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Improved Use of Interact to Decrease 30-Day Readmissions from a Skilled Nursing Facility

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IMPROVED USE OF INTERACT TO DECREASE 30-DAY READMISSIONS FROM A SKILLED NURSING FACILITY

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This project, written by Folasade Adewunmi under direction of Dr. Sarah M. Koplow, Project Chair, and approved by members of the project committee, has been presented and accepted in partial fulfillment of requirements for the degree of

DOCTOR OF NURSING PRACTICE

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We hereby certify that this DNP Project, submitted by Folasade Adewunmi conforms to acceptable standards and is fully adequate in scope and quality to fulfill the project requirement for the Doctor of Nursing Practice degree.

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Abstract

Background: The rising cost of health care in relation to rehospitalizations continues to be a challenge. Medicare 30-day readmissions have an annual estimated cost of $17.4 billion. Irrespective of these costs and the continued improvement in the quality of care, skilled nursing facilities (SNF) still face high readmission rates.

Purpose: The purpose of this quality improvement project was to enhance SNF care processes by improving the utilization of the electronic medical record software program "INTERACT" to increase early identification and treatments of patients to minimize 30-day hospital readmissions.

Theoretical Framework: The theory of planned behavior by Icek Azjen was used.

Methods: Project design: This project used a pretest and posttest design to assess for improvement in the use of the INTERACT tools and increased nursing proficiency after participating in a 45-minute INTERACT training session. A 60-day retrospective and prospective rehospitalization rates data were also compared.

Results: After the training, there was a statistically significant improvement in the number of nurses using the INTERACT tool. The two-tailed paired sample *t*-test result showed a significant difference in the use of the INTERACT clinical decision support tools: Pretest ($M = 2.08$, $SD = 0.88$) and posttest ($M = 1.33$, $SD = 0.63$), $t(23) = 3.30$, $p = .003$. There was no statistical difference in the proficiency of nurses post the training. This result is associated to probable data loss and/or limited time for data collection. Although a 15% decrease in SNFs rehospitalizations rates was noted, there is no direct causative explanation that increased nurses use of the tool significantly contributed to the reduction in rehospitalization rates among other factors.

Conclusion: The INTERACT program has contributed by improving early identification and treatment of patients and facilitated improved patient outcomes and nursing care processes. It is assumed that as nurses begin to build up their use of the INTERACT support tools, this tool will result in an increase in proficiency, which will increase responsiveness to change in condition and a corresponding decrease in avoidable rehospitalizations.

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Chapter 1

Nature of Project and Problem Identification

Patients rehospitalized from skilled nursing facilities (SNF) increase the disintegration and cost of health care. Approximately 23% of Medicare enrollees discharged to post-acute care facilities are rehospitalized within 30 days, and about 34% are readmitted within 90 days (Berkowitz et al., 2013; Snyderman, Salzman, Mills, Hersh, & Parks, 2014). Among industrialized nations, adults over the age of 65 make up 15% to 20% of the total population, and many are frequently hospitalized for chronic disease management (Morandi et al., 2013). The World Health Organization (WHO, 2011) predicts the world population for adults greater than 60 years of age will surge from 650 million to over two billion by 2050. This increase will represent over 10% of the total world population (WHO, 2011). Due to the aging boom, there is a predicted increase in the incidence of chronic illnesses and disabilities, provoking a corresponding increase on demand for health care services to meet the growing and complex needs of this population (Lu, Chi, & Chen, 2013).

With an estimated four million patients rehospitalized in the United States, about 2.4 million (60%) rehospitalizations were possibly avoidable (Ouslander & Maslow, 2012). According to the Centers for Disease Control and Prevention (CDC, 2011), in the United States, 80% of people above 65 years old suffer from one chronic illness, and about 50% of these populations even have two concurrent health conditions. People with chronic diseases are seven times more at risk for recurrent rehospitalizations (Ouslander

& Maslow, 2012). A substantial number of older patients released from acute care require post-acute care services. A third of these patients either receive services at a SNF or a hospital-based rehabilitation center (Morandi et al., 2013). About 24% of SNF patients are rehospitalized within 30 days, which is considered high compared with the national average of 18% (Morandi et al., 2013). In 2012, the Centers for Medicare and Medicaid Services (CMS) established the Hospital Readmissions Reduction Program (HRRP) under the umbrella of the Affordable Care Act (ACA) to assist in regulating rehospitalization rates. This regulation permits financial penalty levied on hospitals or SNFs with high 30-day rehospitalization rates for specific disease populations, which include myocardial infarction, heart failure, and pneumonia (Ouslander & Maslow, 2012).

Financial Implication of Rehospitalizations

Rising health care costs in the United States (US) in relation to rehospitalizations have become an ongoing financial challenge. Unplanned rehospitalizations have cost Medicare over $17.4 billion (Nelson & Pulley, 2015; Snyderman et al., 2014). The anticipation is that the overall cost of health care will rise to about $4.6 trillion by 2050 (CDC, 2011). Contributing to these rising costs is hospitals readmitting 20% of their discharged patients within 30 days (CDC, 2011). Rehospitalization of patients 65 years and older accounts for about $15 billion of Medicare expenditure in a year and an estimated 1.6 million pounds each year in Europe (Morandi et al., 2013). Now, hospitals and programs, such as accountable care organizations (ACO) that have bundle payment plans, have incentivized reasons to improve their post-discharge care management because of the ACA and HRRP initiatives.

In the US, post-acute care facilities like SNFs and hospital-based rehabilitation centers are the most preferred settings for patients discharged from hospitals (Neuman, Wirtalla, & Werner, 2014). These settings are due to the need for better coordination of care and access to continued post-acute care discharge services, such as intensive inpatient skilled nursing and rehabilitation care with extended coverage under Medicare Part A (Alper, O'Malley, & Greenwald, 2016). While SNF rehospitalization rates remain high with one out of four patients rehospitalized within 30 days, two thirds of these rehospitalizations are considered potentially preventable. SNFs and hospitals now have the need to better coordinate their partenerships to prevent rehospitalizations and avoid financial penalties (Neuman et al., 2014).

In a retrospective cohort study from 2004 to 2011 with a population of 2,735 patients with an average age of 70 years, three risk factors were identified as independent predictors of 30-day readmissions. These risk factors were prolonged hospital stay greater than 13 days, polypharmacy, and functional decline (Morandi et al., 2013). Morandi et al. also indicated that patients readmitted with a post-discharge diagnosis of either a musculoskeletal, cardiovascular, or respiratory etiology had worsening status upon readmission (Morandi et al., 2013). With prolonged hospital stay, patients tend to have a functional decline, requiring post-acute care rehabilitation, and with a short hospital length of stay, patients are often discharged with a higher level of care, warranting the need for post-acute care coordination (Hudson, Comer, & Whichello, 2014). Through the identification of patients with high risk for rehospitalizations, care interventions can be targeted at patients during their post-acute care admission to decrease the risk of rehospitalization (Dombrowski, Yoos, Neufeud, & Tarshish, 2012).

The goal of this project was to identify ways to reduce rehospitalization rates in SNFs through adequate nursing care and management of chronic illnesses with post-acute care supervision at preventing disease exacerbation while promoting appropriate patient follow-up care and management post-acute care discharge.

Post-Acute Care Transition Plans

With a short length of hospital stay, patients are discharged from hospitals to post-acute care facilities due to the continued need for medical management and skilled therapy services, particularly in the older adult population (Alper et al., 2016). The transfer time between health care settings coupled with poor care transition increases the vulnerability of older adult patients for possible exacerbation of their chronic health conditions, which may precipitate possible rehospitalizations (Nelson & Pulley, 2015). Inadequate hands-off communication between the hospital and SNFs in conjunction with poor discharge planning and early discharge to a health care environment that is incapable of meeting patients' medical needs can also result in immediate rehospitalization (Alper et al., 2016). Receiving facilities that do not recognize high-risk patients on admission and fail to institute an appropriate plan of care may potentiate possible rehospitalization (Alper et al., 2016).

In an effort to reduce rehospitalizations rates, the CMS ACA Section 3026 program was focused on increasing funding to transitional improvement programs with the aim of preventing rehospitalizations and improving health care outcomes for patients during post-acute care discharge (Tinetti, Carpenter, Gottschalk, & Baker, 2012). The goal of this program is to increase hospital partnerships with SNFs in preventing post-acute care rehospitalizations. In a 13-year meta-analysis study, transitional improvement

programs were noted to decrease the frequency of rehospitalizations in chronically ill patients (Verhaegh et al., 2014).

Nursing has a pivotal role in ensuring successful care transitions from the acute care hospital to the SNF and in reducing 30-day rehospitalizations (Jacelon, Macdonald, Fitzgerald, & Quality Council, 2015). The key is ensuring that all team members possess the knowledge and attitudes to be helpful in attaining positive health care outcomes (Son & You, 2015). Nursing staff is crucial at helping to detect acute changes in patients' clinical conditions that may alter patient outcomes, increase cost, and lead to rehospitalization (Jacelon et al., 2015). Nursing assessments are needed for early detection and management of potential health issues that may lead to rehospitalizations, such as acute changes in patient's physical and mental status, an unusual presentation of illnesses, and ineffective pain management (Jacelon et al., 2015). These acute changes contribute to rehospitalizations due to worsening clinical status upon readmissions for post-discharge diagnosis of either a musculoskeletal, cardiovascular, and respiratory etiology (Morandi et al., 2013). By identifying patients with increased risk for rehospitalizations, care interventions may be aimed at addressing these issues during post-acute care admissions to decrease the incidence and minimize the risk of future rehospitalizations (Dombrowski et al., 2012). Reducing avoidable rehospitalizations is a necessary goal to improve patient standards of care and decrease healthcare costs (Wyman & Hazzard, 2010). An approach suggested to reduce rehospitalization rates is to standardize clinical nursing practice and enhance nursing assessment skills, especially in patients undergoing critical changes in medical status (Wyman & Hazzard, 2010).

Problem Statement

SNF patients who experience medical care delays are at high risk for rehospitalizations. These delays have been related to ineffective nursing assessment and clinical practices (Polniaszek, Walsh, & Wiener, 2011). Changes in patients' medical conditions are often not promptly recognized or reported, leading to severe exacerbation of their illnesses resulting in rehospitalizations (Ouslander et al., 2014). This process negatively affects patient care outcomes, increases morbidity and mortality, and results in higher health care costs (CMS, 2012b).

Purpose Statement

The purpose of the quality improvement project was to enhance skilled nursing care processes by improving the utilization of the electronic medical record software program INTERACT to increase early identification and treatments of patients to minimize 30-day hospital readmissions.

Project Objectives

The following were the objectives for this project:

1. Conduct a literature review to identify evidence-based practice (EBP) outcomes with the use of the INTERACT program in reducing rehospitalization rates.
2. Compare SNF standard of practice for patients' transfers to recommended standards of the INTERACT program and outcomes.
3. Introduce the re-utilization of the INTERACT program into the nursing process.

