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Implementation of Post Falls Huddles in Skilled Nursing Facility

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IMPLEMENTATION OF POST FALLS HUDDLES IN SKILLED NURSING FACILITY

by

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DEDICATION

I'd like to dedicate this Evidenced Based Project to my forever love Gregory Maurice Burnett Sr. He always inspired me, supported me and pushed me to my highest potential. Thank you baby for being my biggest cheerleader. I will always love you and remember all the good times we shared. Until we meet again, your one and only Princess.

I'd also like to dedicate this project to my grandfather I heaven Mr. John Lomax Sr. Thank you granddaddy for always showing me that there was more to life than 76th and Essex St. Thank you for encouraging a little brown girl from the heart of the Englewood area in the city of Chicago that the sky was the limit and as long as I worked hard for it, the sky could be mine.

Last but not least I wish my mother Deborah Jean Lomax was alive to see that the strong intelligent female that she raised me to be finally beat the odds. I would love for her to be here to see that I, Princess Lomax achieved a Doctoral Degree. No one would have ever thought that this was possible, not even me. So this Evidenced Based Project is dedicated to my three Angels in Heaven. One day we will be able to celebrate this accomplishment together.

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Unfortunately there are so many people that deserve to be acknowledged for this great accomplishment, but for the sake of time, I would first like to acknowledge my Lord and Savior. To God be the Glory, Hallelujah, thank you Jesus. God I am nothing without you and my life would not be what it is today without you, so Lord thank you for loving me when I didn't and or couldn't love myself. God thank you for blessing me with a heart of gold, a determined mind and strength of steel. Without you God, there would be no me, so thank you God for favor that I didn't deserve, I love you and will forever honor your name.

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ABSTRACT

The purpose of this paper is to discuss the quality improvement project, implementation of the post fall huddle in a long-term care facility. Falls are the most common problem in adults 65 years and older. Falls in this population can have devastating effects, often leading to significant changes in morbidity or death. Adults in long term care settings have an increased risk of falling and having a subsequent fall due to an acute illness, weakness, or confusion (CDC, 2015). At the skilled facility, there has been a significant increase in hospitalizations due to injuries sustained from falls. To address this problem, the literature recommends and supports the practice of a post-fall huddle to discuss and drill down the root cause of the falls. Most of the literature written today is about utilizing post fall huddles in Hospital settings. There is limited clinical practice data that addresses the implementation of post fall huddles in long term care settings and its effects on reducing falls. Based on the literature review recommendations and the needs of the facility, a quality improvement project was implemented. The results of the project were analyzed to show if the post-fall huddle reduced the number of recurrent patient falls and reduce the number of falls within the facility in the eight-week time frame. The analyzed results showed a significant decrease in falls therefore decreasing the number of hospitalizations due to fall related injuries.

CHAPTER 1

INTRODUCTION

Background

According to current literature reviewed, there is a high prevalence of inpatient falls in skilled nursing facilities. This is concerning as it is reported that falls have adverse effects on a person's health and attributed to physical and emotional disabilities and even death among the vulnerable populations such as elderly. New strategies need to be implemented which would lead to improvements in patient safety. One new strategy is the post-fall huddle. Post fall huddles are strategically used in the inpatient settings in the determination of the causes of falls and assuring proper intervention to prevent future falls. Post fall huddles are efficient in ensuring communication of fall risks and more importantly, management of those risks (Carpenito, 2014). The main goal of integrating the post-fall huddle is to improve the health outcomes by promoting the delivery of safe and effective services. Post-fall huddle integration is a long-term strategy that will lead to the prevention of further adverse health events secondary to falls.

Statement of the Problem

Inpatient falls are rampant in hospitals and have become a devastating issue to both patients and the healthcare facilities. Inpatient falls in the top five of the most prevalent causes of preventable patient injury, prolonged hospital stay, hospital cost and most importantly patient death. According to the Agency for Healthcare Research and Quality (2016), approximately 700,000 to 1,000,000 falls occur each year in the hospital setting. As of 2008, the Centers for Medicare and Medicaid Services (CMS) do not reimburse hospitals for certain types of traumatic injuries that occur while a patient is in the hospital; many of these injuries could occur after a fall. The aforementioned outcomes pertain mainly to the elderly patients. Elderly patients are most

affected due to health complications such as inability decreased eyesight and general weakness related to muscle fatigue and loss of muscle mass. When elderly patients fall, they either suffer head traumas, bruises, hip fractures or all of the mentioned injuries. The risk factors that primarily lead to falls in nursing facilities include side effects of medications, disabling conditions, and unsafe environments that cause poor balance when walking. Falls are unpredictable and even though nurses are responsible assuring safe and affective care, these unforeseen events still occur for a multitude of reasons.

Although fall prevention has increased in awareness during the past decade, healthcare facilities such as skilled nursing facilities continue to see the number of fall occurrences per year gradually increase. Inpatient hospitals and rehab facilities of all types utilize different fall prevention measures, but one of the most commonly utilized is the weekly post fall huddle. Post fall huddle tools can be used in the evaluation of the inpatient falls and help enhance patient safety in skilled nursing facilities. Betty Neuman's Health Care Systems Model and the Lewin's Change Model as the evidence based practice tool can be used integrating real time post-fall huddles, developing risk management policies to decrease the incident of falls.

Data from the Literature Supporting the Need for the Project

According to the Center for Disease Control (CDC), falls remain to be the secondary cause of deaths due to accidents and unintentional global injuries. Additionally, more than 646,000 individuals die of falls indicating how severe injuries are caused by falls. Consequently, the Hendrich II Risk Assessment tool was selected as a logical framework for the post-fall prevention evaluation. The framework is highly effective since it has 73.9% specificity and 74.9% sensitivity making it the best tool to use in measuring patient falls in healthcare facilities and rehabilitation

centers with skilled nurses (Hendrich, 2013). A number of studies conducted using the framework have yielded positive results in the evaluation of patient falls.

Prevalence of falls in the healthcare facilities

Falls in healthcare facilities are devastating and result as a significant source of mortality and morbidity (U.S. Department of Veterans Affairs, 2016). According to the Center for Disease Control (CDC), prevalence of falls among the elderly patients aged 65 years, suffer from injuries as well as death resulting from falls in the healthcare facilities. Falls are the leading cause of preventable injuries and despite nursing interventions, the prevalence of falls continues to increase (Gray-Miceli, 2018). There is a significant gap in sustainable fall prevention interventions in healthcare facilities and the need to create a sustainable strategy to reduce elderly falls need to be implemented.

Post-fall huddles are a new integrated strategy which may reduce falls among the patients in the healthcare facilities. Post-fall huddles are effective in the extended care facility (Clinical Excellence Commission, 2019). According to the U.S. Department of Veterans Affairs (2016), huddles prevent falls in medical centers and demonstrate the need for immediate bedside assessments. As such, according to the article by the Department of Veterans Affairs, there is a need to have a group of people who respond to incidents of fall immediately to promote the health and the safety of the patients in the healthcare facilities. Huddles are especially valuable as the activity creates an opportunity for the staff and management team to evaluate the causes of the fall but more importantly, a platform to plan for the future to prevent recurrence of such instances.

The etiologies, as well as the causes of pain, are associated with a large number of elements. As such, the falls in the healthcare facilities can be described as a phenomenon that is multidimensional and can be attributed to factors such as acute disease, medications, and chronic

disease, among other causes. For example, elements such as the age of the patients, prodromal factors, as well as the environment, are also significant causes of falls in hospitals (Gray-Miceli, 2018). Therefore, the factors which contribute to falls among the patients are diverse and thus, the need to involve both the internal and the external environments in solving the issue of falls. Solving the immediate causes of falls is an excellent way of ensuring that the future of falls is protected (U.S. Department of Veterans Affairs, 2016). The resolution to falls requires a procedure whereby, once the diagnosis has been made, investigation of the fall etiology follows and more importantly, the assessment sustainable prevention measures should be implemented.

Evidence Supporting Implementation

There is increasing evidence supporting the necessity to implement post-fall huddles in skilled nursing facilities. The healthcare literature has provided significant information regarding different interventions towards falls. For instance, since falls are significant morbidity and mortality causes, risk assessment has been vital in the skilled nursing facilities. There has thus been the implementation of multidimensional as well as multi-disciplinary methods towards prevention of fall incidents (Clinical Excellence Commission, 2019). While implementing the post-fall huddles in the healthcare facilities, the fall risks among the patients are screened. Following the extent of the fall risk among the patients, they are put on the protocol of controlling falls according to the rate of risks. Screening of the patients can also lead to results that the patient is at risk of falling; in such a case, various interventions are employed.

For example, exercises can be introduced to foster the physical welfare of the patient (Morse, 2008). Besides the physical therapy, there is also a necessity to reduce the fall risk through modification of the environment. However, although the interventions are put in place, there is a significant limitation of individualized care of the patient since the measures towards fall

prevention are usually generalized to suit all the patients. The best context of the post-fall, huddles is when there is the presence of the family member or the patient (Gray-Miceli, 2018). The huddle should also occur in the point at which the patient fell for the best analysis and investigations. Furthermore, there is a great need to ensure that the huddle has been conducted immediately after the incidence of fall.

There are increased benefits of the post-fall huddles that make the strategy use in the contemporary environment in the healthcare facilities. One of the advantages of having a post-fall huddle is the achievement of the individualized structured intervention towards the reduction of the risk of fall recurrence. Secondly, the post-fall huddles are significant in the improvement of the level of compliance with the protocols that are set in the organization regarding the safety standards (Carpenito, 2014). Thirdly, there is a need to ensure that the skilled nursing facility develops a culture whereby; the safety of the patients is prioritized. As such, the fall incidents in the facility will be treated with the necessary seriousness. Furthermore, there will be increased concentration on the missed falls in the institution through the identification of the etiology and investigating the sufficient measures to prevent falls in future.

Skilled nursing institution, which implements the post-fall huddles, creates an easy platform for the staff to offer the patients the necessary apologies (Mauk, 2017). For example, if the falls have been caused by a cause that is preventable by the hospital, the management team, among other relevant staff, should take the accountability and responsibility of the situation. The other advantage associated with the implementation of the post-fall huddles in the skilled nursing institution leads to increased awareness of the situations that led to falling. As a result, the staff is prepared to prevent a similar fall etiology due to the anticipation of the situations (U.S Department

of Veterans Affairs, 2016). Therefore, awareness of the causes of falls is an essential way of reducing the incidents in the inpatient context.

Practical Aspect of implementation of post-huddles in Skilled Nursing Facility

Implementation of the post-fall huddles in the nursing facility is a practical issue that includes the active participation of the staff. The huddles are significant in increasing the management of the patients in the healthcare facilities. While practicing the post-fall huddles, there is a need for healthcare providers to review the data that is associated with the fall risk (Gray-Miceli, 2018). Besides, there is a necessity to make a post-fall assessment and more importantly, to conduct the medical reviews of the patient. The nurses are the staffs who are often at the hospitals while the fall incidents happen (Morse, 2008). There is a need for healthcare practitioners to involve the input of the nurses while creating the relevant recommendations regarding the strategies that can be used in the prevention of falls. Besides the nurses, there is a need to involve the patients in investigations of the etiology of the falls in the skilled nursing facilities. The best instrument in the prevention of repeat fall is the elimination of the circumstances, which caused a fall in the first instance (Clinical Excellence Commission, 2019). According to the available literature, there are no specific measures of preventing the secondary falls. As such, there is a need to have a plan that is individualized to intervene in a fall. The most significant barrier towards solving the issues of falls in the healthcare facilities is a lack of collaboration and coordination of the huddles (Mauk, 2017). A multi-disciplinary collaboration should foster the intervention strategies employed after the investigation of the etiology of the falls.

Purpose of the Evidence-Based Practice Project

The purpose of this research project is to provide an in-depth study of the prevalence of patient falls in health facilities and to validate the application of evidence-based practice using the

post-fall huddles as a strategy in mitigating the falls. The outcomes of the study can then be used by health facilities in developing policies that will ensure the patient areas are always assessed to reduce risk factors that can lead to falls. Ultimately, the evidence-based project will help reduce patient falls and also deal with the injured patients accordingly.

PICOT Question. Is there a relationship between implementing an immediate post fall huddle compared to the weekly fall huddle impact and the number of resident falls over an eight-week period?

