IMPROVING NURSING HOME STAFF CRITICAL THINKING TO REDUCE HOSPITAL ADMISSIONS OF SKILLED NURSING FACILITY RESIDENTS

Presented in Partial Fulfillment of the Requirements for the Degree Doctor of Nursing Practice

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2013
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Executive Summary

A substantial proportion of hospitalizations of skilled nursing facility residents can result in iatrogenic complications, increased morbidity, and excess healthcare expenditures and may be avoidable. Many ambulatory care sensitive diagnoses such as urinary tract infections (UTIs), pneumonia, and congestive heart failure are indicative of potentially avoidable hospitalizations of skilled nursing facility residents. These conditions are amenable to treatment in the skilled facility setting if identification and intervention can be provided in a timely and appropriate manner (Grabowski & O’Malley, 2007). Interventions to Reduce Acute Care Transfers (INTERACT) is a quality improvement program consisting of a set of evidence-based clinical practice tools and strategies designed to improve the clinical knowledge of staff and enhance communication pathways in skilled nursing facilities. Studies conducted in institutions where this intervention has been taught to the nursing staff have indicated a significant reduction in hospitalizations of facility residents (Ouslander et al., 2009; Ouslander et al., 2011).

LPNs and CNAs primarily work in skilled nursing facilities. The formal certified training programs of LPNs and CNAs do not emphasize development of critical assessment or clinical judgment skills (Case, 2004, p. 25). Compared to RN programs, LPN programs provide a basic introduction to anatomy, physiology and pharmacology associated with patient conditions. Whereas, RN programs last a minimum of two years, LPN programs are one year or less and include little practice experience time. CNAs have even less formal education about patient conditions or assessment skills. Facione and Facione, 1996, state that, “Critical thinking along with content knowledge and practice experience are the three essential components of the development of expertise in
clinical judgment” (p. 131), and Tanner insists that: “Clinical judgment is an essential skill for virtually every health professional” (Tanner, 2006, p.204).

Therefore, LPN and CNA staff should be educated about the knowledge and assessment components of the INTERACT program, but they also require honing of their critical thinking skills to help prevent hospital admissions for the population in skilled nursing facilities. The Tanner Clinical Judgment Model is a theoretical model which outlines the process of reasoning patterns of nurses as they assess patients. It aids in the development of clinical judgment skills. Vital to Tanner’s concept of clinical judgment is critical thinking which she labels as clinical reasoning.

The purpose of this study was to decrease hospitalizations and 30 day rehospitalization rates of residents in a targeted skilled nursing facility. This involved educating the nursing staff about the use and tools associated with the INTERACT quality improvement program and the components of the Tanner Clinical Judgment Model to help them practice the kind of critical thinking skills needed when a resident’s health status changes.

The intervention took place over a four month period at one East Coast state skilled nursing facility (SNF). A convenience, longitudinal, pre-test, post-test design was used to determine the extent to which staff critical thinking was affected by this INTERACT educational intervention. Institutional Review Board (IRB) approval from Otterbein University was obtained (Appendix A).

Data analysis consisted of quantitative data using inferential and descriptive statistics. LPNs and CNAs were evaluated using a paired t-test comparing their pre and post critical thinking test results. This had the advantage of blocking out individual
variability and aided in determining if there were any statistically significant differences between the pre and post test results. Hospitalization rates were calculated for all unplanned inpatient admissions over a four month period before and after the educational intervention. These admissions were categorized and tracked based on 30 day readmissions and all other admissions. These two categories of hospitalizations were further evaluated for “preventable” versus “non-preventable” diagnoses (Appendix D).

TER results indicated that all the participants as a group had a statistically significant improvement in the critical thinking skill of deduction. Overall all the participants as a group had nearly statistically significant improvement in all the critical thinking skills combined.

Unplanned hospitalizations improved from 19.6% to 12% during the intervention period. 30 days readmissions improved by 36% during the intervention.
Reducing hospitalizations and rehospitalizations within 30 days has become a major public policy goal, the purpose of which is to improve quality and lower the cost of health care. Specifically, “hospitalizations of nursing home residents can cause discomfort for residents, anxiety for their loved ones, morbidity due to iatrogenic events, and excess healthcare costs” (Ouslander et al., 2010, p. 627). Hospitalizations also expose residents to additional risks such as nosocomial infections, deconditioning and immobility. Many of these hospitalizations and rehospitalizations could be prevented by implementing the evidence-based program called: Interventions to Reduce Acute Care Transfers (INTERACT). INTERACT was developed under a contract with the Centers for Medicare and Medicaid Services to identify, evaluate, and communicate changes in resident health status (INTERACT, 2011, About INTERACT). While the target facility of this DNP candidate’s project implementation confirmed that portions of the INTERACT program had been introduced to nursing staff, the results of a focus group needs assessment conducted June 12, 2011 with 10 LPNs from the target facility uncovered the common theme that they felt they lacked the knowledge to accurately
assess acute changes in residents’ status. Target facility staff also had little exposure to critical thinking skills needed to make clinical judgments about resident transfers. Therefore, the focus of this DNP candidate’s project became educating staff on the implementation of INTERACT incorporating the use of the Tanner Clinical Judgment Model.

The Tanner Clinical Judgment Model (TCJM) is an evidence-based middle range nursing theory that has been tested in academic settings and has been found to be efficacious in understanding, guiding and evaluating progress in clinical judgment by the nursing instructor as well as by the student in any clinical setting at any level. “The TCJM describes the clinical judgment of experienced nurses and provides guidance for faculty members to help students diagnose breakdowns, identify areas for needed growth, and consider learning experiences that focus attention on those areas” (Tanner, 2006, p. 208).

Outcomes associated with the TCJM supported this DNP candidate’s objective to use this middle range theory to guide the instruction to the nursing staff of the target facility towards the ultimate goal of excellence in care through improved critical thinking skills to reduce hospital admissions.
SECTION TWO

Background and Significance of Problem

Over the past ten years, the role of the skilled nursing facility has changed dramatically due to health care reform, changes in insurance reimbursement and the resultant trend of keeping patients in the hospital for shorter lengths of stay. According to the Alliance for Quality Nursing Home Care (2010) this has transformed skilled nursing facilities (SNFs) into postacute care facilities which must provide advanced care to more medically complex patients. Many times these patients may be discharged directly from an intensive care unit to the skilled nursing facility. Communication pathways between the hospital and the SNF and vice versa can be inadequate often leading to omissions of vital information necessary to prevent complications which lead to hospitalizations. These and other less acute SNF residents are also often vulnerable for hospitalization and rehospitalization due to ambulatory care sensitive diagnoses. “Ambulatory care sensitive diagnoses (ACSDs) are conditions for which good outpatient care can potentially prevent the need for hospitalization, or for which early intervention can prevent complications or more severe disease” (Agency for Healthcare Research and Quality, 2004, p.1). These diagnoses include conditions such as “angina pectoris, heart failure, chronic obstructive pulmonary disease, pneumonia, urinary tract infections, cellulitis, diabetes mellitus and dehydration” (Ouslander et al., 2010, 627).

Jencks, Williams, & Coleman (2009) state that “almost one-fifth (19.6%) of all Medicare beneficiaries were rehospitalized within thirty days in 2004. Approximately 90 percent of these rehospitalizations were unplanned. The cost to the Medicare program for
these hospitalizations was estimated to be $17.4 billion” (p. 1424). “A return trip to the hospital also increases the risk that a patient will experience a health complication. In fact, Healthcare Associated Infections (HAIs) represent a serious risk with an estimated 1.7 million HAIs occurring in hospitals each year” (Alliance for Quality Nursing Home Care, 2010, p.2). Ouslander et al., agree that “Hospitalizations expose nursing home residents to disruptions in care, iatrogenic events and related morbidity, and result in excess health care costs” (Ouslander et al., 2009, p. 644).