4. Evaluate the effectiveness of the tool at improving the SNF rehospitalization rate.
5. Collaborate with the SNF interdisciplinary team (IDT) to reintegrate INTERACT program decision support tools into the nursing process.
6. Collaborate with the SNF corporate team at reintegrating the INTERACT program into the global electronic medical records (EMR) to maintain congruency in the nursing care processes.

Theoretical Framework

The theoretical framework guiding this quality improvement project was the theory of planned behavior (TPB). The TPB was established by Icek Ajzen in 1985 and has been among the most popular theories among human psychologists in explaining the attitude of people in expressing a behavior. It is one of the most used theoretical models in social psychology, and it has been found to be valuable in forecasting different health providers' behaviors (Cote, Gagnon, Houme, Abdeljelil, & Gagnon, 2013; Hobbs, Dixon, Johnston, & Howie, 2013; Rich, Brandes, Mullan, & Hagger, 2015).

Theory of Planned Behavior Quality of Care Framework

The TPB was referred to as the theory of reasoned action in the 1960s. This theory presents the effect intention has on the performance of a behavior. The aim of this theory is to understand the characteristics that are essential to a person's ability to control the performance of an action (McEwen & Wills, 2011).

Structure. The principle of the TPB is rooted in the belief that the most concise determinant of one's behavior is the intention to perform that behavior (Rich et al., 2015). Intention is dependent on three elements: attitude, subjective norms, and perceived

behavioral control (Hobbs et al., 2013; Rich et al., 2015). Azjen (1991) as cited by Hobbs et al. (2013) described attitude as a significant predictor of intention, and it refers to "the degree to which a person has a favorable or unfavorable appraisal of the behavior in question" (p. 188). Subjective norm, on the other hand, is the social or environmental pressures influencing the performing of the behavior (Rich et al., 2015) while perceived behavioral control is a personal view of the ability to safely and effectively carry out the behavior (Asare, 2015). Intention is a direct precursor of behavior, and the TPB presents the determining factor of one's performance of behavior is intention (Cote at al., 2013). Moreover, intention is the portrayal of one's willingness to perform a specific behavior, which is governed by one's attitude towards the perceived behavior and the general principles motivating the performance of that behavior (McEwen & Wills, 2011). This theory also presents that the intention of individuals is determined by their attitude towards a problem and is also dependent on one's view concerning the execution of that behavior in achieving either a positive or negative response (McEwen & Wills, 2011).

Process. Social cognitive theories, such as the TPB, have been used to predict health providers' behaviors, about changes in quality improvement processes, and outcomes (Hobbs et al., 2013). Health care professionals are encouraged to continuously improve the quality and efficacy of care provided to their patients (Cote et al., 2013). Nurses are an integral part of the health care system and are involved in all levels of care; therefore, their behaviors can have a significant impact on patient outcomes. It is crucial to look at the intentions and actions of nurses and how it impacts patient outcomes.

Outcomes. It is vital that nurses make an excellent judgment at predicting patients' susceptibility to illnesses, determining their disease progression and/or

exacerbation, and deciding how to manage patients best to avert further worsening of illnesses or prevent rehospitalizations (Cote et al., 2013). With the TPB, intentions are considered as a way of explaining behaviors. With this theory, nurses can identify and possibly alter their intentions to change behavior and ultimately improve patient outcomes. With this theory, nurses will be able to identify clinical decision-making factors that influence their intentions at determining at-risk patients predisposed to poor health outcomes and reporting potential clinical severity that may lead to serious health concerns or rehospitalizations if appropriate action is not quickly performed (Sharifirad et al., 2015). The aim for the use of this theory was to improve nurses attitudes and perceived behavioral control at changing their clinical intention to promote positive outcomes in care.

Application of Theory

The foundation of TPB for health care providers is rooted in the belief that the benefits of executing an action must offset its risks before a person should act, and the confidence of knowing that the ability of a nurse to performing an obligatory behavior is contingent on knowing that such action will positively change the outcomes of patient care (Rich et al., 2015). This theory can be utilized to influence nurses' intentions, and ultimately improve their clinical behavior by increasing their awareness to the impact their unique clinical practices and assessment skills can affect patients' outcomes positively or negatively. Nurses' early prediction of illnesses or initial recognition of the acute change in patient's clinical conditions can ameliorate further exacerbation and prompt early treatments to avoid possible rehospitalizations (Kripalani et al., 2014).

Significance of the Project

Nursing Practice

With a shorter length of hospital stay (LOS), patients are discharged earlier than expected with recommendations for continued care management in the SNFs. Currently, the acuity level of patients in SNFs have increased compared with how the facility is medically equipped, resulting in recurrent rehospitalizations and poor patient care outcomes (Nelson & Pulley, 2015). Health care now is centered on outcome-based reforms, and with the introduction of the ACA and ACOs, bundled payments reimbursement plans, including pay for performance (P4P) initiatives, have been used to instigate the integration of EBP as a model for nursing practice to foster positive health care outcomes (Joint Commission International, 2016).

Evidence-based practices have resulted in time-saving care that is structured to promote the adoption of clinical practices that increase desirable clinical outcomes (Nelson & Pulley, 2015). The massive growth in information technology has enhanced the knowledge of health care consumers in realizing that EBP leads to high-quality patient care. With the rising health care costs and a decline in health care benefits coupled with ACA's mandate for rehospitalization rates reduction, health care agencies are obliged to comply with changing reforms to avoid CMS penalties (Nelson & Pulley, 2015). The outcomes of this project promoted the achievement of these initiatives, and ultimately impact nursing practice.

Health Care Outcomes

The focus of this project was to identify effective nursing interventions to manage potential SNF-to-hospital transfers with the aim of preventing a breakdown in the

continuum of care, reduce the occurrence of adverse health outcomes, and prevent avoidable rehospitalizations. The implementation of quality improvement programs like the INTERACT, have focused on identifying at-risk patients in SNF and long-term care (LTC), adapting care interventions to increase prompt identification of these patients initiate timely assessments with appropriate escalation of changes to providers, supporting documentation of changes in patients' medical conditions to prevent further exacerbation of their illnesses, and possibly avoiding rehospitalizations (Nelson & Pulley, 2015). With CMS reimbursements tied to P4P and the HRRP mandate, hospitals and SNFs are encouraged to work in partnerships to avoid or significantly reduce rehospitalization rates (McIlvennan et al., 2015). Currently, there is no congruent communication process between acute care hospitals and their partnering facilities; the INTERACT program helps to bridge this gap. This program is serving as a communication tool between transferring and receiving facilities to project patients' clinical conditions that may require immediate medical attention upon admission and/or improve early identification and treatments of acute change in patients' conditions. Rehospitalization rates have become a measure for evaluating the quality of health care standards for reimbursements (CMS, 2012a). Promoting collaboration between hospitals and post-acute care facilities should be broaden to include a standardized guideline that has detailed information about the patients and increase each facility's ability to adequately care for patients upon their admissions (Long-Term Quality Alliance, 2012).

Health Care Delivery

Health care delivery is affected by the CMS reimbursement reduction efforts to minimize the readmission rates for Medicare patients under the current HRRP (Collins &

Waxman, 2013). As health care facilities face financial penalties for high rehospitalizations, it is imperative that hospitals and SNFs maintain suitable partnerships geared towards effective care plans to prevent avoidable rehospitalizations after hospitals discharge (Butcher, 2012). These plans consist of follow-up visits by licensed nurses for medication reconciliation and complete assessments performed post discharge to prevent unplanned medical events that may occur during and after discharge. These collaborative practices have been shown to significantly reduce avoidable rehospitalizations, increase favorable patient outcomes, and save health care dollars (Nelson & Pulley, 2015).

This project was instrumental in assisting SNF health care providers to establish best practices for managing patients with an acute change in medical status and improve timely recognition of symptoms that may become exacerbated using the standardized quality improvement tools of INTERACT. The INTERACT program also has provisions for early detection and management of clinical conditions, using the clinical decision support tools (care paths), designed to assist nurses at effectively managing different disease processes to prevent avoidable hospital transfers. If a patient's transfer is inevitable, the INTERACT program is designed to facilitate communication flow from the SNF to the hospitals and promote continuity of care to increase positive patient outcomes (Butcher, 2012). This project promotes health care delivery by sharpening nurses' skills and empowering them about how to adequately deal with acute medical changes.

Health Care Policy

The delivery of health care has become fragmented due to changes in health care policies and reforms. Different coverage policies exist within insurance agencies, and the

reimbursements process also differs between health care facilities and medical providers. Current CMS policy presents the need for medical necessity as a basis for patients' visits, and providers are cautious of providing "repetitive care" for fear of litigation or audit (Department of Health and Human Services [DHHS], 2012). When providers' visits are dependent on medical necessity rather than maintaining the patient's stability, this situation can lead to delay in treatments, which increases the risk of rehospitalization (Binderman, Blum, & Kronick, 2013). Medicare guidelines for SNF provider visits is used for either a visit from a mid-level provider or physician instead of hospitalization. This move has led to better management of acute medical changes in patients, reduce readmissions, and increased health care savings (CMS, 2012a).

Under the ACA, health care facilities are penalized for care management disorganization and numbers of readmitted patients back to the facilities within 30 days of hospital discharge (CMS, 2012a). This quality improvement project presented the opportunity for the utilization and integration of the INTERACT program into clinical practice, provide an educational forum for nurses to promptly identify clinical issues that require timely interventions and any escalation to the mid-level provider or physician to prevent further worsening of clinical conditions and ultimately reduce the rate of rehospitalizations in the facility. This project helped to achieve rehospitalization reduction efforts by improving reimbursements and preventing rehospitalizations that may not be covered under current CMS reimbursement guidelines (Collins & Waxman, 2013).

Summary

Since the introduction of the ACA, the ACOs and hospital administrations are saddled with the need to reinvent strategies for post-acute care management of patients with the aim of preventing rehospitalizations. This aim has led to increased collaborative partnerships between acute care facilities and SNFs to promote adequate care transitions and reinvent ways to improve acute and chronic diseases management in SNFs. Health care facilities are compelled to observe expected standards allowable by the ACA guidelines and the insurance to avoid financial consequences, giving dwindling health care coverage payments. Part of aim of this project was to improve nurses' knowledge in recognizing acute medical changes and institute proper management strategies to prevent rehospitalizations, promote positive patient outcomes, and save health care dollars.

Chapter 2

Literature Review

Introduction

Two essential databases were used to review the literature for this study: Medline and CINAHL. Keywords included rehospitalization rates, readmission rates, INTERACT tools, and nursing care. Out of over 2,500 related articles retrieved, about 250 were reviewed based on references by year of publication less than 5 years and relevancy of articles. As the U.S population increases with age, there is a correlative increase in hospitalizations due to medical comorbidities from chronic diseases mismanagement. One in five Medicare beneficiaries aged 65 years or older admitted to the hospital was readmitted within 30 days, and a fourth of these patients died during their rehospitalizations (Gorina et al., 2015).

Many acute care patients are discharged to a SNF for continued post-hospitalization care management (Dombrowski et al., 2012). However, many of these SNF patients are also at increased risk for rehospitalization due to reduced functional status and having numerous conditions for which the SNF may be ill-equipped (Dombrowski et al., 2012). Over two thirds of SNF patients are readmitted back to the hospitals due to an acute exacerbation or relapse of chronic illnesses and/or recurrence of previously complex medical conditions (Dombrowski et al., 2012).