Significance of the Study

The primary purpose of this research is to establish workable solutions to patient falls in a Skilled Nursing Facility. Therefore, the implementation of the post-fall huddles in skilled nursing facilities is essential for the sustainability of the safety of the patients. Prevention of patient falls is the responsibility of the management team of healthcare facilities. Such a team needs adequate resources, including the correct strategy to handle these falls. However, since falls are accidents and unpredictable, it is only possible to control them when the etiology is identified which can deliberately be addressed using the post-fall huddles approach. Environment, age, medication, among other elements, can lead to falls. The most susceptible population is the elderly and precisely those above 65 years old. Falls are attributed to occasional fatality as well as physical disabilities among the victims. The study on the post-fall huddle strategies, therefore, enlightens health facilities to identify the cause of falls and prevent future occurrences by employing think tanks with the ability to assess situations leading to the falls. Furthermore, the study also elaborates on the relevant stakeholders needed to actualize the post-fall huddles strategy and how they can possibly be involved in reducing patient falls. The stakeholders include the nurses on duty when the fall incident occurs, the patient, family members of the patient as well as

members of the management team. Finally, for effectiveness, the study illustrates the perfect time to implement the post-fall huddles to address fall accidents. The safety of the patients should always be prioritized throughout the implementation of post-fall huddles.

CHAPTER 2

THEORETICAL FRAMEWORK, EBP MODEL, AND REVIEW OF LITERATURE

Theoretical Framework

Overview of Theoretical Framework

Patient falls within healthcare facilities including skilled nursing facilities (SNF) has been researched and studied over the decades. During this time period, various strategies have been implemented in an attempt to prevent falls and yet, this preventable event still plagues healthcare facilities. Current and relevant publications will be incorporated into this Evidence Based Practice (EBP) project to build upon the existing evidence while emphasizing best practices in the skilled nursing facilities setting. This project will embrace the nursing theory of Betty Newman's Health Care Systems Model, Kurt Lewin's Change theory, and a thorough search of literature to build a solid base for changing nursing practice in managing falls post facto. Chapter two will establish a synopsis of the aforementioned theories and frameworks, while reviewing how each theoretical element facilitates practice change within this EBP project. The primary literature will be analyzed and reviewed with guided appraisals that develop the foundation for this practice improvement implementation. These theories and models were utilized in developing the PICOT question at hand and the needed evidence to implement such process.

Application of Theoretical Framework to EBP Project

Theoretical Framework: Betty Neuman

Betty Neuman's Health Care Systems Model is a comprehensive holistic system based approach that is used to implementation of post fall huddles in the skilled nursing facility. Neuman's model offers a tripartite framework for nursing interventions (Black, Boore, & Parahoo,

2011). It adds a conceptual richness and strengthens the foundation for the implementation of post fall huddles.

Neuman focuses on the traditional nursing process by incorporating appropriate interventions through the process of planning and implementation. She uses primary prevention as an intervention, which involves the nurse's actions to promote client wellness by stress prevention and reduction of risk factors (Parker & Smith, 2010). Newman theory suggests that developmental interventions with the right implementation would guide nurses to new approaches and in return would improve patient care delivery and outcomes. Newman's implication for nursing practice is directed toward facilitating optimal wellness through retention, attainment, or maintenance of client system stability (Kearney-Nunnery, 2016). The systems model describes three steps of prevention. These steps of nursing intervention are primary intervention, secondary intervention, and tertiary intervention (Aylward, 2010).

Neuman's System Model uses concentric circles to depict lines of defense that are necessary for basic survival. The client is an open system consisting of a fundamental core of energy. The open system is dynamic and constantly evolving to provide the body with homeostasis. For this EBP project, Neuman's System Model demonstrates that the environment surrounding a person is the sum of all internal and external forces; and with which they interact at any given time. Alyward (2010) expressed that proper nursing actions should be incorporated into care when patients experience a stressor or a possible threat to the self. Stressors could be intrapersonal; (like a fall), interpersonal; (personal relationships), and extra personal; (job issues). Neuman views nursing as a unique profession concerned with the variables that influence the response the patient might have to a stressor. Nursing also addresses the whole person, giving the theory a holistic perspective (Petiprin, 2016).

Strengths and Limitations of Theoretical Framework for EBP Project

Neuman's System Model is an excellent model for evaluating interactions within a healthcare facility; more specifically a system approach to decreasing falls. Neuman and Fawcett (2012), substantiate that the environment of the institutionalized patient is viewed as a combination of extrinsic and intrinsic forces. As this is the case, the Neuman's System Model can explain the many causes of facility falls and in return, can be used by nurses to help predict and reduce falls. In previous studies, the System Model was utilized to improve –nurse-patient engagement and practice improvement.

Neuman's System Model does not provide direct content specifically for nursing actions and fall reduction. The model limits a hierarchy that is systematic and does not provide concrete suggestions on how nursing practice can be influenced for change. Lastly, is does not decrease environmental distractions to care as to achieve best practices. It would be challenging to actively carry out all elements of the System Model with every nurse-patient interaction. However, the theory provides insight to current evidence in answering what variables influence falls in hospitalized patients. Using a theory that incorporates holistic care and supported by nursing foundations will enhance and support desired outcomes. Neuman's System Model for nursing was to involve nurses in conducting comprehensive patient assessments, which would provide the basic framework for delivering appropriate care to patients.

Evidence-based Practice Model

Overview of EBP Model

Evidence-Based Practice Model

Evidence based practice projects implemented within healthcare organizations intermingle with and develop organizational traits as seen within the healthcare facility's working culture. The

need for better planning models toward these influential factors need to occur if patient outcomes are to improve. The main action for this proposed EBP project is to foresee effects as current practices unfreeze from their current settings, generate active movement in the proposed changes, and become refrozen as demonstrated in Lewin's three-step change model. Planning for active movement through change is equally important as the actual planning for desired outcomes among healthcare facilities and patients. For this reason, Kurt Lewin's Change theory will be utilized (Lewin, 1947) in this quality improvement project.

The Lewin's Change model is built on the theory that a medical facility or patient care unit desiring a scripted change, there are forces driving change and opposing forces that resist the same change. To implement a process of change successfully, the positive driving forces need to increase in strength, while there is a decrease in the restraining forces.

Lewin states that motivation for change needs to be generated before change can occur. One must be helped to re-examine many cherished assumptions about oneself and one's relations to others. With Lewin's Change Theory, there are three stages to change and they are unfreezing, change, and refreezing (Lewin, 1947). When instituting Lewin's Change Theory, a clinical question must be formulated as the unfreezing process must be guided by research and best practices. It is important for the PICO question to be focused and specific. The PICO question will define the specific patient population, intervention of focus, a comparison patient group or treatment, and a defined outcome. In this proposed project, the PICO is as follows: In residents aged 65 years and older living in a long term acute care facility, would implementing an immediate post fall huddle decrease future fall rates as compared to a weekly fall huddle?

Application of EBP Model to EBP Project

This project has used the Lewin's Change Theory (LCT) as the EBP model. The first step in the LCT was to create a sustainable PICO which is: In residents aged 65 years and older living in a long term acute care facility, would implementing an immediate post fall huddle decrease future fall rates as compared to a weekly fall huddle? Once a defined PICO has occurred the movement through the three stages of the LCT can occur.

Unfreezing

During the unfreezing stage, assessing current practice is the primary goal as to achieve best-practice standards. In this stage, an extensive search of primary literature was achieved within the five most nursing influential databases. Eleven studies were selected and appraised using John Hopkins Evidence-Based Practice tool (John Hopkins Evidence-Based Practice [JHNEBP], 2012). The EBP was identified in the literature; along with a collection of baseline data such as patient falls to determine if a change is needed. The institutional staff must understand that the current action plan is not meeting best practice standards and a move to change must occur.

Change

A comprehensive plan was designed with the input from the organization representative and university advisor. Implementation of the project occurs during the change stage. Successful implementation occurs when there is administrative support and staff by-in. The change stage represents the period of actual change including the planning and implementation stages of the project. The change phase will occur over an eight-week time-frame and the plan will be to implement and sustain the use of the post fall huddle tool.

Refreezing

During the refreezing stage, the change is continuously monitored and evaluated to adjust as needed and to sustain the change. For the quality improvement project, the director of nursing or the assistant director of nursing will monitor the use of the post fall huddle in the event of a fall. During the post implementation phase, a survey will be given to the nursing staff on the effectiveness of the tool. This will be summarized and the feedback will be processed with a leadership and staff reviews in case the post fall huddles need to tweak to meet the needs of the residents and staff of the facility.

For some nurses, change is inconvenient and out of his/her comfort zone, resulting in resistance to the change process. Therefore, team members and stake holders in the process must engaged and involved during the active phases of development, implementation, and evaluation. The DNP student and the leadership of the facility will be accountable for acting as a change agent and role model, supporting the staff nurses throughout the change process. Resistance from staff members at first is expected; however, extensive planning and presence of leadership helps reduce tension when implementing the change.

Strengths and Limitations of EBP Model for EBP Project

Strength of the Lewin's Change Theory as the EBP model includes how the process facilitates how to move people through change. The LCT emphasizes the dynamics of group work and how that group work influences change. Lastly it displays effectiveness in stabilizing wavering environments. The LCT on the other hand does not offer suggestions on how to prepare people for change during the unfreezing stage. This simplistic oversight can be the broken link to implementing a sustainable transformational change, resulting in lost time and a failed project.

Literature Search

Sources Examined for Relevant Evidence

Primary articles of research were obtained through Cumulative Index to Nursing and Allied Health Literature (CINAHL), PubMed, MEDLINE and systematic reviews were obtained through Joanna Briggs Institute (JBI) and the Cochrane library. Citation chasing was utilized at times to find the authors of primary source. Boolean operators were used to refine searches and included falls, elderly residents, skilled nursing facility, hourly rounding, falls among elderly, fall prevention, fall interventions, assess*, huddle* and post-falls. Search limiters included publication years 2009-2019, scholarly peer reviewed and English language only. The inclusion criteria for articles in this project included adult patient population over the age of 64, post fall implementations, post falls reviews, post fall assessments and post fall interventions. Articles were excluded that were exclusively falls in the community setting, and falls related to children and younger adults.

Results

The JBI search produced twenty-six results that best matched the search terms and limiters. Titles and abstract were reviewed and three articles were chosen for a critical appraisal. Next, MEDLINE produced 200 results using the same search terms and limiters. Thirty-four of those articles were identified but critical appraisal was not completed on those. PubMed produced 91 results that matched the search criteria and one article was chosen for critical appraisal. CINAHL produced 221 articles, which fifteen met the inclusion criteria and four was chosen for critical appraisal. The Cochrane library produced 56 high level results, which three met inclusion criteria and were included in the critical appraisal. Using the Melnyk and Fineout-Overholt's (2011) pyramid of evidence, a grid was produced to summarize the eleven main literature review articles (see Table 2.1).

Levels of Evidence

Melnyk & Fineout-Overholt's Pyramid of Evidence

Table

2.1

Hierarchy of Evidence	Number included in Project
Level 1- Systematic Reviews/Meta-analysis of RCTs	2
Level 2- RCT Design	0
Level 3- Controlled Trials, Quasi-experimental Designs	1
Level 4- Case-Control, Cohort Studies/retrospective	6
Level 5- Systematic Reviews/ integrative reviews of Descriptive or Qualitative Studies	0
Level 6- Descriptive, Qualitative Studies	1
Level 7- Expert Opinion, Report of Expert Committees	1

Appraisal of Relevant Evidence

Melynk and Fineout-overholts (2011) pyramid of evidence as well as the John Hopkins Evidence-Based Practice tool (John Hopkins Evidence-Based Practice [JHNEBP], 2012, pp. 238-240) were used to appraisal the eleven selected articles. Melnyk and Fineout-Overholt's (2011) pyramid of evidence refers to the seven levels of evidence hierarchy as displayed in table 1

above. The methodology of the hierarchy provides visualization for both the quality of evidence and amount of evidence available. It ranks articles level one, strongest level of evidence, to level 7, weakest level of evidence. The study design, results, and conclusion were reviewed utilizing the JHNEBP tool.

