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Fall Reduction among Elderly Residents in Skilled Nursing Facility

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Executive Summary

Fall reduction among Elderly residents in skilled nursing facility

Problem

Falls among elderly or older adults is a serious issue in skilled nursing facilities. According to the Centers for Disease Control and Prevention (2012), about 1800 residents living in nursing homes die annually from falls and fall-related injuries. Those who survive sustain injuries that might cause permanent disability. Some of the facilities use bed alarms as a preventive measure. Despite the use of these bed alarms, the fall rates in these skilled facilities still remains high. The problem statement describing this capstone project is: In (P) nursing staff in skilled nursing facility, (I) staff education and implementation of hourly rounds and use of bed alarm, (C) when compared to the use of bed alarm only (O) decrease in the incidence of falls?

Purpose

The purpose of this capstone project is to assess whether hourly rounding by staff and the use of bed alarm will decrease the incidence of falls in skilled nursing facility.

Goal

The goal of this project is to serve residents in the skilled nursing facility by providing an intervention rooted in evidence based practice aimed at decreasing the incidence of falls and promoting quality of life.

Objectives

The project objectives included: to reduce the fall rate by 50% in six months; to reduce the fall rate by 75% in one year; and to increase the supervision of residents by nursing staff.

Plan

This project utilized Zaccagnini and Whites (2011) Doctor of Nursing Practice Process Model. The project identified through a needs assessment and comprehensive literature review that despite the use of bed alarms in skilled nursing facilities, the rate of falls was still high. This information provided the framework which developed the goals and objectives, guided the theoretical foundation, and initiated specific plans for the work, evaluation, and implementation after Institutional Review Board approval was obtained from the facility and Regis University.

Outcomes and Results

The implementation of hourly rounding using the 4 P's reduced the fall rate in the facility by 13.3% and the use of bed alarm by 9.5%. It was concluded that there was a decrease in the incidence of falls following the implementation of bed alarm and hourly rounding using the 4 P's.

Acknowledgements

I would like to dedicate this capstone project to God, Almighty, who has made it possible for me to get this far in life and in my career. He is my strength, my refuge, my rock, my Redeemer and provider. To Him be all the glory, honor, praise and adoration.

I would like to thank my mother Josephine (nnem) for her encouragement, love, caring and support during this program. To my wonderful sisters, Ogechi and Chidinma, you all were there in prayers and encouragement. To Ejike, my brother, you stood strong with me during this program. My brother-in-laws, Emeka and Evans.

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Fall reduction among elderly residents in skilled nursing facility

Introduction

The project describes an intervention aimed at reducing the incidence of falls in a skilled nursing facility. Having worked in long term care or in skilled nursing facility as a direct care nurse, charge nurse, unit manager, nurse supervisor, director of nursing services and chief nursing officer, there is a first-hand experience on the issue of falls among elderly residents. The practice problem identified in this capstone project addresses the issue of falls among elderly residents in relation to hourly rounding and use of bed alarm.

Problem Recognition and Definition

Statement of Purpose

This capstone project is an evidence-based practice study and not meant to generate new evidence or to be generalized outside of the organization. As such, the focus of the project is the increase in the incidence of falls despite the use of bed alarms as an intervention. Often times, if the resident is ambulatory, the resident may be out of the bed or on the floor before the nurse gets to the area (Morse, 2009). Also, if an alarm sounds and the nurse is not nearby to get to the resident, the resident will try to get up and perhaps sustain a fall. Also, what happens in a situation where the bed alarm malfunctions and does not sound when a resident gets out of bed? In such a situation, the resident will get out of bed and most likely sustain a fall. Therefore, the purpose of the project is to provide an intervention that would reduce this incidence of falls in skilled nursing facility.

Problem Statement

According to the Centers for Disease Control and Prevention (2013), each year, one in every three adults age 65 and older falls. In 2010, 2.3 million nonfatal fall injuries among older adults were treated in emergency departments and more than 662,000 of these patients were hospitalized. Without doubt, falls among older adults is a serious issue in skilled nursing facilities. According to CDC (2012), about 1800 residents living in nursing homes die annually from falls and fall-related injuries. Those who survive sustain injuries that might cause permanent disability. In 2010, the direct medical cost of falls, adjusted for inflation, was $30 billion. Fortunately, falls are a public health problem that is largely preventable. Therefore, the question is: what measures do we put in place in order to prevent or reduce the incidence of falls? The problem statement is despite the use of bed alarms, fall rates in skilled nursing facilities still remains high.

PICO Statement and leads to question

With the issue of falls in the skilled nursing facility, some of the facilities were using bed alarm as an intervention. However, despite the use of bed alarms as an intervention, the rate of falls remained high. This leads to the question of whether bed alarms do reduce the incidence of falls. On the other hand, frequent checking of the residents while assessing and meeting their needs in the form of rounding has been shown to result in fall reduction. According to Nientimp & Peterson (2012), in order to reduce falls and increase patient satisfaction, nurses can further extend their assistance by checking on the patients hourly. To guide the formation of the capstone project question, the population, intervention, comparison, and outcome (PICO) format, where P= Population, I= Intervention, C= Comparison and O was utilized.

P: Nursing Staff in skilled nursing facility

I. Staff education and the implementation of hourly rounds, and the use of bed alarm,

C When compared to the use of bed alarm only

O Decrease the incidence of falls

The actual project question was: Does the use of bed alarm and hourly rounding using the 4 P's decrease the incidence of falls for residents in skilled nursing facility? The 4 P's are Pain, Position, Prompted voiding and Placement.

Project Significance, Scope and Rationale

The significance of the project to clinical practice is the education of staff on hourly rounding, training of the staff on appropriate documentation of the hourly rounding, monitoring of the hourly rounding documentation, and assess whether hourly rounding and bed alarm decreases fall.