Rehospitalizations are costly and increase the risk of adverse care outcomes, especially in high-risk patients (Stephens et al., 2012). The risks have a higher effect on

patients' finances and the facility, causing significant disruption in the treatment plan and also increases the risk of possible reinfection and other comorbid complications that may result in decreased functional ability of patients post rehospitalization (Dombrowski et al., 2012; Polniaszek, Walsh, & Wiener, 2011).

Financial Implication of Rehospitalizations

Rising costs of health care in the US have become a continuing economic challenge. About 20% of Medicare patients admitted to SNFs are rehospitalized within 30 days, and skilled care needs for these patients has accounted to over 20 billion dollars of annual Medicare spending (Thomas et al., 2012). Unplanned rehospitalizations cost Medicare an estimated $17.4 billion (Nelson & Pulley, 2015; Snyderman et al., 2014), with health care costs expecting to rise to about $4.6 trillion by 2050 (CDC, 2012b). The Agency for Healthcare Research and Quality (AHRQ, 2014) also reported that annual costs of 30-day readmission accounts to $44 billion in total health care spending. Regardless of increasing health care costs in the US, hospitals, however, readmit about 20% of their discharged patients within 30 days (Morandi et al., 2013).

The ACA has introduced programs like the ACOs that enables partnerships between the payer source (insurance agency) and a group of providers in sharing responsibilities and financial risks for providing quality health care to a particular patient population and bundled payment plan, which allows lump sum payments to providers to treat patients in an episodic disease state (The Commonwealth Fund, 2013). With such programs, hospitals have incentivized reasons to improve their post-discharge management. In the US, post-acute care facilities like the SNF and hospital-based rehabilitation centers are the preferred settings for patients discharged from the hospitals

because they can provide ongoing care management and therapies for those patients who may not be able to receive care in a less intensive environment, such as the home setting (Neuman et al., 2014).

Two thirds of hospital readmissions from SNFs are considered preventable (Morandi et al. 2013) Patients at high risk for rehospitalizations should be identified during admission to sub-acute rehabilitation (SAR) with care interventions targeted to them during their stay to decrease these risks (Dombrowski et al., 2012). The goal of this quality improvement project was to distinguish ways to reduce rehospitalization rates in skilled nursing facilities through adequate management of acute medical issues, maintenance of chronic medical conditions, and improved post-acute care supervision to prevent further exacerbation of complex medical conditions with appropriate follow-up care management.

Post-Acute Care Transition Plans

Short hospital length of stay leads to poor functional recovery, precipitating unprovoked exacerbation of chronic illnesses, which requires continued health care service needs in most geriatric patients (Alper et al., 2016). Poor care transitions between different health care settings also increase the vulnerability of these patients for readmissions and functional decline (Alper et al., 2016; Nelson & Pulley, 2015). Inappropriate discharge plans with inadequate hands-off communication and/or receiving facilities that are not equipped to handle patients' acuity or recognize at-risk patients from admission, thereby failing to initiate an appropriate plan of care to include medication reconciliation to prevent polypharmacy and follow-up care with functional status assessment, increases patients' risk of possible rehospitalization (Alper et al.,

2016). Untimely discharge to an environment that is incapable of meeting patients' medical needs can result in immediate rehospitalization (Alper et al. 2016). To identify and reduce the cause of rehospitalization in the US, CMS in combination with other health care agencies have developed programs aimed at effectively reducing unnecessary readmissions. One of these programs is the ACA, Section 3026, which focuses on increasing funding for transitional care improvement programs with the purpose of averting rehospitalizations that may increase adverse health care outcomes for post-acute care patients (Tinettiet al., 2012).

Hospital partnerships with SNFs are helpful at preventing post-acute care rehospitalizations. Nursing plays a pivotal role in ensuring a successful care transition from acute care to SNF or home. Nurses dedicate the most clinical time of the health care professions in the care of patients facing challenges that ultimately affect outcomes. Having a functioning health care team to facilitate staff's readiness in accepting a teamwork culture, ensures that team members possess the awareness, educational skills, and attitudes to be an instrumental transitional care team member, which is very imperative to achieving positive health care outcomes. This ability has required collective efforts to enhance the effortless flow of communication between the patients, their families, and health care providers (Son & You, 2015).

The development of strategized and standardized interventions has helped to identify and reduce the risk for rehospitalization, which will ultimately reduce the burden on the health care team, decrease costs, and improve outcomes (Snyderman et al., 2014). Various initiatives have been funded by CMS to assist in the reduction of avoidable rehospitalizations. One of the efforts is the Interventions to Reduce Acute Care Transfers

(INTERACT) program, which is aimed at providing nursing facilities with interventional tools to assist early identification, assessment, communication, and documentation of residents' clinical condition changes (CMS, 2012a). When first launched, 25 nursing facilities were pioneers with reports of up to 25% reduction in rehospitalizations rates and over $125,000 reported in Medicare savings per 100-bed facility (CMS, 2012a).

Interventions to Reduce Acute Care Transfers

INTERACT is an acronym for Interventions to Reduce Acute Care Transfers. The Internet software program is a patent product of Pathway Health Inc and created with support from the CMS in 2010 to combat the need to reduce SNF readmission rates (Pathway Health, 2017). INTERACT is a quality improvement program that aimed at lowering post-acute care transfers through the improved use of communicating, identifying, and evaluating patients' change in medical conditions. In an analysis of 25 post-acute care facilities using the INTERACT program, a 17% decrease in readmission rates were documented (CMS, 2012a; Nelson & Pulley, 2015). The INTERACT is a dashboard application that is utilized on patients to document and trend any acute change in clinical conditions. During this time, nursing assessments and documentation are performed per shift or daily as stipulated by the SNF's policy and protocols for change in condition documentation.

The INTERACT program consists of four essential tools to assist SNF health care team in directing patient care during an acute change in medical status. The four tools are the Quality Improvement tool, the Decision Support tool, the Communication tool, and the Advance Care Planning tool (Pathway Health, 2017). The quality improvement tool is used to review the cause of SNF readmissions and tracks rehospitalization rates.

The Decision Support tool includes care paths to 10 common medical conditions associated with increased SNF to hospital transfers; these care paths contains step-by-step assessment guide to nurses on how to best address acute change in patients' condition with appropriate diagnostic recommendations as needed to support treatment and when to escalate clinical concerns to medical providers. This tool also contains various file cards suggestive of when to report immediate or non-immediate medical concerns. The file cards are used as an adjunct to the care paths (Ouslander et al., 2014).

The Communication tool consists of the "Stop and Watch" warning tool used by all other clinical and non-clinical staff to report early warning signs indicative of subtle changes in patient's conditions and trigger appropriate follow-up assessments to prevent symptoms exacerbation. This tool also consists of the medication reconciliation worksheet with the Situation, Background Assessment, and Report (SBAR) communication tool to promote accurate nursing documentation and facilitate the flow of report to appropriate medical providers (Pathway Health, 2017). The Advance Care Planning tool is intended to identify patients that are appropriate for the end-of-life care, and it can be used in educating families and patients about hospice and comfort care management. The Advance Care Planning tool is also appropriate for directing the plan of care to reflect current changes in patients' prognosis, which can result in fewer rehospitalizations (Butcher 2012; Pathway Health, 2017). When used appropriately, these tools can assist the SNF health care team in providing safe and effective care with the goal of reducing readmissions, improving care outcomes, and saving health care costs (Ouslander et al., 2012).

Managing Potentially Avoidable Rehospitalization

SNF rehospitalizations rates are becoming a significant concern. SNFs are burdened with frequent but preventable rehospitalizations that are costly and disruptive to the patient care process and unsafe for elderly patients with poor functional status (CMS, 2012a). Over a quarter of SNF patients are hospitalized every year, and many of these rehospitalizations are potentially avoidable (Polniaszek et al., 2011). SNF patients have been identified to suffer multiple co-morbidities that require excellent clinical skills and sharp diagnostic proficiencies in differentiating an acute disease process from chronic disease exacerbation, or other ongoing medical issues (Polniaszek et al. 2011).

In a 15-month study of nursing homes, Ouslander et al. (2014) examined readmission rates and causes of potentially avoidable rehospitalizations and discovered that out of 200 preventable hospitalizations, 134 patients (67%) were rehospitalized due to other clinical factors, such as untimely laboratory reports, lack of on-site medical providers, poor care management in addressing patients' change in condition, and ineffective care planning. These factors are potentially preventable and can be handled in the SNF setting with appropriate nursing assessment and interventions. The purpose of this quality improvement project was to enhance skilled nursing care processes by improving the utilization of the electronic medical record software program INTERACT to increase earlier identification and treatments of patients to minimize 30-day hospital readmissions. Patients at-risk for rehospitalizations should be identified, and appropriate clinical interventions are directed to prevent it (Dombrowski et al., 2012).

The Nurses Role

The role of nursing is significant in preventing rehospitalization. Nursing assessments are initiated upon admission, and it includes a complete head-to-toe evaluation with chart review, medication reconciliation, and care plans to ensure appropriate follow-up assessments with a medical provider is in place (Morandi et al., 2013). These duties are a daily responsibility of nurses until patients are discharged. The staff nurse is also responsible for promptly identifying an acute change in patient's clinical conditions when it occurs, and appropriately escalating critical changes to the medical provider (nurse practitioner [NP]/physician [MD], or on-call provider). Part of a nurse's skill set is recognizing subtle clinical symptoms that may further exacerbate a patient's conditions. Evidence has shown that nursing facilities with low-level skilled nurses have a higher risk of rehospitalizations (Polniaszek et al., 2011). Nurses with resilient critical thinking abilities coupled with sharp clinical skills can accurately identify acute medical changes and manage patients with complicated care plans to prevent recurrent rehospitalizations (Polniaszek et al., 2011). The INTERACT program is used as a clinical support tool to direct nursing assessments during an acute change in the patient's condition and act as a guide to making a sound clinical judgment that will lead to positive care outcomes.

Standard health care practices include a nursing-led approach that is comprised of rehospitalizations prevention efforts that looks beyond disease-specific strategies, but ensures interventions are focused individually on targeting at-risk patients to improve care coordination across the health care spectrum (Advisory Board, 2017). Providing care to higher acuity level patients involves continuous assessments and reassessments

using critical nursing management skills (Polniaszek et al., 2011). Medical providers also play a significant role in deciding whether to hospitalize or rehospitalized patients. The provider's decision to further assess or transfer patients is significantly dependent on staff nurses' communication skills. Delay in communications between the provider and staff nurses may jeopardize the opportunity to immediately intervene in clinical management before the deterioration of the disease process (Polniaszek et al., 2011).

Transitional Care and Cost Savings

Improving the quality of care provided at nursing facilities will reduce health care spending associated with avoidable rehospitalizations, reduce morbidity and mortality rates, and enhance positive health care outcomes (Ouslander et al. 2014). Preventing rehospitalizations is a quality improvement initiative that results in Medicare cost savings (CMS, 2012a). SNF patients with an acute change in clinical conditions may be safely managed in the nursing facility, lessening the burdens associated with rehospitalizations and contributing substantially to health care savings (Ouslander et al. 2014).