Level 1. Spoelstra, Given, and Given (2012) performed a systematic review that reported the findings of fall prevention programs in hospital settings to offer a foundation for the development of programs using the best available evidence. The authors made overall conclusions from the available literature on fall prevention interventions in order to provide nurse administrators with a basis for developing evidence-based fall prevention programs in hospital settings. The authors search COCHRANE, PubMed and CINAHL for pertinent articles. Falls, acute care hospitals and interventions were the search terms included by the authors. Search limiters included the timeframe 2000-2011and only English-language publications. Eleven articles retrieved focused on interventions for fall preventions in the acute care setting and included systematic reviews and randomized controlled trials. According to the findings of the review, fall reduction rates were evident with the implementation of fall prevention programs and ranged from 19% to 57% or 1.90 to 2.22 per 1,000 bed days. In sum, the authors found that multifactorial fall prevention programs that included developing a safety culture fall risk assessments, multifactorial interventions post-fall follow-up and quality improvement along with the integration of electronic records led to a decrease in both falls and fall-related injuries among inpatients. The findings showed that post-fall follow-up and quality improvement are critical in the prevention and reduction of future falls since this allows the identification that led to the fall, problem-solving and modification of the care plan. The authors conclude that hospitals ought to reduce the rate of falls using multifactorial fall prevention programs that are based on evidence-based intervention to alleviate falls and falls and

fall-related injuries. The study limitations included the lack of clear delineation on single interventions that reduced falls and lack of consistent reporting of falls per 1000 patient day as well as lack of consistent reporting for fall injuries per 10,000 patient days. Future studies to providing consistent reporting for falls and injuries and to provide consistent measurement for a clearer interpretation of the rate of falls were the authors recommendations.

Miake-Lye, Hempel, Ganz, and Shekelle (2013) performed a systematic review to reassess the benefits and harm of fall prevention programs in acute care settings as well as to identify factors associated with the successful implementation of such programs. The authors performed a search on PubMed from 2005 to 2012 and identified 21 studies including seven randomized controlled trials (RCTs), 13 quasi-experimental studies, and one cohort study. An optimal bundle of components was not established but common components of fall prevention programs include patient risk assessment, patient and staff education, wristband alerts, bedside signs, advice about footwear, scheduled and supervised toileting and medication reviews (Miake-Lye, Hempel, Ganz, & Shekelle, 2013). According to the results of the review, the rate of falls in acute care settings was around 1 to 9 per 1000 bed days. Two new, large RCTs demonstrated that multicomponent fall prevention interventions have the potential to reduce the risk of in-hospital falls by as much as 10%. Potential harms of multicomponent fall prevention programs included increased use of sedating drugs and restraints along with decreased efforts to mobilize patients. Eleven studies suggested that successful implementation of multicomponent fall prevention interventions was associated with including front-line staff engagement of the program design, support from leadership, multidisciplinary committee guidance of the prevention program, technology systems for utilization of information, training and education of staff, pilot testing interventions, and changing attitude about falls prevention.

Level three. Spiva, Robertson, Delk, Kimery and Green (2014) used a longitudinal, quasi-experimental, repeated measures design to evaluate the impacts of a TeamSTEPPs based training curriculum. The curriculum incorporated video vignettes concentrating on fall prevention for debriefing. The secondary item was reinforcement of team members' teamwork attitudes and perception, communication and safety culture associated with injuries. The study was conducted in four medical-surgical units of two acute care whereas the units were assigned to either a study group or a control group. The study group (n = 18) included a 17-bed neurology unit and a 16-bed orthopedic unit while the control group (n = 16) included a 30-bed neurology unit and 22-bed orthopedic unit. The study group received the TeamSTEPPs based training while the control group received no training and continued with routine practice. Data collection tools include Hospital Survey on Patient Safety Culture (HSOPS), TeamSTEPPS Team Members' Perception of Team Effectiveness, TeamSTEPPS Teamwork Attitudes, and four behavioral observation tools. The rate of falls and fall-related injuries was also collected. Data was collected over nine months for both groups. Following the implementation of the TeamSTEPPs based training curriculum, the scores of the study group significantly improved on all measures except teamwork perception. The observations result also showed that there was an improvement in communication in the study group compared to the control group. Additionally, a 60% reduction in the rate of falls and a 71% decrease in the rate of fall-related injuries was reported in the study group while the rates of falls and injuries increased in the control groups. The authors concluded that team training using evidence-based training tools such as the TeamSTEPPs has the potential to reduce the rate of falls and fall-related injuries in health care settings. Study limitations included small sample size, short tracking period of caregiver perceptions and falls, and the units and observers were not blinded to the intervention. The authors recommend future studies to consider larger samples with

a longer tracking period of caregiver perceptions and falls. Based on the evidence pyramid and JHNEBP tool, this study is a level three in the hierarchy of evidence and good quality using the JHNEBP tool.

Level four. Breimaier, Halfens, and Lohrmann (2015) implemented a quasi-experimental, mixed-methods design to evaluate time investment efficiency for implementing a fall clinical practice guideline. The clinical practice guideline is an evidence-based fall prevention guideline into an acute care nursing practice. Effective implementation as defined by the authors is the improvement in nursing knowledge of fall prevention measures, positive change in staff's attitude towards evidence-based practice guidelines and successful implementation by the participating nurses. This particular study was performed on two departments of an academic teaching hospital and the participant were all nursing assistants and registered nurses. Qualitative data collection was achieved via questionnaire, semi-structured interviews, and group discussions. Analysis of the qualitative data occurred through the Consolidated Framework for Implementation Research (CFIR), which was also used as the theoretical framework for the study (Breimaier, Halfens, & Lohrmann, 2015). According to the results of the study, the application of multifaceted and tailored implementation approaches increased the knowledge of the graduate and assistant nurses on fall prevention, assessment of falls CPG and the guideline itself increased significantly from baseline to final assessment ($p \leq .001$). Based on the qualitative data results, there was an increase in the participants, awareness on the prevention of falls. Baseline positive attitude towards fall prevention guidelines improved significantly at the end of the study ($p = .001$). In regards to the required time investment of nursing staff, the hospital nursing staff (approximately 150 nurses) invested a total of 1192 working time hours over the course of the project. The authors concluded that multifaceted approached tailored to a particular setting within

the participatory action research approach along with the CFIR has the potential to enable effective implementation of a CPG into nursing practice in acute care settings. The authors provided limitations that can improve their study and future studies.

Koh, Manias, Hutchinson, and Johnston (2007) completed a retrospective audit design to investigate and explore the incidence of falls. Baseline data was collected from December 2004 to March 2005 and captured the incidence of falls and fall prevention practices in five acute care hospitals from. A randomized sample of 6000 medical records of patients admitted in the medical, geriatric and surgical units of the five hospitals was retrieved and reviewed to determine if falls, fall assessments and interventions were being initiated and documented. Data collection occurred with a valid audit instrument in the Fall Prevention for Older Adults Evidence-Based Protocol. The collected data included documented fall history, medical history, assessment of fall risk factors, medications functional assessments, balance and gait screening, and environmental management. According to the results of the study, 825 patients had experienced falls in the five hospitals and the rate of patient falls ranged from 0.68 to 1.44 per 1000 patient days with 27%.4 to 71.7% of these falls being associated with injuries. The utilization of fall assessment tools by the nursing staff was recorded in 77% of all the nursing records. The authors concluded that several measures should be implemented in healthcare settings to promote identification and intervention for patients at the risk of falling as well as reduce the rate of fall-related injuries. Evidence-based strategies for fall prevention, including risk assessment along with evidence-based interventions for reducing falls and injuries, should be implemented and evaluated in acute care settings. The authors also recommended continuous evaluation of the interventions and the need to educate about the need for EBP and understand the significance of targeting interventions based on risk assessment to reduce the rate of falls and fall-related injuries. As identified by Koh et al. (2007),

the major limitation of the study was that the researchers did not investigate as well as describe the factors that were associated with the risk of falling. Also, the study did not investigate the cause of the falls or the type and extent of the fall-related injuries.

Reiter-Palmon, Kennel, Allen, Jones, and Skinner (2015) performed a retrospective cohort study that aimed at providing a better understanding of the naturalistic decision making (NDM) in health care and the use of after-action reviews (AAR) as learning tools to reduce errors. The study concentrated on the implementation of a post-fall huddle as the AAR to learn from errors as well as decrease patient falls and associated adverse effects. The researchers utilized 17 small rural critical access hospital located in a mid-eastern state that participated in the effort. The researchers collected 226 patient fall reports from the 17 hospitals over a 16-month period (August 2012 and November 2013), which had been completed by hospital staff members. The findings of the study suggested that the utilization of self-guided post-fall huddles increased over the period of the project, which indicated adoption of the process. Statistical analysis with the chi-square indicated a significant relationship between the utilization of the post-fall huddles and the project period ($p < .001$). Essentially the proportion of events of patient falls that included a post-fall huddle increased from below 40 % in time one to over 80% in time three. Additionally, the findings indicated that there were changes in the type of errors identified to be attributed to the patient falls, with a decrease in coordination and task errors over time. There was a significant relationship between the project period and the proportion of task errors ($p = .02$) and coordination errors ($p = .02$). There was no significant association between the period of the project and accuracy of identification of task ($p = .14$) judgment ($p = .77$) or coordination ($p = .44$) errors. The proportion of falls associated with less adverse effects such as injuries increased in the course of the project period. The authors concluded that self-guided AARs are influential learning tools, but

more attention must be paid to the guide as well as its development to ensure that the AARs are tailored to the type of errors that teams are more likely to encounter. Reiter-Palmon et al. (2015) provided various limitations that may improve their study as well as future studies. These limitations included a limited number of fall event reports over the project time period, the possibility of varied staff training between hospitals on conducting fall huddles, the post-huddle guide might not have sufficiently supported the reflection required to identify and learn from judgment errors, lack of a follow-up to determine the sustainability of the project.

Dacenko-Grawe and Holm (2008) performed a quality improvement program that implemented evidence-based fall prevention protocol in an acute care setting. The fall prevention protocol was implemented at Saint Francis Hospital (Evanston, IL), an acute care teaching hospital located in Evanston, IL. Prior to the implementation of the quality improvement, in 2002, SFH had been experiencing higher rates of inpatient fall rates, with rates of 4.1, 4.5, and 4.3 falls per 100 patient days for the first three quarters of the year. This placed the hospital above the national average of 3.9 inpatient falls per 1000 patient days that year. As a result, the SFH chief nursing officer charged SFH nursing educators to develop as well as implement a fall prevention program which was known as the SFH fall prevention protocol. The SFH nursing educators developed a protocol that was based on ideas from Schmid (1990) that had reduced the rate of falls from 5 to 4 per 100 patient days in one year. The SFH fall prevention protocol included providing all nursing staff members a mandatory patient safety education, educating all hospital staff members about patients who are more likely to fall, use of hospital supplied non-skid footwear at all times by all hospitalized patients, hourly rounding on all inpatients and provision of patient patient-family education about falls through a safety instruction sheet that was given to all patient on admission. The assessment and evaluation of the fall prevention protocol, a fall quality assessment tool was

used to collect data on patients that sustained a falls in addition to incident reports. Over the five-year period following the initiation of the implementation of the fall prevention protocol, a total of 854 inpatients fell with each year demonstrating a significant decline in the number of patients that experienced falls. From 2002 through to 2006 the rate of falls decreased significantly from 4.04 to 2.27 per 1000 patient days (50% decline, p=0.002). Besides decreasing the absolute number as well as rate of falls, the fall prevention protocol also increased the level of patient safety during hospitalization. The highest decrease in the rate of inpatient falls was seen in the first year of the implementation of the protocol. Broad communication with all staff members beyond bedside caregivers was attributed to the continued decline in the number of falls and shared accountability with all staff in monitoring patients at risk. The authors did not evaluate the strengths and limitations of the study and did not offer recommendations for future studies.