The project scope is a quality improvement study with a convenience sample. The research participants are the nursing staff in a skilled nursing facility in Massachusetts. The inclusion criteria include all nursing staff that works full time, part time and per diem/ as needed. The exclusion criteria include that staffs that have not been educated on the hourly program. The project analyzed the incidence of falls despite the use of bed alarms. That is to say, the number of residents who sustained a fall within the past five months who had a bed alarm as an intervention were assessed and circumstances surrounding the falls discussed. Also, the project looked into the hourly rounding by the staff and the use of bed alarms in relation

to the incidence of falls. The hourly rounding will be comprised of the 4 P's. That is to say,

during hourly rounds, the staff assessed or checked the residents for pain, positioning, placement and prompted voiding. The hourly rounding was carried out by the facility staff that had been educated and trained on the hourly rounding program.

Based on the significance and scope of the project, the rationale assessed whether hourly rounding by staff and the use of bed alarms decreased the incidence of falls in skilled nursing facility.

The Doctor of Nursing Practice role related to project rationale

The doctor of nursing practice brings to the development of clinical prevention interventions an increased depth of knowledge regarding how to implement programs (Zaccagnini & White, 2011). That is to say, the DNP brings an increased depth of knowledge in the training of staff at the facility. Also, the DNP identifies strategies that lead to good outcomes, increased depth of knowledge on how to implement the program and analyzes of the results from the study.

Theoretical Foundation for Project and Change

According to Zaccagnini & White (2011), theories provide the base from which nurses seek to understand patients and their health problems, and from which they plan interventions to help the patients. Hence, scientific research and practice require a framework. Virginia Henderson's Need theory provided one of the frameworks for this project. According to Parker & Smith (2010), Virginia Henderson identified 14 components of basic nursing care that reflects needs pertaining to personal hygiene and healthy living, including helping the patient carry out the physician's therapeutic plan. The theory in its component nine, talks about avoiding dangers in the environment and avoiding injuring others. This is related to the project in that, it is seen in the area of avoiding dangers like falls and fall related injury which could lead to death or

permanent disability. As such, this would serve as a guide in preventing or reducing the incidence of falls.

On theoretical foundation for change, the Lewin's theory of change is another theoretical Model that was applicable to this project. The Lewin's force field analysis model is a classic framework for understanding the process of change within a group, system or health initiative (Zaccagnini & White, 2011). Kurt Lewin theorized a three-stage model of change that is known as the unfreezing-change-refreeze model that requires prior learning to be rejected and replaced. As such, with the change from only bed alarm as an intervention to hourly rounding by staff, there would be need to get the employees to accept these changes so as to carry on with the project. The ability to facilitate change or serve as an agent of change is a key function required for successful collaboration. Therefore, the DNP must be versed in one or more theories of change to effectively motivate the collaborative team to the optimal goal.

Literature Review

A systematic review of literature was conducted (See Appendix A), using well-known search engines that include EBSCOhost, Cumulative Index to Nursing and Allied Health Literature (CINAHL), MEDLINE and Google scholar as the main sources. Searches were completed using subject heading searches for falls, elderly residents, skilled nursing facility, bed alarms, hourly rounding, falls among elderly, fall prevention and fall interventions. No article less recent than ten years were utilized. The systematic assessment of each article included identification of elements which include: purpose, hypothesis, theoretical framework, setting, sample, methods, conclusion, nursing implication, and findings. During the literature search,

ninety three articles were available and somehow related to the topic. However, thirty six articles were most appropriate and as such reviewed for the project.

Some Key Articles

Bed Alarm use. In a case study by the Medicare Quality Improvement Organization for Massachusetts (2006), Nursing home alarm elimination program: it is possible to reduce falls by eliminating resident alarms, the relationship between elimination of resident pressure alarms and falls was examined. The study or intervention occurred within a Massachusetts nursing home's 45 bed unit. Alarms were removed from several residents who had not had any falls for a significant period of time because the causative factor for their previous falls had resolved. During the last quarter of the study that encompassed the months of alarm reduction and increased resident monitoring on the target unit, there was a 32% reduction in the quarterly average of falls for the unit, when compared to the average number of falls for the first three quarters before the study.

Also, the article, Effects of an intervention to increase bed alarm use to prevent falls in hospitalized patients (Shorr, 2012), it showed that an increase in bed alarms among hospitalized patients had no statistically or clinically significant effect on fall related event.

Hourly Rounding. A quasi-experimental study by Olrich, Kalman & Nigolian (2012) explored the effect of hourly rounding on fall rates, call light usage, and patient satisfaction in an inpatient medical-surgical patient population. The site was a 506-bed teaching hospital in the northeast United States. The primary outcome result/ measure is that the fall rate on the experimental unit was 3.37/1000 patient days. The rate decreased to 2.6/1000 patient days with the rounding intervention. While this was not significant statistically (p=).672), the 23%

reduction in falls was significant clinically. The result of the study showed potentially promising effects of hourly rounding on patient falls.

Also, the article, outcomes and challenges in implementing hourly rounds to reduce fall in orthopedic units (Tucker, 2012), discussed the importance of educating and following up with the staff on a regular basis about the rounding process.

The article, Hourly rounding: A strategy to improve patient satisfaction score (Ford, 2010) discussed the 4 P's which is a huge part of the hourly rounding process. It highlighted the importance of rounding using the 4 P's.

Furthermore, an article by Kessler, et al (2012) highlighted some strategies to sustain hourly patient rounds and also the use of point person or champion in facility in implementing the rounding program.

Fall and fall risk. A systemic review by Fonad et al. (2008) explored falls and risk factors for falls in older people living in nursing homes. The study covered 2343 reported incidents from 21 nursing home units in five municipal homes for older adults. The primary outcome measure /result showed a significant correlation between falls and fractures. The result of the

study showed that in clinical practice, patient safety is very important. Preventive measures should focus on risk factors associated with individuals, including their environment. According to American nurse today (2011), among older adults who sustain a hip fracture, nearly 50% never regain their previous level of functioning and 30% die within six months. With the number of older Americans increasing, the problem of fall-related injuries is likely to rise substantially over the next few decades.