According to the CMS, rehospitalization trends from nursing facilities have shown that a high ratio of hospitalizations could be avoided (CMS, 2012a). In a comparative study of 59 nursing homes from 1992 to 1997, 256 cases resulting in hospital transfers were compared with an equivalent caseload that was treated in the nursing home. A mean average of $4,206 was saved on patients whose conditions were managed in the nursing home versus the hospitalized patients (Ouslander et al. 2010). Extrapolating data from the above study to the Georgia State 2006 nursing home study and calculating potentially avoidable rehospitalizations costs, it was found that over 21,000 preventable hospitalizations would have been avoided if patients were treated at

the nursing home rather than being rehospitalized and would have saved up to $142 million in Medicare spending (Ouslander et al. 2012).

Summary

There is consensus agreement across the health care spectrum that rehospitalizations are inconvenient with significant financial consequences. According to the CMS (2012a), the rehospitalization rates of SNF patients are becoming a medical concern. Nursing facilities are burdened with frequent but preventable rehospitalizations that are costly and disruptive to patient care processes and generally unsafe to the geriatric population due to irreversible functional decline. Over a quarter of SNF residents are hospitalized every year, many of which are avoidable (Polniaszek et al. 2011). These rehospitalizations cause undue physical and emotional stress on the patients and increase the morbidity and mortality risks in this patient population. Several initiatives sponsored in part by the CMS are directed at reducing rehospitalizations and increasing nursing facilities' involvement in reducing rehospitalization rates. This quality improvement project contributed to the body of nursing knowledge by focusing on how to best improve patient care outcomes through the improvement of nursing processes at reducing rehospitalizations rates. Patients with increased risks for rehospitalization are identified on admission to an SNF, and a modified plan of care should be adapted to meet their clinical needs. Also, patients who develop acute medical changes while in the facilities should be promptly managed using the INTERACT tools, geared at directing nursing assessments towards a clinical pathway to avoid treatment delays, and prevents further deterioration of clinical symptoms.

Chapter 3

Methods

Introduction

Patients discharged from acute care to SNF require specialized nursing care that is dependent on licensed nurse capabilities (Thomas et al., 2012). In a retrospective chart review by Dombrowski et al. (2012), 62% of rehospitalized patients have reoccurring complications and/or continuance of the same clinical conditions preceding their SNF admissions. One in four Medicare patients admitted to the SNF are rehospitalized within 30 days, and about 40% of these rehospitalizations may have been prevented with high-quality SNF care (Thomas et al., 2012). Excellent nursing care with enhanced clinical skills have been found to be an integral factor in improving patient's outcomes, and potentially reduce readmission rates (Jacelon et al., 2014). The purpose of this quality improvement project was to enhance skilled nursing care processes by improving the utilization of the electronic medical record software program INTERACT to increase earlier identification and treatments of patients to minimize 30-day hospital readmissions.

SNF nurses are vital to preventing rehospitalizations. Clinical nurse skills with excellent coordination of care and professional oversight promote quality care (Thomas et al., 2012). Many factors contribute to enabling immediate follow-up care of patients upon discharge from the hospital. Patients with a previous history of rehospitalizations require follow-up care assessments that are targeted to address their current clinical status, which is dependent on the severity of their illnesses, the level of their functional

status, and available support systems (Snyderman et al., 2014). Nursing tasks include conducting patients' assessments, monitoring for acute clinical changes, mediating with family, and consulting with medical providers regarding any significant change in patient's conditions (Thomas et al., 2012). Identifying patients at high risk for rehospitalizations using various risk stratification data obtained from medical records, and other health care databases will assist nursing and other health care providers to correlate the level of care to patient's acuity and thereby reduce the likelihood of rehospitalization (Snyderman et al., 2014).

SNFs equipped with experienced nurses have a higher level of care standards (Thomas et al., 2012). When staff become familiar with institutional policies and protocols, standardized care plans are maintained and organized follow-up care is preserved. Nursing facilities with low rehospitalization rates have nurses with astute clinical capabilities to promptly recognize deteriorating health status and determine when such changes can be escalated (Thomas et al., 2012). To prevent rehospitalizations, continuous follow-up care is required from admission to discharge. With timely follow-up care, patients are less likely to be rehospitalized (Snyderman et al., 2014). Identifying patients at risk for rehospitalizations on admission, using appropriate screening tools and follow-up assessments tools like the INTERACT program, staff is more empowered to adequately assess patients' conditions and seek immediate help to prevent further deterioration (Dombrowski et al., 2012).

Project Design

This project utilized a pretest and posttest design with retrospective data collection methods. Gathered data were analyzed using the IBM SPSS Statistics version

25. This quality improvement (QI) project involved obtaining pretest survey data to determine the nurses' baseline knowledge of the INTERACT decision-support tools. Afterward, a 45-minute training session was provided to nurses, and a posttest survey was administered 60 days later to assess for improvement in knowledge and increased use of the INTERACT decision-support tools at managing acute changes in patients' clinical conditions. A copy of the pretest and posttest is located in Appendix D and E. In this retrospective design, the investigator collected 60-day readmission rates data from the INTERACT dashboard before training and post training on Day 30 and 60 respectively to collect data on readmission rate occurrences. Ongoing assessments for improvement in nursing care processes, hospital transfers, and care delays were also monitored. The purpose of this design was to compare a corresponding decline in readmission rates following the INTERACT re-utilization training.

Setting

The project setting was at a SNF located in the suburb area of Montgomery County, Maryland. This SNF consisted of 118 eligible double beds with an average occupancy of about 50 skilled patients. The reported readmission rate of the facility for January 2018 was 14%, which is higher than then the corporate benchmark of 9%. Moreover, according to the SNF quality measures report on Nursing Home Compare Web site, assessed in May 2017, the SNF total rehospitalization rates from June 2015 to July 2016 was 27.1%, which is higher than the stated average of 21.1% and the national average of 20.1% (CMS, 2017).

Inclusion and Exclusion Criteria

The inclusion criteria for the project included full-time licensed nurses employed in the facility for 6 months or more. All participants were to be able to speak, write, and read English. Exclusion criteria consisted of licensed nurses employed in the facility for less than 6 months.

Ethical Considerations

The project was supported by the Nova Southeastern University (NSU) Institutional Review Board (IRB) approval with an administrative site support letter from the SNF as the facility does not partake in the IRB process. The project included human subjects (licensed nurses), which required protective rights and welfare safeguard through the provision of informed consent. Retrospective readmission data were obtained from the SNF INTERACT program dashboard. A copy of the site support letter and informed consent form is included in Appendix B and C.

Informed Consent and Confidentiality

The project used a consent letter of participation required to be signed by each eligible participant. All signed consents were kept in a locked cabinet in the principal investigator's (PI) office separate from the aggregate data collected to maintain confidentiality. Participation in the study was voluntary. Participants were able to withdraw from the study at any point in the process without any repercussions or punitive measures. The Belmont report of 1979 has stated that a participative research agreement should include a voluntary consent that specifies undue influence and is free of coercion (DHHS, 1979; The National Commission for the Protection of Human Subjects of Biomedical and Behavioral Research, 1978). For this project, all consents were obtained

and kept confidentially and locked in a file cabinet in the PI's office. These data collected from the SNF INTERACT dashboard were secured electronically on a code lock computer. All collated data will be kept for 36 months and deleted per the NSU IRB guidelines (i.e., in 3 years). The pretest and posttest questionnaires are anonymous, and the two surveys are linked by a code selected that only the participants would know.

Project Phases/Objectives

These project objectives occurred over various phases:

1. Objective 1. Conduct a literature review to identify EBP outcomes with the use of the INTERACT program in reducing rehospitalization rates.
    - Phase 1 Perform an evidenced-based literature review outcome to use the INTERACT program and its effectiveness in reducing 30-day SNF rehospitalization rates.
    - Phase 2. Attend a two-day training workshop for the implementation of the INTERACT 4.0 versions.
2. Objective 2. Review current SNF nursing process for assessing and documenting patients' change in conditions.
    - Phase 1. Review current SNF policies and procedures for documenting acute changes in patients' conditions.
    - Phase 2: Compare SNF standards of practice for patients transfers to recommended standards of the INTERACT program and outcomes.
3. Objective 3. Introduce the re-utilization of the INTERACT program into the nursing process.

- Phase 1. Prepare a PowerPoint training session, emphasizing the use of the decision-support tools in the INTERACT program.
- Phase 2. Perform 45 minutes to 60 minutes of interactive training sessions for nurses, emphasizing the use of the INTERACT decision-support tools at assessing and documenting acute change in patients' conditions.

4. Objective 4. Evaluate the effectiveness of the tool for improving the SNF rehospitalization rate.
    - Phase 1. Compare the SNF pre-implementation and post-implementation rehospitalization rates using the comparative data analysis strategy.
    - Phase 2. Administer a pretest and posttest questionnaire to assess improvement in nursing knowledge by using the decision-support tools of the INTERACT program.
5. Objective 5. Collaborate with the SNF IDT to reintegrate INTERACT program decision-support tools into the nursing process.
    - Phase 1. Discuss the outcomes of the project with the IDT emphasizing possible improvement in rehospitalization rates using the decision-support tools.
    - Phase 2. Reintegrate using the decision-support tools system into the nursing process for assessing and documenting patients change in conditions.
6. Objective 6. Collaborate with the SNF corporate team at reintegrating the INTERACT program into the global EMR to maintain congruency in the nursing care processes.

Timeline

The project initiation commenced during the 16 weeks of Capstone I that started in January 2017 through May 2017. During this time, research about the QI capstone project topic and supporting evidence were obtained to highlight the effectiveness of the INTERACT program in reducing readmission rates. After the NSU's procurement of the affiliation agreement with the facility, the QI project topic was presented to the SNF's IDT for consideration. After QI topic was approved, weekly meetings with the IDT team were maintained, coupled with one-on-one discussions with each departmental head to obtain vital information about the admission process, rehospitalization rates, and nursing practices.

From June through August 2017, further observations on nursing behaviors were documented, and continued research to gather evidence to support the significance of the QI project was completed. The IRB process was initiated after the completion of Capstone II, and IRB approval was obtained before the project implementation phase in Capstone III. During the implementation phase, which occurred from May through July 2019, participants' informed consent were obtained, and a pretest and posttest questionnaire survey assessing nurses knowledge for the use of the tool was also obtained. A 45-minute interactive training session emphasizing the use of the decision-support tool during patients' change in condition was administered, and project data were collected and analyzed.

Resources

Budget

The cost of the project included all printing materials and a two-day training workshop on implementing the INTERACT program. The estimated cost of printing was $120 to cover paper and printer ink. The INTERACT two-day training workshop costs of $629 and $450 were used to cover travel and hotel expenses. The total cost of this project implementation was $1229.00. The DNP student incurred these costs.