The Patient Protection and Affordable Care Act

On March 23, 2010, President Obama signed the Patient Protection and Affordable Care Act (ACA) into law. This comprehensive health reform law focuses on provisions to expand coverage, control health care costs and improve the health care delivery system. One of the major reforms incorporated into the ACA is the provision that Medicare payments will be allocated not as fee-for-service, but will be bundled instead as payment for episodes of care based on outcomes. This reform has been devised to impact many aspects of medical care delivery including hospital readmissions of community dwelling or SNF inhabitants within 30 days of a hospitalization. Under the ACA, hospitals will be penalized financially for avoidable readmissions, which are defined as “being admitted at the same or different hospital within a period prescribed by the Secretary (generally 30 days) for certain applicable conditions. The ACA focuses initially on three conditions: Heart Attack (AMI), Heart Failure and Pneumonia. In FY 2015, the policy expands to include COPD, CABG, PTCA and other vascular conditions” (Center for Medicare Advocacy, 2012).
According to the document, *Focus on Health Reform*, (2011) published by the Kaiser Foundation, beginning in 2012, the ACA would adjust payments for hospitals that are currently paid under an inpatient prospective payment system to an alternate payment system. This new system will be based on a predetermined Medicare dollar value which will be assigned for each hospital’s percentage of potentially preventable Medicare readmissions. Lower rehospitalization rates will be rewarded with higher payment scales. Initially this Medicare reform will apply to three targeted conditions of heart attack, heart failure and pneumonia. These conditions will have risk adjusted readmission measures that are currently endorsed by the National Quality Forum (National Quality Forum, 2010). This section of the ACA also provides Medicare with the authority to expand the policy to additional conditions in future years and further directs Medicare to calculate and make publicly available, information on all patient hospital readmission rates for certain conditions. This has provided an incentive for hospitals to partner with skilled nursing facilities, rehabilitation facilities, and home health agencies as accountable care organizations to devise a transition of care plan to avoid rehospitalizations (Centers for Medicare and Medicaid, n.d., Accountable Care Organizations). This payment system coupled with the bundle payments for episodes of care provides powerful financial incentives for hospitals to communicate openly and thoroughly with SNFs to ensure that discharged patients are well managed to preclude preventable rehospitalizations within 30 days.

**Nursing Home Staff**

Studies have demonstrated that a variety of factors are associated with hospitalizations of SNF residents including the overall quality of care provided in the
nursing homes and the availability of registered nurses and nurse practitioners in these facilities.

A study of more than 500 nursing homes examined factors which were associated with ambulatory care sensitive hospitalization rates among nursing home residents. Logistic regression results indicated that “facilities that spend a greater proportion of total nursing expenses for LPNs and less on RNs experience greater risk of ambulatory care-sensitive hospitalizations” (Carter, 2003, p. 322). When the data was further extrapolated, the researcher concluded that, “Nursing homes that typically are attentive to quality-of-care issues may be more likely to notice changes in resident health and, in turn, may be more likely to intervene during beginning stages of emerging medical problems” (Carter, 2003, p. 323).

Numerous other studies have also indicated that staffing credentials might affect hospital admissions. Hongsoo, Harrington & Greene, 2009, conducted a retrospective panel data study of 411 nursing homes in California. They found that as the RN to licensed practice nurse ratios increased, total deficiencies and serious deficiencies decreased in all of the nursing homes. A systematic review of studies that looked at staffing and quality in nursing homes indicated that there is a proven association between higher total staffing levels, especially of licensed staff and improved quality of care (Bostick, Rantz, Flesner & Riggs, 2006). Hongsoo, Kovner, Harrington, Greene & Mezey, 2009, concluded that total nurse staffing levels and RN staffing levels were predictors of nursing home quality. Despite such data, budget constraints and lack of availability of registered nurses willing to work in SNFs, (Ouslander et al., 2010) make adding RNs to their staff not feasible for most SNFs.
But, hospitalizations and rehospitalizations of SNF residents can also be avoided if the cues for illness and status deterioration are identified early and addressed promptly by any facility health care providers. Whereas, registered nurses are trained in advanced health assessment and identifying cues for health deterioration as noted, most extended care facilities are primarily staffed with licensed practical nurses (LPNs) and certified nursing assistants (CNAs) who do not have this kind of training. The result may be a delay in the recognition of status deterioration, resulting in a delay in treatment and necessitating admission or re-admission to a hospital of a resident. Ouslander et al., (2011) suggest that in order to reduce avoidable hospitalizations, investment in SNF infrastructure is needed which includes: “clinical practice tools, adequate numbers of nursing home staff with training in assessment and management of acute changes in status, primary care clinicians to use the tools, and rapid access to ancillary services such as diagnostic testing, intravenous or subcutaneous fluid administration, and antibiotics and other medications” (p. 745).

**INTERACT Program Components**

Interventions to Reduce Acute Care Transfers (INTERACT), is a quality improvement program developed by Ouslander et al in 2011 under a contract with the Centers for Medicare and Medicaid Services. It consists of practice guidelines, care path algorithms of ambulatory care sensitive diagnoses, and communication and other kinds of tools related to advance care planning and palliative care. These tools and strategies were designed to assist the nursing staff in SNFs to proactively recognize, report, and manage acute conditions of residents in skilled nursing facilities.
The INTERACT quality improvement program targets the areas of advance care planning, medication reconciliation, decision tools and hospital communication tools. It also, includes communication tools that encourage staff to discuss these aspects with the resident and family as indicated.

Improved advance care planning is an important goal in long-term care to help minimize ineffective and potentially counterproductive care. Advanced care planning should be discussed with residents and their families early in the admission process and regularly as warranted by a resident’s change in health status. The INTERACT program supports the concept that all staff should be able to communicate about end-of-life care with residents and their families and be able to identify who may be appropriate for hospice or palliative/comfort care (INTERACT, 2011, INTERACT Version 3.0 Tools). INTERACT tools include a communication guide which can be used to educate providers, nursing staff, social workers and administrators regarding respectful, reassuring and effective ways to initiate discussions about advance directives, palliative care and hospice care.

Medication discrepancies occurring at transitions in the care of nursing home residents have been implicated as a potential flashpoint to cause residents harm. More than 40 percent of medication errors are believed to result from inadequate reconciliation during admission, transfer, and discharge of residents (Rozich et al., 2004). Of these errors, about 20 percent are believed to result in direct to harm to residents (Gleason et al., 2004). Many of these errors also increase the risk for serious drug interactions that might result in hospitalizations for the elderly. These unwanted outcomes can be avoided
if effective medication reconciliation processes are in place. INTERACT provides a medication reconciliation tool for staff to use to avert this undesirable possibility.

The program also includes care path algorithms for symptoms associated with eight ambulatory care sensitive diagnoses. These help guide nursing staff in the assessment and management of common changes in resident status that may result in acute care transfers such as: acute mental status change, fever, symptoms of lower respiratory infection, symptoms of CHF, symptoms of UTI, GI symptoms of nausea, vomiting and diarrhea, shortness of breath and dehydration. The algorithms provide “evidence-based and expert-recommended assessment and management” (INTERACT, 2011, Version 3.0 tools for nursing home) strategies for these conditions. They help nursing staff proceed logically and efficiently through the uncertainty of an acute change in a resident’s health status. In addition, the Change in Condition File Cards provide a handy reference for nursing staff to aid in assessment and management when a resident experiences symptoms outside of the eight ambulatory care sensitive diagnoses. They are also designed to help the nursing staff to determine if and when a primary provider should be notified of any new findings.

The final component of the INTERACT quality improvement program revolves around improving communication within the SNF and between the SNF and the hospital. Improved internal SNF communication involves using two tools. The Stop and Watch tool provides a list of early changes in resident status using the first letters of the words, “STOP AND WATCH.” This tool was devised to help front-line staff, such as rehabilitation, environmental and dietary services, as well as family members and CNAs to decide which symptoms should be reported to nursing staff within the same shift that
they are observed. This should aid in early detection and intervention of resident conditions before they result in acute care transfers. The SBAR (situation, background, assessment and response) is the second tool. It consists of a form which provides guidance to the nursing staff as they evaluate, document and communicate to providers about residents who have had a significant change in their health condition. The idea is that timely intervention will avoid unnecessary hospitalizations.

Communication between the SNF and hospital is supported by the INTERACT Acute Care Transfer checklist tool and Nursing Home to Hospital Transfer form. These guide the nursing staff to provide vital information to help the hospital clearly understand the resident’s health condition and ameliorate problems that occur during transitions of care. INTERACT, 2011, also suggests that improved communication between the hospital and SNF should include making sure that the collaborating hospitals are informed of the SNF’s capabilities which may aid the discharge planners and hospital physicians when they make hospitalization and discharge decisions (Version 3.0 tools for).

All these INTERACT tools and interventions are designed to bolster the skilled facility nursing staff’s ability to manage sicker residents, care for them in their facilities and avoid unnecessary hospitalizations. Evidence supports the efficacy of the INTERACT program through a study conducted in three nursing homes. Results indicated an overall 50% reduction of hospitalizations over a 6 month period in nursing homes that implemented the INTERACT program (Ouslander et al, 2010, p. 646).
Tanner Clinical Judgment Model

The INTERACT program can be combined with the Tanner Clinical Judgment Model. “The model describes the clinical judgment of experienced nurses and provides guidance for faculty members to help student nurses diagnose breakdowns, identify areas for needed growth, and consider learning experiences that focus attention on those areas” (Tanner, 2006, p. 208).