Market/Risk Analyses

Strengths, Weaknesses, Opportunities, and Threats (SWOT)

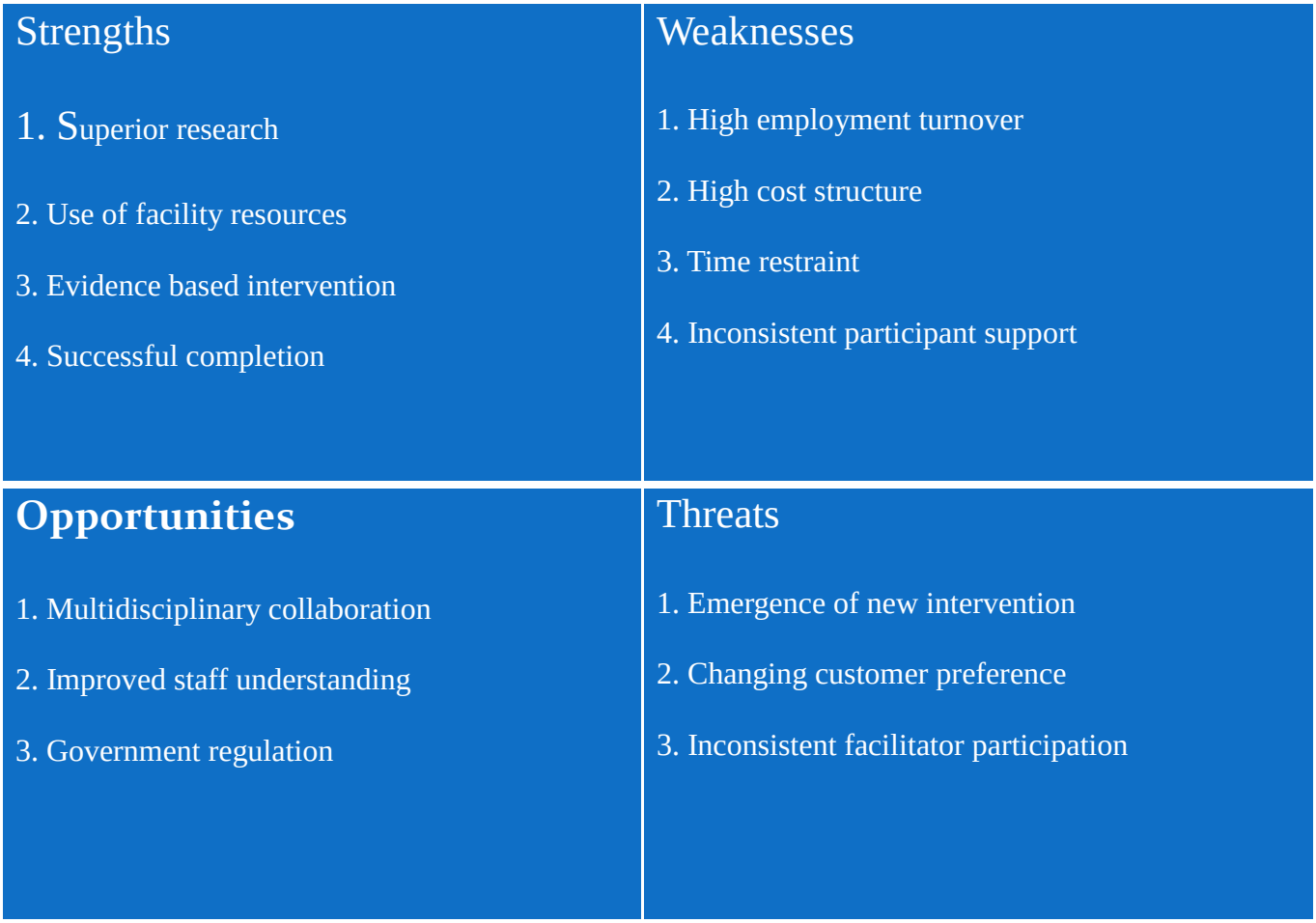
According to Fortenberry (2010), the SWOT analysis is a tool for analyzing the state of affairs associated with healthcare organizations and the various goods and services they provide to customers. Hence, to ensure the successful completion of this study, an analysis of strengths, weaknesses, opportunities, and threats as listed in table 1 was utilized. Strengths are positive product related attributes that facilitate exchange (Fortenberry, 2010, p. 186). The issue of falls is a huge issue in skilled nursing facilities. As such, a multi-disciplinary collaboration would enhance the effectiveness of this fall intervention and would be a strength. Also, other strengths include, improved staff understanding and government regulation on nurse per patient ratio in skilled nursing facility which will help make the hourly rounding more efficient in facilities.

Weaknesses are negative product and product related attributes that adversely impact exchange (Fortenberry, 2010, p. 187). Emergence of new intervention is one of the weaknesses. Hence, if the facility's parent organization decides to introduce or implement a new fall intervention program despite the success of the hourly rounding program.

Opportunities are external events and circumstances that have the potential to positively impact products (Fortenberry, 2010 p. 187). As such, a superior research on fall intervention would be strength. Also, other strengths include, use of facility resources, evidence-based intervention and successful completion could highlight factors contributing to falls.

Threats are external events and circumstances that have the potential to negatively impact products (Fortenberry, 2010 p. 187). High employment turnover in the facility is one of the weaknesses. It sets the project back as it affects the time and cost of training new employees on the new intervention. Also, time restraints and inconsistent participant support could be a weakness for the project.

Figure 1- SWOT Analysis



Driving/ restraining forces

There are some factors which are the driving forces for this project. The factors include, statistics on the yearly elderly fall rate, statistics on the number of injuries and death resulting from falls, and statistics on the cost of falls among older adults. According to Centers for Disease Control and Prevention (2012), about 1800 residents living in nursing homes die annually from falls and fall-related injuries. Also, according to CDC (2013), each year, one in every three

adults age 65 and older fall. These falls can cause moderate to severe injuries, such as hip fractures and head traumas. In 2010, 2.3 million nonfatal fall injuries among older adults were treated in emergency departments and more than 662,000 of these patients were hospitalized. Under statistics on the cost of falls, the CDC reports that in 2010, the direct medical cost of falls, adjusted for inflation, was $30 billion.

The internal drivers of the facility include the fall rate during the night shift which was 37%, fall rate during the day shift which was 37%, and fall rate during the evening shift which was 26%.

On restraining forces, some of the factors include reluctance of the participants or employees to participate in the study because of fear of change or new intervention could be a frustrating and restraining force on the study. Also, the different levels of readiness of the participants and stakeholders could be a restraining force in that it affects the progress and completion of the study.

