Project Proposal - Transition of Care Model- Preventing Readmission

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Introduction

Older adults with multiple chronic end-stage diseases and comorbidities are a population

who are at high risk for suffering gaps in care when transitioning from acute care to skilled

facilities and home. The typical process of care transition presents certain gaps: among them a

lack of coordination of care that erects barriers to the delivery of high-quality care. Patients

residing in skilled nursing facilities (SNFs) have a high risk of poor outcomes owing to changes

in setting and providers. Other risk factors include age, dependency, frailty, socioeconomic

challenges, and caregiver's level of education (Coleman, 2003; Coleman, Min, Chomiak, &

Kramer, 2004). The transition from hospital to SNF is a journey through a revolving door, with

20% to 25% of SNF patients being readmitted to the hospital within 30 days (Kane et al., 2017).

Once rehospitalized, SNF patients are particularly vulnerable to increased morbidities and

hospital acquired complications (Ouslander, Bonner, Herndon, & Shutes, 2014b). In addition to

the problems they pose for patients, hospital readmissions are a financial problem, both in terms

of adding to national healthcare costs, and in terms of hospital costs. Nationally, the annual cost

of Medicare patients' hospital readmission within 30 days of discharge is approximately $20

billion (Robinson & Hudali, 2017). To discourage preventable readmissions, Medicare imposes

penalties on hospitals with high 30-day readmission rates and has implemented incentive

programs for hospitals and healthcare systems to reduce readmissions rates, thus making

readmissions a financial as well as a quality problem for hospitals (Mixon et al., 2016).

The prospect that one quarter of recently admitted residents will be rehospitalized within

30 days thus represents a major problem for SNFs, their staffs, and residents. In addition to

facing pressure to help reduce readmissions from hospitals, SNFs also view 30-day

rehospitalization rates as an important quality of care metric and seek to reduce rehospitalization

whenever possible (Ouslander et al., 2016; Ouslander et al., 2014b). The active participation of

SNF staff in managing patients' transition of care is essential to addressing the problem of

rehospitalization (Enderlin et al., 2013). SNF staff are best positioned to identify patients at high

risk for rehospitalization and to take steps to reduce vulnerabilities and ensure these patients have

a smooth transition of care to the SNF environment (Dambaugh & Ecklund, 2014). This DNP

project uses of the transition of care model (TCM) during the transition of elderly patients from

acute care facilities to the SNF, improving transitions and as a consequence, reducing the rate of

rehospitalization within this population.

Background

This DNP project will address the high rehospitalization rates and the fragmentation of

care patients receive as they transition from the acute care facilities to the SNF. Fragmentation

of care increases the vulnerability of the frail elderly patients, which contributes to increased

readmissions to the hospital. To overcome this problem all health care providers need to work as

a team. Teamwork starts from the day of admission to the hospital until the patient is discharged

to the SNF and is followed by the advanced practice nurse (APN) or is discharged to home and is

followed by the primary care provider in the community. To reduce fragmentation and improve

the transition of care, coordinated care between the healthcare providers in the hospital or acute

care facility, the SNF, and the community is required, as well as coordination with the informal,

family caregivers (Coleman, 2003; Coleman, 2009; Coleman & Boult, 2007).

Coordinated seamless care prevents a rehospitalization, decreases economic burden, and

decreases in cost of care (Brock et al., 2013; Carter et al., 2013; Coleman & Fox, 2004; Coleman

et al., 2004; Feltner et al., 2014; Naylor & Keating, 2008; Toles et al., 2013). The Transitional

Care Model (TCM) improves communication between providers, patients, family, and caregivers

(Coleman & Boult, 2003; Enderlin et al., 2013; Hirschman, Shaid, McCauley, Pauly, & Naylor,

2015). The TCM has several variables, which provide the collaboration throughout the

continuum of care and prevent rehospitalization, maintaining patient safety and successful

transition (Enderlin et al., 2013; Naylor et al., 2013).

Communication among members of the interdisciplinary teams (IDTs) plays an important

role in the transition of care from the hospital to the SNF and the SNF to the community. As part

of the IDT, SNF APNs collaborate with team members at the SNF, the hospital, and the

community to closely monitor patients' progress while preparing for a safe, timely hospital

discharge to the SNF and subsequently following through in the community. During this

collaboration, the IDT may be able to identify factors that increase the new SNF resident's risk

for rehospitalization. Factors that may increase SNF residents' risk for rehospitalization include

lack of care coordination, absence of patient participation, absent or inadequate communication,

poor follow-up, discontinuity of care, and the existence of a gap in services when a patient

moves among clinicians in various settings (Enderlin et al., 2013).

Rehospitalization is a significant problem among elderly patients. As described by

Hirschman et al. (2015), Medicare beneficiaries who had four or more multiple chronic

conditions (MCCs) experienced a 30-day rehospitalization rate of 36%. Kane et al. (2017)

reported that 20%-25% of SNF residents are rehospitalized within 30 days of their transfer to the

SNF. Citing data through 2010, Ouslander et al. (2016) reported a 30-day rehospitalization rate

from SNFs of 23%. Moreover, in their study of rehospitalization of SNF patients within 48

hours and 30 days after SNF admission, Ouslander et al. (2016) found that out of 4,658 SNF to

hospital transfers examined, 1,450 or 31% occurred within 30 days and 8% occurred within just

48 hours of admission to the SNF. Some rehospitalizations are appropriate and even

unavoidable, yet it is estimated that 13% to 20% of rehospitalizations of chronically ill older

adults are preventable (Hirschman et al., 2015).

A number of studies suggest that the percentage of SNF resident rehospitalizations that

could be classified as preventable may be closer to 30%-35% (El Morr, Ginsburg, Nam,

Woollard, & Hansen, 2016; Kane et al., 2017; Walsh, Wiener, Haber, Bragg, Freiman, &

Ouslander, 2012; Wysocki et al., 2014). Wysocki et al. (2014) studied potentially preventable

rehospitalizations among a large population of older adult dual eligibles (eligible for both

Medicare and Medicaid), including 1,065,228 SNF residents. Among these patients, 12.5% were

rehospitalized within 30 days (3.3% died and 84.2% were not rehospitalized. Based on

comprehensive case review, Wysocki et al. (2014) classified 29.6% of these rehospitalizations as

potentially preventable versus 70.4% classified as non-potentially preventable. In a similar

study, Walsh et al. (2012) found that 39% or 382,846 patients in their study of rehospitalization

among dual eligible were admitted with diagnoses associated with potentially avoidable

admissions. Further analysis indicated that 20%-60% of those hospitalizations could have been

prevented, resulting in a savings of $625 million and $1.9 billion for the 77,000-260,000

preventable rehospitalizations (Walsh et al., 2012). Comorbidities, chronic conditions, race,

socioeconomic status, age, access to primary care providers, and other factors are known to

increase the risk for rehospitalization (Damery & Combes, 2017; Robinson & Hudaili, 2017).

Rehospitalizations classified as potentially preventable are associated with specific disorders and

conditions that are amenable to early treatment, preventive care, and effective care management.

Notably, five conditions have been found to be associated with the majority of preventable

rehospitalizations: dehydration, pneumonia, congestive heart failure (CHF), urinary tract

infections (UTI), and chronic obstructive pulmonary disease (COPD) (Walsh et al., 2012;

Wysocki et al., 2014).

Older adults and those who have complex health care needs are particularly vulnerable

during the transition from the hospital to the SNF and subsequently to the home (Coleman &

Boult, 2003; Coleman et al., 2004). Therefore, utilizing TCM will provide the framework to

focus on addressing current issues in the post-acute care setting, a goal to prevent unavoidable

rehospitalization by facilitating appropriate discharge planning techniques, a smooth transfer of

care to the community clinician, and ongoing follow-up.

<div align="center">**Problem Statement**</div>

Potentially preventable early (within 30-day) rehospitalization is a significant problem for

patients, hospitals, SNFs, and the overall national healthcare system. Patients who experience

rehospitalization are at increased risk for hospital-acquired complications as well as increased

morbidity and mortality (Ouslander et al., 2014b). Hospitals incur significant monetary penalties

for preventable readmissions (Mixon et al., 2016). High rates of rehospitalization impose a huge

cost burden on our national health system (Robinson & Hudali, 2017). High rates of

rehospitalization from SNFs indicate a failure in the delivery of quality care (Mileski et al., 2017;

Ouslander et al., 2016). Interruptions and failure in providing quality care during the transition

are a major cause of excess rehospitalizations (Damery & Combes, 2017; Mileski et al., 2017;

Ouslander et al., 2016; Walsh et al., 2012). Advanced practice nurses (APNs) and staff nurses

who work in SNFs are an integral part of improving the level of care, preventing post-acute

rehospitalization, and recognizing early indications of conditions that may lead to preventable

rehospitalization. Led by APNs who work at SNFs, improvements in the transition of care can

reduce the rate of preventable rehospitalizations. The TCM provides an empirically tested model for improving care transitions in older adult patients that can be applied to the SNF care setting.