Tzeng and Yin (2015) performed a retrospective, descriptive, chart review study that was aimed at demonstrating one strategy for communicating aggregated as well as actionable inpatient fall data to bedside nurses. The study was conducted at a non-profit acute care medical Centre located in the northwestern region of the United States to analyze quantitative data collected using post-fall audit reports of inpatient falls that occurred at the hospital over a period of 10 months (between March 1 and December 31, 2012). The post-fall audit report was developed by the hospital's fall committee and completed by a designated registered nurse fall specialist. During this ten-month period, a total of 119 patient falls occurred at the hospital. Of these 119 patient falls, 107 falls cases met the inclusion criteria, which included patient falls that occurred in the inpatient care units or the emergency room and those that were identified as accidental falls or anticipated psychological falls. Unanticipated patient falls and falls that occurred outside the study units were excluded. According to the results of the study, the implementation of the post-fall audit led to a

lower overall rate of falls and fall-related injuries as demonstrated by the quarterly report National Database of Nursing Quality Indicators (NDNQI). The average number of falls per 1000 patient days reduced by 8.47% in the post intervention compared to the pre-intervention. The average number of injury-related falls per 1000 patients also reduced by 22.09% from the pre-intervention to the post-intervention. However, the total number of nursing hours per patient-day was 30% higher in 2012 and the number of RN hour's patient increased by 38.48%. The authors concluded that timely as well as systematic reporting, analysis and interpretation of patient fall data in an electronic format can promote the prevention of patient

falls and fall-related injuries in healthcare settings. They also emphasized the need for producing fall profiles that are individualized for different units and patient. As identified by the authors the major limitation of the study is its generalizability given that it was limited to a single data source. Other limitations included the possibility that some falls were not reported and small sample size. Silva-Smith, Kluge, LeCompte, and Snook (2013) performed a retrospective descriptive study that was aimed at examining the data reported by staff related to falls among an assisted living setting to describe the characteristics of falls among residents in assisted living settings and to analyze the quality and value of data provided by incident reports to enhance fall prevention approaches. The study was conducted in an assisted living facility and captured the data of residents who fell between December 1, 2010, and November 30, 2011, including residents with mild to moderate cognitive impairment as indicated by a score of less than 25 on the Montreal Cognitive Assessment. Incident reports care plans along with medication administration records (MARs) were used to extract data. Frequency and descriptive were used for data analysis. During the study period, 34 falls occurred among 15 residents with a mean age of 84 years. The majority of the falls occurred at the bedside (n = 13, 38%). Seven (21%) of the falls occurred in the bathroom

and the rest occurred in common living areas including hallways, lobby and dining area (n = 6, 17%); the shower (n = 1, 3%); outside on facility ground (n=2, 6%); and the apartment (n = 5, 15%). The Falls were attributed to trips/slips (n = 9, 26%), loss of balance (n = 5; 15%) and other causes (n = 4; 12%). No cause was specified for 16 fall cases (46%). 44% of the total 34 falls (n=15) did not lead to injury. 15% of the residents who sustained injuries had skin tears, 21% had scrapes bruises or cuts and 18% reported pain. Body parts that were affected following the falls differed and included scalp or head (n = 5; 18% of falls), lower limbs (n = 5; 15%), upper limbs (n = 7; 21%), and in three cases multiple body parts were affected including the legs, arms, pelvis and head (n = 3; 6%). Loss of consciousness was not reported but 9 residents (27%) sustained severe falls that assessment by paramedics (6%) or transport to the emergency room (21%) for further assessment and treatment. Of the 34 analyzed falls, benzodiazepine (30% of cases) or narcotic pain drug (41% of cases) had been administered within 24 hours of the fall. 94% of the participants used assisted device for mobility. The authors concluded that bathroom and bedside were the most high-risk areas for residents in assisted living facilities and staff in these settings needs more knowledge concerning individual risk factors of residents and how they can intervene in risky environments. The authors emphasize the need for caregivers to respond rapidly to prevent future falls. As identified by Silva-Smith et al. (2013), the limitations of the study included limited generalizability and incomplete data on the incident reports. The authors recommended future studies to use larger sample sizes.

Level six. Gray-Miceli, Strumpf, Johnson, Draganescu, and Ratcliffe (2006) reported the development and psychometric properties of post-fall assessment (PFA) tools, which is a 30-item; multi-dimensional post-fall assessment instrument designed by registered nurses in long-term care facilities. The authors developed as well as validated the tool in three phases. In the first

phase, a 76-item PFI that had been conceptually derived from existing national and professional recommendation for the evaluation of falls and the authors' expertise was tested for content validity by national experts. A convenience sample of 65 clinical experts was used to establish the clinical relevance of the tool by rating the clinical relevance of the PFI items to determine the etiology of falls using a point ordinal scale. The 76-item PFI was reduced to a 46-item PFI, which received a 75% endorsement across all judges. In the second phase, the 46-item PFI was tested for feasibility with a convenience sample of six registered nurses practicing in a long-term care facility. While reflecting on evidence-based guidelines, a PFI with 30-items emerged comprising of essential items that cause falls in long-term care facilities.it comprised of five domains including a fall-focused history, functional and environmental assessment, physical examination and past medical history. Around 78% of the items included in the final PFI was found to have a large absolute agreement among the registered nurses that ranged from 70%-100%, which indicated fairly good interpreter reliability. The authors stated that the PFI is a comprehensive post-fall assessment tool that measures multiple domains rather than a single construct. As such, no summary score or overall reliability is generated for the instrument. This multidimensional aspect of the tool is thus most beneficial for patients that needing comprehensive post-fall assessment. Even though the authors provided an in-depth interpretation of the findings of the study, the limitations were inferred rather than described.

Level 7. Naqvi, Lee, and Fields (2009) conducted a review that was aimed at reviewing and summarizing the Nurses Improving Care for Health System Elders (NICHE) guideline on preventing and reducing the rate of falls in acute care settings according to the authors, the guideline recommendations endorse the use of fall-risk assessment including intrinsic and extrinsic risk factor assessment to enable the identification of patients at risk. Risk assessment

should start with intrinsic risk assessment including history of falls, age, cognitive impairment, and articular comorbidities such as Parkinson's disease, diabetes, functional disability, osteoporosis gait, and balance disorders and visual impairment. The guideline also emphasizes reviewing the medications of the patient given that the use of high-risk medications is a strong predictor of falls. Intrinsic assessment should be followed by extrinsic factors including environmental factors that increase the risk of falls. Naqvi et al. (2009) also state that the NICHE also recommends post-fall assessment including a thorough physical examination for injuries and predisposing factors and endorses the development of an individualized post-fall assessment within 24 hours of a fall incident followed by a 48-hour follow up monitoring. Another major recommendation is the NICHE is the prevention of new falls through an individualized multidisciplinary team approach to address treatable problems that cause or contribute to falls and to prevent future falls. The authors state that essential elements of the multidisciplinary fall prevention plan include good communication between the interdisciplinary team members the patient and family members. Last the authors state that the guideline calls for staff education since the success of fall prevention programs largely depends on the knowledge along with skill of the staff care provision including them capability to perform accurate and comprehensive fall risk and post-fall assessment and the ability of other care providers to provide specific care. The authors conclude that the prevention of falls in high-risk geriatric patients using evidence-based recommendations can reduce morbidity and mortality and prevent the occurrence of costly hospitalizations.

Construction of Evidence-based Practice

Synthesis of Critically Appraised Literature

The current evidence-based practices about fall prevention were explored. Generally, evidence shows that multifactorial fall prevention interventions are most effective and are more efficient if

delivered by a multidisciplinary team (Spoelstra et al., 2012; Breimaier et al., 2015). Evidence also shows that successful factors for the implementation of multicomponent fall prevention interventions include engagement of front-line staff in the design of programs, leadership support, guidance of the prevention program by a multidisciplinary committee, utilization of information technology systems to avail data about falls, staff education and training, pilot testing interventions, and changing nihilistic attitude about the prevention of falls (Spoelstra et al., 2012; Miake-Lye et al., 2013; Spiva et al., 2014; Breimaier et al., 2015). Patients, particularly residents in long-term care facilities, continue to fall at alarming rates despite the clarity in the recommendations. There is emerging data that indicates that the “one plan fits all strategy” may not be effective especially among recurrent fallers (Spoelstra et al., 2012). Recent data suggests that taking a proactive, preventative approach has the potential to decrease the rate of falls by providing individualized information to staff that provides direct care and services, therefore most likely to be able to intervene and prevent patient falls (Tzeng & Yin, 2015). Post fall assessment enables the identification of risk factors and other issues which if addressed, will increase the likelihood that future falls will be prevented. A Post fall huddle has been shown to be critical in post-fall assessment given that it enables the identification and evaluation of the situation as well as factors that led to a patient fall, and to determine actions that should be taken to prevent future falls (Spoelstra et al., 2012; Reiter-Palmon et al., 2015; Naqvi et al., 2009; Gray-Miceli, et al., 2006). The utilization of post-fall assessments or huddles may be one of the best approaches to prevent future falls for a particular patient (Naqvi et al., 2009; Gray-Miceli, et al., 2006). In addition, recommendations to collect data in an organized and standardized manner have been recommended to ensure that this information is accessible to facilitate the prevention of future falls. Post-fall huddles should occur immediately following the patient fall and should include a

multidisciplinary team and patient and family members to ensure that the factors that lead to the fall are addressed to prevent future falls.

Best Practice Model Recommendation

Based on the literature review, the best recommendations include immediate implementation of a post huddle following a patient falls and should include a multidisciplinary team. Patient and family members should also be included. Factors that increase the likelihood of the success of the implementation of the fall prevention program must also be considered including engagement of front-line staff in the design of programs, leadership support and guidance of the prevention program by a multidisciplinary committee, utilization of information technology systems to avail data about falls, and staff education and training.

CHAPTER 3

IMPLEMENTATION OF PRACTICE CHANGE

Patient falls are one of the most preventable health problems in adults aged 65 years and older. Fall events in the elderly have been associated with disability, reduced quality of life, loss of independence, chronic pain and even death in severe cases (de Souto Barreto et al., 2018). Evidence shows that a history of previous falls is a major determinant of future or subsequent falls. Previous studies have found that approximately 50% of all Long Term Care (LTC) residents fall each year and 40% of those fall twice or more each year van (Schooten et al., 2017). Even though risk factors associated with recurrent falls are similar to those of single falls, recurrent fallers are at a higher risk of injuries and as such, they constitute an important target group for preventative efforts. Individualizing the plan of care to prevent repeat falls and recognizing the root cause of the falls in long term care is thus essential. The implementation of immediate post-fall huddles that includes a multidisciplinary team provides a promising intervention that can reduce the rate of repeat falls among patients in healthcare settings (Spoelstra et al., 2012; Reiter-Palmon et al., 2015; Naqvi et al., 2009; Gray-Miceli, et al., 2006). Post fall huddles enable the identification of root cause of fall events thus facilitating the development of an individualized care plan to prevent future falls by intervening on modifiable risk factors. A skilled nursing facility in Buckhead has discovered that despite the implementation of weekly fall huddles, the rate of falls, particularly, repeat falls, among the residents aged 65 years and older is still high. This proposed study addresses how implementing immediate post-fall huddles can reduce the rate of future fall rates thus improve health outcomes of the residents.

Betty Neuman's Health Care Systems Model is a comprehensive holistic system-based approach that is used to implementation of post-fall huddles in the skilled nursing facility. The

model offers a tripartite framework for nursing interventions (Black, Boore, & Parahoo, 2011). The model focuses on the response of a patient system to actual or potential environmental factors and the utilization of primary, secondary and tertiary nursing prevention for retention, achievement, and maintenance of the wellness of patient systems (Kearney-Nunnery, 2016). Primary prevention occurs before the client system can respond to a particular stressor to reduce the possibility of encounter with the stressor (Aylward, 2010). Secondary prevention occurs after a patient system has already responded to a stressor and tertiary prevention occurs after the active treatment and concentrates on readjustment towards optimal patient system wellness (Aylward, 2010). Given the emphasis on prevention, the model provides an excellent approach to decreasing patient falls and repeat falls. As this is the case, the Neuman's System Model can explain the many causes of facility falls and in return, can be used by nurses to help predict and reduce falls.

Participants and Setting

The EBP was performed at a skilled nursing facility, located in the East Coast of the United States. The Skilled Nursing Facility (SNF), which is a 164 bed SNF, specializes in the provision of skilled nursing, rehabilitation, and respite care services. About 75% of the facility's beds are occupied by long-term residents aged 65 years and older. This includes. The rest include patients admitted for rehabilitation and skilled care. The SNF has a resident population that comprises of elderly individuals from different ethnic backgrounds including African America, Caucasian, Hispanics, and Asian Americans though the majority of the residents are white. The majority of the patients in the SNF qualify for Medicare-covered services.

The facility has a nursing staff that provides care to the residents 24 hours per day. The organizational structure comprises of the administrators of the facility, the director and assistant

director of nursing, registered nurses, and certified nursing assistants. The SNF also employs social workers, maintenance, dietary, Minimal Data Set (MDS) coordinators and housekeeping staff. The facility seeks to improve patient care outcomes and has been accepting change ideas and welcoming recommendations that can help attain improved care outcomes. The current fall policy of the SNF entails assessing risk factors on admission and assessing after a fall using weekly fall huddle.

Pre-Intervention Group Characteristics

Participants in this EBP was gathered as a convenience sample of registered nurses and certified nursing assistants employed at the participating SNF. All the participants will be staff members that assess residents at the SNF and are responsible for providing care services to the residents. Staff education will be provided to all the participants during the pre-intervention, followed by the implementation of the post-fall huddle. The ultimate goal of the intervention was to reduce the rate of falls, injuries with falls, and repeat falls among the residents of the participating SNF. Falls data will be collected for all residents aged 65 years and older that sustains a fall during the intervention period.