Need, resources and sustainability

According to Zacagnini and White (2011), the needs assessment serves to determine the extent to which the mission of the project is consistent with the needs of the target population. The need for the project related to the topic of fall prevention among the elderly was established through the use of a need assessments and meeting with the staff in the facilities.

As a result of the needs assessment, some of the needs for the project include personnel, equipment, time and other resources. Under personnel, the employees in the facility were needed to implement and monitor the hourly rounding intervention. Under equipment, these included some of the materials needed for the education and implementation of the hourly rounding. Some

of the material includes hourly rounding log and monitoring material. Also, the time required to train the staff as well as implement hourly rounding.

The hourly rounding intervention was sustained through monitoring of the system and continuous education of the staff. It was very important to monitor the progress of the hourly rounding so as to ensure that staff is following the guideline. Also, it is important to quarterly re-educate staff members and new staff members on the new system.

Feasibility, risks and unintended consequences

It was feasible to implement the hourly rounding study because the study focuses on staff education on a new intervention. The intervention will reduce death associated to falls by reducing the incidence of falls in skilled nursing facility.

There were no risks associated with the implementation of the hourly rounding in the skilled nursing facility. The unintended consequences could be complaint by patients on disturbing them while the staff is rounding.

Stakeholders and project team

According to Zaccagnini and White (2011), stakeholders are those individuals who are affected by a project. The direct stakeholders included residents, families, nursing staff,

rehabilitation staff, medical staff, facility administrators, project champions and the project leader. Ancillary stakeholders included regulatory agencies like Massachusetts Department of Public Health (DPH) and Centers for Medicare and Medicaid services (CMS), public and private insurers.

The project team included the team leader (DNP student), capstone chair, clinical mentor, director of nursing services of the facility, two project champions from each unit. The team leader was responsible for the project design, educational content and leading the educational programs. The director of nursing services assisted the team leader in implementing the program in the facility. The project champions were responsible for the proposed practice changes and role-modeling best practices for fall prevention and management. The champions were provided with resource binders containing research evidence and information related to fall prevention and hourly rounding.

Cost-Benefit Analysis

The total cost of the project including materials and labor time of the nurses will be estimated at $7,500. See below.

Materials on 4 P's and Writing Materials…….$350

Papers for copying and printing……...$150

Training time…….....10 hours at $4050

(Average hourly pay of Certified nursing assistant……..$12)

(Average hourly pay of Nurses…… $26)

(CNA cost = 10 hours x $12 x 25 employees……$3000)

(Nurses cost = 10 hours x $27 x 15 employees…….$4050)

Total Cost……...$7050

The total benefit of the project is unquantifiable as it relates to safety of residents. The cost of the project implementation is significant in comparison to the potential monetary savings associated with decreased incidence and increased prevention of falls. According to CDC (2014), in 2010, the total direct medical cost of fall injuries for people 65 and older, adjusted for inflation, was $30 billion. Medicare costs per fall averaged between $13,797 and $20,450 in 2012. On average, the hospitalization cost for a fall injury in 2012 was $34,294. Hence, preventing at least one fall in the facility will save the facility about $20,000. In addition, the anticipated benefit to residents should not be measured only in monetary value but rather quality of care provided and avoidance of pain and suffering.

Project Objectives

Mission and Vision

The mission of this project is to serve residents in the skilled nursing facility by providing an intervention rooted in evidence based intervention aimed at decreasing the incidence of falls, and promoting quality of life.

The vision is to provide care that is resident-centered which is rooted in evidence-based practice that will touch the lives of people.

Goals

The goal of this project is to serve residents in the skilled nursing facility by providing an intervention rooted in evidence based practice aimed at decreasing the incidence of falls and promoting quality of life. Hence, to reduce the falls in the facility by 50% in six months, fall rate to be measured quarterly in the facility, fall rate before and after intervention would be compared and to reduce falls in the facility by 75% in one year.

This capstone project is an evidence-based practice study and not meant to generate new evidence or to be generalized outside of the organization. As such, the focus of the project is the increase in the incidence of falls despite the use of bed alarms as a preventive intervention. Often times, if the resident is ambulatory, the resident may be out of the bed or on the floor before the nurse gets to the area (Morse, 2009). Also, if an alarm sounds and the nurse is not nearby to attend to the resident, the resident may try to get up and perhaps sustain a fall. Furthermore, what happens in a situation where the bed alarm malfunctions and does not sound when a resident gets out of bed? In such a situation, the resident will get out of bed and most likely sustain a fall. Therefore, the purpose of the project is to provide an intervention that could reduce the incidence of falls in a skilled nursing facility and to educate staff about the importance of this issue.

Process/ outcomes objectives

The first objective of the project was to reduce the fall rate by 50% in six months of the introduction and implementation of hourly rounding. The reduction of fall related injury by 75% within the first six months.

The second objective was to reduce the use or dependence of the facility on just bed alarms by 50% in three months of the introduction and implementation of hourly rounding and bed alarm.

The final objective was to increase supervision of residents by nursing staff which would equally improve the quality of care. Hence, using the 4 P's, the residents are assessed for pain, positioning and prompted voiding.

Evaluation Plan

Logic Model

According to Zaccagnini & White (2011, p. 479), "a logic model is a systematic and visual way to present and share your understanding of the relationships among the resources you have to operate your program, the activities you plan, and the changes or results you hope to achieve- W. K. Kellogg Foundation (2004)". The diagrams show how parts of the program are joined together. As such the logic model (Table 2) is a picture description of how the project will work.

Appropriate for objectives and research design

The facility was appropriate for the objectives and research design because it was a long term care facility; it is using bed alarm as a fall intervention. The facility despite the use of bed alarms as an intervention still had an increase in fall rates, and the facility has staff that provide care for the patients who can be trained on hourly rounds.