Critical Elements of Successful Transitions

Preventing readmission requires a comprehensive assessment of risks, including the length of stay in acute care, acuity of the admission, comorbidities, and emergency department visits in the past six months – these criteria taken together formulate the patient's LACE score (Mixon et al., 2016). Any plan of care that uses evidence-based practice (EBP) must be based on the patient's treatment goals while employing proper discharge planning and ensuring continuity of care. The responsibility to oversee this coordination of care belongs to the APN (Enderlin et al., 2013).

Patient care goals, current legislation, and the severity of the present health care crisis all suggest the need for revision of processes, policies, and payments. Older adults, who have a greater likelihood of rehospitalization, might derive great benefit from TCM. These individuals are more likely to be at risk for one of the five conditions (dehydration, UTI, COPD, CHF, pneumonia) strongly associated with potentially preventable rehospitalization (Walsh et al., 2012; Wysocki et al., 2014). APNs are well positioned to manage patients' changes in condition through regular assessment and by monitoring for exacerbation of chronic diseases. APNs should develop a strategic plan designed to prevent avoidable readmissions. Guided by the TCM, such a strategic plan would include comprehensive assessment of each patient's risks and vulnerabilities for rehospitalization, identification of the causes for rehospitalization when they occur, identification of appropriate actions to reduce risks and prevent rehospitalization, and planning for and establishing supports for a high-quality transition of care. A high-quality transition of care is one that provides patients with a stable, appropriate level of care, and

provides adequate ongoing support and coordination to avoid preventable rehospitalizations. Implementation of a suitable transition process will heighten the quality of care while lessening the financial burden borne by society as well as by health care organizations.

<div align="center">Project Questions</div>

Population

The populations of interest are the APNs and staff nurses who treat the elderly population admitted to SNFs and presenting with multiple chronic conditions such as cardiac disease, respiratory conditions, diabetes, falls, and sepsis within the past 90 days.

Interventions

Use of the INTERACT tool and LACE score for identification of readmission likelihood and causes.

Comparison

No use of Interact tool and LACE scoring.

Outcome

Improvement in transition of care and reduction of acute care readmission.

Time

45 days.

PICOT Question

Does the implementation/documentation of the use of the Interact tool and LACE scoring by RNs as compared to no use of the Interact tool and LACE scoring improve transition of care and reduction of hospital readmission among patients admitted to SNFs?

Purpose Statement

This DNP project seeks to use an evidence-based protocol to systematically coordinate, implement, and evaluate the transition of care when patients are discharged from hospitals to SNFs (Enderlin et al., 2013). According to Alper, O'Malley, and Greenwald (2016), "preventing avoidable readmission has the potential to profoundly improve both the quality of life for patients and financial wellbeing of the healthcare facility" (p. 1).

Objectives

The objectives of this project include the following:

- Implement and evaluate an educational program for RNs to utilize to identify SNF patients who are at risk of readmission into the acute care setting.

- Determine if the implementation of an assessment tool for change of condition with Interact Stop and Watch tool improves (decreases) rehospitalization rates of high-risk patients (high LACE scores) into the acute care setting. Maintain compliance to follow admission protocol (See Appendix E).

Literature Review

The goal of this DNP project is to use an evidence-based nursing assessment protocol and assessment tool for change of condition to systematically coordinate, implement, and evaluate the transition of care for SNF patients. This is a brief literature review of transitional care interventions and its relationship to hospital readmissions. PubMed, Google Scholar, EBSCO, CINAHL and other relevant University Library databases were searched using the keywords *hospital readmissions, long-term readmissions, post-discharge self-care, short-term readmissions, skilled nursing facilities, the transition of care model, the transition of care model*

and readmissions, and re-hospitalization rates. Search limits were set to peer-reviewed, relevant to the topic and published from 2013-2017.

The review of literature is categorized into relevant themes about the positive effects of transitional care interventions. Findings of literature reviewed showed that the transition of care model could be effective in three main aspects: prevention of hospital readmissions (Verhaegh et al, 2014; Rennke et al., 2013), improvement of self-care after discharge to the SNF (Feltner et al., 2014; Leppin et al., 2014), and improvement of skilled nursing facilities (Dambaugh et al., 2014; Toles et al., 2016).

Prevention of Hospital Readmissions

Literature supports the role of transitional care interventions in preventing hospital readmissions for patients diagnosed with a broad range of diseases including chronic illnesses, heart failures, and other complex conditions (Bettger et al., 2012; Verhaegh et al., 2014; Rennke et al., 2013). Verhaegh et al. conducted a systematic review of 26 randomized controlled trials completed from 1980 to 2013. They reviewed various transitional care interventions and their effects on the length of the time before a patient was readmitted to an acute care facility. The researchers wanted to determine if interventions can lead to short, intermediate, and longer-term readmissions. Results showed that transitional care could be effective in reducing short-term readmissions. Also, the researchers even found that shorter-term readmissions can be reduced if care given was on high-intensity.

According to Feltner et al. (2014), one in four heart failure patients are readmitted within a month of being discharged because of decompensation. However, being in a hospital setting repeatedly might lead to further deterioration physically as well as emotionally. Depression, anxiety and a sense of hopelessness can descend those who are readmitted to the hospital

because of decompensation. With the transitional model of care's emphasis on a continuum of care, Feltner (2014) found that readmission can be reduced, and so are the negative effects associated with this. By replacing traditional discharge with transitional care, wherein patients are given continuous care and support, patients find it easier to ease back into their daily lives. Rennke et al. (2013) also synthesized 47 controlled studies to evaluate the effectiveness of transitional care interventions in reducing hospital readmissions and emergency visits after discharge. They found that during transitions of care, routes that enable patients and relatives to be involved in the process can lead to reduced errors and readmissions.

　　More studies have evaluated the positive effects of transitional care, but not through synthesis review. Empirical research and case studies also revealed how valuable the transitional care is in reducing readmission rates (Brock et al., 2013; Carter et al., 2015; Naylor et al., 2014; Toles, Colon-Emeric, Naylor, Wee et al., 2014). Brock et al. (2013) evaluated whether or not improved transitional care for patients with a fee for service (FFS) Medicare insurance can also lead to reduced readmissions to hospitals. According to Brock et al., the beneficiaries of Medicare is an interesting group to study the phenomenon of readmissions because they usually experience errors during transitions among care settings, ending in harmful circumstances that will require them to be rehospitalized unnecessarily. The researchers implemented a quality improvement initiative for care transitions and measured its effectiveness by evaluating the 30-day re-hospitalizations per 1000 Medicare FFS beneficiaries. Results revealed that among Medicare beneficiaries, involved communities experienced reduced re-hospitalizations.

Improvement of Self-Care Capacity

　　Apart from preventing readmissions, the constant support provided under transitional care leads to growth in patient knowledge and self-care techniques that will ultimately reduce

hospital readmissions (Feltner et al., 2014; Leppin et al., 2014).   Leppin et al. also conducted a

systematic review of studies that focused on the reduction of 30-day hospital readmissions. The

researchers additionally evaluated the features of these interventions, including patients' capacity

to carry out post-discharge self-care. Results indicated that while all the interventions evaluated

were effective in reducing early readmissions; transitional care interventions stand out. The

researchers found value in interventions that promoted patients' abilities to engage in self-care in

their changeover from being under the care of the hospital to going home. In particular, Feltner

et al. (2014) carried out a systematic review and meta-analysis of transitional care interventions

that can reduce readmissions for persons who suffered from heart failure.

Effectiveness in Skilled Nursing Facilities

Toles et al. (2016) assessed how effective transitional care delivery is in various skilled

nursing facilities. According to the researchers, among the hospitalized older adults who are

transferred to skilled nursing facilities for a short period and then transferred to their homes,

approximately 22% will later be readmitted to the emergency department or hospital within a

month. While transitional care has been studied in other settings, it has not been

studied extensively in SNFs. The researchers designed their study to close the gap, describing

how current staff in SNF provides transitional care and how these can be improved using a

prospective multiple case study. According to Toles et al. (2016), most of the staff has a clear

understanding of why transitional care is necessary and should be given more attention. Results

also indicated that for effective transitional care in SNFs, there should be team meetings and

tracking tools that will guide care delivery. Robust team interactions are needed to provide

transitional care effectively.

Dambaugh et al. (2014) also found that transitional care is an innovative model that can remedy problems that may arise during transitions from one level of care to another, including hospital to skilled nursing facilities. The researchers found that APNs, especially clinical nurse specialists, are one of the best providers to implement the transitional care model. Through transitional care in SNFs provided by specialists, these facilities are more equipped with meeting the needs of the residents, more so those with acute conditions and significant rehabilitation needs.