Intervention

For this project, the intervention will include the implementation of a new evidence-based post-fall huddle protocol to address repeat falls. An overview of the new post-fall huddle protocol will include:

1) In the case of a fall, the staff member in charge of the patient (eg. RN) makes an announcement of an immediate post-fall huddle. The staff member will become the post-fall huddle team leader

2) Within 15 minutes a post-fall huddle will be performed with the available nursing staff, the patient, ancillary services, and any visitors present at the time of the fall. The huddle will include a staff critical discussion of the fall event to determine the root cause of the fall of the patient
3) The team completes an analysis of the fall event and factors leading to the fall, and determine the type of fall
4) The huddle leader synthesizes information gleaned from post-fall huddle and intervention for the prevention of repeat fall is decided by the multidisciplinary team (nursing, physician, rehabilitation).
5) Completion of the Post-Fall Huddle Form and attachment of the form to the incident report by the huddle leader
6) Implementation of the new plan as well as resource attainment for the plan.
7) Documentation of the Updated care plan of the patient in the EMR
8) Fall event documentation and documentation of huddle with recommendations in the EMR by the patient's team nurse

Prior to the implementation of the PFH protocol, the staff nurses, licensed practical nurses, and certified nursing assistants will be provided with pertinent and succinct education concerning falls, fall prevention and post-fall huddle. The education was provided by the project leader via powerpoint presentation. Educational information for post-fall huddles was obtained from the National Falls Toolkit designed by the United States Department of Veteran Affairs (2014). The toolkit includes a fall decision tree, fall decision tree typology after action review and two case studies. Educational discussions also included to review the assessment of the fall risk of patients,

with consideration of the pertinent medications associated with falls, functional assessments including measuring orthostatic blood pressure and other ways to prevent falls.

Comparison

The project compared pre-intervention to post-intervention fall data. The pre-implementation data included falls data that was collected before the initiation of the post-fall huddle protocol and the post-intervention data was comprised of falls data collected after the initiation of the protocol. Data was gathered from electronic health records (EHRs), post-fall assessment forms and incident reports. The post-intervention data was compared to pre-intervention data from the previous two years within the same period.

Outcomes

There were three primary outcomes for this project including overall fall rate, number of recurrent falls, and injury rate. Fall rates were measured with the rate of falls per 1000 patient days and injury rate will was measured using the number of falls with injury per 1000 patient days. The rate of repeat fallers included the number of patients who experienced more than one fall during the study period. Data from the falls, was collected by the primary investigator, from the EHRs, post-fall assessment forms and incident reports. A post-fall Huddle Survey was used for all the staff that took part in a post-fall huddle to determine if the staff felt that the tool was effective and whether the process needs to be changed to meet the needs of the residents and the staff of the facility.

The primary outcomes that are expected to result from the intervention include:

- Decrease overall fall rate (falls per 1000 patient days)
- Decrease rate of falls (falls per 1000 patient-days) for recurrent fallers
- Reduce the number of patients with recurrent fall

Statistical Analysis

The data for this study was analyzed using the statistical package for social sciences (SPSS) using descriptive and inferential statistics. Descriptive statistics will be used to describe demographic data and fall event data including nursing unit where the fall occurred, fall location, the way in which the fall events occurred, recommendations of the PFH for future fall prevention and fall type. Paired t-test and ratios of fall rates was completed to compare pre-intervention and post-intervention data. This helped reveal whether the implementation of immediate post-fall huddle would significantly reduce the number of future falls in addition to the overall number of falls and falls with injury. Statistical significance was defined as a $p < 0.05$.

Timeline

Timelines are important as they help capture the essence of what the project will accomplish and how it will be completed. The timeline for this project was around six months. The first two months was dedicated to the implementation of the plan including staff education and implementation of the post-fall huddle protocol. The following two months was used for monitoring, collection of data, along with evaluation. The DNP student aspired to begin the implementation of the project in the first week of September.

Protection of Human Subjects

The primary investigator ensured that that the implementation of the project along with data collection was not initiated until approval from the Valparaiso University Institutional Review Board (IRB) and the study site IRB have been acquired. The project will impose a minimal risk to the

privacy of the participants and as such, implied consent may not be required. Confidentiality will always be maintained. No patient identifiers were collected at any point of the project. Thus, all the subjects remained anonymous since no names or identifying information will be collected or recorded. With regards to the data related to patient falls, all data will be pulled from the Cerner EHR computer system at the facility. The data included the date of the event, event type, location of the fall, and severity of harm related to the fall event; the primary investigator will not use any patient identifiers. The collected data was stored in a password protected spreadsheet in a password protected computer, only accessible to the primary investigator. The data will be maintained for five years in the password protected computer in a locked office, then discarded thereafter in a manner that is approved by the facility, rendering it irretrievable.

CHAPTER 4

FINDINGS

The purpose of this EBP project was to implement an immediate post-fall huddle protocol. The aforementioned protocol served as the evidence-based intervention for reducing the number of falls among residents in a skilled nursing facility. The primary objective of this project was to develop and evaluate whether the implementation of immediate post-fall huddles would be successful in the identification of root causes associated with falls. The Secondary objective was to facilitate the development of individualized care plans to prevent falls and thus ultimately reduce the number of falls. This chapter presents the outcomes of the project and the post-intervention analysis.

Participants

Participants in this project included residents aged 65 years of age and older and receiving care in a skilled nursing facility located in the Southeast area of the United States. Fall data was collected for all residents who sustained a fall during the study period. A total of 164 residents were admitted at the facility during the defined study period. Demographic data and clinical characteristics of the residents who acquired a fall, in addition to the circumstances under which the fall occurred were collected after consent to participate was granted.

Characteristics

Of the 164 residents admitted at the facility, 54.9% (n=90) sustained a fall during the study period. The demographics and characteristics of residents who fell are displayed in Table 4.1. As shown in Table 4.1 of the 90 residents, 62.2% (n=56) were female and 37.8% (n=34) were male. The majority of the participants were 71-75 years of age (n=30; 33.3%), with 5.6% aged over 86 years (n=5). Comorbidities were evaluated and osteoarthritis was the dominant comorbidity in this

population (n=90; 100%), while hypertension was represented in 88.9% (n=80); 83.3% (n=75) had muscle weakness and 77.8% (n=70) had diabetes mellitus. The least documented comorbidity among the group was dementia (n=51; 56.7%). Residents could have had more than one comorbidity but this element was not explored Additionally, as shown in table 4.1, among the residents who fell during the study period, 30% (n=27) used a wheeled walker and 22.2% (n=20) used a wheel chair as a mobility device for ambulation.

Table 4.1

Demographics and characteristics of residents who fell

Characteristics		**n (%)**
Age		
65-70	14	(15.6)
71-75	30	(33.3)
76-80	23	(25.6)
81-85	20	(22.2)
86>	5	(5.6)
Gender		
Male	34	(37.8)
Female	56	(62.2)
Co-morbidities		
Diabetes Mellitus	70	(77.8)
Hypertension	80	(88.9)
Osteoarthritis	90	(100)
Dementia	51	(56.7)
Muscle weakness	75	(83.3)

Ambulatory Status		
Cane	10	(11.1)
Walking	17	(18.9)
Bedbound	16	(17.8)
Wheelchair	20	(22.2)
Wheeled walker	27	(30.0)

The time and circumstances under which the residents fell are displayed in Table 4.2. As shown in the table, the largest proportion of residents sustained a fall during the evening shift (11 PM -7 AM) (n=43, 47.8%). The least number of fall events were reported to have happened during the morning shift (n=6, 6.7%). All the falls occurred under three major circumstances including while walking or getting out of bed or wheelchair. Of the 90 residents who fell, 47.8% (n=43) suffered a fall while walking, 32.2% (n=29) when getting out of bed, and 20.0% (n=18) when getting out of a wheelchair.

Table 4.2

Time and Circumstances of falls

Descriptors	n (%)
Time of Fall	
Morning	6 (6.7)
Afternoon 3:30-7	14(15.5)
Evening 7-11:00	27 (30.0)
Night 11-7:00	43(47.8)
Fall Status	
While Walking	43(47.8)
Out of Bed	29 (32.2)
Out of Wheelchair	18 (20.0)

The number of staff present on unit where the residents who fell were admitted was also evaluated. All the elderly fallers were admitted in units with less than 5 staff members. As displayed in Table 4.3, the occurrence of falls decreased with the number of staff members present on the units. The largest proportion of residents who sustained a fall were admitted in units with two or less staff members (n=43, 47.8%), and the lowest proportion of these residents were admitted in units with four or five staff members (n=8, 8.9%). No residents admitted in units with more than five staff members sustained a fall during the study period.

Table 4.3

No of staff present on unit

No of Staff Present on unit	n (%)
1-2	43(47.8)
2-3	27 (30.0)
3-4	12 (13.3)
4-5	8 (8.9)
5+	0 (0.0)

Changes in Outcomes

Statistical Testing

For this EBP project, two analysis methods were used to determine the effectiveness of the post-fall huddle intervention. First, a chi-square of independence and Fisher's exact test ware used to analyze whether there were significant differences in variables related to falls between the pre-intervention group and the post-intervention group. Second, a chi-square of independence was used to test whether there was a significant association between the time and number of falls to determine whether the decrease of change in falls was significant from pre-intervention to post-intervention. All statistical testing were performed using the Statistical Package for Social Sciences (SPSS), Version 26.

Significance

A total of 90 fall events were reported among 90 individualized residents. Of the 90 fall events, 68 (75.6%) occurred during the pre-intervention period and 22 (24.4%) occurred during the post-intervention period. At baseline, the majority of the residents who fell were female (n=42, 61.8%) and were in the 71-75 years age group (n=22, 32.4%, or 76-80 years age group (n=20, 29.4%) (Table 4.4). All these residents had comorbidities with the most frequently reported being osteoarthritis (n=68, 100%), hypertension (n=60, 88.2%) and muscle weakness (n=55, 80.9%) (Table 4.4). The prevalence of mobility device use was also high among residents who fell during the pre-intervention period including a wheeled walker (n=22, 32.4%), wheelchair (n=15, 22.1%) and a cane (n=8, 11.8%). 19.1% (n=13) did not use any mobility device and 14.7% (n=10) were bedbound (Table 4.4). Regarding the time of fall, the majority of fallers fell during the night shift (11 PM-7 AM) (n=31, 45.6%) and evening shift (7 PM-11 PM) (n=20, 29.4%) (Table 4.5). Pertaining to the number of staff present on unit during the occurrence of the falls, the majority of falls occurred in units with less than 3 staff members (n=31, 45.6%), and the least number of fall occurred in units with more than 4 staff members (n=7,20.3%). Notably, during the pre-intervention period, no fall events occurred in units with more than 5 staff members present (Table 4.6).

Of the 22 fall events that occurred during the post-intervention period, the majority were sustained by females (n=14, 63.4%) and residents in the 71-75 years age group (n=8, 36.4 %(Table 4.4). All the residents had comorbidities with the most frequently reported being osteoarthritis (n=22, 100%) (Table 4.4). Of the 22 residents, the majority were bedbound (n=6, 27.3%), or used a wheelchair (n=5, 22.7%) or wheeled walker (n=5, 22.7%) for mobility assistance. Concerning the time of fall, the majority of the fall events occurred during the night shift (11 PM-7 AM) (n=31, 45.6%) and evening shift (7 PM-11 PM) (n=20, 29.4%) (Table 4.5). Only one fall event occurred during the morning shift. Regarding the number of staff present on unit, 54.5% of the fall events occurred in units with 1-2 staff members. (Table 4.5)

Chi-square and Fisher's test were used to evaluate the homogeneity of variables related to the demographic, clinical and unit characteristics in the pre-intervention and post-intervention groups. Chi-square test of independence was used to evaluate homogeneity of variables related to the residents' gender, comorbidities, ambulatory status, time of fall, and fall status, and the number of staff present on unit where the falls occurred. The chi-square test results showed that the two groups were homogenous in terms of gender (p =0.875), presence of comorbidities (p =0.940), ambulatory status (p =0.716), time of fall (p =0.732), fall status (p =0.835), and the number of staff present on unit (p =0.724). Fisher's exact test was used to evaluate homogeneity of variables related to the age of the participants. Fisher's exact test results showed that the two groups were homogenous in terms of age (0.319). Table 4.4 shows the characteristics of the participants and their homogenous results using Chi-square and Fisher's exact test.