Population/ Sampling Parameters

The population is comprised of nursing staff in a skilled nursing facility in Massachusetts. The sample includes nursing staff that are working full time, part time or perdiem basis in a 100 bed for-profit facility in Medford, Massachusetts. There were 40 staff members who participated in the project. The inclusion criteria included all nursing staff that work full time, part time or per diem in the facility and have been trained on the hourly rounding and bed alarm intervention. The exclusion criteria included all nursing staff that had not been trained on the hourly rounding

and bed alarm intervention. The recruitment and enrollment of the nursing staff was voluntary. Consents were obtained verbally from the staff. Hence, they were informed about the intervention as well as the goal of the project, their right not to participate and withdraw their participation any time they so desire.

Educational Intervention Content

There were 40 nursing staff members that attended the education/ teaching session. The nursing staff was educated on the meaning and purpose of hourly rounding, the definition of the 4 P's in hourly rounding. That is to say, asking and/ or assessing the patient for pain, positioning of the patients in a comfortable way, prompted voiding of the patients and placement of the patients belongings within reach. The nursing staff was also educated on how to document the hourly rounding on the hourly rounding log and the importance of reporting fall incidence.

The objective of this was to ensure that the nursing staff knew exactly what the hourly rounding was all about, how to carry out an appropriate hourly rounding using the 4 P's, and how to document accurately and timely.

Methodology

The project was a quantitative study as it manipulated numerical data through statistical procedures for the purpose of describing phenomena or assessing the magnitude and reliability of relationship among them (Polit, 2010). The capstone project utilized a pre-intervention/ post-intervention quasi-experimental design in which the independent variable is hourly rounding by staff in addition to the use of bed alarm. This quality improvement study consisted of analyzing results before the application of the intervention and after the application of the independent

variable. The dependent variable for the project is the decrease in the incidence of falls in the skilled nursing facility related to the fall intervention..

The software that was used for analyzing the results was Microsoft Excel. Using the Microsoft Excel, the total number of falls before the implementation of the hourly rounding was compared with the total number of falls after implementation of the hourly rounding.

The data was entered into Microsoft Excel, each time point or condition was put in a new column. The pre-hourly rounding fall rate comprised of the fall rates for January, February, March, April and May. The post hourly rounding fall rate comprised of fall rates for June, July, August, September, and October. The fall rate or numbers before the implementation of the hourly was labeled "pre-hourly rounding fall rate" and the fall rate or numbers after the implementation of hourly rounding was "post hourly rounding fall rate".

The evaluation plan methodology for the project included the facility Morse scale assessment used for assessing patients that are at risk for falls. Other tools analyzed included the facility daily fall analysis report, the facility weekly analysis report and the facility monthly analysis report which was used to obtain information on falls related with the use of bed alarms.

Human Subjects Protection

The research study was focused on collecting data from the facility on the falls pertaining to residents for the past months before the implementation of the hourly rounding by the staff and after the implementation of the program. The risk of the research is very minimal.
The intervention is an implementation of intervention with the facility staff, not with the patients directly. The intervention required a change in behavior of staff. There was very minimal risk to the subjects. The patients still had their alarms in place, the only change or addition was the

hourly rounding that the staff did in order to anticipate and meet the needs of the subjects. This was a quality improvement initiative with the goal to reduce the incidence of falls among the patients.

Therefore, this DNP student had an exempt from HHS regulation from the Regis University Institutional Review Board.

The principle of autonomy applies to this research in that the staff members had the right to make informed decisions regarding their participation or exclusion from the activities involved with this project. The employees consented verbally to participate in the study. Therefore, it was the responsibility of the investigator that the participants were aware of this information. In line with this an information sheet was necessary so as to make sure that these important factors are addressed. The information sheet contains information which includes:

1. Purpose of the study

2. Expectations of participants

3. Maintenance of confidentiality

4. DNP student contact information

5. Capstone chair contact information

6. Regis IRB contact information

7. Ease of exit from study

8. Expected benefits

Figure 2- Morse Fall Risk Assessment

FALL RISK ASSESSMENT

Instructions: Upon admission, annually, with Significant Changes and at least quarterly thereafter, assess the resident status in the eight clinical condition parameters listed below (A-H) by assigning the corresponding score that best describes the resident in the appropriate assessment column. Add the columns of numbers to obtain the TOTAL SCORE. If this score is 10 or greater, the resident should be considered at HIGH RISK for potential falls. A prevention protocol should be initiated immediately and documented on the resident's interdisciplinary care plan.

RESIDENT NAME:				ROOM NO.:			
	PARAMETER	SCORE	RESIDENT STATUS/CONDITION	1	2	3	4
A.	LEVEL OF CONSCIOUSNESS MENTAL STATUS	0	ALERT – (oriented x3) OR COMATOSE				
		2	DISORIENTED x3 at all times				
		4	INTERMITTENT CONFUSION				
B.	HISTORY OF FALLS (past 3 months)	0	NO FALLS in past 3 months				
		2	1-2 FALLS in past 3 months				
		4	3 or MORE FALLS in past 3 months				
C.	AMBULATION/ ELIMINATION STATUS	0	AMBULATORY/CONTINENT				
		2	CHAIR BOUND – restraints and assist with elimination				
		4	AMBULATORY/INCONTINENT				
D.	VISION STATUS	0	ADEQUATE (with or without glasses)				
		2	POOR (with or without glasses)				
		4	LEGALLY BLIND				
E.	GAIT/BALANCE	To assess the resident's gait/balance have him/her stand on both feet without holding onto anything, walk forward, walk through a doorway and make a turn. Please list ALL that apply.					
		0	Gait/Balance				
		1	Balance problem while standing				
		1	Balance while walking				
		1	Decreased muscular coordination				
		1	Change in gait pattern when walking through doorway				
		1	Jerking or unstable when making turns				
		1	Requires use of assistive device (cane, walker, w/c,etc)				
		2	NOT APPLICABLE – Unable to perform any of above				
F.	SYSTOLIC BLOOD PRESSURE	0	NO NOTED DROP between lying & standing				
		2	Drop LESS THAN 20 mm Hg between lying & standing				
		4	Drop MORE THAN 20 mm Hg between lying & standing				
G.	MEDICATIONS	Respond below based on the following types of meds: Diuretics, Narcotics, Sedatives, Hypnotics, Psychotropics, Cathartics, Anesthetics, Antihistamines, Antihypertensives, Antiseizure, Benzodiazepines,					
		0	NONE of these meds taken currently or within the last 7 days				
		2	TAKES 1-2 of these meds currently and/or within the last 7 days				
		4	TAKES 3-4 of these meds currently and/or within the last 7 days				
		1	If resident has had a change in meds and/or doses in the past 5 days. TAKE THIS ADDITIONAL POINT				
H.	PREDISPOSING DISEASES		Respond below based on the following conditions: Hypotension, Vertigo, Parkinson's Disease, Seizures, Loss of Limbs, Arthritis, Fractures, Osteoporosis, CVA				
		0	NONE PRESENT				
		2	1-2 PRESENT				
		4	3 OR MORE PRESENT				
	TOTAL SCORE		Total score of 10 or more HIGH RISK FOR FALLS				