The Tanner Clinical Judgment Model (TCJM) was developed based on an extensive literature review of the published descriptive research on clinical judgment in nursing. Tanner states, “Good clinical judgment requires a flexible and nuanced ability to recognize salient aspects of an undefined clinical situation, interpret their meanings, and respond appropriately” (Tanner, 2006, p. 205). Tanner concluded that there are four aspects which an experienced nurse uses in the process of clinical judgment: noticing, interpreting, responding and reflecting (Tanner, 2006). Noticing involves the initial grasp of a situation through consideration of the context, background, relationship and the expectations of family, patient and nursing culture (Tanner, 2006). Interpreting involves the development of a sufficient understanding of the situation through reasoning analytically and intuitively (Tanner, 2006). Responding is taking a course of action which the nurse deems appropriate for the situation (Tanner, 2006). Reflection should occur during the situation using a variety of reasoning patterns or critical thinking skills to evaluate the efficacy of the patient outcomes and then following the situation to review all aspects of the process and their appropriateness in resolving the situation (Tanner, 2006).
The TCJM is versatile and has proven itself to be a user-friendly model. The principles inherent within the TCJM have been practically applied to guide nursing students to understand the steps of clinical judgment and self-evaluate their own progress in this area. It has been adapted to aid nursing faculty to have clear points indicative of the clinical judgment process. It has served as a foundation to aid nursing faculty in evaluating and reinforcing the development of these processes in their students through the development of particular assessment tools such as the Lasater Clinical Judgment Rubric (Lasater, 2006), a Guide for Reflection (Nielsen, Stragnell & Jester, 2007) and a Pediatric Assessment Tool (Caputi, Kniest & Rothblum, 2009). These instruments were

Figure 1: Clinical Judgment Model (Tanner, 2006, p. 208).
conceived to observe the development of clinical judgment in nursing students and provide “empirical indicators of those concepts” (Fawcett, J., 2005, p. 444).

The structure of the Tanner Clinical Judgment Model was useful to help incorporate aspects of clinical judgment into the staff educational sessions about the INTERACT program. The use of this model should result in staff moving to a higher level of clinical understanding and performance after the educational intervention.

**Target Nursing Facility**

The target skilled nursing facility is located in an East Coast state. It is a 205 bed skilled nursing facility which treats long term care residents and short term rehabilitation patients. It is one of 150 SNFs within a larger “for profit” nursing home corporation. Three years ago the target SNF hired a nurse practitioner to collaborate with the Medical Director to enhance care to its residents on a daily basis. It is characterized by nursing staff consisting of 87% CNAs (N=117) and LPNs (N=44). The administration of this facility and those within the larger corporate structure recognized that staffing credentials and training of existing staff might affect residents’ hospital admission rates.

Administration was aware of the INTERACT quality improvement program and its potential value to the staff in reduction of hospital admissions and readmissions. In fact, several tools from the INTERACT training program had already been introduced to the skilled nursing facilities company-wide before this DNP candidate began her project. However, further investigation indicated that these INTERACT initiatives were not being used.
SECTION THREE

Problem Statement

“Hospitalizations expose nursing home residents to disruptions in care, iatrogenic events and related morbidity, and result in excess health care costs” (Ouslander et al, 2009, p. 644). Many hospitalizations and rehospitalizations within thirty days may be potentially preventable through early detection and treatment within the SNF. This not only prevents the iatrogenic cascade, but is a much more cost effective alternative to the hospital setting.

LPNs and CNAs comprise the majority of staff closely involved in the day to day care of residents at skilled nursing facilities. The formal certified training programs of these health professionals do not emphasize critical assessment or clinical judgment skills (Case, 2004, p 25). Although, the latter can be enhanced over time through the life experience of a staff member who is motivated to learn, generally the persistent lack of critical thinking or clinical judgment skills potentially affects the quality of timely assessment and intervention which may affect hospitalizations and thirty day rehospitalization rates in skilled nursing facility residents.

The relevance of this problem was demonstrated in a needs assessment focus group conducted with 10 LPNs at the select skilled nursing facility in June 2011. Members of the group discussed their perceptions of resident hospitalizations and possible solutions. The session was analyzed for predominant themes. Most of the LPNs indicated that they felt they lacked the clinical knowledge to accurately assess a resident’s acute change in status and therefore did not believe that the resident could be
managed safely in the skilled nursing facility. This fear by the staff was reflected by a 36.6% unplanned hospitalization rate and a 19.6% thirty day rehospitalization rate in the skilled nursing facility for the four month comparison period originally scheduled for September through December 2012, but readjusted to include November 2012 through February 2013.
SECTION FOUR

Purpose Statement

The purpose of this DNP project was to reduce hospitalizations and 30 day rehospitalizations by assisting staff to apply critical thinking skills to proactively recognize, report, and manage acute conditions of skilled nursing facility residents. The strategies used to do this included educating staff about the tools and processes involved in the INTERACT quality improvement program and incorporating the Tanner Clinical Judgment Model as a basis for analyzing a case study and real life occurrences to reinforce critical thinking skills.
SECTION FIVE

Project Implementation

Educational Intervention

Given that the project design needed to be adapted considerably from its original format, this author will present the initial plan here and then report in the next section on the revised plan that was carried out. The INTERACT educational intervention goals and projected costs were prepared and presented to the Executive Director (ED), Assistant ED, Director of Nursing Services (DNS) and Assistant DNS of the target SNF. Approval for the project, and its anticipated costs were granted following a presentation by this DNP candidate in March, 2012. Following approval, a power point presentation was to be developed to introduce the hospitalization rate problem, the Tanner Clinical Judgment Model and the INTERACT materials to the staff.

The providers at the target facility were to be educated about these items prior to the materials being shared with the staff. The providers would then be informed of the project goals and told how they could use the materials to support these goals.

Also, and very important to the success of this project, would be educating the administrators, evening and night RN supervisors, RN unit managers and the Director of Clinical Education about the educational intervention and elicit their enthusiasm for the INTERACT quality improvement program. These personnel would be vital project facilitators and champions for the intervention during the project implementation.

This DNP candidate’s original approach to the rehospitalization problem included a plan to introduce INTERACT evidence-based solutions to each member of the nursing
and social workers staff at the target skilled nursing facility. This plan called for group educational sessions of 4 hours duration as suggested by the INTERACT guidelines. The educational sessions were to be presented on different shifts during the months of September and October 2012. The estimated cost for the on-site four hour education of the nursing staff of 20 RNs at $25 per hour, 44 LPNs at $20 per hour, 116 CNAs at $13 per hour and 3 social workers at $30 per hour would be $11,852.00.

Each staff participant was to be given an informational packet which contained a copy of the Tanner Clinical Judgment Model, Advance Care Planning communication guide and Comfort Care order set, Stop and Watch tool, SBAR form, Care path algorithms and Change in Condition file cards. The total cost covered by the SNF for the informational packets to be given to each participating staff member and provider was estimated to be $566.66. Each of the five nursing units within the SNF were to be provided with a reference notebook which contained laminated copies of the Stop and Watch tool, SBAR form, Care Path algorithms and Change in condition file cards for a total cost of $75.38. These notebooks were also to be funded by the SNF.

The objective of the DNP candidate’s educational intervention was to present the problem and its solutions highlighting “disruptions in care, iatrogenic events and related morbidity, and results of excess health care costs” as they pertained to discussions of personal experiences by the nursing staff (Ouslander et al, 2009, p. 644). Following this the staff was to be introduced to the Tanner Clinical Judgment Model and educated in its components. A case study was to be discussed throughout the presentation using the TCJM to illustrate the aspects of clinical assessment and how they were to be applied in the situation.
The INTERACT materials were then to be presented and discussed beginning with the Stop and Watch tool. Emphasis was to be placed on the CNAs role in noticing the early warning signs of a resident’s change in condition. Nurses were also to be alerted to their responsibility to encourage the CNAs and other non-clinical staff in the importance of not only verbally warning charge nurses, unit managers or providers of their findings, but filling out the Stop and Watch tool out as a visual reminder, so that appropriate steps could be taken to prevent hospitalizations. The Change in Condition file cards were then to be presented and briefly discussed. Their purpose and value as an important reference tool for the nursing staff to improve communication between them and providers was to be emphasized. Finally, the care path algorithms were to be discussed. Initial discussion was to revolve around how these algorithms should be used in clinical assessment. Further discussion was to focus on urinary tract infections (UTIs), congestive heart failure (CHF) and lower respiratory infections as these are often the most common reasons for hospitalizations and rehospitalizations of nursing home residents. These conditions were to be discussed in the context of geriatrics which often includes symptoms not commonly seen in the rest of the population. The physiology of the heart and pathophysiology of CHF was to be discussed in clear, but simple terms and then discussion was to be encouraged regarding logical symptoms which could occur as a result. Symptoms were to be related to common occurrences and practices which CNAs and nursing staff often encounter. The website, Easyauscultation.com, was to be used as part of the instruction of the care path algorithms when appropriate to help nurses recognize the auditory cues which may signal early warning signs of a resident’s change in condition.
Following the INTERACT education, several simulations were to be conducted to emphasize components of the Tanner Clinical Judgment Model and the Care Path Algorithms and to exemplify appropriate critical thinking skills necessary to early intervention of acute changes in resident status.