Table 4.4

Demographics and characteristics of residents who fell

(N =90)

Characteristics	Categories	Pretest.(n=68) n (%)	Posttest. (n=22) n (%)	$\chi 2$	P

Age	65-70	10(14.7)	4(18.2)	4.708	.319
	71-75	22(32.4)	8(36.4)		
	76-80	20(29.4)	3(13.6)		
	81-85	13(19.1)	7(31.8)		
	86>	5 (7.4)	0 (0.0)		
Gender	Male	26(38.2)	8(36.4)	0.025	.875
	Female	42(61.8)	14(63.6)		
Co-morbidities	Diabetes Mellitus	54 (79.4)	16(72.7)	0.796	.940
	Hypertension	60 (88.2)	20(90.9)		
	Osteoarthritis	68 (100.0)	22(100.0)		
	Dementia	36 (52.9)	15(68.2)		
	Muscle weakness	55 (80.9)	20(90.9)		
Ambulatory Status	Cane	8 (11.8)	2 (9.1)	2.108	.716
	Walking	13 (19.1)	4(18.2)		
	Bedbound	10 (14.7)	6(27.3)		
	Wheelchair	15 (22.1)	5(22.7)		
	Wheeled walker	22 (32.4)	5(22.7)		

Table 4.5

Time and Circumstances of falls

(*N* =90)

Time/circumstances	Categories	Pretest.(n=68)	Posttest. (n=22)	$\chi 2$	*P*
		n (%)	n (%)		
Day & time of Fall	Morning	5 (7.4)	1(4.6)	1.290	.732
	Afternoon 3:30-7	12(17.6)	2(9.1)		
	Evening 7-11:00	20(29.4)	7 (31.8)		

	Night 11-7:00	31(45.6)	12 (54.5)		
Fall Status	While Walking	32 (47.1)	11(50.0)	0.360	.835
	Out of Bed	23 (33.8)	6 (27.3)		
	Out of Wheelchair	13 (19.1)	5 (22.7)		

Table 4.6

Time and Circumstances of falls

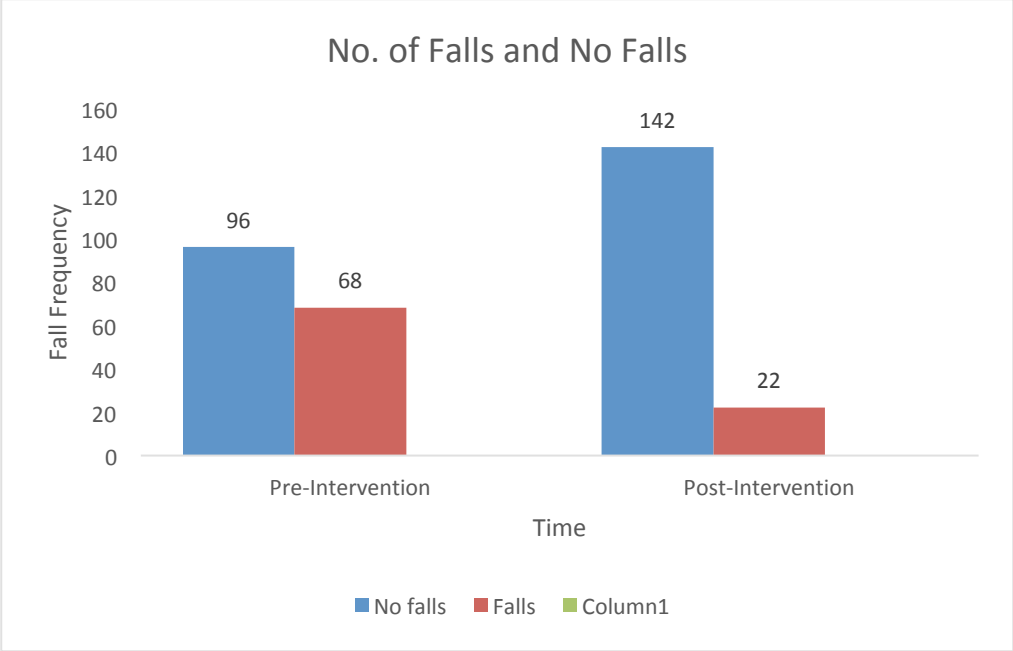
(N =90)

Characteristic	Categories	Pretest.(n=68) n (%)	Posttest. (n=22) n (%)	$\chi 2$	P
No of Staff Present	1-2	31 (45.6)	12(54.5)	1.322	.724
	2-3	20 (29.4)	7(31.8)		
	3-4	10 (14.7)	2 (9.1)		
	4-5	7 (10.3)	1 (4.6)		
	5+	0 (0.0)	0 (0.0)		

Frequency data was utilized to analyze the number of falls before and after the implementation of the post-fall huddle. It was expected that the number of falls would decrease significantly following the implementation of the post-fall huddle. As shown in figure 4.1 there was a decrease in the number of falls during the post-intervention period from the pre-intervention. The number of fall events that were documented during post-intervention was 67% lower compared to baseline. Additionally, the number of residents who did not sustain a fall was 47.91% higher after the implementation of the intervention compared to baseline.

Figure 4.1

Number of Falls and No Falls



The Chi-Square of independence was used to test whether there was a statistically significant change in the number of falls. As shown in Table 4.7 and Table 4.8, there was a significant association between time (pre-intervention and post-intervention) and the number of falls ($X^2(1) = 32.402$, $p < 0.0001$) (Table 4.8). This means that falls were significantly associated with time, revealing that there was a statistically significant decrease in the number of falls from pre-intervention to post-intervention (figure 4.1). This proves that the intervention worked.

Table 4.7

Chi square analysis

*Time * Number of Falls Cross tabulation*

		Number of Falls		Total
		No Falls	Falls	
Time	Pre-Intervention	96	68	164
	Post-Intervention	142	22	164
Total		238	90	328

Table 4.8

Chi-Square Tests

Chi-Square	X^2	*df*	*p* (2-sided)
Pearson Chi-Square	32.402	1	.000
N of Valid Cases	490		

Complete analysis of the collected data shows that the change in the number of falls pre- and post-intervention supports the hypothesis that the implementation of immediate post-fall huddle decreased the number of fall events in a skilled nursing facility. Based on the results, there was a 67% decrease in the number of falls after the implementation of the intervention compared to baseline. The Homogeneity tests performed using Chi-square of independence and Fisher's exact test showed that there were no significant differences between the characteristics of the residents who sustained a fall or other variables related to falls during the pre-intervention and post-intervention periods. This is evidence that the change in the number of falls in the facility could only be attributed to the implementation of the immediate post-fall huddle intervention.

Implementation of Post Fall Huddles in a Skilled Nursing Facility

Chapter 5:

Discussion

High-reliability organizations should depend on effective decision-making expertise of healthcare practitioners to offer high-quality patient-centered care and maintain patient safety. Falls are a major safety concern in skilled nursing facilities and potentially fatal. Therefore, creating opportunities to help healthcare professionals to identify the root causes of falls, understanding how falls occur, and identifying strategies for preventing recurrent resident falls are critical to support learning and enhance patient safety. The purpose of this evidence-based project was to determine whether the implementation of immediate post-fall huddle protocol in a skilled nursing facility would decrease the number of falls among residents. The findings of the project provide insight into how recurrent falls among residents in long-term care facilities can be reduced to improve safety and the quality of care provided to residents in these facilities. The clinical question for this project was: In residents aged 65 years and older receiving LTC in an SNF, would implementing an immediate post-fall huddle decrease future fall rates as compared to a weekly fall huddle? Following the collection of data and statistical analysis, this EBP project confirms the significance of performing immediate post-fall huddles to enable the identification of the root causes of fall events in order to facilitate the development of individualized care plans to prevent future falls. This chapter provides the interpretation of the findings, both practical and theoretical implications of the project, and implications for future research and education. It also provides recommendations for future projects and practices to assist advance the science of nursing and the future of fall prevention within LTC facilities.

Explanation of Findings

The primary goal of the evidence-based project was to address whether the implementation of immediate post-fall huddle protocol would decrease the number of recurrent falls among residents in a skilled nursing facility. Before the implementation of the intervention, there were a total of 68 falls and following the implementation of the intervention, there were a total of 22 falls that occurred. The change in the number of falls represents a 67% decrease in the number of falls in the post-intervention period compared to baseline. These findings are consistent with the findings of past research on the importance of immediate post-fall huddles. In a retrospective study by Tzeng and Ying (2015), the researchers found that the implementation of a post-fall huddle led to 8.47% decrease in the average number of falls per 1000 patient days after the implementation of the intervention.

The findings of the project also demonstrated that there was a significant relationship between the implementation of the immediate post-fall huddle and the number of patients who sustained a fall and those who did not sustain a fall ($X^2(1) = 32.402$, $p < 0.0001$). These results suggested that the intervention worked. Additionally, homogeneity tests showed that there were no significant differences between the demographic characteristics of patients that fell and other variables related to falls in the pre-intervention and post-intervention groups. This is clear evidence that the decrease in the number of falls among residents could only be attributed to the implementation of the immediate post-fall huddle protocol. Essentially, these findings are consistent with evidence from past research that performing immediate post-fall huddles provides an organized way for gathering information on the root cause of falls including intrinsic and extrinsic factors associated with falls to allow prompt development of customized interventions into care plans and prevent future falls (Spoelstra et al., 2012; Reiter-Palmon et al., 2015; Naqvi et al., 2009; Gray-Miceli, et al., 2006).

The results of the project also provided significant findings that can be used to make recommendations to reduce the number of falls and recurrent falls at the facility. According to the results of the project, all the patients (n=90; 100%) who sustained a fall during the study period had osteoarthritis, and the majority had other comorbidities including hypertension (88.9%), muscle weakness (83.3%) and diabetes mellitus (77.8%). Considering that all the residents who fell had comorbidities such as osteoarthritis, analysis by comorbidity could provide additional insights into possible modifications to structure the development of fall interventions. For instance, integrating exercise with resident care for residents with osteoarthritis and muscle weakness can help reduce the risk of falls and injuries. Additionally, the results also showed that the majority of patients who sustained a fall used mobility device including wheeled walkers (30%) and wheelchairs (22.2%). These findings are consistent with prior research in which the use of assistive device to support mobility was a major risk factor of falls in residents in an assisted living setting (Silva-Smith et al., 2013). The authors highlighted that when residents fail to use devices and do not have strength to utilize the devices for their intended use, they are at an increased risk of falling.

Analysis by the time of fall and staffing demonstrated that the majority of the residents sustained a fall during the night shift (47.8%) and were admitted in units with two or fewer staff members (47.8%). Interestingly, no patients admitted to units with more than five staff members sustained a fall during the study period. These findings suggest that staffing ratios and inadequate supervision of residents during the night shift could be important determinants of falls among residents in skilled nursing facilities. Additional analysis by time of fall could provide insights into some of the modifications to process and structure indicators. For instance, improving staffing levels and interventions to reduce falls among residents during the night shift.

Evaluation of Applicability of Theoretical and EBP Frameworks

Theoretical Frameworks

Betty Neuman's Health care systems model provided the basis for understanding how the interaction of residents with the healthcare facility environment and how this environment can be applied to fall-related incidences. The model focuses on the response of the patient system to potential and actual environmental stressors and the utilization of primary, secondary and tertiary nursing prevention intervention to retain, attain, and maintain the wellness of the patient system (Aylward, 2010). The model advocates a nursing process that includes the assessment of a patient and incorporation of the appropriate interventions through the planning and implementation process to promote the wellness of the patient through the prevention of stressors or reduction of risk factors (Parker & Smith, 2010). According to the model, prevention is the primary nursing intervention and it focuses on keeping stressors and the response of the patient to the stressors from causing a detrimental impact on the patient's body (Parker & Smith, 2010).

Primary and secondary prevention techniques are critical in preventing of falls in skilled care facilities. However, in the context of this project, secondary prevention was of utmost importance. Secondary prevention occurs after the patient/client has already reacted to a stressor (e.g. fall) and focuses on preventing damage by removing the stressors. Considering the emphasis of the model on prevention, it provided an excellent approach for decreasing resident falls and future falls in the SNF. Essentially, through the implementation of immediate post huddles, this enabled the identification and evaluation of the intrinsic and extrinsic factors that contributed to the fall to facilitate prompt development of interventions to prevent future resident falls.

A major strength of Neuman's System Model is that it provides an excellent model for evaluating interactions within healthcare facilities, specifically a system approach to reducing falls. The model advocates for a comprehensive holistic system-based approach in the care of patients. This was vital in this

project given that the etiology of falls is multifactorial and the prevention of falls should include a multidisciplinary, holistic, and patient-centered approach. Another major strength of the Model is that it emphasizes prevention, which was the focus of this project.