ASSESS	SIGNATURE/ TITLE/DATE	ASSESS	SIGNATURE/TITLE/DATE
1		3	
2		4	

Data Set

The data set for the project was the fall rate before the implementation of hourly rounding, the fall rate for five months, the fall rate by floor, shift, days, shift change, repeat fallers, and the analysis by percentage, year to date, average year to date.

Table 1- Fall Analysis 2014 (Pre-Test)

FALLS ANALYSIS (2014) (PRE-TEST)

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	Q1 AVE	Q2 AVE	Q3 AVE	Q4 AVE	YTD TOTAL	YTD AVE
TOTAL # OF FALLS	6	6	8	11	7								7.75	9.00	#DIV/0!	#DIV/0!	38	7.60
FALLS with INJURIES**	0	0	3	2	1								1.25	1.50	#DIV/0!	#DIV/0!	6	1.20
FALLS REPORTED TO DPH*	0	0	0	1	0								0.25	0.50	#DIV/0!	#DIV/0!	1	0.20
TOTAL PATIENT DAYS	31	28	31	30	31								30.0	30.5	#DIV/0!	#DIV/0!	151.0	30.2
TOTAL CENSUS	1	1	1	1	1	0	0	0	0	0	0	0	1	0.67033	0	0		
% FALLS/P. DAYS	193.55	214.29	258.06	366.67	225.81	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	258.33	295.08	#DIV/0!	#DIV/0!	#DIV/0!	25166
FALLS BY FLOOR	**JAN**	**FEB**	**MAR**	**APR**	**MAY**	**JUN**	**JUL**	**AUG**	**SEP**	**OCT**	**NOV**	**DEC**	Q1 AVE	Q2 AVE	Q3 AVE	Q4 AVE	YTD TOTAL	YTD AVE
WINTHROP UNIT	2	3	2	6	5								3.25	5.50	#DIV/0!	#DIV/0!	18	3.60
PLEASANT VIEW	4	3	6	5	2								4.50	3.50	#DIV/0!	#DIV/0!	20	4.00
													#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	0	#DIV/0!
													#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	0	#DIV/0!
													#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	0	#DIV/0!
FALLS WITH BED ALARMS	4	4	4	6	0								3.60	3.00	#DIV/0!	#DIV/0!	18	3.60
TOTAL	6	6	8	11	7	0	0	0	0	0	0	0	6.67	6.00	0.00	0.00	38	#DIV/0!
FALLS BY SHIFT	**JAN**	**FEB**	**MAR**	**APR**	**MAY**	**JUN**	**JUL**	**AUG**	**SEP**	**OCT**	**NOV**	**DEC**	Q1 AVE	Q2 AVE	Q3 AVE	Q4 AVE	YTD TOTAL	YTD AVE
NIGHT SHIFT	2	0	3	5	4								2.50	4.50	#DIV/0!	#DIV/0!	14	2.80
DAY SHIFHT	1	4	3	5	1								3.25	3.00	#DIV/0!	#DIV/0!	14	2.80
EVENING SHIFT	3	2	2	1	2								2.00	1.50	#DIV/0!	#DIV/0!	10	2.00
TOTAL	6	6	8	11	7	0	0	0	0	0	0	0	6.67	6.00	0.00	0.00	38	7.60
FALLS BY DAYS of the WEEK	**JAN**	**FEB**	**MAR**	**APR**	**MAY**	**JUN**	**JUL**	**AUG**	**SEP**	**OCT**	**NOV**	**DEC**	Q1 AVE	Q2 AVE	Q3 AVE	Q4 AVE	YTD TOTAL	YTD AVE
MON	0	1	3	2	0								1.50	1.00	#DIV/0!	#DIV/0!	6	1.20
TUE	1	0	1	1	3								0.75	2.00	#DIV/0!	#DIV/0!	6	1.20
WED	0	0	0	3	1								0.75	2.00	#DIV/0!	#DIV/0!	4	0.80
THU	2	0	1	1	1								1.00	1.00	#DIV/0!	#DIV/0!	5	1.00
FRI	0	1	1	1	1								0.75	1.00	#DIV/0!	#DIV/0!	4	0.80
SAT	1	1	1	1	0								1.00	0.50	#DIV/0!	#DIV/0!	4	0.80
SUN	2	3	1	2	1								2.00	1.50	#DIV/0!	#DIV/0!	9	1.80
WEEK END DAY FALLS %	25.0%	33.3%	12.5%	13.6%	7.1%	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	22.5%	16.7%	#DIV/0!	#DIV/0!	17.1%	17.1%
TOTAL	6	6	8	11	7	0	0	0	0	0	0	0	6.67	6.00	0.00	0.00	38	7.6
FALLS BY SHIFTS' CHANGE	**JAN**	**FEB**	**MAR**	**APR**	**MAY**	**JUN**	**JUL**	**AUG**	**SEP**	**OCT**	**NOV**	**DEC**	Q1 AVE	Q2 AVE	Q3 AVE	Q4 AVE	YTD TOTAL	YTD AVE
10:30P - 11:30P	0	0	0	0	0								0.00	0.00	#DIV/0!	#DIV/0!	0	0.00
6:30A- 7:30A	0	0	0	0	1								0.00	0.50	#DIV/0!	#DIV/0!	1	0.20
2:30P - 3:30P	0	1	2	0	0								0.75	0.00	#DIV/0!	#DIV/0!	3	0.60
TOTAL	0	1	2	0	1	0	0	0	0	0	0	0	1.00	0.33	0.00	0.00	4	0.80
%of Shifts' Change Falls	0.0	16.7	25.0	0.0	14.3	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	13.89	#DIV/0!	#DIV/0!	#DIV/0!		10.5
# of REPEAT FALLERS	**JAN**	**FEB**	**MAR**	**APR**	**MAY**	**JUN**	**JUL**	**AUG**	**SEP**	**OCT**	**NOV**	**DEC**	Q1 AVE	Q2 AVE	Q3 AVE	Q4 AVE	YTD TOTAL	YTD AVE
Repeat Faller for the Month	0	0	4	2	1								1.50	1.50	#DIV/0!	#DIV/0!	7	1.40
Repeat Faller from Last Month	0	0	0	0	1								0.00	0.50	#DIV/0!	#DIV/0!	1	0.20
TOTAL	0	0	4	2	2	0	0	0	0	0	0	0	1.33	1.33	0.00	0.00	8	1.60