Informal training was to continue as this DNP candidate would mentor and coach the nursing staff during everyday care and in acute situations as they arose. These latter situations were to be prime opportunities to guide the staff through the assessment and decision phases of the INTERACT program to help them apply the concepts of clinical judgment.

**Test of Everyday Reasoning**

Staff critical thinking skills were to be measured prior to and after the designed INTERACT educational intervention using the Test of Everyday Reasoning (TER). The TER was chosen as a measure of the critical thinking skills of the staff because it has a threshold for strong internal consistency and reliability with a minimum Alpha of 0.80 for attribute measures and a minimum KR-20 of 0.72 for skills measures (Test of Everyday Reasoning, 2012, p. 40). The TER was also chosen because it has been specifically calibrated for community and technical college level students and individuals who have completed the equivalent of US ninth grade education (Test of Everyday Reasoning, 2012.) These levels match the actual educational level of the LPNs and CNAs involved in this project intervention. The 35 multiple choice questions of the TER provide an appropriate measure of critical thinking for the reasoning skills of the testing population of CNAs and LPNs within the target skilled nursing facility. Test takers of the TER are challenged to form reasoned judgments based on a short scenario presented in each
question stem. TER questions have been framed in the context of everyday concerns and measure only critical thinking and its components of analysis, inference, evaluation, induction and deduction and not content knowledge. (Test of Everyday Reasoning, 2012). The TER total score targets the strength or weakness of the test taker’s skill in making reflective, reasoned judgments about what to believe or what to do. (Test of Everyday Reasoning, 2012).

The proven ability of the test to capture a measure of the intended domain supports its content validity (Test of Everyday Reasoning, 2012). “Evidence for the construct validity of the TER is provided by the demonstration of improvement in students’ TER test scores after they have taken a course in critical thinking or an educational program training the critical thinking portion of clinical reasoning” (Test of Everyday Reasoning, 2012, p. 38). Criterion validity has been demonstrated for the use of the California Critical Thinking family of tests, of which the TER is one, in peer-reviewed independent published research, dissertation studies, web-published self-study reports and industry-specific professional documents. (Test of Everyday Reasoning, 2012).

Insight Assessment, the distributor of the TER, was solicited for a special discounted price on tests and testing services for the purpose of gathering data for this DNP candidate’s doctoral dissertation. Approval of this request was granted on June 5, 2012 (Appendix H). The total cost for 40 Tests of Everyday Reasoning and a one-time processing fee of $825 was to be paid for by the SNF.
Sample

A convenience sample of twenty LPNs and twenty CNAs were to be recruited to take the Test of Every Day Reasoning before and after the INTERACT educational sessions at the targeted 205 bed SNF. Pre and post testing was to be limited to 40 participants due to cost constraints. Participants were to be self-selected. A random drawing for a Littman stethoscope ($63) was funded by this DNP candidate for those from each group of nursing staff who participated in both the pre and post TER. Participants were to be assured that only aggregated data would be collected, individuals were not to be identified in any way and participation would be strictly voluntary with no penalty for withdrawal from the program. As additional staff indicated interest in participating, their information was to be kept on file for future programs.

Protection of Human Subjects

Since human subjects (nursing home staff) were to be invited to participate in this clinical study, formal Otterbein University human subjects review committee approval was sought. It was possible that participants might feel uncomfortable while taking the Test of Everyday Reasoning. Steps were to be taken to protect the privacy, dignity and confidentiality of the participants. Protection of these human rights were to be ensured through an informed consent which included: 1) Provision of sufficient information regarding their involvement with the TER test and 2) Assurance to the potential staff members that their participation was to be voluntary and could be withdrawn at any time without negative consequences. This oral solicitation form was to be given to the prospective subjects before participating in the study (Appendix B). The consent form (Appendix C) was to be signed and dated by this author and by a witness and stored in a
locked cabinet in the investigator’s office. Each subject was to receive a copy. This researcher was to ensure that subjects clearly understood all procedures, the type of data being collected, and the data collection methods, so that they could make an informed decision about participation in the study before signing the consent. Subjects were also assured that no results of this test would be shared with any managers or administrators and would not affect their job security in any way. Further protection of human rights was to be achieved through review of this study’s protocols by the Institutional Review Board at Otterbein University. IRB approval was to be obtained. The target SNF did not have an institutional review board to provide review.

**Proposed Data Analysis**

Proposed data analysis was to include descriptive and inferential statistics to examine pre- and post-test critical thinking results and pre- and post-test SNF resident hospitalizations and rehospitalizations rates. Qualitative results of the staff and providers’ comments and reactions to the project were to be recorded.

**Proposed TER analysis.** The effect of the INTERACT educational intervention was to include an analysis using a paired t-test between pre and post test results (Polit & Beck, 2004, p. 482) to determine whether a change, if any, occurred in nursing home staff critical thinking. Comparisons were to be made between the group as a whole and between each of the two groups individually. Comparisons for each component of inference, evaluation, induction, analysis and deduction were to be analyzed for statistically significant improvements in critical thinking skills.

**Proposed hospitalization rate analysis.** Baseline data on nursing home patient hospital admissions was to be collected through a retrospective medical record review
during the comparison period of November 2011 to February 2013 and the intervention period of November 2012 to February 2013. Frequency of all-cause unplanned hospitalization rates and 30 day rehospitalizations were to be calculated. This was to include residents who were admitted to the hospital on an inpatient status during the four months in which the INTERACT program was to be enacted. These results were to be compared to the same four month period from the previous year.
SECTION SIX

Outcomes and Analysis

A power point presentation (Appendix E) was developed to introduce the hospitalization rate problem, the Tanner Clinical Judgment Model and the INTERACT materials (Retrieved from http://interact2.net/) to the staff. The providers were each contacted individually and introduced to the designed INTERACT education project goals and given the INTERACT materials packet. Most provider discussions with this DNP candidate occurred over a 20 minute time span. Providers recognized the value of this project and expressed support and enthusiasm for it. One provider stated during the middle of the intervention, that the knowledge of the goals of the INTERACT project prompted him to work more closely with the nursing staff to prevent hospitalizations of the SNF residents.

The project was progressing as planned until several unexpected events occurred resulting in major adjustments to the educational methods used with facility staff. First, the same month in which the INTERACT educational training of staff was to begin, this DNP candidate was informed by the SNF administration that a $24.2 million cut to the state’s seniors’ Medicare-funded nursing home care was kicking in as a result of the Federal Middle Class Tax Relief and Job Creation Act of 2012. The state in which the target facility was located was one of five in the US with the biggest SNF Medicare cuts associated with the new tax law (The Alliance for Quality Nursing Care, 2012, p. 1). This resulted in an 11% cut in Medicare funding to all SNFs in the state.

This prompted the administration of the SNF to reassess the budget over-runs that would be necessary in the original plan of paying staff overtime to attend the 4 hour
group educational sessions. This led to a withdrawal of permission by SNF administration to proceed with the project as planned. However, permission was given to this DNP candidate to educate the staff during normal working hours, but this necessitated that the sessions had to be conducted individually or in small groups and the timeline condensed into 1-2 hours. This revised plan also applied to the education of the Director of Clinical Education, RN unit managers and RN supervisors of each unit who were the intended project champions. Because it took so much time to teach all these persons individually, this interfered with the goal of having these clinical leaders serve as resources for the staff as the INTERACT program was implemented in the facility.

In addition, the annual survey of the skilled facility by state investigators began during the intervention period. At that point all educational sessions were postponed per request of the SNF administration for a six week period to allow the staff to focus on preparing and participating in the annual survey.

Finally, during the first month of the intervention there was turnover of the DNS. The new DNS was not familiar with the INTERACT materials. She was presented with the materials and the project was discussed with her. She was enthusiastic about it, but because she was new to the system, she lacked the influence over the staff to promote its importance. This resulted in a lack of interest, particularly by some of the RN supervisors to make an effort to participate in the educational sessions.