Theoretical Framework

The TCM will serve as the theoretical framework for the proposed evidence-based quality improvement project to reduce and prevent rehospitalization of the elderly population admitted to SNFs. The TCM, also called the care transitions model or the transitional care model, is a framework for transitions interventions to reduce complications and improve patient outcomes during the process of transitioning from hospitals to SNFs. Coleman and associates initially developed the nursing model they called the care transitions framework with associated Care Transitions Intervention for use with older adults (Coleman et al., 2002; Coleman, 2003; Coleman & Boult, 2003; Coleman & Fox, 2004). The framework was developed and labeled the TCM by Naylor and associates at the University of Pennsylvania School of Nursing (Hirschman, Shaid, McCauley, Pauly, & Naylor, 2015; Naylor et al., 2011; Naylor et al., 2013; Naylor & Keating, 2008; Transitional Care Model, 2014). For the purpose of this project, the name TCM will be used to refer to the transitions care framework originally associated with Coleman and subsequently developed and applied by Coleman, Naylor, and others.

Background and Historical Development of the Transition of Care Model

The TCM is best described as a conceptual model or framework for transitional care interventions rather than a full-fledged nursing theory (Coleman et al., 2013 et al., 2013; Enderlin et al., 2013; Hirschman, Shaid, McCauley, Pauly, & Naylor, 2015; Naylor & Keating, 2008).   The theoretical roots of the TCM can be found in Transitions Theory, a middle range nursing theory developed by Meleis (2010).

Meleis (2010) reported spending four decades developing and refining Transitions Theory based on observations of the experiences that people face as they cope with changes related to their development, health, ability to care for themselves and overall well-being. At the core of this theory is the proposition that transitions represent a central concept in nursing (Meleis et al., 2000; Meleis & Trangenstein, 1994; Schumacher & Meleis, 1994). Meleis arrived at this proposition after working to define an organizing concept and/or mission of nursing practice that was not culturally bound and that would allow for different viewpoints and theoretical perspectives. Meleis and Trangenstein (1994) argued that "the transition experience of clients, families, communities, nurses, and organization, with health and well-being as a goal and outcome" met their criteria for an appropriate organizing concept for nursing (p. 255).

Transition: Definition and Types

Transition is defined as "a passage from one life phase, condition, or status to another transition refers to both the process and outcome of complex person-environment interactions" (Meleis & Trangenstein, 1994, p.257). Transitions always involve change but may be differentiated from change in that transitions are processes that occur over time and involve flow and movement (Meleis & Trangenstein, 1994).

Four main types of transitions relevant to nursing identified were developmental (e.g., becoming a parent, life passages), situational (e.g., transitions in educational and professional roles, transitions in family situations such as marriage, divorce, and widowhood), health-illness transitions (e.g., levels of illness/wellness, diagnosis of chronic illness, levels of care, including transition from the hospital to the post-acute level of care, transition from institution to community), and organizational transitions (e.g., leadership transitions, transitions through educational levels, political/social/economic transitions) (Meleis et al., 2000; Meleis, 2010; Schumacher & Meleis, 1994). These transitions are not mutually exclusive. Nor are they discrete. Instead, as Meleis et al. (2000) note, research supports "the notion of transitions as patterns of multiplicity and complexity" (p. 18).

Transition Properties and Components

Although transitions are often complex and multifactorial, Meleis et al. (2000) identify several essential properties found in most transitions: 1) awareness; 2) engagement; 3) change and difference; 4) time span; and 5) critical points and events. These properties are not mutually exclusive or necessarily discrete. The property of awareness concerns the individual's (and nurse's) level of awareness that the transition is occurring. The property of engagement is defined as the extent to which an individual shows involvement in the inherent processes of the transition, such as by seeking information, actively preparing, and following role models. The linked properties of change and difference concerns the fact that the transition involves change (both the result of change and the process of change) as well as the confrontation of and awareness of differences from previous states. The property of time span refers to the fact that transitions "are characterized by flow and movement over time" (Meleis et al., 2000, p. 20).

Finally, the property of critical points and events reflects the finding that "most transition experiences involved critical turning points or events" (Meleis et al., 2000, p. 21).

Nursing Role and Mission Related to Transitions

Transitions Theory posits that the mission and contribution of nursing is that of "facilitating transitions to enhance a sense of well-being" (Meleis & Trangenstein, 1994, p. 257). Meleis and Trangenstein (1994) state that both the concept of transitions and nurses' roles in facilitating transitions are related to common nursing concepts such as self-care, adaptation, unitary human development, and human becoming. Transition Theory states that nurses engage in a range of nursing therapeutics, including assessment, education, and role supplementation to help facilitate the client through the transitions (Meleis, 2010). While working to facilitate clients' transitions, nurses must assess and consider the various facilitators and inhibitors (e.g., meanings, cultural beliefs and attitudes, socioeconomic status, knowledge and preparation) that affect the clients' passage through the transition (Meleis et al., 2000).

Application of Transitions Theory to Current Practice and DNP Project

This DNP project focuses on the care of older adults in post-acute settings such as SNFs. Transition theory is directly relevant based on its focus on health-illness transitions related to patient transitions from hospitals to other settings, including SNFs. Transition theory is also applicable to the current project based on its focus on patients needing assistance to facilitate transitions between stages of illness/wellness. Furthermore, Transitions Theory relates directly to the DNP project in that it focuses on facilitating the transition process from hospitals to the SNF. Then Transitions Theory provides theoretical grounding for the application of the TCM to the SNF.

Transition of Care Model (TCM)

      Historical background. The origins of the transition of care model, initially called the care transitions model, was the recognition that older adults and elderly patients undergoing a transition from hospital care to the post-hospital setting (whether home or a post-acute facility) were especially vulnerable to poor or worsening outcomes, including readmission to the hospital and worsening clinical conditions (Coleman et al., 2002; Coleman, 2003; Coleman & Boult, 2003; Coleman & Fox, 2004). These patients were inherently vulnerable because they often had multiple complex health conditions and needs and because the fragmented transition process increased risk of adverse outcomes (Chalmers & Coleman, 2006; Coleman et al., 2004; Jones et al., 2014). Moreover, historically, very little research had been devoted to the study of older adults' transitions from hospital to post-hospital settings. Coleman and others theorized that a systematic, nursing-led framework could be developed to assist older adults through the transition, thus improving patient outcomes and reducing hospital readmission in this population. Thus, the development of the TCM occurred in response to these identified needs.

Relation of TCM to Transitions Theory

      Neither Coleman nor any of the other major researchers associated with the TCM specifically cited Transitions Theory as a theoretical base for the model. However, based on the previous review and description of Transitions Theory, it is apparent that this middle range nursing theory could serve as a theoretical foundation for the TCM. The focus of the TCM is the health-illness transition, and as applied in this project, older adults' transition from hospitals to post-acute settings, including home based health care. Both Transitions Theory and the TCM perceive the older adult as especially vulnerable during the hospital transition. Both TCM and Transitions Theory posits that nurses, working in collaboration with other healthcare

professionals, can facilitate the patient through the transition process, thus resulting in better

patient outcomes. Moreover, like Transitions Theory, the TCM posits that the nurses facilitating

the transitions must navigate a range of facilitators and inhibitors to the transition process

(Enderlin et al., 2014; Hirschman et al., 2015; Naylor et al., 2013; Rennke & Ranji, 2015).

Finally, both Transitions Theory and TCM argue that the successful facilitation of the transition

process will improve patient outcomes, including preventing or reducing unnecessary hospital

readmissions (Gardner et al., 2014; Hirschman et al., 2015; Labson, 2015; Naylor et al., 2013).

Major Tenets of the TCM

The TCM and the Care Transitions Intervention framework developed by Coleman and

associates is an advanced practice nurse-led model of transitional care that aims at facilitating the

older patient's transition from the hospital and achieving improved patient outcomes. Such care

involves coordination among health professionals and family/informal and community

caregivers, preparing the patient and family for self-care, making logistical arrangements, and

advocating for policies that support effective transitional care (Chalmers & Coleman, 2006;

Coleman, 2003; Coleman & Fox, 2004). Coleman and associates developed a Care Transitions

Intervention. The Care Transition Intervention has the goals of facilitating patient engagement

and of promoting direct patient and family/informal caregiver involvement in self-management

of healthcare following hospital discharge (Rennke & Ranji, 2015). The Care Transition

Intervention rests on four conceptual domains or pillars: 1) medication self-management; 2) use

of a dynamic patient-centered record; 3) timely primary/specialty care follow-up; and 4)

knowledge of red flags indicating a worsening in condition, along with knowledge of how to

respond (Coleman, 2009).