** Injuries include Bruise, Skin Tears, Etc.* *** Reportable Cases include Fractures, Dislocations, Skin Lacerations with Sutures, etc.*

Data Set

The data set for the project was the fall rate after the implementation of hourly rounding, the fall rate for five months, the fall rate by floor, shift, days, shift change, repeat fallers, and the analysis by percentage, year to date, average year to date.

Table 2- Fall Analysis 2014 (Post- Test)

						FALLS ANALYSIS (2014)					POST-TEST						
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	Q1 AVE	Q2 AVE	Q3 AVE	Q4 AVE	YTD TOTAL	YTD AVE
TOTAL # OF FALLS						6	4	4	5	5			4.80	6.00	4.33	5.00	24	4.80
FALLS with INJURIES**						0	0	1	1	0			0.40	0.00	0.67	0.00	2	0.40
FALLS REPORTED TO DPH*						0	0	0	0	0			0.00	0.00	0.00	0.00	0	0.00
TOTAL PATIENT DAYS						30	31	31	30	31			30.6	30.0	30.7	31.0	153.0	30.6
TOTAL CENSUS	0	0	0	0	0	1	1	1	1	1	0	0	0	0.32967	1	0.337		
% FALLS/P. DAYS	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	200.00	129.03	129.03	166.67	16129	#DIV/0!	#DIV/0!	156.86	200.00	14130	16129	#DIV/0!	156.86
FALLS BY FLOOR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	Q1 AVE	Q2 AVE	Q3 AVE	Q4 AVE	YTD TOTAL	YTD AVE
WINTHROP UNIT						2	2	3	2	3			2.40	2.00	2.33	3.00	12	2.40
PLEASANT VIEW UNIT						4	2	1	3	2			2.40	4.00	2.00	2.00	12	2.40
													#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	0	#DIV/0!
													#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	0	#DIV/0!
													#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	0	#DIV/0!
FALLS WITH BED ALARM						2	2	1	2	1			2.00	2.00	1.67	1.00	8	1.60
TOTAL	0	0	0	0	0	6	4	4	5	5	0	0	0.00	2.00	4.33	1.67	24	#DIV/0!
FALLS BY SHIFT	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	Q1 AVE	Q2 AVE	Q3 AVE	Q4 AVE	YTD TOTAL	YTD AVE
NIGHT SHIFT						1	0	1	1	2			1.00	1.00	0.67	2.00	5	1.00
DAY SHIFHT						1	2	1	2	2			1.60	1.00	1.67	2.00	8	1.60
EVENING SHIFT						4	2	2	2	1			2.20	4.00	2.00	1.00	11	2.20
TOTAL	0	0	0	0	0	6	4	4	5	5	0	0	0.00	2.00	4.33	1.67	24	4.80
FALLS BY DAYS of the WEEK	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	Q1 AVE	Q2 AVE	Q3 AVE	Q4 AVE	YTD TOTAL	YTD AVE
MON						2	1	0	0	1			0.80	2.00	0.33	1.00	4	0.80
TUE						0	1	1	1	0			0.60	0.00	1.00	0.00	3	0.60
WED						1	0	2	0	1			0.50	1.00	0.67	1.00	4	0.80
THU						0	1	0	1	0			0.40	0.00	0.67	0.00	2	0.40
FRI						1	0	0	2	1			0.80	1.00	0.67	1.00	4	0.80
SAT						1	1	1	0	2			1.00	1.00	0.67	2.00	5	1.00
SUN						0	0	0	1	0			0.20	0.00	0.33	0.00	1	0.20
WEEK END DAY FALLS %	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	10.0%	12.5%	12.5%	10.0%	20.0%	#DIV/0!	#DIV/0!	#DIV/0!	30.0%	11.5%	60.0%	13.0%	13.0%
TOTAL	0	0	0	0	0	5	4	4	5	5	0	0	0.00	1.67	4.33	1.67	23	4.6
FALLS BY SHIFTS' CHANGE	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	Q1 AVE	Q2 AVE	Q3 AVE	Q4 AVE	YTD TOTAL	YTD AVE
10:30P - 11:30P						0	1	0	0	0			0.20	0.00	0.33	0.00	1	0.20
6:30A- 7:30A						1	0	0	0	1			0.40	1.00	0.00	1.00	2	0.40
2:30P - 3:30P						0	0	1	0	0			0.20	0.00	0.33	0.00	1	0.20
TOTAL	0	0	0	0	0	1	1	1	0	1	0	0	0.00	0.33	0.67	0.33	4	0.80
% of Shifts' Change Falls	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	20.0	25.0	25.0	0.0	20.0	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	16.67	#DIV/0!		17.4
# of REPEAT FALLERS	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	Q1 AVE	Q2 AVE	Q3 AVE	Q4 AVE	YTD TOTAL	YTD AVE
Repeat Faller for the Month						0	1	0	1	0			0.40	0.00	0.67	0.00	2	0.40
Repeat Faller from Last Month						1	1	0	0	1			0.60	1.00	0.33	1.00	3	0.60
TOTAL	0	0	0	0	0	1	2	0	1	1	0	0	0.00	0.33	1.00	0.33	5	1.00

Data Comparison

The data comparison by floor or unit in the facility is that fall rate on the Winthrop unit before the introduction of hourly rounding was 18 and after the introduction of the hourly rounding it was 12. While on the Pleasant view unit, the fall rate before the introduction of hourly rounding was 20 and after the introduction of the hourly rounding it was 12.