Table 1
Project Expense

Expense	Amount ($)
Printing cost: Papers and printer ink	120.00
INTERACT two-day workshop	629.00
Hotel	230.00
Travel	250.00
Total	1,229.00

Outcomes Measures

During the review of the literature, studies have shown that SNF readmissions are a significant health care concern, secondary to its economic impact on health care facilities and its physical effects on patients and their families (Gorina et al. 2015).

Outcomes of this project will be evaluated using measures listed below:

Objective 1. Conduct a literature review to identify EBP outcomes with the use of the INTERACT program at reducing rehospitalization rates by summer 2017.

This objective was measured by exploring large bodies of literature and multiple research articles for 30-day readmissions and the effect the INTERACT program has on rehospitalization reduction with documented evidenced-based outcomes pretest and posttest implementation of the program.

Objective 2. Review current SNF nursing process for assessing and documenting patient's change in conditions.

This objective was measured by reviewing the SNF's current standard as stipulated on its policy and procedures manual for nursing documentation of the acute change in conditions and hospital transfers and compare this standard to the INTERACT program recommendations for addressing change in condition (CIC) with the goal of assessing for gaps in documentation and its effects on rehospitalization rate.

Objective 3. Introduce the re-utilization of the INTERACT program into the nursing process.

This objective was achieved by administering a 45 minute group training session to nurses about how to incorporate the decision-support tool to direct nursing assessments during acute patients' change in conditions and maintain congruency in documentation and hospital transfers. The objective was measured by administering a pretest questionnaire before project implementation to evaluate nurses' perceptions of the use of the tool for reducing readmissions and to assess nurses' knowledge. A posttest questionnaire was administered 60 days post training to assess for improvement in nurses' perception of the use of the tool and increased proficiency. Although the questionnaires were anonymous, they were linked with a code selected by the participants to conduct inferential statistics for comparison.

Objective 4. Evaluate the effectiveness of the tool for improving the SNF rehospitalization rate

This objective was measured by comparing readmission rates 60 days before and 60 days after project implementation for improvement. The retrospective readmission

rate from 60 days before project implementation was obtained from the facility's dashboard and compared with the current readmission rates obtained on Day 30 and Day 60 post project implementation.

Objective 5. Collaborate with the SNF IDT to integrate INTERACT program decision support tools into the nursing process

This objective was measured through ongoing collaboration with the IDT. The PI presented the outcomes of the study to the team with the goal that the team will integrate the INTERACT decision-support tools into the nursing process and efficiently sustained the changes to nursing assessments and documentation during acute CICs.

Objective 6. Collaborate with the SNF corporate team for integrating the decision-support tools of the INTERACT program into the nursing policy and procedures manual and incorporate the tool in the global EMR to maintain congruency in the nursing care processes.

The objective was measured by presenting a standardized INTERACT re-implementation guideline process to the nursing team for corporate-wide systems integration. The willingness of the SNF leadership team to adopt project recommendations with the goal of reducing rehospitalization rates was anticipated.

Summary

The physical effects of rehospitalizations have contributed to increased morbidity and mortality rates of frail elderly patients. Due to this underlying problem, it is essential to improve this issue to prevent further impact on patients and the economic downturn on the facilities. The purpose of the quality improvement project was to enhance skilled nursing care processes by improving the utilization of the electronic medical record

software program INTERACT to increase earlier identification and treatment of patients to minimize 30-day hospital readmission. This focus was geared at assessing the SNF nurses' perception for utilizing an EBP standardized program to reduce 30-day rehospitalization rates in SNFs and identify problems associated with nursing assessments and documentation that may have contributed to patients' rehospitalizations. It is believed that with continued staff re-education, improvements in nursing documentation, and patients' assessments would be noted with a corresponding decrease in rehospitalizations. The result of this project facilitated an improvement in patient care outcomes and reduce health care expenditures.

Chapter 4

Results and Discussion

Rehospitalizations have been noted as a significant contributor to the disintegration of health care, and its financial implications have since affected health care costs and spending (Point Click Care [PCC], 2017). Unplanned rehospitalizations cost Medicare an estimated $17.4 billion (Nelson & Pulley, 2015) with two thirds of these readmissions considered preventable (Morandi et al., 2013). By 2022, it is projected that hospitals in the United States will lose $7 billion in rehospitalization reimbursements (Treece et al., 2018), and by 2050, health care costs are expected to rise to about $4.6 trillion (CMS, 2012b). The problem is SNF patients who experience medical care delays are at high risk for rehospitalizations. These delays have been related back to ineffective nursing assessment and clinical practices (Polniaszek et al., 2011).

Changes in patients' medical conditions are often not promptly recognized nor reported, leading to severe exacerbation of their illnesses, resulting in rehospitalizations (Ouslander et al., 2014). This process negatively affects patient care outcomes, increases morbidity and mortality, and results in higher health care costs (CMS, 2012b). The purpose of the quality improvement project was to enhance skilled nursing care processes by improving the utilization of the electronic medical record software program INTERACT to increase early identification and treatments of patients to minimize 30-day hospital readmissions. The CMS introduced the Hospital Readmission Reduction Program as a measure to reduce 30-day readmissions of acute care hospitals with a

maximum penalty reduction of 3% in reimbursements to facilities with excess rehospitalization rates (Hoffman & Cronin, 2015). This measure has contributed to the steady decline in readmission rates (Wasfy et al., 2017) and an increase in the hospital-to-SNF collaboration, and an increased focus on outcomes-based care (Butcher, 2012). This project was used to foster coordinated care and promote the continuity of care across all health care settings.

Data Analysis

During the 16-week implementation period, data were collected from the pretest and posttest surveys as well as the INTERACT dashboard. The 14 question pretest survey data was administered to determine nurses' baseline knowledge and use of the INTERACT clinical decision-support tools. A 45-minute interactive training session was provided to the nurses, and a posttest survey was administered 60 days after the training to assess for improvement in nurses' knowledge and use of the INTERACT clinical decision-support tools. A 60-day retrospective and prospective rehospitalization rates were obtained from the INTEARCT dashboard (See Table 3). Data were compared before and after the training sessions, and differences were noted. Participants' demographic data for nurses' age, years of nursing experience, gender, number of change in conditions completed in the 30 days, job roles, and work shifts were obtained from the pretest survey. Descriptive statistics were used to analyze demographic data and reported in frequencies and percentages (See Table 2). All other relevant data collected were also analyzed into frequencies and percentages.

Table 2
Demographic Characteristics of Nurses

Characteristics		Frequency (n = 24)	Percent %	Valid %	Cumulative %
Gender	Male	3	12.5	12.5	12.5
	Female	21	87.5	87.5	100.0
Age	20-29	1	4.2	4.5	4.5
	30-39	11	45.5	50.0	54.5
	40-49	6	25.0	27.3	81.8
	50-59	2	8.3	9.1	90.9
	60-69	2	8.3	9.1	100
	Missing	2	8.3	8.3	
Job designation	LPN	7	29.2	29.2	29.2
	RN	17	70.8	70.8	100.0
Years of practice	6-12 months	7	29.2	29.2	29.2
	1-2years	3	12.5	12.5	41.7
	3-5 years	3	12.5	12.5	54.2
	>5 years	11	45.8	45.8	100.0
Work Shift	Day shift	11	45.8	45.8	45.8
	Evening	8	33.3	33.3	79.2
	Shift	4	16.7	16.7	95.8
	Night Shift	1	4.2	4.2	100.0
	PRN				
CIC performed in last 30-days	0-1	10	41.7	41.7	41.7
	1-2	8	33.3	33.3	75.0
	>3	6	25	25	100.0

Out of the 31 nurses who participated in the pretest survey, 24 nurses (77%) were able to complete the posttest survey. It was determined that loss of participants was due to three internal transfers, two staff vacations, and two resignations. Descriptive statistics showed that most participants were female and registered nurses. Most had greater than 5 years' experience. Age ranged from 20 to 69, with a median age in the 30s. Most of nurses predominately worked day shift, and over half had completed more than one CIC within the last month. Pretest and posttest data for the frequency of nurses' use of the

tool and nurse's proficiency were analyzed into frequencies and percentages as shown in Tables 4 and 5, respectively. To test for significant differences between the pretest and posttest data for Questions 10 and 14, these two questions were about nurses' use of the program and proficiency. A two-tailed paired sample *t* test was conducted using the IBM SPSS Statistics version 25. The paired *t* test was used due to its capacity to compare two means that are from the same individual in different times, such as the pretest and posttest mean after an intervention had been applied between the two time points. Tables 7 and 8 present the results.

Results

A convenience sample of 31 nurses participated in the pretest survey and attended the 45-minute INTERACT program training in groups of three to five nurses in each training session as allowed by work schedule and availability during the work shift. The training sessions covered a two-week period, and training was provided across all shifts. After the training, the investigator performed continued observations of nurses during CICs and offered support. All participants met the inclusion criteria of a minimum of 6 months working at the facility and speaking English. Specific steps were taken in achieving the project objectives as stated at the beginning of the project.

Objective 1. Conduct a literature review to identify EBP outcomes with the use of the INTERACT program in reducing rehospitalization rates. An extensive review of the literature was gathered to support the need for the project based on the documented success of the program in other SNF facilities, and CMS also supported the program as a significant measure for reducing readmission rates (PCC, 2017). In previous research,

the use of this program has been recorded to decrease rehospitalizations between up to 25% (Ouslander et al., 2014).

Objective 2. Compare SNF standard of practice for patients' transfers to the recommended standards of the INTERACT program and outcomes. In achieving this objective, the investigator reviewed the facility's protocol for documenting CIC prior to initiation of the training sessions, which included necessary steps as established in a PCC a cloud-base software program used by nurses to access the INTERACT program. Per policy, all assessments should be manually initiated based on the facility's protocol. Documentation using the electronic INTERACT change of condition template is initiated when there is a new change in condition, and nurses are required to perform appropriate clinical observations and collect pertinent patient data to report to a physician or advanced practice provider. The nurse is the major factor for determining when a change in condition is worth assessing and or escalated (Kripalani et al., 2014). Various inconsistencies were noted in the nursing report, and documentation was not reflective of patient clinical status. There were no coordinated steps for assessing patients during CIC, and nurses are given the responsibility to make the decision of when to escalate changes to mid-level providers based on their assessment skillset, and documentations were based on necessity.

Objective 3. Introduce the re-utilization of the INTERACT program into the nursing process.

Objective 4. Evaluate the effectiveness of the tool for improving the SNF rehospitalization rate. In achieving both Objectives 3 and 4, which included the project implementation process, all participants were able to be trained in the use of the

INTERACT program through various training sessions, and an accompaniment decrease in rehospitalizations was noted with increased use of the INTERACT decision-support tool as depicted in Table 3.

Table 3 also presents the breakdown of the facility's monthly admissions with corresponding 30-day rehospitalization rates irrespective of the payer source. Data were obtained from the SNF utilization dashboard, and 30-day readmission rates were calculated per recommendations from the CMS and as used in the INTERACT program. Rehospitalization rate was calculated as the number of patients transferred to the hospital, divided by the number of admissions from the hospital for the month (PCC, 2017). Most common readmission diagnosis note during this review was altered mental status (AMS), fever, urinary tract infection (UTI), and others (diagnoses are non-specific).