Expanding somewhat on Coleman's framework, Naylor and associates developed the TCM that relies on a Transitional Care Nurse (TCN) coordinator and has the goals of facilitating patient and caregiver engagement and involvement within a broad program to facilitate hospital transitions and improve transition outcomes (Naylor & Keating, 2008; Naylor et al., 2011; Naylor et al., 2013). The major components of Naylor's variant of the TCM include an in-hospital evidence-based nursing care plan, home visits and follow-up with the Transitional Care Nurse, holistic focus, patient and caregiver education and support, patient and caregiver on the team, physician-nurse collaboration, open cross communication, early identification and response, and a TCM hospital discharge screening tool for high risk older adults (Enderlin et al., 2013).

Application to the DNP Project

Grounded in Meleis' Transitions Theory, the TCM provides the theoretical framework for the DNP Project that seeks to facilitate hospital-to-SNF transitions and to reduce rehospitalizations among the older adult patients of the SNFs. This nurse-led project draws on evidence-based transition interventions and promotes patient and family/caregiver engagement, involvement, and self-care to lead to improved transition outcomes and reductions in preventable rehospitalizations among SNF patients.

Project Design

As defined by Dang and Dearholt (2012), quality improvement (QI) is "a process by which individuals work to improve systems and processes at the local level with the intent to improve outcomes" (p. 421). Although QI projects are based on established knowledge and focus on solving problems at the local (microsystem, organization) level, the processes and results of quality improvement projects may contribute to new knowledge that can be

generalized to other practice settings and care systems (Oermann, Turner, & Carman, 2014; Stausmire, 2014). Quality improvement initiatives aimed at improving outcomes among residents of SNF's entail using existing knowledge of best practices and evidence-based care to improve processes and systems within the microsystem, unit, or broader SNF organization. This is done with the expectation that such changes will lead to improvements in resident patient outcomes (Low et al., 2015; Mileski et al., 2017).

DMAIC Quality Improvement Model

This DNP project uses the Define, Measure, Analyze, Improve, Control (DMAIC) quality improvement model as a guide to increase nurse practitioners' adherence to evidence-based care and assessment guidelines in the SNF's. The DMAIC model is a Six Sigma quality improvement measurement-based strategy designed to examine and improve existing processes (Plonien, 2013; U.S. Department of Health and Human Services, 2011). As applied to this DNP project, the DMAIC process includes the following:

Define. The goal of this project is to reduce readmission of SNF patients to the acute care hospital setting.

Measure. To determine the underlying causes of rehospitalization, a thorough review of the current processes occurring within the SNF was conducted. The Interventions to Reduce Acute Care Transfers (INTERACT) tool assessment was used to determine the primary factors associated with rehospitalization of SNF patients (Bonner et al., 2014; Ouslander et al., 2014b). A retrospective audit of 30 SNF resident charts using the INTERACT QI Tool was conducted and was analyzed to identify specific causes of rehospitalization. The LACE tool will also be used pre- and post-intervention. The LACE tool identifies the patients that are at high risk of rehospitalization and is a further check on APN documentation and assessment practices in the

SNF (Damery & Combes, 2017; Robinson & Hudali, 2017). The LACE score is currently used

in the facility. However, the objective is to increase the consistency of its use by the APN,

expand its use by staff nurses, adding the LACE score to the 24-hour nursing report for each

shift. Additionally, the LACE score will be used as a tool to develop specific treatment plans for

identified high-risk patients. Post-intervention, the INTERACT and the LACE tools will be used

to measure the effectiveness of the protocol in reducing rehospitalizations in the SNF patient

population.

Analyze. The retrospective chart audit with INTERACT QI tool included charts of

patients that were readmitted to the hospital with a change in condition. The retrospective chart

audits indicated that rehospitalizations were associated with a high complexity of disease, change

in conditions, and multiple comorbidities. Except for a small number of unavoidable

rehospitalizations due to the onset of new symptoms that required a higher level of care.

However, analysis indicated that rehospitalization could have been prevented with early

recognition of signs and symptoms and notification to the APN. The LACE tool score provides

indication of risk for rehospitalization. A LACE score of 0-4 indicates low risk, a score of 5-9

indicates moderate risk, and a score of 10 or greater indicates a high risk of rehospitalization.

Currently, only APNs are using the LACE tool (during initial assessment) and they are using it

correctly.

Improve. Nursing staff at the SNF failed to recognize early symptoms of change of

conditions. Furthermore, staff nurses were not reporting the results of recent relevant labs such

as BNP, kidney function, and electrolyte levels. Appropriate and timely notification of patients'

change in condition to the APN can prevent rehospitalization. Improvements are thus needed in

after-hours recognition and reporting of symptoms as well as nursing staff recognition and

reporting early symptoms of a change in condition. This justifies the need to improve the

knowledge and practice of bedside nurses by educating all the available nursing staff. Steps to

improve include - Staff nurses to attend monthly QA meetings, staff nurses to present their

patients during IDT meetings and administration team to share admission / readmission data

during monthly staff meetings to develop awareness, in order to prevent readmission rates.

Control. During this phase, any variations in the process will be controlled to ensure

sustained improvement in reducing readmissions which includes meetings with stakeholders,

continual auditing of charts to determine potential fallouts and to provide real time coaching of

staff to help improve communication and compliance with notifications.

The QI project involves the implementation of an evidence-based assessment protocol to

coordinate and evaluate transition of care in SNF patients. The project intervention focuses on

educating and training SNF staff nurses to improve early recognition of patients' change in

condition and to improve timely notification of patients' change in condition. Additionally, the

project intervention trains and educates a SNF-based APN to use the evidence-based assessment

protocol. The ultimate objective is to improve the knowledge and clinical practice of bedside

nurses in order to reduce rehospitalizations among SNF patients.

<div align="center">

Population of Interest and Stakeholders

</div>

Population of Interest

The population of interest in this DNP quality improvement project are APNs and staff

nurses working at a SNF with geriatric residents. APNs are responsible for completing

admission assessments and the staff nurses are responsible for immediately reporting any

changes in patient conditions to the APN based on their assessments. APNs are the only

providers conducting admission assessments at this facility. The APNs work both independently

and as part of IDT's at the SNF. The APNs engage in both direct and indirect care and take on

leadership and supervisory roles within the SNFs. One APN is currently employed at the project

site and is eligible for inclusion in the project. APNs who otherwise meet inclusion criteria may

be excluded based on lack of availability for the duration of the project. Staff nurses are

involved in the direct care of SNF patients and are responsible for notifying the APN of any

change in patients' condition, and therefore play an important role in reducing rehospitalization.

The retrospective chart audit revealed numerous gaps in bedside nurses' knowledge base and

clinical practice related to change in patient conditions and timely notification to APNs. All 13

staff nurses employed at the project site are eligible for inclusion in the project. Staff nurses who

otherwise meet inclusion criteria may be excluded based on lack of availability for the duration

of the project.

Stakeholders

Successful implementation of quality improvement projects requires the engagement and

support of multiple stakeholders (Brewster et al., 2015; Clark et al., 2014; Kirchner et al., 2012).

Organizational leadership has a stake in process and system improvements with the potential to

reduce costs and improve patient outcomes. Key leadership stakeholders include the Chief

Medical Officer of the parent company of the SNFs in this project and a physician who is a

medical provider at the SNFs. The executive leadership, nursing leadership, and the APN have

all granted full support to the implementation of this project. The nurses involved in direct care

of the patients are also important stakeholders. The resident patients at the SNF will ultimately

benefit from improvement in process, which will result in improved outcomes and reduced risk

for rehospitalization.

Recruitment Methods

Nurse Practitioners

Consistent with procedures used in most quality improvement projects, this project will rely on nonprobability sampling (Melnyk & Fineout-Overholt, 2015; Schmidt & Brown, 2015). The researcher will use purposive sampling to recruit one APN from the project site.

The APN will be asked to voluntarily participate in the project. No monetary compensation will be offered. The incentive to participate for the APN provider will be the potential for reduction in rehospitalization rates, which improves patient outcomes and benefits the facility.

Nurses

All staff nurses from all three shifts, including five nurses from the morning shift, five nurses from the afternoon shift, and three nurses from the night shift (n = 13), will be eligible to participate in the project. The facility mandated attendance for the staff nurses. No staff nurses will be excluded. No monetary compensation will be offered. The incentive to participate for the staff nurses will be the potential for reduction in the patient rehospitalization rates and the improvement in nursing quality of care for the population of SNF patients.

Chart Reviews

The inclusion criteria for retrospective chart reviews will be charts on patients admitted to the SNF within the previous 45 days and include charts on patients readmitted to the hospital. The initial retrospective chart review (n = 30) include charts for patients who were readmitted to the facility or sent out with a change of condition and did not return to the SNF. Charts on patients admitted to the SNF more than 45 days ago will be excluded from the analysis.