A major limitation of the Model is that it does not provide directions on how nursing actions should be implemented. Essentially, the Model does not offer a systematic hierarchy of how change should be attained in nursing practice or how environmental distractions should be decreased to attain the best practice. Nonetheless, the theory offers insight into current evidence in identifying variables that influence falls among residents in LTC facilities

EBP Framework

Kurt Lewin's Change Theory was used as the EBP model for this project. Lewin's Change Theory is based on the assumption that for change to occur in a given organization driving forces that favor change must be strengthened or restraining forces that hinder change must be weakened. Moreover, Lewin posits that motivation to change should be generated before the change can happen. Lewin's change theory involves three major stages including unfreezing, change and refreezing.

Lewin’s Change Theory was easily applied within the skilled care facility setting to guide the implementation of the post-fall huddle intervention. Each of the progressive stages of the change theory was used including unfreezing, change and refreezing. These stages served as a comprehensive guide for the projects nursing practice change, which included the implementation of an immediate post-fall huddle protocol. During the unfreezing stage, it was critical to identify and understand the existing problem. A clinical question was formulated and a literature review was completed to find evidence-based data to support the need for change.

During the change phase, strategies to strengthen the driving forces and mitigate the restraining effects were identified followed by the actual implementation of the intervention. During this phase,

planning, team meetings, dissemination of past fall data and education concerning post-fall huddles were used to help unfreeze the old behavior, to gain administrative support and staff buy-in. During the refreezing stage, the change was evaluated where the primary researcher monitored the impact of the new practice on the number of falls.

A major strength of Lewin's Change Theory is that it includes how the three stages of change facilitate how people or organizations move through the process change and how to counter change resistance. Additionally, the theory presents a rational, goal and plan oriented model for implementing change. This is critical in the implementation of fall prevention programs given that Spoelstra et al. (2012) recommended the use of structured implementation plans with clear priorities and goals in the implementation of such programs. The major limitation of Lewin's Change Theory is that it does not offer suggestions on how people should be prepared for a change in the unfreezing stage, or how change should be sustained following the change phase.

Strengths and Limitations of the EBP Project

This EBP project was evaluated for strengths and limitations to facilitate the success of the project implementation process as well as determine areas that may require improvement. Identifying the strengths and limitations of a project can potentially offer insights or recommendations for future research related to the prevention of falls in elderly residents in skilled nursing facilities. Essentially, this will be critical for SNF staff members, particularly the nursing staff, who assess residents and are responsible for providing care services to the residents.

Strengths

Several factors affected the success of the project. Leadership support from the facility was a major strength. Prior to the implementation of the intervention, the SNF was experiencing high rates of resident

falls and was seeking to improve resident outcomes. As such, the administration was in the search of interventions that could improve patient outcomes and was accepting change ideas and welcoming recommendations. The professional practice leader in the quality assurance department assisted with the collection of data from the electronic medical records (EHRs), which provided the required fall data. The senior care assistant was available for questions and helped with access to post-fall assessment forms and incident reports. Another major strength of the study is that the nursing staff was willing to participate in the educational sessions. It was noted that all nursing staff attended the educational session except for a few registered nurses who worked as needed and were enrolled in nursing school. Lastly, this EBP project was implemented efficiently, met current standards, and ensured the maintenance of patient privacy.

Limitations

There were several limitations to the EBP project. First, the project was implemented in a single Skilled Nursing facility and as such, may not be reflective of other elderly SNF residents in other facilities and other states. Even though the sample size was relatively large (n=90) power analysis was not performed to determine if the sample was adequate to detect whether the implementation of the immediate post-fall huddle protocol was effective in preventing recurrent falls. Second, all the fall events were reported by the caregivers per the facility policies which potentially introduces bias given that there is no way to ensure that all the fall events were reported. Hence, if a fall event occurred and was not reported, it was not included in the project. Third, time constraints for a formal follow-up limited the evaluation of the sustainability of the intervention over time. The academic timeline of the primary investigator mandated a one-month post-intervention as the maximum data that could be gathered for the project. Nonetheless, even though the findings of the project demonstrated a reduction of the number of falls post-intervention, one month is likely not adequate time to determine the success or failure of an evidence-based fall prevention intervention. A major challenge encountered during the implementation of the project was poor multidisciplinary

participation particularly for rehabilitation staff and physicians. The staff often stated that they were too busy to attend unit huddle announcements. Lastly, the project did not evaluate the staff's compliance in conducting the post-fall huddles and the impact of the intervention on fall related injuries.

Implications for the Future

Falls are a major safety concern in healthcare settings. Essentially, among the older adult populations, falls are a major source of mortality and morbidity with around 30% of this population experiencing at least one fall event annually and 20-30% of the fall events being associated with injuries, morbidity and mortality (de Souto Barreto et al., 2018). Despite the implementation of aggressive fall prevention programs, falls and fall-related injuries and death continue to be a major safety problem for residents in LTC facilities. Older adults in these facilities are usually at an increased risk of sustaining falls and experiencing subsequent falls due to various intrinsic and extrinsic factors. As a result, there is a need to develop individualized care plan for reducing secondary falls and identification of the root causes of each fall to prevent future falls. This EBP project provides future insight by adding the statistical significance for implementing immediate post-fall huddles to help identify the root causes of falls and facilitate prompt development and implementation of individualized interventions in order to prevent future falls in older adults in SNFs.

Practice

The implementation of the EBP project advances current guidelines and recommendations on safety culture concerning the prevention of falls among elderly residents in LTC facilities. The interventions that were implemented on this project were based on the current standards and evidence for reducing falls in older adults. In the skilled nursing facility, an easily applicable fall prevention measure was established by assessing gaps in the current fall prevention protocols and incorporating evidence for prevention of repeat

falls using immediate post-fall huddles. Implications for practice arising from the findings of this project include continued use of the post-fall huddles among nursing staff and other healthcare professionals to demonstrate the multifactorial approach to the prevention of falls. Updating the current fall prevention policy to include immediate post-fall huddles. Mandating post-fall huddles by policy can be vital in assuring that everyone shows up on the unit when a huddle is announced. Staff often complained that they were very busy to participate in the post-fall huddles despite huddles being multidisciplinary intervention. This would be vital given that literature indicates that falls are best prevented through multi-disciplinary interventions which require the involvement of a multi-disciplinary team (Spoelstra et al., 2012; Miake-Lye et al., 2013; Spiva et al., 2014; Breimaier et al., 2015).

Implications for practice include ongoing nursing staff education to further improve adoption and accurate use of post-fall assessment tools. Conceptually, training nursing staff to efficiently lead and perform post-fall huddles improved the structure of care considering that actions taken as a result of the post-fall huddles influenced the process of care, which in turn led to a decrease in the incidence of falls. The findings of the EBP project call for ongoing staff education given that the success of fall prevention programs largely depends on the skills and knowledge of staff including their capability to perform accurate and comprehensive fall risk and post-fall assessment (Naqvi et al., 2009). Fall prevention education provided to nursing staff also supports change to the desired fall prevention measures. Essentially, education improves nurses fall prevention awareness and their perception of fall prevention interventions. In conjunction with fall prevention strategies, fall prevention education reduces the incidence of falls.

Implications for practice may also include organized and efficient documentation. Documentation from post-fall huddle offered important descriptive data concerning fall circumstances. Besides ensuring that the staff are aware that a fall has occurred, the process also serves as an opportunity for staff to discuss and learn on the factors that led to the fall and develop an individualized care plan to prevent future falls by

intervening on the modifiable risk factors to keep the resident safe during their stay at the SNF. As highlighted by Silva-Smith et al. (2013), post-fall assessment helps to evaluate as well as improve clinical practice since fall prevention interventions can be based on data gathered from these assessments.

Implications for practice can also include incorporation of a notification system to the EMR to notify all healthcare professionals that a particular resident has sustained a fall. To attain this, technical support would be required to incorporate the automatic notification system within the EMR in a manner that ensures that all disciplines are notified and aware of a fall event when they open a patient chart in the EMR. This would help ensure that all disciplines are aware of all fall events.

Theory

The findings of this EBP project influence future theory development through the promotion of fall prevention in the elderly population. Health and safety serve as the foundations of theory development and are demonstrated in this EBP project. The post-fall huddle protocol provides a structured model that should be followed. Neuman's System Model was an appropriate theory for this project. The theory is based on the notion that a relationship exists between living organisms and their interactions with the environment (Kearney-Nunnery, 2016). For this project, the theory was used to understand how elderly residents interact with their environment in LTC facilities and how this environment is applied to fall-associated events. The theory emphasizes on prevention as an intervention by ensuring that potential hazards to a person's health are acknowledged, tackled, and eliminated before or after the occurrence of the undesired incident (Aylward, 2010). The application of the theory helped the staff to examine resident's fall events by looking at intrinsic and extrinsic factors that may have led to the falls and develop an individualized care plan to prevent the occurrence of future falls. Through the implementation of a standardized post-fall huddle protocol that included a comprehensive post-fall assessment tool, staff in skilled nursing facilities and other LTC facilities can identify root causes of falls and develop individualized care plans that help prevent future

falls among elderly residents. Future theories can model after Betty Neuman's System Model as well as focus on basic aspects specific to a fall event, including post-fall assessments and interventions involved. The need for interventions to prevent recurrent falls can be demonstrated by risk factors identified during the post-fall assessment.

The outcomes of this EBP project support the use of Kurt Lewin's Change Theory. During the implementation of the post-fall huddle protocol in the SNF, the three stages of change were utilized to guide the change process. During the implementation of the intervention, dissemination of past fall data, and staff education were used to refreeze old behavior and promote change. Future change models can model after Lewin's Change Theory, particularly during the planning stage, to anticipate along with balance resisting forces to promote successful implementation of the desired change.

Research

Findings from this EBP project provides insight into the reduction of the incidence of falls and the prevention of recurrent falls in elderly residents in SNFs. Following the implementation of the immediate post-fall huddle protocol, the number of falls reduced by 67% at the SNF. These findings advance scientific knowledge on the prevention of falls in the elderly population by confirming the importance of immediate post-fall huddles in reducing the incidence of falls. However, further research and data collection are required to identify additional future implications associated with this project and the best practice protocols and algorithms that focus on the prevention of recurrent falls. Details of the best practice protocols should be established in literature and as such, future research should focus on the aspects of the specific interventions that were implemented. Continued study for a longer period of time, in this case over a twelve-month period, would provide more understanding and correlation of the impact of the intervention on resident outcomes including the rate of falls, recurrent falls and fall-related injuries.

Future research focusing on staff compliance to immediate post-fall huddle protocols including documentation on post-fall assessment, interventions and education is also required. This can help evaluate the impact of fall prevention education on staff behavior and perception pertaining to the implementation of post-fall huddles. Further research can also evaluate the impact of staffing ratios on the rate of falls, recurrent falls and fall-related injuries.

Education

There is a need for increased education on resident falls and assessment. Past evidence demonstrates the significance of staff and patient education interventions. Future implications may concentrate on the impact of a complete education program for both patients and staff. In regards to patient education, residents may be provided with written materials on fall prevention to ensure that residents take part in the prevention of falls. According to Spoelstra et al. (2012), patients/residents and families should be provided with education on the root causes of falls, goal setting and development of preventative fall prevention strategies. The authors suggested that staff and patient education is a critical success factor in fall prevention programs (Spoelstra et al., 2012).

Conclusion

Evidence from past research shows that falls are a major source of mortality and morbidity for the elderly population. Fall events among the elderly have been linked to disability, reduced quality of life and loss of independence, and mortality in severe cases. Around 50% of residents in LTC facilities fall each year and around 40% of fallers experience recurrent falls (Schooten et al., 2017). Despite recurrent falls being associated with similar risk factors as those of single falls, recurrent falls are associated with a higher risk of injuries and hence, there is a need for preventative strategies of these falls. This EBP project focused on the implementation of an immediate post-fall huddle protocol as a quality improvement program to reduce the recurrent falls in a skilled nursing facility located in the East Coast of the United States.

The implementation of the project included 164 residents who were aged 65 years and older in the skilled nursing facility. Lewin's Change Theory and Betty Neuman's System Model guided implementation of the intervention of immediate post-fall huddle protocol. Descriptive statistics were used to analyze the change in the number of fall events pre- and post-implementation of the immediate post-fall huddle intervention. A chi-square of independence was used to evaluate whether there was a statistically significant association between the implementation of the intervention and the number of fallers and non-fallers. Analysis results showed that the implementation of the intervention led to a 67% reduction in the number of fall events at the SNF. Additionally, the results showed that a significant association between the implementation of the intervention and a reduction in the number of residents who sustained falls compared to those who did not ($X^2(1) = 32.402$, $p < 0.0001$). These results demonstrated that there is statistical evidence to encourage the implementation of immediate post-fall huddles to reduce the number of fall events among older adults in LTC facilities. The results also validate the importance of immediate post-fall huddles in identifying root causes of falls, which facilitates prompt development of individualized interventions in the care of seniors to prevent future falls. However, further research is required to validate the efficacy of post-fall huddles in reducing the incidence of falls among residents in LTC facilities. Specifically, further research is indicated to measure the sustainability of the outcomes and the impact of such interventions on fall-related injuries.

