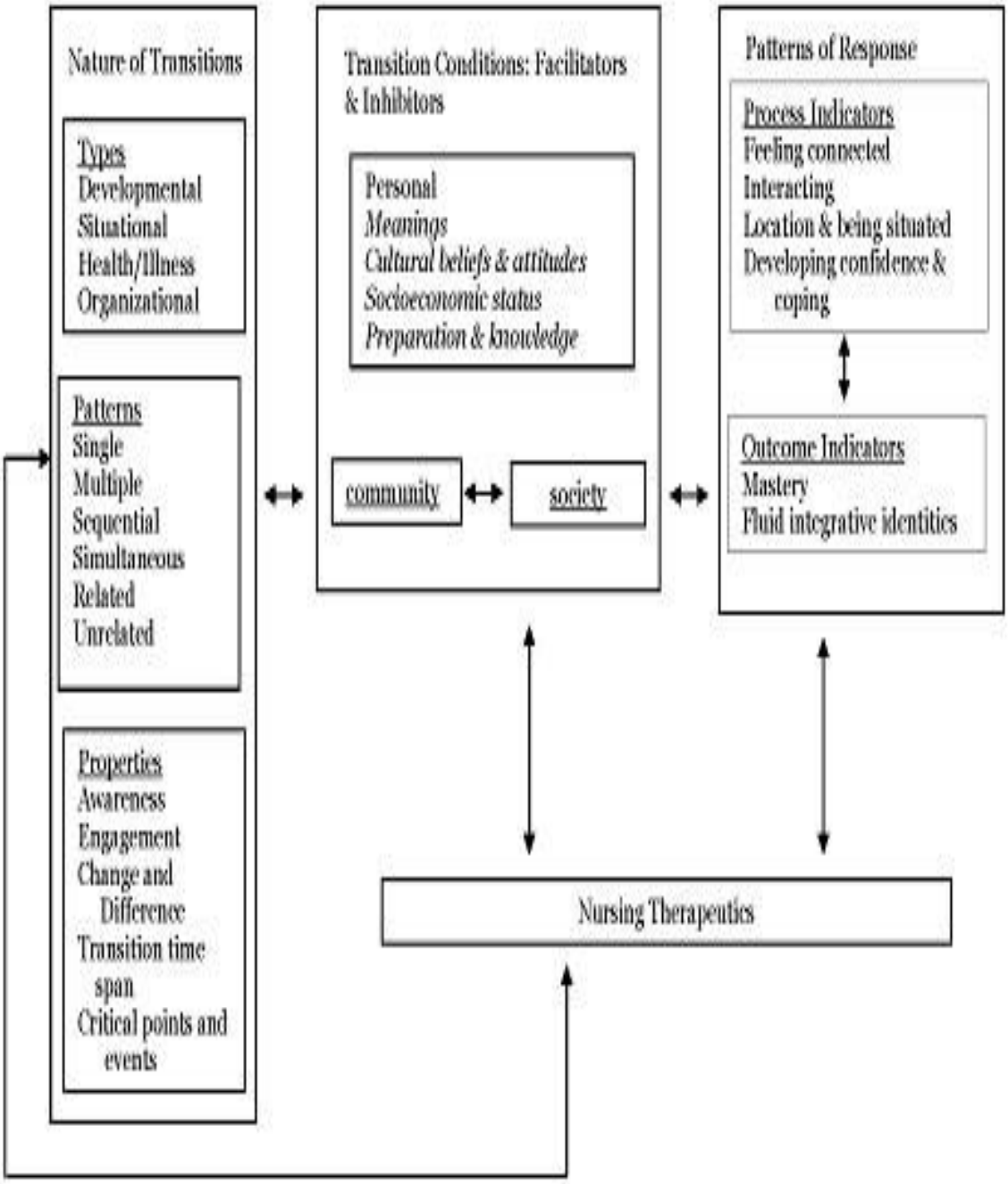
Appendix E

Donabedian Model: Structure-Process-Outcome



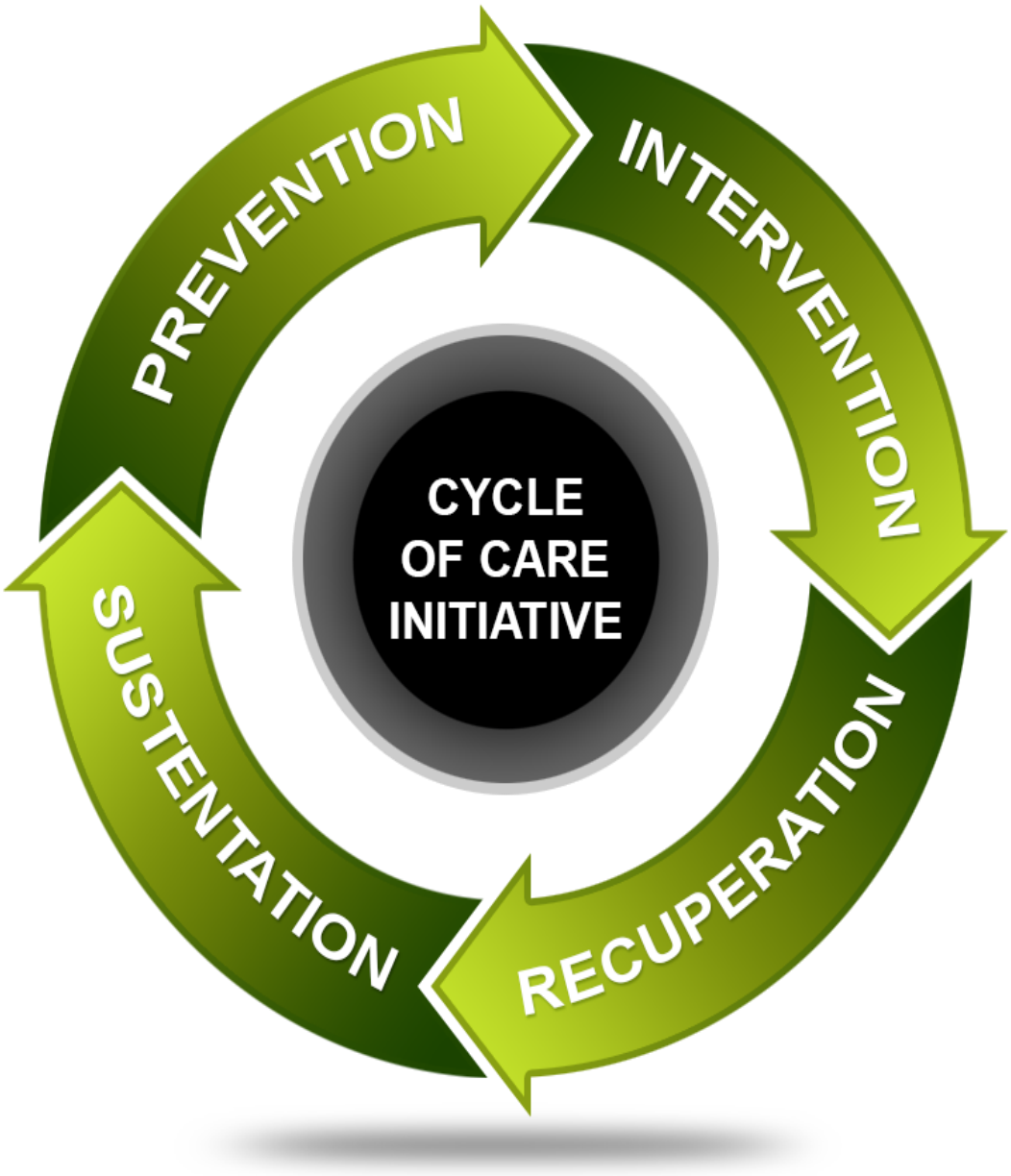
Appendix F

Theory of Transitions



Appendix G

Cycle of Care Initiative



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