Tools/Instrumentation

The quality improvement intervention involves training and educating the APN in the use of an evidence-based assessment protocol to facilitate and improve assessment and transition of care in geriatric SNF resident patients. The protocol items include the established admission protocol of LACE scoring upon initial assessment and documentation of risk of readmission in the admission assessment progress note. The INTERACT QI tool will be used to identify reasons for rehospitalization. A copy of the INTERACT QI Tool is included as Appendix A. A copy of the LACE scoring tool is included as Appendix B. Permission for the use of the LACE scoring tool in a QI project has been granted. A copy of this permission is included as Appendix C. A copy of the Admission Assessment Protocol is included as Appendix E. A copy of INTERACT SNF Educational License Agreement is included in Appendix G.

The quality improvement intervention focuses on training and educating SNF bedside nurses to improve early recognition of patients' change in condition and to improve timely notification of change to APN. Staff nurses will be trained and educated in the consistent use of the LACE score. The LACE score will be added to the 24 hours nursing report for each shift. The INTERACT Stop and Watch Early Warning Tool will be used in the training and education of bedside nurses to improve early recognition of patients' change of condition. Staff nurses will be trained and educated in the use and clinical application of this tool, which is included as Appendix D. Staff nurses will be trained to use the Stop and Watch Early Warning Tool during nursing assessment at each shift.

Stop and Watch Tool

The INTERACT QI toolkit was first developed in Georgia as part of a Centers for Medicare and Medicaid (CMS)-sponsored project to analyze the frequency, causes, and factors

associated with hospitalizations of SNF residents (Ouslander et al., 2014). The toolkit was then

tested and evaluated in a collaborative QI project involving 30 SNFs in three states. The results

indicated a 17% reduction in all-cause hospitalizations among the 25 SNFs that completed the

project (Ouslander et al., 2011). A recent study has shown that the INTERACT tool is useful for

identifying some of the major reasons for potentially preventable SNF resident rehospitalizations

and for helping to develop a strategy for reducing rehospitalizations in SNF residents (Ouslander

et al., 2016).

LACE Tool

The LACE tool was developed as an index to predict early death or unplanned

readmission within 30-days after discharge from a hospital to the community (van Walraven et

al., 2010). A number of studies have evaluated the validity and reliability of the LACE tool

based on evaluations of the model (El Morr et al., 2017; van Walraven et al., 2010; Wang et al.,

2014). The LACE model's performance has been assessed using the C-statistic (c-stat), a

measure of model performance, which in the case of the LACE tool, assesses its ability to

discriminate between patients who are readmitted and those who are not. C-stat scores range

from 0.5 (no better than chance) to 1.0 (perfect). Van Walraven et al. (2010) found that LACE

index to be discriminative (c-state of 0.684) as well as accurate (based on a Hosmer-Lemeshow

goodness-of-fit statistic of 14.1, $p = 0.59$). El Morr et al.'s (2017) recent assessment of the

performance of the LACE Index found it to be a "fair test to predict readmission risk" based on a

c-stat of .632. Wang et al. (2014) reported a c-stat of .637 in their assessment of the LACE

Index's performance on predicting hospital readmissions in congestive heart failure patients.

The APN's compliance with the admission assessment protocol will be assessed through

chart reviews (n = 30). The project lead will act as the independent rater and complete the chart

audits. The admission assessment protocol requires the APN to complete an initial assessment within 24 hours of admission. The LACE score is calculated by the APN during the initial assessment, which occurs within three days of admission. If the LACE score is 10 or greater, then follow-up occurs in one week and as needed. If the LACE score is moderate (5-9), then follow-up occurs in two-three weeks and as needed. If the LACE score is low (0-4), then follow-up occurs in three to four weeks and as needed.

In addition to the chart audits to assess APN's compliance with the admission protocol, the overall outcomes of the project will be assessed through measurement of pre- and post-intervention readmission rate at the facility.

<center>**Data Collection Procedures**</center>

Chart Audits

The project lead conducted pre-implementation retrospective chart audits (n = 30) using the INTERACT audit tool to identify factors leading to rehospitalization. The LACE scoring tool will also be used pre-intervention as part of the retrospective chart audits. The LACE tool will be helpful in identifying the patients that are at high risk of rehospitalization. Data related to the APN's compliance with assessment protocols will be collected via retrospective chart audits. APN demographic data, including gender, ethnicity and age will be collected and facilitate analysis of any relationship between these provider variables and chart compliance/non-compliance status. The project lead will be the independent rater and will use the INTERACT QI tool to audit a sample of 30 charts from the provider prior to intervention and following intervention. Charts will be randomly selected from recent re-admissions in the past six weeks. After the intervention, the project lead will conduct chart reviews and increase the use of the INTERACT QI tool. The INTERACT QI tool will identify whether or not there was early

recognition of change of condition, timely and appropriate notification to APN, and whether the

patient was seen by the APN to address change in condition. The charts will be assessed for the

APN's compliance with the admission assessment protocol. The LACE score will indicate

whether the patient is at low, moderate, or high risk of rehospitalization.

Nurse Notification of Change in Status

Staff nurses' notification/documentation of patients' change in status data will be

collected through the retrospective chart audits. Every shift staff nurses are to use the

INTERACT Stop and Watch Early Warning Tool to assess early indications of change in

condition. The Stop and Watch Early Warning Tool also provides documentation of notification

to APN. LACE score is also to be added to the 24 hour nursing shift report. Staff nurses are to

use the aforementioned tool to notify the APN of any change in patient's condition. Evidence of

any change in staff nurses' documentation practices will be assessed through a comparison of

pre- and post-implementation chart audit results using the INTERACT QI Tool.

Readmission Rates

SNF-wide readmission rates will be calculated during the pre-implementation period

based on SNF admissions during the previous 45 days and again during the post-implementation

phase again based on SNF admissions during the previous 45 days.

Education Program

A PowerPoint presentation will be used to educate and train staff nurses in nursing

assessment, the use and purpose of the LACE score, and early recognition of a change in

condition. The PowerPoint Presentation will also be used to education and train both the staff

nurses and the APN in the use of the Interact Stop and Watch tool. The PowerPoint presentation

consists of the definition, purpose, types, and components of nursing assessment; a discussion of

change of condition; information for staff nurses regarding the LACE score, its purpose and

relation to the risk of readmission; and education for staff nurses and the APN in the use of the

Interact Stop & Watch tool. A copy of the Educational Program PowerPoint Presentation is

included as Appendix F.

<div align="center">**Intervention and Project Timeline**</div>

The quality improvement intervention will consist of training and educating of SNF staff

nurses and APN on the use of an evidence-based admission assessment protocol, use of

INTERACT QI tool to facilitate and improve assessment and transition of care. Nurses involved

in direct care of patients at the SNF will be oriented and educated on the protocol. The total

length of time for the project is 12 weeks, including six weeks pre-implementation and six weeks

post-implementation.

Table 1

Project Timeline, September 1, 2017 – November 30, 2017

Week/Date	Activity	Person(s) Involved
Week 1: 9/1/17 – 9/8/17	Pre-implementation baseline retrospective chart review (n = 30) completed	Project lead
Week 2: 9/9/17 – 9/15/17	Pre-implementation baseline chart audit using the INTERACT tool conducted on 15 charts.	Project lead
Week 3: 9/16/17-9/22/17	Pre-implementation chart audit using INTERACT tool conducted.	Project lead
Week 4: 9/23/17 – 9/30/17	Results of the INTERACT chart audit tool analyzed and applied to develop an action plan. The project lead will education staff nurses on improving knowledge and clinical practice, with identification of early signs of change in patient condition and timely notification of this change to the APN. The plan includes training and educating staff nurses in the clinical use of the LACE score and the use of the INTERACT Stop and Watch Early Warning Tool. The APN will see the patient within 24 hours of notification of possible change in condition from staff	Project lead

Week/Date	Activity	Person(s) Involved
	nurses.	
Week 5: 10/1/17-10/7/17	APN and staff nurse participants identified. Patient charts identified, coded to ensure anonymity. Educational plan completed.	Project lead
Week 6: 10/23/17 – 10/29/17	Intervention – Education Program, morning, afternoon, and evening sessions provided on different days to ensure participation by nurses from all three shifts	Project lead, APN, staff nurses
Week 7: 10/30/17-11/5/17	Intervention continues	Project lead, APN, staff nurses
Week 8: 11/6/2017-11/12/2017	Intervention continues	
Week 9: 11/13/17 – 11/19/17	Intervention continues	Project lead
Week 10: 11/20/17 – 11/26/17	Post-implementation chart review (n = 30) begins	Project lead
Week 11: 11/27/17 -12/03/17	Post-implementation chart review completed	Project lead
Week 12: 12/04/17 -12/10/17	Data summarized, analysis begins.	Project lead
Week 13: 12/11/17 – 12/17/17	Data analysis continues	Project lead
Week 14: 12/18/17 - 12/24/17	Data analysis continues and completed. Discussion of Findings and Significance for Nursing begins.	Project Lead
Week 15: 12/25/17 -01/02/18	Discussion of Findings and Significance for Nursing completed.	Project Lead
Week 16: 01/03/18 - 01/09/18	Limitations and Dissemination	Project Lead
Week 17: 01/10/18 - 01/16/18	Final Submission	Project Lead