All these changes resulted in a labor intensive educational process through which 63% of the 181 RNs, LPNs and CNAs from the SNF were educated. This was done over a 2 month period on different shifts during normal working hours in 25 different training sessions. Sessions were scheduled as much as possible during staff break times and/or
care requirement downtimes to avoid interfering with resident care as much as possible. Although the sessions followed the general outline previously discussed the planned patient simulations could not be conducted at the nursing stations so that part of the plan was dropped. However, a case study (Appendix F) demonstrating critical thinking skills was presented and discussed with the staff during the educational sessions. Since the educational sessions were conducted during working hours, staff was required to continue to provide for the residents’ needs while they were going on. Although, this resulted in a lack of engagement of some of the staff, unit managers and supervisors, most staff participated eagerly in the educational sessions.

As planned, each staff member who participated in the educational sessions was given a packet of the INTERACT materials. The power point presentation was shown on a lap top by this DNP candidate at the nurse’s station during each session. Sessions ranged from 75 to 120 minutes. On one occasion a resident had an acute change in condition during an educational session which required this DNP candidate’s immediate attention. The clinical situation that occurred was used as a training session to guide the LPNs and CNAs in the components of critical thinking and assessment. The staff involved enjoyed this experience, the resident was stabilized, and the hospitalization of the resident was avoided.

During this eight week period, several orientation sessions were conducted for new nursing staff, environmental services staff and dietary staff. Permission was given to present a 90 minute educational session on INTERACT materials and strategies to those staff members involved in the orientation program. Furthermore, owing to the success of those sessions, INTERACT and critical thinking training has now become a permanent
part of new employee orientation at the target facility, taught consistently by this DNP candidate, who is an NP at the facility.

In the quest to educate as many of the staff as possible, an educational session was offered to nursing staff outside of regular working hours at an off-site location sponsored by a hospice company. Only two staff members signed up for the session. Due to lack of interest the session was cancelled. Also, permission to educate the same staff on-site outside of their scheduled work hours was denied. See timeline of these events. (Appendix G).

Data Analysis

**TER results.** As planned, 20 LPNs and 20 CNAs took the Test of Everyday Reasoning over a 45 minute time period prior to beginning the educational sessions. Thirty eight of the 40, completed the educational intervention, and of those, 28 agreed to take the post TER. Those not taking the post test included four persons who resigned and left the facility resulting in a 12.5% turnover of TER participants during the four month intervention period. In the end, 16 LPNs and 12 CNAs agreed to participate in the post intervention TER.

A paired t-test was used to compare pre intervention critical thinking results with post intervention results. Analysis of each critical thinking component of analysis, inference, evaluation, induction and deduction were also compared between the overall group pre and post intervention using the paired t-test. An alpha level of 0.10 or a 90% confidence interval was established due to the small TER sample size of 28 participants. Test results indicated that the participants as a whole had statistically significant
improvement in the critical thinking skill of deduction post intervention with a t of -3.10, the difference was significant beyond the 0.10 level (p = 0.005).

A paired t-test was also used to compare overall pre and post test results at the same alpha level. Test results indicated that all the participants as a group had nearly statistically significant improvement in the combined components of critical thinking including: analysis, inference, evaluation, induction and deduction with a t of 1.69, the difference was significant at the 0.10 level (p = 0.103).

<table>
<thead>
<tr>
<th>Critical Thinking Skills</th>
<th>LPN preintervention</th>
<th>LPN postintervention</th>
<th>CNA preintervention</th>
<th>CNA postintervention</th>
</tr>
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<td>Deduction</td>
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<td>150</td>
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</tbody>
</table>

Table 1. Comparison of LPN and CNA raw score results of the critical thinking skills of analysis, inference, evaluation, induction and deduction prior to and after participating in the project’s educational intervention.

Evaluation of raw scores for the LPN group and the CNA group indicated that the greatest improvement in both groups occurred in the area of deduction, which was
reflected in the statistically significant overall post intervention result. LPNs had overall improvements post intervention in their ability to utilize the critical thinking skills of analysis, inference, induction and deduction. However, the LPN group showed digression in the critical thinking skill of evaluation. The CNA group had overall improvements in analysis, inference and deduction, but notably digressed in the areas of evaluation and induction in the post intervention testing. The combined modest improvements contributed to the overall result of nearly statistically significant critical thinking improvement for both groups post intervention.

Analysis of these results implicate that the LPNs benefited the most from the critical thinking and assessment training provided by the educational intervention. This may have occurred because the LPNs have a stronger basis upon which they can build critical thinking skills.

The critical thinking skill of evaluation is exhibited by providing the “evidence, reasons, methods, criteria or assumptions behind the claims made and the conclusions reached. This pertains to an individual’s ability to assess the credibility of sources of information and their claims” (TER test manual, 2012, p. 12). “This skill is rooted in a strong knowledge base of health care content consisting of etiology, conditions and procedures” (Case, 2004, p. 25). Evaluation skills were tied educationally to the planned simulation activities that were unable to be conducted with participants. Although, a case study was reviewed and discussed with participants, their evaluation scores did not improve and actually decreased post-intervention. Also, evaluation is not the main thing CNAs and LPNs are to do. The RNs and NP providers evaluate the data reported to them by the LPNs and CNAs, so this was not a major focus of the educational intervention.
Hospitalization rate results. Data on nursing home patient hospital admissions was collected through a retrospective medical record review during the four month intervention. Frequency of all-cause unplanned hospitalization rates and 30 day rehospitalizations was calculated. This included residents who were admitted to the hospital on an inpatient status, but not residents that were sent to the hospital and treated in the emergency department or as an observation stay. These results were compared to the same four month period from the previous year prior to the educational intervention.

These results were adjusted related to daily census and the number of days in each of the four intervention months and were reported based on 1000 resident days. This removed the variability which will occur when comparing results from month to month and year to year. The daily census totals were calculated for each four month time period as well as total unplanned hospitalization rates and 30 day rehospitalization rates. Each hospitalization and rehospitalization was evaluated individually to determine cause and results of the unplanned hospitalization. 30 day readmission rates were of particular importance to this study because of the financial penalties that will be imposed by Medicare and Medicaid under the Patient Protection and Affordable Care Act.

A two sample proportion was calculated to determine if the proportion of SNF hospitalizations and 30 day rehospitalizations had changed in each time interval.

Baseline data on all-cause unplanned hospitalizations and thirty day readmissions was collected. The total number of resident days for the comparison period was 23,675 and the average daily census was 195.57. This was compared to the number of resident days for the intervention period which was 24,115. The average daily census during the intervention period was 201.29. The number of unplanned hospitalizations improved
from 71 during the comparison period to 61 during the intervention period. These results were adjusted for daily census and the number of days in each of the four month periods. Hospitalizations decreased from 3 per 1000 resident days in the comparison period to 2.5 per 1000 resident days during the intervention period. This represents a 16.7% improvement.

Table 2. Comparison of unplanned hospitalizations between four month periods in previous year and intervention period.

![Unplanned Hospitalizations](image)

Table 2. Comparison of unplanned hospitalizations between four month periods in previous year and intervention period.

Of the 71 unplanned hospitalizations pre-intervention, 36 of these occurred within 30 days of an inpatient hospitalization during the comparison period. Twenty-four of the 61 unplanned hospitalizations during the intervention period were 30 day readmissions.

The overall proportion of skilled nursing facility episodes ending in readmission within
thirty days of the original hospital discharge during the comparison period was 19.6%. During the four month intervention period the percentage of thirty day readmissions decreased to 12%. This represents a 36% decrease in 30 days readmissions during the intervention period.

Table 2. Comparison of 30 day readmissions between 4 month periods in previous year and intervention period.

A retrospective review of records for all-cause unplanned admissions and 30 day readmissions caused by preventable diagnoses was reviewed (Appendix D). Preventable diagnoses are ACSDs which are considered safe and feasible to be treated within the SNF
rather than the hospital. These diagnoses include: “bleeding, cellulitis, chest pain, congestive heart failure, chronic obstructive pulmonary disease, dehydration/electrolyte imbalance, GI (vomiting, diarrhea, pain), pneumonia/respiratory infection, seizure, sepsis, shortness of breath, urinary tract infection and other” (Calculating hospitalization rates, 2011, p.4). During the four month comparison period, 46 residents with preventable diagnoses were transferred to the hospital for admission or readmission. Hospitalizations decreased to 38 resident transfers during the intervention period realizing a 17% improvement in acute care transfers of preventable diagnoses.