Table 3
SNF Admission and Rehospitalizations Rates From March to July 2018

	SNF all payer 30-day rehospitalization rate		
Month/Year	Total No. of all-payer admits/ readmits to NH	Total No. of 30-day all payer rehospitalization.	30-Day all payer rehospitalization rate (%)
Mar 2018	100	23	23%
Apr 2018	80	19	24%
May 2018	91	14	15%
Jun 2018	63	13	21%
Jul 2018	60	5	8%

Figure 1 shows a line graph describing the decline in rehospitalization rates from March to July 2018. Although a decline in rehospitalizations rates from the pre-implementation rate of 23% to a post-implementation rate of 8% was reported, which accounts for about a 15% reduction in total rehospitalization rates within the implementation period, there was no corresponding association to conclusively show that

the increased use of the INTERACT clinical decision-making tools and/or improvement in nurses' proficiency solely contributed to reduction in the SNF rehospitalization rate. The decline could also be associated with gradual reduction in the number of new admissions, which can have a parallel effect on the number of patients transferred back to the hospitals among all other factors. Slight increase in rehospitalization rate was reported in June, which can be associated with an increased use of as-needed (PRN) staff during the month of June. Even though admission rates were similar for June and July, corresponding rehospitalization rates differed.

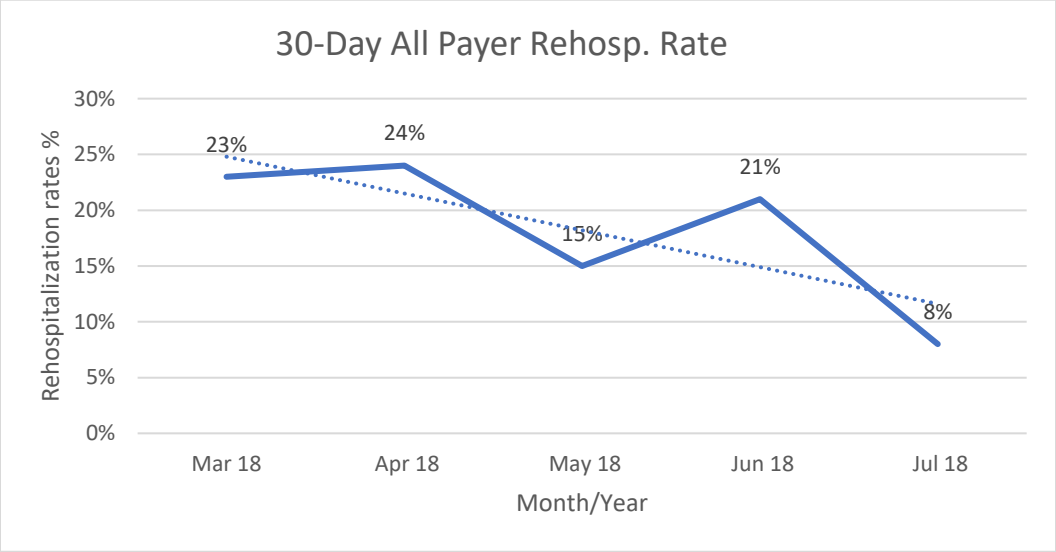

Figure 1. Decline in rehospitalization rates from March to July 2018.

A linear decline in the SNF's monthly rehospitalizations rates was noted after the training with a significant drop reported for May and July. Pre-implementation data presented in March and April shows higher rehospitalization rates. A sharp decline in May and even a much-noted decline in July 2018, 60 days post implementation was noted. Comparing the pretest and posttest survey reports for the use of INTERACT clinical decision-support tool, Table 4 shows that after the training, there was significant

improvement in the use of the INTERACT clinical decision-support tool for directing patients care during CIC. There was a 42% increase in the nurses who now uses the tool during CIC, and there was a 33% decrease in the number of nurses with no prior familiarity with the INTERACT clinical decision-support tools

Table 4
Pretest and Posttest Survey on the Use of the INTERACT Tools

Question 10	Options	Pretest		Posttest	
		Frequency	(%)	Frequency	(%)
Have you used the care path tool in the INTERACT program to direct patient care during a change in condition?	Yes	8	(33.3%)	18	(75.0%)
	No	6	(25.0%)	4	(16.7%)
	Not familiar with the care path tool	10	(41.7%)	2	(8.3%)
Total		24	(100.0%)	24	(100.0%)

Although there was significant improvement in the rate of nurses using the INTERACT clinical decision-support tools for directing patient care, there was no corresponding increase reported in nurse's proficiency. Table 5 shows the pretest and posttest survey results for nurses' proficiency of the INTERACT program.

Table 5.
Pretest and Posttest Survey on Nurses Proficiency of the INTERACT Program

Question 14	Options	Pretest frequency	(%)	Posttest frequency	(%)
Can you say you are proficient in the use of the INTERACT program?	Still needs help with using the program	4	(16.7%)	3	(12.5%)
	Somewhat proficient	8	(33.3%)	6	(25.0%)
	Proficient	9	(37.5%)	10	(41.7%)
	Very Proficient	3	(12.5%)	5	(20.8%)
Total		24	(100.0%)	24	(100.0%)

Using the pretest and posttest data obtained from Tables 6 and 7, a two tailed paired sample *t* test was calculated to test for significance in nurses' use of the tool and nurse's proficiency in the use of the tool. See Tables 6 and 7 for the results.

Table 6
SPSS Output on Question 10: Nurses Use

Question 10

Paired samples statistics

		Mean	*N*	Std. Deviation	Std. Error Mean
Pair 1	Pretest	2.0833	24	.88055	.17974
	Posttest	1.3333	24	.63702	.13003

Paired samples correlations

		N	Correlation	Sig.
Pair 1	Pretest & Posttest	24	-.052	.810

Paired samples test

		Paired Differences							
					95% Confidence Interval of the Difference				
		Mean	Std. Deviation	Std. Error Mean	Lower	Upper	*t*	*df*	Sig. (2-tailed)
Pair 1	Pretest Posttest	.75000	1.11316	.22722	.27995	1.22005	3.301	23	.003

Table 6 presents the results for the test of significance to compare nurses pretest and posttest use of the INTERACT clinical decision-support tool (Question 10). The result showed there was a statistically significant difference in the pretest (M = 2.08, SD = 0.88) and posttest (M = 1.33, SD = 0.63) with 95% CI, $t(23)$ equals 3.30, and p equals .003. This investigator inferred from this result that the INTERACT training significantly increased the nurses' use of the INTERACT clinical decision-support tools.

Table 7
SPSS Output on Question 14: Nurses Proficiency

Question 14

Paired samples statistics

		Mean	*N*	Std. Deviation	Std. Error Mean
Pair 1	Pretest	2.4583	24	.93153	.19015
	Posttest	2.7083	24	.95458	.19485

Paired samples correlations

		N	Correlation	Sig.
Pair 1	Pretest & Posttest	24	-.332	.113

Paired samples test

		Paired differences							
					95% Confidence Interval of the difference				
		Mean	Std. deviation	Std. error mean	Lower	Upper	*t*	*df*	Sig. (2-tailed)
Pair 1	Pretest - Posttest	-.25000	1.53934	.31422	-.90001	.40001	-.796	23	.434

Table 7 presents the results for the test of significance to compare nurses' proficiency in the use of the INTERACT decision-support tools (Question 14). The results showed there was no significant difference in the pretest (M = 2.45, SD = 0.93) and posttest (M = 2.70, SD = 0.95) with 95% CI, t(23) equals -.796, and p equals .434. These results showed that the INTERACT training did not improve nurses' proficiency. Although there was a significant improvement in nurses' use of the INTERACT clinical decision-support tools with an accompanying decline in rehospitalization rates from the start of the project to completion, there was no direct causative explanation that increased nurses use of the INTERACT tool significantly contributed to the reduction in SNF rehospitalization rates among other factors. It is assumed that as nurses begin to build up the use of the clinical support tools, it will result for an increase in proficiency of the tool

over time, thereby relating to an increase in responsiveness to CIC and a corresponding decrease in unnecessary rehospitalizations.

Objective 5. Collaborate with the SNF IDT to reintegrate INTERACT program decision-support tools into the nursing process. In achieving Objective 5, the project outcomes were presented to the facility's IDT, comprised of the Center Nurse Executive as Chair and all other major departmental heads. Progressive drop in rehospitalizations rates was emphasized, and financial savings associated with continued use of the program as depicted in various studies was also presented. Reduction in rehospitalization rates increases health care savings by preventing additional bed holds, avoid loss of revenue and nursing time, and ultimately puts the facility in good standing to acute care facilities as an appropriate post-acute referral source, based on quality measures satisfaction. It is reported that readmission costs equate to 60% to 135% of the original cost of admissions, not counting the non-financial effects on patients health, safety, and physical stability (Monga, 2016).

Objective 6. Collaborate with the SNF corporate team at reintegrating the INTERACT program into the global EMR to maintain congruency in the nursing care processes. Objective 6 is ongoing with goals of global integration of the INTERACT clinical decision-support tools into the facility's EMR and corporately to facilitate consistency in nursing documentations and assessments.

Expected/Unexpected Findings

Expectations were high for immediate integration of the project into the facility's standard nursing protocol due to its relevance in promoting safe care and achieving quality measures while preventing financial penalties. The administrative and clinical

teams were in support of the project implementation, but project application on the nurses' end was a little cumbersome due to several pushbacks. From discussions with the staff during ongoing training of the tool, nurses reported their thoughts and perceptions regarding the tool. Nurses reported thinking that using the decision-making tool is an additional step to their workload, others think they are taking on the roles of a mid-level or physician provider, and several others find the program as a support tool to assist patients' assessment during CIC and improve their documentation process. From the pretest data, over 61% of the nurses felt that worsening disease process was a major contributor to rehospitalizations, and they are unable to halt this process. Nineteen percent of the nurses also associated rehospitalizations to delay in care while others associated rehospitalizations to other administrative issues, such as poor staff-to-patient ratio, and inadequate clinical support system. With two thirds of the nurses supporting worsening disease process as the major factor to rehospitalizations, it was initially challenging to change this belief. Explanation were made to let the nurses understand that with inadequate patient support or poor nursing interventions, conditions tend to worsen, and timely nursing interventions may be needed to halt this process.

The concept for the theory of planned behavior presents that the intention of an individual is ruled by his/her attitude towards a problem and is dependent on one's view concerning the execution of that behavior in achieving either a positive or negative response (McEwen & Wills, 2011). The TPB was used to prompt nurses to change their beliefs and attitudes concerning the probable cause of rehospitalizations. The INTERACT training was used as a tool to redirect nurses' attitudes towards the problem at hand and in turn influence their intention to execute a behavior that will lead to

positive patient outcomes. The training was used to reiterate the importance of prompt clinical assessments and medical interventions to prevent disease exacerbation that may lead to avoidable rehospitalizations. With the implementation of this project, it was expected that rehospitalization rates would decrease and a corresponding decline was noted. Additionally, it was anticipated that there would be an increased use of the INTERACT tools after the training. While there was a statistically significant increase in use, there was not a corresponding statistically significant increase in proficiency.