Ethics and Human Subjects Protection

The participants in this project are the APN/provider and staff nurses at one SNF. The

identity of the APN, staff nurses and the facility will be masked. Although this quality

improvement project does not directly involve any patient participants, it does involve

retrospective chart reviews of patients at the SNF. The retrospective chart review involves using

"pre-recorded, patient-centered data" to address research or project questions (Vassar &

Holzmann, 2013, p. 1). The use of chart reviews, and more specifically, the use of patient data

raises issues related to ethics and possible institutional review board (IRB) review (Wolf,

Walden, & Lo, 2005). The specific patient data collected in this project will include signs of

change of condition, early recognition of change of condition, and appropriate notification of

change in condition. Data on whether or not the patient was appropriately discharged to the SNF

and the SNF was able to provide appropriate care and meet patient care needs will be collected

as a control variable rather than as part of the project objectives. In general, nursing DNP quality

improvement projects are exempt from IRB approval requirements (Vasser et al, 2013; Wolf et

al., 2005). However, when patient-centered data is involved in the quality improvement plan,

there are specific requirements concerning the protection of patient anonymity and

confidentiality. The Code of Federal Regulations governing ethics and oversight of human

research provides research or projects may be exempt from IRB approval or oversight as follows:

> Research involving the collection or study of existing data, documents, records,
>
> pathological specimens, or diagnostic specimens, if these sources are publicly available
>
> or if the information is recorded by the investigator in such a manner that subjects cannot
>
> be identified, directly or through identifiers linked to the subjects (cited in Vassar &
>
> Holzmann, 2013, p. 5).

Thus, based on these requirements, it will be necessary to ensure that the patient's

identity is kept anonymous and that it is not possible to link any specific patient data to any

specific patient. Moreover, all HIPAA protections and regulations will apply to ensure that

patient confidentiality is preserved (Vassar & Holzmann, 2013; Wolf et al., 2005). Patients will

be assigned a specific number. All data collected will be kept in password-protected computer.

Although an exemption for IRB oversight will likely be granted, all tools, educational materials,

and other project-related items, including the complete proposal, must be submitted to the IRB

for approval and review prior to obtaining such an exemption.

<center>**Plan for Analysis & Evaluation**</center>

Notification of Status Change

The use of the Stop and Watch tool by staff nurses is designed to provide assistance in

recognizing a change in the patient's condition and act as a mechanism for notification of a status

change to the APN. Nurses are responsible to immediately report any change in assessment.

Weight gain and patient falls are state-mandated notifications. The Stop and Watch tool

provides additional indicators of change of condition that need to be reported to the APN for

further evaluation and that may require physical exams and laboratory work-up. Additional

indicators included on the Stop and Watch tool are agitation, decrease in talking/communication,

needing more help, eating less, drinking less, confusion, drowsiness, change in skin color or

condition, and needing more than usual help with walking, transferring, or toileting. The goal is

to analyze whether or not the staff nurses' use of the Stop and Watch tool improves

communication and provider notification of change of condition to prevent rehospitalization.

Evidence of any change in staff nurses' documentation practices will be assessed through a

comparison of pre- and post-implementation chart audit results.

LACE Scores

The admission assessment protocol requires the APN to complete an initial assessment

within 24 hours of admission and to calculate the LACE score during this initial assessment.

The APN must also provide a summary of the LACE risk assessment in the admission

assessment progress notes. The results of the pre- and post-implementation chart audit

comparison will be analyzed to determine if the APN's consistent use of the LACE score

improves identification of high-risk patients. Staff nurses will be educated on the meaning of low, moderate, and high-risk LACE scores. The LACE score will be added to the 24-hour nursing shift report.

Readmission Rates

The analysis will compare rehospitalization rates pre- and post-implementation to determine if the educational intervention and associated tools (LACE, Stop and Watch) improve (decrease) rehospitalization rates. Retrospective chart reviews (n = 30) were completed prior to the implementation of the intervention. Four weeks post-intervention, another 30 charts (from the same provider who is participating in the project) will be randomly selected for retrospective chart review, using the same assessment protocol tool as in the baseline chart reviews. The results of these reviews will be tallied and summarized. Each chart will be assessed as being in compliance or non-compliance with the assessment protocol. Fisher's exact test will be used to compare pre- and post-intervention chart status. If applicable, an independent-samples t-test will be used to assess the impact of the intervention on readmission rates at the SNF pre- and post-intervention.

<div align="center">**Analysis of Results**</div>

The baseline 1-month audit included a random sample of 30 patients admitted to the SNF (see Table 1 for patient characteristics). Of these, 14 (46.5% of patients) charts were identified as non-compliant and 12 (40% of patients) had been readmitted to the hospital. As can be seen by the frequencies cross tabulated in Table 2, a statistically significant association between chart status and readmission incidence was found for baseline data as assessed by Fisher's exact test, $p < .001$.

After implementation of an educational protocol designed to increase compliance with identification of LACE score, summary of risk and probability of readmission in the progress note and use of STOP and WATCH tool, a repeat 1-month audit included 30 randomly sampled patient charts admitted to the SNF (see Table 1 for patient characteristics). Of these, 23 (76.7% of patients) charts were identified as compliant and 7 (23.3% of patients) had been readmitted to the hospital. Results of a Fisher's exact test revealed a non-significant trend in the predicted direction, indicating that compared to the baseline audit, chart compliance post-intervention did not increase significantly at an alpha level of .05, $p <.103$ (see Table 3).

Since the intervention was not statistically significant, it would be redundant to perform an independent t-test for comparing pre and post readmission frequencies.

Table 1

Characteristics of Patients Included in the Audit

Characteristics	Pre-Intervention (1 month) (n = 30)	Post-Intervention (1 month) (n = 30)
Mean age, years (range)	76.9 (53-93) (10.74)	77.2 (53-93) (11.14)
Sex, %		
Male	83	87
Female	17	13

Note. Standard deviations appear in parentheses below means.

Table 2

Crosstabulation of Baseline Chart Status and Readmission Status

	Chart Status	
Readmission Status	Compliant	Non-Compliant
Readmitted	1 (3.3)	11 (36.7)
Not Readmitted	15 (50)	3 (10)

Note. Fisher's exact test *p* < .001. Numbers in parentheses indicate column percentages.

Table 3

Crosstabulation of Chart Status and Audit vs Study Period

	Chart Status	
Time Period	Compliant	Non-Compliant
Pre-Intervention	16 (53.3)	14 (46.7)
Post-Intervention	23 (76.7)	7 (23.3)

Note. Fisher's exact test *p* < .103. Numbers in parentheses indicate column percentages.

Discussion of Findings

This DNP project aimed to improve SNF patients' transition of care from the hospital to the SNF and reduce readmissions to the hospital through the use of the INTERACT tool and LACE score for identification of readmission likelihood and causes. The results did not demonstrate a statistically significant relationship following the educational intervention of the INTERACT tool and LACE score and of its use and compliance with the protocol.

Despite the lack of significant findings for the intervention, other findings from the project provided support for the use of an evidence based SNF admission protocol by APNs. This included calculation of the LACE score and an assessment of the patient's risk of hospital

readmission. Notably, the baseline audit found a significant (p <0.001) association between the chart compliance/non-compliance with admission protocol and incidence of readmission. Patients whose charts indicated a lack of APN compliance with evidence-based admission protocol were significantly more likely to experience readmission to the hospital than patients whose charts indicated APN compliance with the evidence-based admission protocol. Additionally, while the results of the intervention were non-significant, there was a clear trend toward increasing compliance with admission protocol following the educational intervention.

Significance/Implications for Nursing

The implications of this project to nursing are important as it provided an opportunity for other nurses and APNs to explore the applicability of the TCM in the SNF setting and the potential use of the INTERACT tool and LACE scoring tool as a way to decrease hospital readmissions. The results of this DNP project provided further support for the use of the INTERACT Stop and Watch tool and the LACE score in enhancing and increasing staff nurses awareness of patients who are at high risk for readmission as well as staff RNs' timely reporting of the patients' change in condition (Bonner et al., 2015; Kane et al., 2017; Robinson & Hudali, 2017). Other implications of this project included the importance of providing staff nurses with an increased awareness of patients at high risk for readmission by providing an educational intervention. In addition, when staff nurses use the LACE score and summary of complexity indicating risk of readmission the frequency and scope of collaboration between the APN and the staff nurses may increase. Over time, increased collaboration between the APN and the staff nurses seems likely to improve the overall quality of care for patients, as well as reducing readmissions (Kirchner et al., 2012).