It is noticeable that the largest difference in the hospitalization rates occurred in February 2013. It is unclear what other factors might have contributed to this. One explanation for this large decrease in February 2013 could be that it took 3 months to implement the educational intervention and so the largest change resulted in the final month. If this is correct, one would expect to see decreased hospitalization rates in succeeding months.
SECTION SEVEN

Conclusion

“Lives depend on competent clinical reasoning” (Facione, N., & Facione, P., 2008, p. 1). Critical thinking skills are a necessary and vital ingredient of good healthcare. Critical thinking skills reflected in the TER test results indicated a statistically significant improvement in the whole group’s ability to perform the critical thinking component of deduction, \( p = .005 \) at the alpha level 0.1. This is defined as “a process of reasoning in which a conclusion follows necessarily from the premises presented, so that the conclusion cannot be false if the premises are true” (Test of Everyday Reasoning, 2012). The TER also revealed nearly statistically significant results overall for the whole group in all aspects of critical thinking, \( p = 0.103 \). Various staff members were engaged in the process, indicated by the questions they asked and more frequent communication of resident changes in condition. This alerted providers early in the disease process allowing for early intervention contributing to the decrease in hospitalizations.

Limitations in this study of nursing staff critical thinking skills must be acknowledged due to the small sample size of 28. This resulted in an adjustment of the alpha level to 0.1. Sample size was small in this study because of the practical constraints of time, subject availability and financial resources. This makes these results less representative of the general population and could have led to misleading or inconclusive results.

Numerous studies have been conducted utilizing various practice algorithms and communication tools similar to the INTERACT materials to assist SNFs to reduce avoidable hospitalizations of their residents (Hutt et al., 2006, Loeb et al., 2006,
Ouslander et al., 2011). Results of the effect of similar guideline tools from other studies may set useful parameters to use for comparison of the results of this study. In a study conducted by Ouslander et al., 2011, in 25 nursing homes in 3 states over 6 months, results indicated a 17% reduction overall in hospitalizations. 17 nursing homes in this study were qualified as engaged in the study and 8 were not. In the 17 nursing homes in this study that were engaged there was a 24% reduction in hospitalizations. The overall reduction of all cause hospitalizations during this DNP candidate’s INTERACT education project was 16.7%. This result is comparable to the results found in those nursing homes which were unengaged in the quality improvement process.

The most positive effect noted in this project was a 36% overall decrease in 30 day readmissions during the intervention period. 30 day readmissions are a major initiative supported by the Affordable Care Act (ACA). The ACA has incorporated a “hospital readmissions reduction program,” into its goals which will help hospitals smooth transitions for patients and reward hospitals that are successful in reducing avoidable readmissions. This directly impacts skilled nursing facilities, because a SNF that cannot administer quality post hospitalization care to prevent 30 day readmissions may not be a preferred destination for discharges from hospitals. This ultimately will affect a SNF’s fiscal livelihood. This is also a quality indicator advocated by The Partnership for Patients, a public-private partnership initiative working to improve the quality, safety and affordability of health care for all Americans initiated by the Centers for Medicare and Medicaid services.

This major decrease in 30 day readmissions was an important improvement in the target facility and was acknowledged during monthly transition of care meetings by two local referring hospitals.
“Taking a critical thinking approach to clinical practice entails two linked goals: accurate problem identification and optimal problem resolutions” (Facione & Facione, p. 10). Previously, nursing experts believed that somehow with experience, nursing students and clinicians would eventually somehow improve in their ability to apply critical thinking skills to accomplish these goals in clinical situations over time (Facione & Facione, 2008). “We have learned that without a direct focus on the critical thinking processes used to interpret, analyze, infer, evaluate and explain what is going on, progress in clinical reasoning is an uncertain outcome” (Facione & Facione, p. 13). Therefore, accurate problem identification and optimal problem resolution can be accomplished with a conscious effort made on the part of the clinician by asking the right questions. Instructors and mentors can facilitate the amelioration of critical thinking skills in their staff by prompting analysis and evaluation during actual clinical situations, and planned patient simulations. Some improvement in the critical thinking skills was noted in the staff of the target SNF when these kinds of approaches were conducted.

In summary, although there were many challenges to project implementation, the trends in reduction in hospitalization rates and the nearly statistical significant results of overall critical thinking improvement among the TER participants suggest a positive effect of the educational intervention of this project.
SECTION EIGHT

Recommendations

Historically, “looming in the path of almost every assessment of quality improvement initiatives in long term care (LTC) is the barrier of low reimbursement, which is said to stretch management and direct care resources so far that they cannot attend to making changes” (Capitman, J., et al., 2009, p.31). Barriers to improving long term care quality as cited by the Institutes of Medicine include LTC worker shortages, regulatory systems such as the minimum data set, low reimbursements and the lack of strong impetus for change which is encouraged by these barriers (Capitman, J., et al., 2009). As is the case with the target facility in this project, “many facilities are forced to make business choices between achieving better quality improvement reports or investing in staffing levels and other resources to sustain quality improvements” (Capitman, J., et al., 2009, p. 32). One recommendation to overcome the lack of funding necessary to pay staff during training in quality improvement initiatives in long-term care would be to procure a grant to implement them. These have become available more now in response to the ACA (Health care for health care workers, 2010).

Many experts “have concluded that fundamental changes in LTC will require more funding, nothing is done, since there is no new funding” (Capitman, J., 2009, p. 32). This should be a motivation for those interested in the LTC industry to become involved in the political processes which could provide more funding for LTC.

In addition, training all of the staff in large numbers at the beginning of the project meant that there would need to be increased staffing to cover staff while they were being trained. Choosing to train and work with one nursing unit at a time could
allow the project champion and unit managers to focus their available time and attention on fewer numbers of staff. This may ensure that the training was understood and properly applied before moving on to a subsequent unit.

Although, a notebook of the INTERACT materials was laminated and left on each unit for reference, accessibility of the information could be better facilitated by making posters of the information and placing them in strategic places at the nursing stations. Frequent visualization of the materials could emphasize their importance and embed vital content into nursing staff thought processes.

Again and again the literature finds promise in innovative models, protocols, and practice guidelines for “best practice” care for certain conditions. In trials these guidelines are generally found to be helpful, but then the new practices are not even able to survive in the test nursing homes, let alone be more widely implemented. (Institute of Medicine, 2001)

Reports from studies that have conducted quality improvement initiatives in long-term care suggest that to embed cultural change within a facility, the key was to sell the idea of an empowered staff to top management (Manard, B., 2001; Stone et al., 2002). More time and effort could be spent introducing the project and intended goals to not only facility administrators, but to corporate administrators, as well, through letters, personal meetings and telephone calls.

This DNP candidate would also like to suggest that incorporating methods to develop nursing staff critical thinking skills as is exemplified in RNs, could also aid in the solution to making the changes a permanent part of the SNF culture. This is a method to train LPNs to think and act more like RNs. Training cost in most SNFs would be a consideration as experienced by this DNP candidate, but when weighed against the actual
cost of paying RN salaries, a project emphasizing the development of critical thinking skills for LPNs could make the most fiscal sense.

Despite the limited educational opportunities, training and mentoring that occurred during this project; results suggested a strong effect on both rates of hospitalizations and improvement in overall critical thinking skills of the nursing staff. Many nursing staff of both groups expressed enjoyment in the educational sessions and the opportunity to learn. Following the sessions, more staff has been engaged in providing better resident care as evidenced by the decrease in hospitalizations. There have been increased impromptu questions by staff regarding clinical assessments during daily care of the residents. Several of the staff members have expressed an interest following the sessions to further their educations. One CNA has begun LPN education following the educational sessions. Three LPNs have started course work towards the completion of RN education.

“In the case of preventive and chronic care services, organizational adoption of innovation is viewed as an important influence on individual practitioner attitudes and behavior” (Capitman, J., 2009, p. 26). An example of this was the comment by a provider at the target facility in this project who stated, “Since this project was started in this facility, I have worked harder with the nursing staff to prevent hospitalizations when feasible.”

Continuing emphasis and further training of staff should be conducted with simulations which specifically emphasize the components of critical thinking, coaching and mentoring by providers and available nurse practitioners, physician assistants, project champions and unit managers to further reinforce the assessment and early intervention
process. This emphasis should be reinforced by commentary from SNF administrators on a regular basis.

All new employees should also be trained during the orientation process. This would allow training to be extended as it should be to environmental services staff, social workers, and office staff and to dietary staff, as well. All staff that interface with the residents should be able to recognize early changes in resident health condition and verbalize their observations to the appropriate staff. They should recognize that their contribution to resident care is appreciated, vital to quality care and welcomed.