Strengths and Limitations of the Project

The strength of the project included the collaborative support that was provided by the center administration and the IDT team during the implementation of this project. The project also included diversity of nurses with different practice backgrounds, and the practical application of the TPB framework to guide change in practice, and the project has achieved a favorable effect as anticipated. After the completion of the project, the nursing administration requested the continued use of the INTERACT clinical support tools as an assessment guide for nurses during CIC.

The project also had some limitations. First, rehospitalization rates were obtained from the SNF utilization dashboard, and clarifications for planned or unplanned transfers were not noted. The project may not be generalizable due to limited data available from only one source, and the time allotted for data collection was too short to observe the maximum effect of the intervention, such as increased nurses' proficiency.

Lastly, changes in leadership during the implementation period may have contributed marginally to affect the adequate implementation of this project. During the implementation period, there was a change in nurse leadership, which affected the moral

of the nurses at fully committing to the application of the project. There was also increased use of PRN staff during the month of June. These staff did not participate in the INTERACT training and are unfamiliar with the resources and assessment tools that could have further prompt evaluation and prevent unnecessary rehospitalizations, which contributed to an increased rehospitalization rate for that month. The TPB was very instrumental at overcoming these obstacles. Despite all these limitations, the outcomes of the project were used to provide new grounds for future research, including the application of evidenced-based knowledge to practice, improve the outcomes of care, and enhance the nursing care process.

Implications of the Project

Practice

Over time, the sustainability of the project using champion users was encouraged. While implementing the project, several champion users were trained. These users were nurses with an increased understanding of the tool and could act as a support system to nurses when needed. These users would assist in boosting nurses' confidence for using the tool more in practice. The facility also hired a nurse practice educator (NPE) during the implementation period. The NPE will be the primary champion user for the project going forward. These champion users will ensure continuity of the project and facilitates the gradual integration of the INTERACT training into nursing orientation programs. These steps will be used for newly hired nurses to be trained firsthand before engaging in the full clinical practice. This integration would also be used to promote an organizational change to allow for easy integration into the nursing process and to facilitate project sustainability past the implementation period. The project would also

encourage the use of EBP in nursing, improve the use of health information technology, and promote remote access to patients' information by on-call providers. The program may also be infused into telemedicine access to help congruency in care practices across multiple facilities.

Health Care Outcomes

Return on investment is an essential reason for the facility to integrate the project into clinical practice. In 2011, $42 billion was paid to reimburse over three million cases of 30-day, all-cause readmissions (Monga, 2016). The INTERACT program was created to prevent acute care transfers, which would improve care continuity and patient outcomes. For the current facility, the INTERACT program is in place and does not require any implementation costs. The long-term benefits of the program and the financial savings associated with its full implementation over time is significant. The INTERACT program clinical decision-making tools are used for early identification of an acute change in patients' medical condition, provides clinical support to nurses, and encourage early interventions to prevent further clinical exacerbations, which promotes positive care outcomes (Ouslander et al., 2014).

Health Care Delivery

During the project implementation, a significant number of rehospitalizations were noted to have occurred during the evening and night shifts. Availability of medical practitioners during the day facilitate the immediate assessment and application of clinical interventions, which may prevent further exacerbations and rehospitalizations. Maintaining an adequate on-call team with the possibility of telemedicine access have shown to prevent rehospitalizations and save health care costs (Grabowski & O'Malley,

2014). Nurses are also encouraged to use the decision-making tool as a guide to patient assessments and to facilitate appropriate on-call protocols for patient management. The INTERACT program is used to promote positive care outcomes, to support collaborative practice within the health care system, and to facilitate the continuity of care. Most importantly, it has been shown to prevent unnecessary rehospitalizations (Ouslander et al., 2014). SNFs with low rehospitalization rates are often the preferred facility for patients' referral post-acute care hospitalizations, thereby increasing SNFs revenue (Butcher, 2012).

Health Care Policy

With the fragmentation of care and increasing health care cost, the CMS recommended penalizing facilities up to 3% of their reimbursements revenue (CMS, 2012), which has triggered many preventative measures to be undertaken by hospitals and post-acute care facilities for reducing their rehospitalizations rates. The INTERACT program is one of the many tools approved by the CMS for use in SNFs to prevent acute care transfers. This tool has been validated and is widely recommended as a practice standard for rehospitalizations prevention. The DNP project has also contributed to increased educational opportunities for nurses to improve their clinical skills through the use of the INTERACT clinical support tools. Increased program use also culminates in improved care delivery to achieve the ACA P4P goals and promotes the CMS readmission reduction efforts.

Recommendations for Future Research

It is recommended that future research be made to document the progression of improvement in clinical skills of new nurses using the INTERACT program decision-

making tools as a guide to patients' management during CIC. Also, research measuring improvement in participants knowledge of the INTERACT program after the training and chart review to document improvements in nursing documentations will also be a valid study to implement. It will also be interesting to know the results of a longitudinal study about nurses' proficiency after using the INTERACT tools in practice will show. To establish a new clinical protocol, a change in organizational culture must be established. The TPB framework can facilitate an organizational change in nursing culture through the increased awareness of the impact that nursing clinical practices can have on patients' outcomes. This change can also be achieved through the application of appropriate clinical knowledge to new hires during nursing orientation as this change will facilitate an organizational change in nursing culture and the implementation of new clinical protocols.

Summary of the DNP Project

The goal of this project was focused on reducing SNF rehospitalizations rates using the INTERACT program decision-making tools as a guide for nurses to manage acute changes in patients' clinical conditions appropriately. This program also increases the early recognition of acute CIC and facilitates prompt clinical interventions to prevent further worsening of the disease process, prevent delay in care, and avert unplanned rehospitalizations. The use of this program has been recorded to decrease rehospitalizations up to 25% (Ouslander et al., 2014), and due to current ACA mandate at penalizing facilities with high numbers of rehospitalizations, the INTERACT program has influenced an increased in early identification and treatment of patients and also facilitated improved nursing care and provider's interventions. With a shortened length of

hospital stay, post-acute care facilities are burdened with high acuity level of patients, which affected their rehospitalization rates. This DNP project will continue to improve nursing care process across board and facilitate a significant reduction in rehospitalization rates through the integral role SNFs have at supporting acute care facilities at meeting and exceeding their outcomes-based quality measures.

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Appendix A

IRB Exempt Amendment Approval

NOVA SOUTHEASTERN UNIVERSITY
Institutional Review Board

MEMORANDUM

To: FOLASADE ADEWUNMI
Ron and Kathy Assaf College of Nursing

From: Nurit Sheinberg, Ed.D.
Chair, Institutional Review Board

Date: May 18, 2018

Subject: IRB Exempt Amendment Approval Memo

TITLE: IMPROVED USE OF "INTERACT®" TO DECREASE 30-DAY READMISSIONS FROM A SKILLED NURSING FACILITY– NSU IRB Protocol Number 2018-132

Dear Principal Investigator,

Your submission has been reviewed and approved by the Institutional Review Board on **February 27, 2018**. You may proceed with your study.

Please Note: If you receive stamped copies of consent, assent, and recruiting materials indicating approval date, these documents must be used when recruiting and consenting or assenting participants.

Level of Review: Exempt

Type of Approval: Amendment

Exempt Review Category: Exempt Category 2

Post-Approval Monitoring: The IRB Office conducts post-approval review and monitoring of all studies involving human participants under the purview of the NSU IRB. The Post-Approval Monitor may randomly select any active study for a Not-for-Cause Evaluation.

Final Report: You are required to notify the IRB Office within 30 days of the conclusion of the research that the study has ended using the IRB Closing Report Form.

The following modifications were approved:

- Addition of/change to survey(s), questionnaire(s), or other research instruments
- Change to research/study design, methods or procedures

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(954) 262-5369 • 866-499-0790 • Fax: (954) 262-3977 • Email: *irb@nova.edu* • Web site: *www.nova.edu/irb*

- Addition of/change in research personnel

Translated Documents: No

Please retain this document in your IRB correspondence file.

CC: Vanessa A Johnson, Ph.D.
Sarah Koplow

Appendix B

Letters of Site Support

[redacted]

SITE APPROVAL LETTER

Nova Southeastern University
3301 College Avenue
Fort Lauderdale, FL 33314-7796

Subject: Site Approval Letter

To whom it may concern:

This letter acknowledges that I have received and reviewed a request by Folasade Adewunmi to conduct a research project entitled "*Improved Use of INTERACT® to Decrease 30-day Readmissions from a Skilled Nursing Facility*" at [redacted] and I approve of this research to be conducted at our facility.

When the researcher receives approval for his/her research project from the Nova Southeastern University's Institutional Review Board/NSU IRB, I agree to provide access for the approved research project. If we have any concerns or need additional information, we will contact the Nova Southeastern University's IRB at (954) 262-5369 or irb@nova.edu.

Sincerely,

[redacted]

[redacted]

Appendix C

Informed Consent Form

NOVA SOUTHEASTERN UNIVERSITY
Ron and Kathy Assaf College of Nursing

General Informed Consent Form
NSU Consent to be in a Research Study Entitled
Improved Utilization of "INTERACT®" to Decrease Rehospitalizations in a Skilled Nursing Facility.

Who is doing this research study?

College: Ron and Kathy Assaf College of Nursing

Principal Investigator: Folasade Adewunmi. MSN. AGPCNP-BC

Faculty Advisor/Dissertation Chair: Dr. Sarah M. Koplow. PhD, ARNP, AGPCNP-BC

Co-Investigator(s):N/A

[redacted]

Funding: Unfunded

What is this study about?

This is a research study, designed to test and create new ideas that other people can use. The purpose of this research study is to enhance skilled nursing care processes by improving the utilization of the electronic medical record software program "INTERACT®" in order to increase earlier identification and treatments of patients to minimize 30-day hospital readmissions.

Why are you asking me to be in this research study?

You are being asked to be in this research study because you currently work as a Licensed Practice Nurse or Registered Nurse in the facility as a full time, part-time, or per-diem staff This study will include about 30 people.

What will I be doing if I agree to be in this research study?

While you are taking part in this research study, you will answer a pretest questionnaire consisting of 14 questions and a posttest questionnaire consisting of 9 questions. You will also be required to attend a 45-60 minutes training on the use of INTERACT software program.

Research Study Procedures - as a participant, this is what you will be doing:

- You will complete a consent form, anticipated to take about 3 minutes for each participants.

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(954) 262-1301 • 800-672-1802

- Each participant will complete the pretest questionnaires, consisting of 14 questions and is to take 3 minutes to complete. You will be required to attend one group training session lasting between 45-60 minutes for a group of 5-10 participants per available shifts and on weekends. Training will be scheduled in the first two weeks of clinical rotations for Capstone III to start May 21 to June 2nd, 2018. All groups are administered the same training via power point presentation to maintain consistency.
- Each participant will be required to complete a posttest questionnaire consisting of 9 questions, 60 days after the training session. Approximately 2 minutes is needed to complete this form

Are there possible risks and discomforts to me?