Limitations

This DNP evidence-based quality improvement project had a number of limitations. As a quality improvement versus research project, this project was limited in that it did not generate any new knowledge or test any theories. Methodological limitations included the small number of participants, the limited number of chart audits conducted, and the short time period of the intervention. Another limitation was the focus on a single SNF facility where the patient population was comprised predominantly of male veterans. It is unknown how the gender imbalance or the reliance on a single SNF facility with a rather homogeneous population affected the results. The scope and breadth of data analysis was limited by the small volume of data collected and by the lack of significant findings for the intervention, which obviated the need to carry out t-test analysis of pre- and post-readmission frequencies. Future projects need to address these concerns by expanding the study design to include an increased number of participants, greater gender variation in the patient population, a longer timeframe for the intervention and follow-up, and an expansion of the project design to include more than one SNF facility.

Areas for Further Dissemination

The project's evidence based protocol can be disseminated to other SNFs affiliated with the parent organization of the SNF in this project. The educational intervention, assessment tools, and procedures used in this project could be replicated in other SNFs. As a first step towards implementing TCM, the impact of the evidence-based project will be disseminated to organizational leadership and stakeholders at affiliated SNFs through a poster presentation as part of a monthly quality meeting. The poster presentation will also provide a means for disseminating the DNP project at geriatric and transitional care workshops and meetings

(Williams & Cullen, 2016). To further disseminate the project to a geriatric and SNF-based care professional audience, the project lead will prepare a manuscript for submission to a geriatric care journal (Fineout-Overholt, 2011).

Project Sustainability

The results of the analysis indicate that the project is sustainable, both in the initial project site facility and potentially in other SNFs. Although not statistically significant, there was a clear trend towards increased APN compliance with admission protocol. Likewise, the educational intervention improved RNs' recognition of patients' change in condition. The highly significant association between chart compliance/non-compliance with admission protocol and incidence of readmission confirms the benefits of the educational intervention. Dissemination of the protocol and educational intervention to other SNFs, as well as the use of refresher educational sessions for the APN and the RNs at the original site facility will help to ensure the sustainability of the project.

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Appendix A

TCM QI Chart Assessment Protocol Tool – INTERACT QI Tool

Purpose: The purpose of the project is to maintain standard of care and compliance in SNF patients to prevent re-admission.

Provider's Demographics:

Gender: M/F

Race/Ethnicity
- African American
- Asian/Pacific Islander
- Hispanic/Latino/Latina
- Native American
- White
- Other

Age of Provider?

1. LACE Score on Initial Assessment: See Appendix B

2. Summary of risk and probability of re-admission in the progress note? Y/N

Is Chart Compliant? Y/N

(See next page for INTERACT QI TOOL)

Quality Improvement Tool
For Review of Acute Care Transfers

INTERACT®
Version 4.0 Tool

The INTERACT QI Tool is designed to help your team analyze hospital transfers *(including ER visits, observation stay and admissions)* and identify opportunities to reduce transfers that might be preventable. Complete this tool for each or a representative sample of hospital transfers in order to conduct a root cause analysis and identify common reasons for transfers. Examining trends in these data with the INTERACT QI Summary Tool can help you focus educational and care process improvement activities.

Patient/Resident _____   Age _____

Date of most recent admission to the facility _____ / _____ / _____

Primary goal of admission: ☐ Post-acute care   ☐ Long-stay   ☐ Others:_____

SECTION 1: Risk Factors for Hospitalization and Readmission

a. Conditions that put the resident at risk for hospital admission or readmission:

☐ Cancer, on active chemo or radiation therapy
☐ CHF
☐ COPD
☐ Dementia
☐ Diabetes
☐ End-stage renal disease

☐ Fracture *(Hip)*
☐ Multiple active diagnoses and/or co-morbidities
    (e.g. CHF, COPD and Diabetes in the same patient/resident)
☐ Polypharmacy *(e.g. 9 or more medications)*
☐ Surgical complications

b. Was Patient/Resident hospitalized in the *30 days before their most recent admission to the facility?*   ☐ No   ☐ Yes *(list dates and reasons)*
  (Other than the one being reviewed in this tool)

_____

c. Other hospitalizations or emergency department visits in the *past 12 months?*   ☐ No   ☐ Yes *(list dates and reasons)*
  (Other than the one being reviewed in this tool)

_____

SECTION 2: Describe the Acute Change in Condition and Other Non-Clinical Factors that Contributed to the Transfer

a. Date the change in condition first noticed _____ / _____ / _____

b. Briefly describe the change in condition and other factor(s) that led to the transfer and then check each item below that applies

_____

_____

c. Vital signs at time of transfer

Temp _____   Pulse _____   Pulse Ox *(if indicated)* _____% on ☐ Room Air ☐ O$_2$ (_____)

Respiratory rate _____   BP _____ / _____   Glucose *(diabetics)* _____

(continued on reverse side)

Quality Improvement Tool
For Review of Acute Care Transfers (cont'd)

INTERACT®
Version 4.0 Tool

d. Check *all* that apply

New or Worsening Symptoms or Signs

- ☐ Abdominal Pain
- ☐ Abnormal vital signs *(low/high BP, high respiratory rate)*
- ☐ Altered mental status
- ☐ Behavioral symptoms *(e.g. agitation, psychosis)*
- ☐ Bleeding *(other than GI)*
- ☐ Cardiac arrest
- ☐ Chest pain
- ☐ Constipation
- ☐ Diarrhea
- ☐ Edema *(new or worsening)*
- ☐ Fall
- ☐ Fever
- ☐ Food and/or fluid intake *(decreased or unable to eat and/or drink adequate amounts)*
- ☐ Function decline *(worsening function and/or mobility)*

- ☐ Gastronomy tube blockage or displacement
- ☐ GI bleeding
- ☐ Hypertension *(uncontrolled)*
- ☐ Loss of conciousness *(syncope)*
- ☐ Nausea / vomiting
- ☐ Pain *(uncontrolled)*
- ☐ Respiratory arrest
- ☐ Respiratory infection *(bronchitis, pneumonia)*
- ☐ Shortness of breath
- ☐ Seizure
- ☐ Skin wound or ulcer
- ☐ Stroke / TIA / CVA
- ☐ Trauma *(fall-related or other)*
- ☐ Unresponsive
- ☐ Urinary incontinence
- ☐ Weight loss
- ☐ Other *(describe)* _____

Abnormal Labs or Tests Results

- ☐ Blood sugar *(high)*
- ☐ Blood Sugar *(low)*
- ☐ EKG
- ☐ Hemoglobin or hematocrit *(low)*
- ☐ INR *(high)*
- ☐ Kidney function *(BUN, Creatinine)*
- ☐ Pulse oximetry *(low oxygen saturation)*
- ☐ Urinalysis or urine culture
- ☐ White blood cell count *(high)*
- ☐ X-ray
- ☐ Other *(describe)* _____

Diagnosis or Presumed Diagnosis

- ☐ Acute renal failure
- ☐ Anemia *(new or worsening)*
- ☐ Asthma
- ☐ CHF *(congestive heart failure)*
- ☐ Cellulitis
- ☐ COPD *(chronic obstructive lung disease)*
- ☐ DVT *(deep vein thrombosis)*
- ☐ Fracture (site:_____)
- ☐ Pneumonia
- ☐ UTI *(urinary tract infection)*
- ☐ Other *(describe)* _____

Other Factors

- ☐ Advance directive not in place
- ☐ Family and/or resident preference or concerns
- ☐ Clinician insisted on transfer despite staff willing to manage in facility
- ☐ Other *(describe)* _____

SECTION 3: Describe Action(s) Taken to Evaluate and Manage the Change in Condition Prior to Transfer

a. Briefly describe how the changes in Section 2 were evaluated and managed and check each item that applies

_____

_____

b. Check *all* that apply

Tools Used

- ☐ Stop and Watch
- ☐ SBAR
- ☐ Care Path(s)
- ☐ Change in Condition File Cards
- ☐ Transfer Checklist
- ☐ Acute Care Transfer Form *(or an equivalent paper or electronic version)*
- ☐ Advance Care Planning Tools
- ☐ Other Structured Tool or Form *(describe)* _____

Medical Evaluation

- ☐ Telephone only
- ☐ NP or PA visit
- ☐ Physician visit
- ☐ Other *(e.g. in a specialist office or while at dialysis)*

Testing

- ☐ Blood tests
- ☐ EKG
- ☐ Urinalysis and/or culture
- ☐ Venous doppler
- ☐ X-ray
- ☐ Other *(describe)*
  _____

Interventions

- ☐ New or change in medication(s)
- ☐ IV or subcutaneous fluids
- ☐ Increase oral fluids
- ☐ Oxygen *(if available)*
- ☐ Other *(describe)*
  _____

c. Were *advance care planning or advance directives* considered in evaluating/managing the change? *(e.g. orders for Do Not Resuscitate (DNR), Do Not Intubate (DNI), palliative or hospice care, other such as POLST, MOLST or POST)*:   ☐ No   ☐ Yes *(check all that apply)*

If yes, were the relevant advance directives: ☐ Modified as a result of this change in clinical condition/transfer?
                                                 ☐ Already in place and documented?
                                                 ☐ New as a result of this change in clinical condition/transfer?