LTC providers are inconsistent in their embrace of existing medically oriented process enhancements and simply lack the time, money and other resources to address quality of life enhancements on a systematic basis. This tendency is reinforced by available measures and indicators of quality that only suggest problems in care process and outcomes, but do not offer benchmarks for excellence (Capitman, J., 2009, p. 40).

Some benchmarks for excellence in LTC quality are being addressed in the ACA. A new view of long term care policy goals seems to be emerging with new discussion about the quest for quality of care and the costs that come with the impetus. As the baby boomer generation continues to age, long term care and its quality will become more firmly entrenched in the forefront of the public’s consciousness. With this will come the need to persevere in evoking cultural change in the long-term care industry to improve the quality of life for the increasing number of aging in the population.
LIST OF REFERENCES

derev3.pdf


regulatory deficiencies. *The Journals of Gerontology Series B: Psychological Sciences and Social Sciences, 64B*(2), 269-278.


Philadelphia, PA: Lippincott Williams & Wilkins.


Appendix A: IRB approval letter

INSTITUTIONAL REVIEW BOARD
RESEARCH INVOLVING HUMAN SUBJECTS
OTTERBEIN UNIVERSITY

Original Review
Continuing Review
Five-Year Review

ACTION OF THE INSTITUTIONAL REVIEW BOARD

With regard to the employment of human subjects in the proposed research:

HS # 11/12-93
Pryor-McCann & Morgan: Improving nursing home staff critical thinking to reduce . . .

THE INSTITUTIONAL REVIEW BOARD HAS TAKEN THE FOLLOWING ACTION:

Approved
Disapproved
Approved with Stipulations*
Waiver of Written Consent Granted
Deferred

*Stipulations stated by the IRB have been met by the investigator and, therefore, the protocol is APPROVED.

It is the responsibility of the principal investigator to retain a copy of each signed consent form for at least four (4) years beyond the termination of the subject’s participation in the proposed activity. Should the principal investigator leave the college, signed consent forms are to be transferred to the Institutional Review Board for the required retention period. This application has been approved for the period of one year. You are reminded that you must promptly report any problems to the IRB, and that no procedural changes may be made without prior review and approval. You are also reminded that the identity of the research participants must be kept confidential.

Date: 1-9-12
Signed: [Signature]
Chairperson

OU HS Form AF
APPENDIX B: Oral solicitation

Project Title: Improving nursing home staff critical thinking to reduce hospitalizations in an East coast skilled nursing facility.

Hello, my name is Michele Morgan. I am a geriatric nurse practitioner and a nursing doctoral student at Otterbein University in Columbus, Ohio.

You are invited to participate in a research project called “Improving nursing home staff critical thinking to reduce hospitalizations in an East coast skilled nursing facility.” The purpose of this project is to find out whether learning new information about caregiving changes your critical thinking ability and changes residents’ needs for hospital admission. Critical thinking means asking yourself important questions and making careful observations while you are taking care of the residents. The research project is part of my Doctor of Nursing Practice (DNP) course work at Otterbein University near Columbus, Ohio. The faculty member guiding this project is Dr. Joan Pryor-McCann, a professor of nursing at Otterbein.

You may volunteer to participate if you are at least 18 years old, have not completed more than 2 years of community college, and can speak and read English. If you decide not to participate, your job will not be affected in any way. If you volunteer to participate, you will be asked to sign a statement which indicates your agreement to participate. After signing you will be asked to complete a confidential, 50-minute multiple choice test. Then you will have a 4 hour care training confidential, 50-minute multiple-choice test. You have the right to stop participating at any time. If you decide to stop participating, your job will not be affected in any way.

The 4 hours of care training class may provide you with new information and skills needed to think about and recognize changes in residents under your care. Early recognition of changes in a resident’s condition might help the doctor or nurse practitioner to care for the resident in the facility rather than being transferred to a hospital.

Although it is not likely, there is a very small chance that you might feel uncomfortable with some test questions or excited about learning new things.

If you volunteer to participate and you complete all parts of this project, your name will be entered into a random drawing for a new 3M Littman Classic II Stethoscope ($65).

As I mentioned earlier, you are invited to participate in this research project. If you agree to participate you have the freedom to withdraw at any time throughout the course of the project without penalty. There are no costs for participation in the study. You will be paid your normal hourly wage to take the two 45-minute tests and the 4-hour education class. Your decision to participate or to not participate in this project will not affect your job in any way. Your identity as a research project participant will be kept confidential and never shared in research reports. The information will be kept in a locked drawer in
my office. I will share the results of this study with you, if you wish, after it is completely finished.

If you want to participate please phone me at 614-378-7102, or email me at michele.morgan@otterbein.edu. I will meet with you individually to answer any questions and ask you to sign your consent form. You may request additional information concerning this study before or after it is complete. You may contact Dr. Pryor-McCann at jpryor-mccann@otterbein.edu or the Otterbein University Institutional Review Board at 614--823-1230 for more information on your rights as a research project participant.
APPENDIX C: Informed Consent

The Department of Nursing at Otterbein University supports the practice of protection for human subjects participating in research. The following information is provided for you to decide whether you wish to participate in the present study. You should be aware that even if you agree to participate, you are free to withdraw at any time without penalty.

We are interested in studying the effects of an educational intervention on the clinical judgment skills of nursing staff in this nursing facility. You will be participating in two sessions that will involve taking a multiple choice test. One test will be given before your participation in the care training classes and one will be given after the education intervention is completed. It is estimated that each test will take no more than one hour. The education classes will take no more than four hours of class time. Although it is not likely, there is a chance that you might feel slightly uncomfortable with some of the questions during the test. Although participation may not directly benefit you, we believe that the information will be useful in determining the effects of the education on each participant’s clinical judgment skills.

Your participation is solicited although strictly voluntary. We assure you that your name will not be associated in any way with the research findings. The information will be identified only by a code number.

If you would like additional information concerning this study before or after it is complete, please feel free to contact me by phone, in person or mail.

Sincerely,

Joan Pryor-McCann, Principal Investigator
Michele Morgan, Secondary Investigator
Otterbein University
1 S. Grove Street
Westerville, Ohio 43081

Signature of subject agreeing to participate

With my signature I affirm that I am at least 18 years of age.
## Preventable Diagnoses of all Unplanned Hospitalizations

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<tr>
<th>Comparison Period</th>
<th>Diagnoses</th>
<th>Intervention Period</th>
<th>Diagnoses</th>
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</table>
| November 2011     | 1. Respiratory failure  
2. CHF  
3. Urosepticemia  
4. Electrolyte imbalance  
5. Electrolyte imbalance  
6. Pneumonia  
7. Pneumonia | November 2012 | 1. CHF  
2. Electrolyte Imbalance  
3. Respiratory Septicemia  
4. Aspiration pneumonia  
5. Pneumonia and Urinary tract Infection  
6. Pneumonia  
7. Pneumonia and respiratory failure  
8. Chest pain |
| December 2011     | 1. Left hip fracture  
2. Anemia  
3. Electrolyte imbalance  
4. Respiratory septicemia  
5. Shortness of breath  
6. Electrolyte imbalance  
7. Right hip fracture  
8. Shortness of breath  
9. Electrolyte imbalance | December 2012 | 1. Pneumonia and respiratory failure  
2. Mental status Change  
3. Pneumonia  
4. Dehydration  
5. Urosepticemia  
6. Sepsis  
7. Dehydration  
8. TIA  
9. Left hip fracture |
| January 2012      | 1. Respiratory failure with pleural effusion  
2. Dehydration and electrolyte imbalance  
3. Urinary tract infection  
4. Altered mental status  
5. Sepsis and renal failure | January 2013 | 1. Altered mental status  
2. Pneumonia  
3. Pneumonia  
4. Respiratory bacteremia  
5. Respiratory bacteremia  
6. Renal failure  
7. Electrolyte imbalance |
<table>
<thead>
<tr>
<th>February 2012</th>
<th>February 2013</th>
</tr>
</thead>
<tbody>
<tr>
<td>6. Pulmonary edema</td>
<td>1. Mental status change</td>
</tr>
<tr>
<td>7. Urosepticemia</td>
<td>1. Mental status change</td>
</tr>
<tr>
<td>8. Pneumonia</td>
<td>2. Sepsis</td>
</tr>
<tr>
<td>10. Renal failure</td>
<td>4. CHF</td>
</tr>
<tr>
<td>11. Anemia</td>
<td>5. COPD exacerbation</td>
</tr>
<tr>
<td>12. Syncope</td>
<td>6. Renal failure</td>
</tr>
<tr>
<td>13. TIA</td>
<td>7. Peripheral Vascular Disease</td>
</tr>
<tr>
<td>February 2013</td>
<td>8. CHF, shortness of breath.</td>
</tr>
<tr>
<td>12. TIA</td>
<td></td>
</tr>
</tbody>
</table>
The goal of INTERACT is to improve the care of nursing home residents with acute changes in condition, NOT to prevent all hospital transfers.