This research study involves minimal risk to you. To the best of our knowledge, the things you will be doing have no more risk of harm than you would have in everyday life.

What happens if I do not want to be in this research study?

You have the right to leave this research study at any time or refuse to be in it. If you decide to leave or you do not want to be in the study anymore, you will not get any penalty or lose any services you have a right to get. If you choose to stop being in the study before it is over, any information about you that was collected **before** the date you leave the study will be kept in the research records for 36 months from the end of the study and may be used as a part of the research

What if there is new information learned during the study that may affect my decision to remain in the study?
If significant new information relating to the study becomes available, which may relate to whether you want to remain in this study, this information will be given to you by the investigators. You may be asked to sign a new Informed Consent Form, if the information is given to you after you have joined the study.

Are there any benefits for taking part in this research study?

There are no direct benefits from being in this research study. We hope the information learned from this study will enhance skilled nursing care processes by increasing early identification and treatments of patients to minimize 30-day hospital readmissions, reduce the economic burden on healthcare facilities resulting in healthcare savings.

Will I be paid or be given compensation for being in the study?

You will not be given any payments or compensation for being in this research study.

Will it cost me anything?

There are no costs to you for being in this research study.

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NOVA SOUTHEASTERN UNIVERSITY
Ron and Kathy Assaf College of Nursing

How will you keep my information private?

Information we learn about you in this research study will be handled in a confidential manner, within the limits of the law and will be limited to people who have a need to review this information. All forms will be kept in a locked cabinet in the PI's office. This data will be available to the researcher, the Institutional Review Board and other representatives of this institution, and any regulatory and granting agencies (if applicable) If we publish the results of the study in a scientific journal or book, we will not identify you. All confidential data will be kept securely in a locked cabinet in the PI's. All data will be kept for 36 months and destroyed after that time by shredding.

Whom can I contact if I have questions, concerns, comments, or complaints?

If you have questions now, feel free to ask us. If you have more questions about the research, your research rights, or have a research-related injury, please contact:

Primary contact:
Folasade Adewunmi MSN, AGPCNP-BC can be reached at 301-437-6351

If primary is not available, contact:
Dr. Sarah, M. Koplow. PhD, ARNP, AGPCNP-BC can be reached at 954-262-1892

Research Participants Rights
For questions/concerns regarding your research rights, please contact:

Institutional Review Board
Nova Southeastern University
(954) 262-5369 / Toll Free: 1-866-499-0790
IRB@nova.edu

You may also visit the NSU IRB website at www.nova.edu/irb/information-for-research-participants for further information regarding your rights as a research participant.

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NOVA SOUTHEASTERN UNIVERSITY
Ron and Kathy Assaf College of Nursing

Research Consent & Authorization Signature Section

Voluntary Participation - You are not required to participate in this study. In the event you do participate, you may leave this research study at any time. If you leave this research study before it is completed, there will be no penalty to you, and you will not lose any benefits to which you are entitled.

If you agree to participate in this research study, sign this section. You will be given a signed copy of this form to keep. You do not waive any of your legal rights by signing this form.

SIGN THIS FORM ONLY IF THE STATEMENTS LISTED BELOW ARE TRUE:

- You have read the above information.
- Your questions have been answered to your satisfaction about the research.

Adult Signature Section

I have voluntarily decided to take part in this research study.

Printed Name of Participant	Signature of Participant	Date
FOLASADE ADEWUNMI		
Printed Name of Person Obtaining Consent and Authorization	Signature of Person Obtaining Consent & Authorization	Date

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Appendix D

Pretest Questionnaire

Nova Southeastern University

Ron and Kathy Assaf College of Nursing

Pretest Questionnaire

Improved Utilization of "INTERACT" to Decrease Rehospitalizations

in a Skilled Nursing Facility

Your response to this questionnaire is anonymous, but we need information to link your responses with the posttest questionnaire

Date of birth month: i.e. 01-12: _____

Favorite color: _____

1. What gender are you?
    - Male
    - Female
2. What is your age? _____
3. Are you a Licensed Practice Nurse or Registered Nurse?
    - Licensed Practice Nurse
    - Registered Nurse
4. How long have you been practicing as a nurse?
    - 6- 12 months
    - 1-2 years
    - 3-5 years
    - >5 years

5. What shift do you predominantly work?
    - Day shift
    - Evening Shift
    - Night Shift
    - PRN
6. On average, how many hospital transfers or change in conditions have you completed in the last 30 days?
    - 0-1
    - 2-3
    - >3
7. Of all the transfers and change in conditions completed in the last 30 days, what do you consider to be the most significant contributing factor?
    - Delay in care
    - Worsening disease process
    - Other: _____
8. How familiar are you with the INTERACT® program in documenting change in patients' conditions?
    - I need help with using the program
    - Not familiar
    - Somewhat familiar
    - Very familiar

9. How would you rate the quality of your documentation using the INTERACT ® program?
    - Low
    - Moderate
    - High
10. Have you used the care pathways on the INTERACT® program to direct patient care during a change in conditions?
    - Yes
    - No
    - Not familiar with the care path tool
11. Do you conduct a nursing assessment using the care path tool in the INTERACT program?
    - Never
    - Sometimes
    - Always
12. How do you rate your nursing assessment skills using the care path tool?
    - Average
    - Below Average
    - Excellent
    - I do not use the care path tool

13. How likely are you to use the care path tool on the INTERACT program?

- Not so likely
- Likely
- Very likely

14. Can you say you are proficient in the use of the INTERACT program?

- Still needs help with using the program
- Somewhat proficient
- Proficient
- Very proficient

Appendix E

Posttest Questionnaire

Nova Southeastern University

Ron and Kathy Assaf College of Nursing

Posttest Questionnaire

Improved Utilization of "INTERACT" to Decrease Rehospitalizations

In a Skilled Nursing Facility

Your response to this questionnaire is anonymous, but we need information to link your responses with the pretest questionnaire

Date of birth month: i.e. 01-12: _____

Favorite color: _____

1. On average, how many hospital transfers or change in conditions have you completed in the last 30 days?
    - 0-1
    - 2-3
    - >3
2. Of all the transfers and change in conditions completed in the last 30 days, what do you consider to be the most significant contributing factor?
    - Delay in care
    - Worsening disease process
    - Other: _____
3. How familiar are you with the INTERACT® program in documenting change in patients' conditions?

- I need help with using the program
- Not familiar
- Somewhat familiar
- Very familiar

4. How would you rate the quality of your documentation using the INTERACT ® program?
    - Low
    - Moderate
    - High
5. Have you used the care pathways on the INTERACT® program to direct patient care during a change in conditions?
    - Yes
    - No
    - Not familiar with the care pathway
6. Do you conduct a nursing assessment using the care path tool in the INTERACT program?
    - Never
    - Sometimes
    - Always
7. How do you rate your nursing assessment skills using the care pathway?
    - Average
    - Below Average
    - Excellent

- I do not use the care pathway tool

8. How likely are you to use the care pathway on the INTERACT program?
    - Not so likely
    - Likely
    - Very likely
9. Can you say you are proficient in the use of the INTERACT program?
    - Still needs help with using the program
    - Somewhat proficient
    - Proficient
    - Very proficient

Appendix F

INTERACT Skilled Nursing License Agreement

INTERACT VERSION 4.0 FOR SKILLED NURSING LICENSE AGREEMENT

THIS LIMITED LICENSE AGREEMENT (this "Agreement") is made effective as of this 7th day of June 2017 ("Effective Date") and is entered between [redacted] and Folasade Adewunmi., ("Limited-Licensee"), an individual with its principal address at [redacted].

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   b. "INTERACT Licensed Marks" shall mean the term "INTERACT" and formatives thereof, both with and without graphical components, as used with goods and services relating to interventions to reduce acute care transfers from health care facilities, and specifically including the Registered Trademark protected by US Registration No. 4,236,059 (the "Registered Trademark").

   c. "INTERACT Licensed Materials" shall mean: (i) Appendix A for

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8. LIMITATION OF LIABILITY. IN NO EVENT WILL PATHWAY BE LIABLE FOR NEGLIGENCE, STRICT LIABILITY, BREACH OF CONTRACT, MISREPRESENTATION AND OTHER CONTRACT OR TORT CLAIMS ARISING FROM OR RELATED TO THIS AGREEMENT, OR THE USE OF THE INTERACT® LICENSED MATERIALS.

9. GOVERNING LAW; ARBITRATION. This Agreement shall be governed in all respects by the laws of the State of Minnesota, USA, without regard to choice-of-law rules or principles.

10. SEVERABILITY. If any provision of this Agreement is held to be illegal or unenforceable for any reason, then such provision shall be deemed to be restated so as to be enforceable to the maximum extent permissible under law, and the remainder of this Agreement shall remain in full force and effect.

11. ASSIGNMENT. You may not assign or otherwise transfer this Agreement without Pathway's prior written consent.

12. COUNTERPARTS. This Agreement may be executed in any number of duplicate originals, and each such duplicate original shall be deemed to constitute one and the same instrument.

IN WITNESS WHEREOF, the parties have executed this Limited License Agreement by their duly authorized representatives as of the day and year first above written.

PATHWAY HEALTH SERVICES INC.	INDIVIDUAL
By: [redacted]	By: Folasade Adewunmi
Name: [redacted]	Name: Folasade Adewunmi
Title: Chief Executive Officer	Educational Institution: Nova Southeastern University, Fort Lauderdale, Florida
Date: 7/7/17	Date: 7/7/17

Appendix G

INTERACT Version 4.0 Tools for Nursing Homes Agreement

INTERACT VERSION 4.0 TOOLS FOR NURSING HOMES

Overview Figure
Overview of INTERACT Program and Tools

Implementation Guide

Quality Improvement Tools
Hospitalization Rate Tracking Tool
Quality Improvement Tool for Review of Acute Care Transfers
Quality Improvement Summary

For Communication within the Nursing Home
Stop and Watch Early Warning Tool
SBAR Communication Tool and Change in Condition Progress Note
"Medication Reconciliation Worksheet for Post-Hospital Care"

For Communication between Nursing Home and Hospital
Engaging Your Hospitals
Nursing Home Capabilities List
NH – Hospital Transfer Form
NH- Hospital Data List
Acute Care Transfer Checklist
Hospital – Post-Acute Care Data List and Sample Form

Decision Support Tools
Acute Change in Condition File Cards
Care Paths
- Acute Mental Status Change
- Change in Behavior New or Worsening Behavior Symptoms
- Dehydration
- Fever
- GI Symptoms (Nausea, Vomiting, Diarrhea)
- Shortness of Breath
- Symptoms of CHF
- Symptoms of Lower Respiratory Illness
- Symptoms of UTI

Sepsis

Advance Care Planning Tool
Advance Care Planning Tracking Tool
Advance Care Planning Communication Guide
Identifying Residents Appropriate for Hospice or Comfort Care
Comfort Care Order Set

Educational Information for Residents and Families
Deciding About Going to the Hospital
Decision Making Vignettes, CPR
Tube Feeding