Describe _____

(continued)

Quality Improvement Tool
For Review of Acute Care Transfers (cont'd)

INTERACT
Version 4.0 Tool

SECTION 4: Describe the Hospital Transfer

a. Date of transfer _____/_____/_____   Day _____   Time (am/pm) _____

b. Clinician authorizing transfer: ☐ Primary physician   ☐ Covering physician   ☐ NP or PA   ☐ Other *(specify)*

c. Outcome of transfer: ☐ ED visit only   ☐ Held for observation   ☐ Admitted to hospital as inpatient

Hospital diagnosis(es) *(if available)* _____

d. Resident died in ambulance or hospital: ☐ No   ☐ Yes   ☐ Unknown

e. Factors contributing to transfer *(check all that apply and describe)*

☐ Advance directive not in place   ☐ Clinician insisted on transfer despite staff willing to manage in the facility
☐ Resident preferred or insisted on transfer   ☐ Resources to provide care in the facility were not available
☐ Family members preferred or insisted on transfer   ☐ Other *(describe)*
☐ Discharged from the hospital too soon

SECTION 5: Identify Opportunities for Improvement

a. In retrospect, does your team think this transfer might have been prevented?   ☐ No   ☐ Yes *(describe)*

_____

If yes, check one or more that apply:

☐ The new sign, symptom, or other change might have been detected earlier
☐ Changes in the resident's condition might have been communicated better among facility staff, with physician/NP/PA, or other
     health care providers
☐ The condition might have been managed safely in the facility with available resources
☐ Resources were not available to manage the change in condition safely or effectively despite staff willing to manage in the facility
     (check all that apply)
     ☐ On-site primary care clinician   ☐ Staffing   ☐ Lab or other diagnostic tests
     ☐ Pharmacy services   ☐ Other *(describe)* _____
☐ Resident and family preferences for hospitalization might have been discussed earlier
☐ Advance directives and/or palliative or hospice care might have been put in place earlier
☐ Discharged from the hospital too soon
☐ Other *(describe)*

_____

b. In retrospect, does your team think this resident might have been transfered sooner? ☐ No   ☐ Yes *(if yes, describe)*

_____

c. After review of how this change in condition was evaluated and managed, has your team identified any opportunities for improvement?
☐ No   ☐ Yes *(describe specific changes your team can make in your care processes and related education as a result of this review)*

_____

Name of person completing form_____   Date of completion _____/_____/_____

Appendix B
LACE Tool

Note that there are other risk assessments in the environment and this is just one example.

Ottawa Hospital Research Institute
LACE Index Scoring Tool for Risk Assessment of Death and Readmission
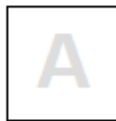
Step 1. Length of Stay
Length of stay (including day of admission and discharge): _____ days

Length of stay (days)	Score (circle as appropriate)
1	1
2	2
3	3
4-6	4
7-13	5
14 or more	7

L
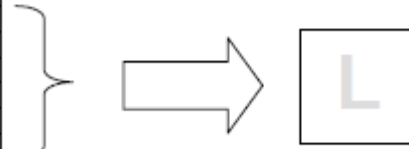
Step 2. Acuity of Admission
Was the patient admitted to hospital via the emergency department?
If yes, enter "3" in Box A, otherwise enter "0" in Box A

A

Step 3. Comorbidities

Condition (definitions and notes on reverse)	Score (circle as appropriate)
Previous myocardial infarction	+1
Cerebrovascular disease	+1
Peripheral vascular disease	+1
Diabetes without complications	+1
Congestive heart failure	+2
Diabetes with end organ damage	+2
Chronic pulmonary disease	+2
Mild liver disease	+2
Any tumor (including lymphoma or leukemia)	+2
Dementia	+3
Connective tissue disease	+3
AIDS	+4
Moderate or severe liver disease	+4
Metastatic solid tumor	+6
TOTAL	

If the TOTAL score is between 0 and 3 enter the score into Box C. If the score is 4 or higher, enter 5 into Box C

C

Step 4. Emergency department visits
How many times has the patient visited an emergency department in the six months prior to admission (not including the emergency department visit immediately preceding the current admission)? _____
Enter this number or 4 (whichever is smaller) in Box E

E

Add numbers in Box L, Box A, Box C, Box E to generate LACE score and enter into box below. If the patient has a LACE score that is greater than or equal to 10, the patient can be referred to the virtual ward. (Note: A *virtual ward* uses the systems and staffing of hospital care, but without the physical building: staff provide preventative care for patients in their own homes. If your hospital does not support a virtual ward, proceed to treat patient as a high risk individual.)

LACE

Shared with permission from Carl van Walraven (lead author) on July 3, 2012.

Note that there are other risk assessments in the environment and this is just one example.

Condition	Definition and/or notes
Previous myocardial infarction	Any previous definite or probable myocardial infarction
Cerebrovascular disease	Any previous stroke or transient ischemic attack (TIA)
Peripheral vascular disease	Intermittent claudication, previous surgery or stenting, gangrene or acute ischemia, untreated abdominal or thoracic aortic aneurysm
Diabetes without microvascular complications	No retinopathy, nephropathy or neuropathy
Congestive heart failure	Any patient with symptomatic CHF whose symptoms have responded to appropriate medications
Diabetes with end organ damage	Diabetes with retinopathy, nephropathy or neuropathy
Chronic pulmonary disease	??
Mild liver disease	Cirrhosis but no portal hypertension (i.e., no varices, no ascites) OR chronic hepatitis
Any tumor (including lymphoma or leukemia)	Solid tumors must have been treated within the last 5 years; includes chronic lymphocytic leukemia (CLL) and polycythemia vera (PV)_
Dementia	Any cognitive deficit??
Connective tissue disease	Systemic lupus erythematosus (SLE), polymyositis, mixed connective tissue disease, moderate to severe rheumatoid arthritis, and polymyalgia rheumatica
AIDS	AIDS-defining opportunistic infection or CD4 < 200
Moderate or severe liver disease	Cirrhosis with portal hypertension (e.g., ascites or variceal bleeding)
Metastatic solid tumor	Any metastatic tumour

Appendix C

Permission to Use LACE Tool

From: **Van Walraven, Carl** <cvanwalraven@ohri.ca>
Date: Wed, Aug 16, 2017 at 2:31 AM
Subject: Re: Permission to use LACE score
To: Kulbir Dhillon

You can use it. Best of luck

Carl van Walraven MD FRCPC MSc
Professor of Medicine & Epidemiology, University of Ottawa
Senior Scientist, Ottawa Hospital Research Institute

> On Aug 16, 2017, at 12:35 AM, Kulbir Dhillon wrote:
>
> Hi Dr. Walraven,
>
> I am currently a DNP student. I would like to ask your permission to use the LACE score as a
QI tool for my project.
>
> My project is "Transition of Care Model - Preventing Re-admission in SNFs". The focus of
this project is on documentation compliance among the facility providers.
>
> I have attached a copy of my paper for your review and consideration.
>
> Thank you
>
> Best Regards,
> Kulbir Dhillon, NP

Appendix D

Stop and Watch
Early Warning Tool

INTERACT®
Version 4.0 Tool

If you have identified a change while caring for or observing a resident, please **circle** the change and notify a nurse. Either give the nurse a copy of this tool or review it with her/him as soon as you can.

S Seems different than usual
T Talks or communicates less
O Overall needs more help
P Pain – new or worsening; Participated less in activities

a Ate less
n No bowel movement in 3 days; or diarrhea
d Drank less

W Weight change
A Agitated or nervous more than usual
T Tired, weak, confused, or drowsy
C Change in skin color or condition
H Help with walking, transferring, toileting more than usual

☐ Check here if no change noted while monitoring high risk patient

Patient / Resident

Your Name

Reported to   Date and Time (am/pm)

Nurse Response   Date and Time (am/pm)

Nurse's Name

Appendix E

Admission Protocol

1. APN conducts initial assessment within 24-hours of patient admission to the SNF.

2. APN calculates LACE score:

       If the LACE score is 10 or greater (high risk), then follow-up occurs in one week and as

       needed. If the LACE score is moderate (5-9), then follow-up occurs in two-three weeks

       and as needed. If the LACE score is low (0-4), then follow-up occurs in three to four

       weeks and as needed.

3. APN includes a summary of risk and probability of re-admission in the progress note.

Appendix F

Educational Program

See attached PowerPoint presentation.

Appendix G

A copy of INTERACT SNF Educational License Agreement is attached.