All of us can help our facility safely reduce hospital transfers by:

- Preventing conditions from becoming severe enough to require hospitalization through early identification and assessment of change in resident condition.
- Managing some conditions in the NH without transfer when this is feasible and safe.
- Improving advance care planning and the use of palliative care plans when appropriate as an alternative to hospitalization for some residents.

Objectives of INTERACT education

1. Train the nursing home staff in the process of clinical judgment.
2. Educate the nursing home staff about the INTERACT tools.
3. Educate the nursing home staff how to apply the INTERACT tools to their everyday care of the NH residents.
4. Mentor and coach the nursing home staff in the development of clinical judgment skills as they apply their knowledge of the INTERACT tools in the care of the NH residents.
Advance Care Planning Communication Guide

Residents at High Risk of Entering the Actively Dying Process

The following characteristics should prompt proactive advance care planning, and consideration of a Palliative Care plan, Comfort Care Orders, and/or enrollment in Hospice:

- Frequent Emergency Room visits and/or hospitalizations over the last 6 months
- Semi-comatose state
- Minimal oral intake (or receiving continuous IV hydration or tube feeding)
- Inability or difficulty with taking oral medicines
- Major decline in functional status with no identified reversible cause
- Mottling of extremities
- Primary diagnosis of metastatic cancer
- Primary diagnosis of advanced dementia
- Existing DNR order

The Process of Clinical Judgment

1. NOTICING
   * background, context-diagnosis
   * relationship
   * initial grasp
2. INTERPRETING
   * reasoning patterns
3. RESPONDING
   * actions, outcomes
4. REFLECTING
   * in action
   * on action

Early Warning Tool

If you notice or mention any important change while caring for a resident today, please fill in the changes and contact us if you think it is important before the end of your shift.

- Name of Resident:
- Description of change:
  - 1. Dopamine
  - 2. Lab results new
  - 3. Lab results change
  - 4. New medications
  - 5. Other...

- Date and Time:
- Comment:

Change in Condition

Immediate Notification:

Any significant, urgent or apparent discomfort that

1. A new symptom that is not controlled by usual
2. A change in the usual
3. A change in the usual

Source:

Change in Condition: Rapid Change in Condition in the Long Term Care Setting 2011

Ambulatory care sensitive diagnoses

1. Dehydration
2. Fever
3. Mental Status Change
4. Symptoms of Congestive Heart Failure (CHF)
5. Symptoms of Lower Respiratory Infection
6. Symptoms of Urinary Tract Infection (UTI)
Anatomy and Physiology of Normal Heart

Care Path: Dehydration

Vital Sign Criteria
- Temperature: >106°F (≥41°C)
- Respiratory rate > 30/min
- P脉: ≤ 20 mm Hg or < 30 mm Hg systolic
- Oxygen saturation < 90%
- Weight less than desired

Take Vital Signs
- Temperature
- P脉
- Respiratory rate
- Oxygen saturation
- Hydration status

Care Path: Dehydration

Notify MDS/MDP Immediately
Consider
- Lab test as indicated
- Transfer to acute care facility as indicated
### Table 3. Progressive Case study for Teaching Skills of Interpretation, Analysis, Inference, Deduction and Induction

<table>
<thead>
<tr>
<th>Case</th>
<th>Questions</th>
</tr>
</thead>
</table>
| Mrs. K. is an 86-year-old with a recent hospitalization for aspiration pneumonia. She was readmitted to the nursing facility 10 days ago. One hour after the evening meal, the charge nurse notes during med pass that the resident has had a change in condition. She notes that Mrs. K. is coughing and saliva in running out of the side of her mouth. She seems to be short of breath. She is sitting upright in her bed. | 1. What is the priority problem in this case study that should be addressed? Why do you think this is the priority?  
2. What additional data would you collect first?  
3. Why is this information critical to your decision making as you plan your nursing care?  
4. Name 2 possible problems that could have caused these symptoms and why? Which of these problems seems most likely and why?  
2. What are 2 different actions you could take and why? |
| VS were collected.  
• B/P- 160/90  
• P- 100  
• T-97.4  
• R-26  
• O2 saturation-87% on room air.  
Lung sounds: Anterior rhonchi bilaterally, posterior lung sounds are diminished with scattered rhonchi and wheezes. | Distribute  
Care Path: Symptoms of Lower Respiratory Infection (Interact 3.0 tools for nursing Home, 2012).  
1. What would be your plan of nursing care based on these symptoms and why?  
2. What are 2 different actions you could take and why? |
| Nursing staff brings the crash cart to the bedside. Mrs. K. is suctioned with a Yankauer suction tip and O2 is started with a non-rebreather mask at 25 L/min. Mrs. K’s O2 saturation improves to 93% on the non-rebreather mask. Her coughing has diminished and her respirations have improved to 22/min. Lung sounds auscultated reveal occasional anterior and posterior rhonchi. |  
1. What would you report to the provider on call and why? |
| The provider orders that Mrs. K be weaned off of the non-rebreather mask onto a nasal cannula maintaining her O2 saturation at 92% or greater. He also orders: | 1. What lab values might you expect and why?  
2. What might you expect the chest x-ray to show and why? |
- Stat portable chest x-ray
- CBC and BMP in the AM.
- VS every 4 hours.

Stat chest x-ray results show a RLL infiltrate. CBC shows WBC elevated to 14,000. BMP shows no abnormal values. The provider orders:
- Clindamycin 600 mg IM X 1.
- IV midline.
- Clindamycin 600 mg IV every 8 hours X 3 days, then Clindamycin 600 mg po X 7 days.

<table>
<thead>
<tr>
<th>Question</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. What lab values would you report to the provider and why?</td>
</tr>
<tr>
<td>2. Do you agree with the provider’s plan of care and why?</td>
</tr>
</tbody>
</table>
### APPENDIX G: Revised Timeline

<table>
<thead>
<tr>
<th>Timeline</th>
<th>Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. IRB approval received from Otterbein University. (see attached appendix)</td>
<td>July 2012</td>
</tr>
<tr>
<td>2. Approach LPNs and CNAs to determine those interested in participating in the TER. Answered their questions and obtained informed consent.</td>
<td>August 2012</td>
</tr>
<tr>
<td>3. Planned and prepared INTERACT power point education presentation.</td>
<td>September 2012</td>
</tr>
<tr>
<td>4. Prepared INTERACT reference binder to be placed on each nursing unit.</td>
<td>November 2012</td>
</tr>
<tr>
<td>5. Administered TER pre-test to those who signed the informed consent.</td>
<td>November 2012</td>
</tr>
<tr>
<td>6. Conducted INTERACT training sessions to groups of staff members on units during varying shifts.</td>
<td>November/December 2012</td>
</tr>
<tr>
<td>7. Informally meet with each RN unit manager every 2 weeks for 10 minutes to discuss the progress, problems and concerns and application of the educational intervention in daily practice by staff.</td>
<td>November 2012-February 2013</td>
</tr>
<tr>
<td>8. Track hospitalizations and readmission of residents during the four month intervention period.</td>
<td></td>
</tr>
<tr>
<td>9. Coach LPNs and CNAs informally during daily rounds in the use and application of the INTERACT educational materials.</td>
<td></td>
</tr>
<tr>
<td>10. Administered TER post-test to 28 staff members who participated in the INTERACT educational intervention.</td>
<td>January/February 2013</td>
</tr>
<tr>
<td>11. Records review to determine number of hospitalizations from November 2011 to February 2012.</td>
<td>February 2013</td>
</tr>
<tr>
<td>12. Complete tracking of hospitalizations and data analysis of results.</td>
<td>March 2013</td>
</tr>
<tr>
<td>12. Project proposal defense for April 8 of Spring Semester.</td>
<td>April 2013</td>
</tr>
</tbody>
</table>
Hello Michele,  
2012  
June 5,  

We are pleased to inform you that you have been approved for a special discounted price on tests and testing services for the purpose of gathering data for your doctoral dissertation.

We will be preparing a price quote for the materials you inquired about. Please fill out the attached rapid response quote request including translation where applicable, as well as testing modality (paper & pencil or online) and that price quote will be emailed to you very soon. Thank you; look forward to speaking with you again soon.

Best,

Sierra

Sierra Chambers  
Insight Assessment  
Client Services Specialist  
Office 650-697-5628  
Fax 650-692-0141  
www.insightassessment.com  

Measuring Critical Thinking Worldwide