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AUTOBIOGRAPHY

Princess Lomax graduated from Triton College with an Associate Degree in the Science of Nursing in 2005. She worked in various intensive care and long term care settings before returning to Benedictine University for her BSN in 2008. Princess Lomax earned her MSN with certification in Family Nurse Practice from Olivet Nazarene University in 2014 and is currently attending Valparaiso University to earn a DNP in 2020. Princess is a member of Sigma Theta Tau International Lambda Upsilon-at-Large Chapter. She is also a member of AANP, ANA, and BNA. Princess is a Philanthropist at heart, which is why she has several events throughout the year giving back to underprivileged children in Chicago's underserved poverty stricken neighborhoods. While serving in the military, she became interested in going on mission trips in Developing Countries. Princess Lomax is a Family Nurse Practitioner who has dedicated her life to health and wellness. Utilizing her many licenses, certifications, and accomplishments through higher learning, she now educates other healthcare professionals on strategies to maximize their income. In her debut book, Princess teaches six signature strategies for nurses to increase their annual income. Using industry insight along with her personal experience, she shares practical tools to help other Registered Nurses maximize their income, save more, and spend less.

ACRONYM LIST

AAR: After Action Reviews

ANA: American Nurses Association

APA: American Psychological Association

CDC: Centers for Disease Control

CFIC: Consolidated Framework for Implementation Research

CINAHL: Cumulative Index to Nursing and Allied Health Literature

EHR: Electronic Health Record

EBP: Evidenced Based Practice

HSOPS: Hospital Survey on Patient Safety Culture

IRB: Institutional Review Board

JBI: Joanna Briggs Institute

JHNEBP: John Hopkins Evidence Based Practice

LCT: Lewin's Change Theory

LTC: Long Term Care

MAR: Medication Administration Records

MDS: Minimal Data Set

NDNQI: National database of Nursing Quality Indicators

NDM: Naturalistic Decision Making

NICHE: Nurse Improving Care of Health System Elders

PFA: Post Fall Assessment

PFH: Post Fall Huddles

PFI: Post Fall Incident

RCT: Randomized Controlled Trials

RN: Registered Nurse

SNF: Skilled Nursing Facility

SPSS: Statistical Package for Social Sciences

Appendix A

Review of Literature

#	Author, Date, Title	Method & Level of evidence	Type of Patient & Enrollment period	Content of Intervention	Study Findings Outcomes
1	Breimaier, H. E., Halfens, R. J., & Lohrmann, C. (2015). Effectiveness of multifaceted and tailored strategies to implement a fall-prevention guideline into acute care nursing practice: a before-and-after, mixed-method study using a participatory action research approach.	A quasi-experimental, mixed-methods design Level of Evidence 4	All graduate and assistant nurses working in an ophthalmic (65%) and Accident surgery (35%) departments of an Australian teaching hospital September 2009 to March 2012	Evidence-based fall prevention guideline (fall CPG) was implemented in the ophthalmic and Accident surgery departments. Subjects were evaluated on knowledge on fall prevention and fall CPG	The assistant and graduate nurse's knowledge on fall prevention, how to access the falls CPG and the guideline itself increased significantly between pretest and posttest ($p \leq .001$). Awareness on fall prevention improved. Baseline attitude towards guidelines improved significantly ($p = .001$).
2	Dacenko-Grawe, L., & Holm, K. (2008). Evidence-based practice: a falls prevention program that continues to work.	Quality improvement Level of evidence 4	All hospital staff members at Saint Francis Hospital (SFH), an acute care hospital October 1, 2002, to September 30, 2006	All nursing staff members were provided with mandatory patient safety education All hospital staff members were educated about patients at high risk of falls Use of non-skid footwear among	The rate of falls declined significantly from 4.04 to 2.27 per 1000 patient days (50% decline, $p=0.002$). The level of patient safety improved

				hospitalized patients hourly rounding on all inpatients Rate of falls was evaluated at the study setting	
3	Gray-Miceli, D. L., Strumpf, N. E., Johnson, J., Draganescu, M., & Ratcliffe, S. J. (2006). Psychometric properties of the post-fall index.	Descriptive validation study Level of evidence 6	Older nursing home (NH) residents n=30 (Male=27%, female-73%) Mean age 78 years No period listed	Development and validation of a PFA tool in three phases: a 76-item PFI was first tested for validity by national experts. Next, it was tested for feasibility with RNs practicing in NHs. Last, it was piloted with a sample of 30 falls by elderly residents of a CCRC	The final 30-item PFI tool contains all essential items causing falls. The tool had large absolute agreement of among RNs that ranged from which indicated fairly good interrater reliability. PFI is a comprehensive post-fall assessment tool that measures multiple domains rather than a single construct
4	Koh, S. S. L., Manias, E., Hutchinson, A. M., & Johnston, L. (2007). Fall incidence and fall prevention practices at acute care hospitals in Singapore: a retrospective audit.	A retrospective audit design Level of Evidence 4	Patients aged 16 years and older admitted to medical, surgical and geriatric units of five acute hospitals in Singapore. Between 1 June 2003 and 31 May 2004	Falls incidence was obtained from the hospital's databases and incident reports for the period between June 2003 and May 2004	The no. of all fallers in the hospitals was 825. Patient fall rate ranged from o.68 to 1.44 per 1000 patient days. Falls associated with injuries ranged from 27.4% to 71.7%. Use of fall risk

					assessment tool by nurses was recorded in 77% of all nursing records
5	Miake-Lye, I. M., Hempel, S., Ganz, D. A., & Shekelle, P. G. (2013). Inpatient fall prevention programs as a patient safety strategy: a systematic review.	Systematic review Level of evidence 1	Acute care settings Articles published between 2005 and September 2012	Review literature about fall prevention programs in hospitals to determine their potential harms and benefits and identify factors associated with the successful implementation of such programs.	Two large RCTs showed that multicomponent fall prevention programs can reduce the risk of inpatient falls by up to 10%. Potential harms: little data concluded, but authors discuss the following potential harms: constipation (vitamin D side effect) sedation use and decreased efforts to mobilize patients. Factors linked to successful implementation: engagement of front-line staff in the design of programs, leadership support, guidance of the prevention program by a multidisciplinary committee, utilization of information technology systems to avail

					data about falls, staff education and training, pilot testing interventions, and changing nihilistic attitude about the prevention of falls
6	Naqvi, F., Lee, S., & Fields, S. D. (2009). An evidence-based review of the NICHE guideline for preventing falls in older adults in an acute care setting. *Geriatrics*, *64*(3).	Not defined Level of evidence 7	Older adults in acute care settings No period listed	Review and summarize the NICHE guideline for preventing fall in acute care settings	NICHE guideline recommendation for preventing falls among elderly in acute care setting include pre-fall risk assessment, use of post-fall assessment tools, follow-up monitoring for 48 hours and implementation of individualized, multidisciplinary care plan to address treatable concerns

					contributing the fall and to prevent future falls. The guideline also calls for staff education to improve knowledge and staff skill in accurately and comprehensively performing pre-fall risk and post-fall risk assessments.
7	Reiter-Palmon, R., Kennel, V., Allen, J. A., Jones, K. J., & Skinner, A. M. (2015). Naturalistic decision making in after-action review meetings: The implementation of and learning from post-fall huddles.	Retrospective cohort design Level of evidence 4	Patients hospitalized in 17 hospitals Fall event report of the subjects between August 2012 and November 2013.	Implementation of a post-fall huddle. Evaluation of the use of post-fall huddles, type of errors contributing to patient falls, and type of patient falls	Use of self-guided post-fall huddles increased significantly ($p < .001$). Significant reduction in percentage of task errors ($p = .02$) and coordination errors ($p = .02$) but not judgement errors ($p = .61$) The proportion of falls with less adverse effects increased significantly ($p = .01$)
8	Silva-Smith, A. L., Kluge, M. A., LeCompte, M., & Snook, A. (2013). Improving staff reports of falls in assisted living.	Retrospective descriptive design Level of evidence 4	Residents of an assisted living facility with at least one fall event and mild to moderate	Subjects fall incidences were analyzed. Descriptive and frequency analyses were	34 fall occurred among the 15 participants. Majority (n=13, 38%) of the falls occurred at the

			cognitive impairment n=15 (Male= 6.7%, female= 93.3%) (White=93.3%, Asian American=6.7%) December 1, 2010, to November 30, 2011	performed to describe fall characteristics, high-risk medication use and prevalence of omitted data on IRs Data collection tools were Incident reports (IRs), care plans and medication administration records	bedside, bathroom (n=7, 21%) and common living areas (n=6, 17%). Majority of falls were attributed to slips (n = 9, 26%) and loss of balance (n = 5; 15%). 44 % of falls did not lead to injury. Benzodiazepine (30% of cases) or narcotic pain drug (41% of cases) had been administered within 24 hours of the fall. Significant data omissions were noted in the IRs. AL facility staff need more knowledge about individual fall risk factors of resident and how they can intervene or reduce them
9	Spiva, L., Robertson, B., Delk, M. L., Patrick, S., Kimrey, M. M., Green, B., & Gallagher, E. (2014). Effectiveness of team training on fall prevention.	Longitudinal, quasi-experimental, repeated-measures design Level of evidence 3	Nurses working in four medical-surgical units of two acute care hospitals Study group n=18, control group n=16 RNs (29.4%), female (97.1%), white (67.7%),	Subjects were divided into two groups. The intervention group received training on TeamSTEPPS concepts with patient video vignettes	The IG questionnaire scores improved significantly over time on patient safety culture, and teamwork attitudes (P < .01), but teamwork perception did

			baccalaureate prepared (41.2%), worked day shift (79.4%). May 2012 to February 2013	focusing on fall prevention over two weeks while the control group received no training. Outcomes measured for both groups included patient safety culture, teamwork perception, teamwork attitudes, communication related to fall risk status and fall rates. Data collection tools included questionnaires, observation tools and fall data	not improve significantly (P = .03). No statistical differences in scores were found within CG on all measures but teamwork attitude slightly increased (P = .04). IG communication related to patient fall risk status improved significantly (P < .01) but not in the CG. Fall rates reduced by 62% (2.69 to 1.03, (t = 4.27, P = .15) and injury rates by 71% in the IG (0.97 to 0.24, t = 5.05, P = .122). fall and injury rates increase in the CG. Team training has the potential to reduce falls and fall-related injuries.
10	Spoelstra, S. L., Given, B. A., & Given, C. W. (2012). Fall prevention in hospitals: an integrative review.	Integrative Review Level of Evidence 1	Adults 18 years or older hospitalized in various hospital units Articles published between 2000 and 2011	Literature review to provide a listing of the best evidence available in scientific literature to guide nurse administrators	Fall reduction rates were evident and ranged from 19% to 57% or 1.91 to 2.23 per 1,000 patient days. Studies that were successful in

				in the development of fall prevention programs	reducing fall and injury rates included the following elements: developing a safety culture, fall risk assessments, multifactorial interventions, post-fall follow-up and quality improvement, and integration of electronic records.
11	Tzeng, H. M., & Yin, C. Y. (2015). Exploring post-fall audit report data in an acute care setting.	Retrospective descriptive study design Level of evidence 4	Patients in adult acute inpatient care units (Male=54.2%, female = 45.8%) March 1 to December 31, 2012	Quarterly report of the National Database of Nursing Quality Indicators was used to interpret changes in fall rates and fall-associated injury rates following implementation on post-fall audit	The overall rate of falls reduced by 8.47% (4.43 per 1000 patient days) in 2012 compared to 2011 (4.84 per 1000 patient days) Average injury rate was 22.09% lower in 2012 (0.67 per 100 patient days) compared to 2011 (0.86 per 100 patient days) Implementation of post-fall audits reports can lower overall fall rate and fall injury rate in acute care settings.

APPENDIX B

Post Fall Huddle Form

FALL EVENT DETAILS--To be filled out by huddle leader

Date of fall: _____

Time of fall: _____

Date of last fall: _____

Nursing Unit where fall occurred:_____

Patient's fall risk level prior to fall: _Low _Moderate _High

Fall prevention measures in place? List all:_____

Physical location of fall: _____

Was fall witnessed? _Yes _No

Was fall assisted? _Yes _No

Is there a reportable injury? –Yes --No

If yes, injury type:_____

Hourly rounding protocol implemented by: _____

Huddle leader signature:_____