The data comparison by shift in the facility is that fall rate on the night shift before the introduction of hourly rounding was 14 and after the introduction was 5. The day shift before hourly rounding was 14 and after hourly rounding was 8. The evening shift before hourly rounding was 10 and after hourly rounding was 11.

The overall number of falls before the introduction of the hourly rounding was 38. While the overall number of fall after the introduction of the hourly rounding was 24.

Analyzing the results of the test

In order to analyze the results of the test using Microsoft Excel, the total number of falls for the five months was divided by average daily census which was 105 and then multiplied by 100. On the pre-test, there were a total of 38 falls which the percentage of falls in relation to the average census of 105 will be 36.1%. While on the post-test, there were a total of 24 falls which the percentage of falls in relation to the average census of 105 will be 22.8. Hence, the difference between the pre-test and post-test was 13.3% decrease in falls.

Therefore applying the result to the research question, it could be said that there was a decrease in the incidence of falls with the implementation of hourly rounding using 4 P's

Table 3- Data Comparison

	PRE	PRE	POST	POST
	YTD TOTAL	YTD AVE	YTD TOTAL	YTD AVE
TOTAL # OF FALLS	38	7.60	24	4.80
FALLS with INJURIES**	6	1.20	2	0.40
FALLS REPORTED TO DPH*	1	0.20	0	0.00
TOTAL PATIENT DAYS	151.0	30.2	153.0	30.6
TOTAL CENSUS				
% FALLS/P. DAYS	#DIV/0!	25166	#DIV/0!	156.86
FALLS BY FLOOR	YTD TOTAL	YTD AVE	YTD TOTAL	YTD AVE
WINTHROP UNIT	18	3.60	12	2.40
PLEASANT VIEW UNIT	20	4.00	12	2.40
	0	#DIV/0!	0	#DIV/0!
	0	#DIV/0!	0	#DIV/0!
	0	#DIV/0!	0	#DIV/0!
FALLS WITH BED ALARM	18	3.60	8	1.60
TOTAL	38	#DIV/0!	24	#DIV/0!
FALLS BY SHIFT	YTD TOTAL	YTD AVE	YTD TOTAL	YTD AVE
NIGHT SHIFT	14	2.80	5	1.00
DAY SHIFHT	14	2.80	8	1.60
EVENING SHIFT	10	2.00	11	2.20
TOTAL	38	7.60	24	4.80
FALLS BY DAYS of the WEEK	YTD TOTAL	YTD AVE	YTD TOTAL	YTD AVE
MON	6	1.20	4	0.80
TUE	6	1.20	3	0.60
WED	4	0.80	4	0.80
THU	5	1.00	2	0.40
FRI	4	0.80	4	0.80
SAT	4	0.80	5	1.00
SUN	9	1.80	1	0.20
WEEK END DAY FALLS %	17.1%	17.1%	13.0%	13.0%
TOTAL	38	7.6	23	4.6
FALLS BY SHIFTS' CHANGE	YTD TOTAL	YTD AVE	YTD TOTAL	YTD AVE
10:30P - 11:30P	0	0.00	1	0.20
6:30A- 7:30A	1	0.20	2	0.40
2:30P - 3:30P	3	0.60	1	0.20
TOTAL	4	0.80	4	0.80
% of Shifts' Change Falls		10.5		17.4
# of REPEAT FALLERS	YTD TOTAL	YTD AVE	YTD TOTAL	YTD AVE
Repeat Faller for the Month	7	1.40	2	0.40
Repeat Faller from Last Month	1	0.20	3	0.60
TOTAL	8	1.60	5	1.00

Evaluation Plan Intervention

The evaluation plan intervention is to analyze the previous fall rate of the facility, analyze the number of resident, implementation of the hourly rounding and education of the staff on hourly rounding during the evening shift.

Validity

On the validity of the Morse Fall Assessment Tool, Kim et (2011) compared the validity of three fall assessment scales. In the study, the Morse fall assessment scale had at a cut-off score of 50 had sensitivity of 78.9% and a specificity of 55.8%. The positive predictive value was 30.8%

and a negative predictive value of 91.4%. The study concluded that of the three fall risk assessment scales, Morse fall assessment scale had the highest predictive validity.

Reliability

In a study by Chow et al (2007), the Morse fall assessment scale was tested in long term care units on two thousand six hundred and eighty nine patients and it demonstrated good clinical validity and reliability. Also, in the study, the inter-reliability was found satisfactory.

See Appendix C for Collaborative Institutional Training Initiative (CITI) certification completed by the author.

Budget and Resources

Resources provided by the site

- Printing papers/ flyer $150.00
- Pens for documentation $50.00

Resources provided by the DNP student

- Refreshment for staff $100.00
- Materials on hourly rounding $100.00
- Staff Training $7050.00

Total $7,450.00

Overview of results with Evidence based practice question

The total number of falls before introduction of hourly rounding was 38. The total number of falls after the introduction of the hourly rounding was 24. The number of falls with only alarms was 18. While the total number of falls with alarm and rounding was 8. Therefore it would be readily stated that hourly rounding and the use of bed alarm reduced the incidence of falls as compared to only the use of bed alarm.

Limitations

The limitations of the study include staff turnover because new staff would need to be educated. Secondly, the nursing staff had the tendency of not completing the rounding process because of the instructions from patients who did not want to be checked / assessed every hour. Thirdly, staffing constraints in the light of inadequate staffing could affect the full implementation of the study especially during the evening shift. Finally, inadequate documentation from the nursing staff could make it difficult to ascertain whether the hourly round was done.

Recommendations

In light of the study, skilled nursing facilities could reduce the incidence of falls by implementing hourly rounding. Nurses should be educated to anticipate the needs of patients by using the hourly rounding, and skilled nursing facilities should educate nurses periodically at least quarterly on fall intervention.

Implications for change

The implications for change is that skilled nursing facilities would decrease the incidence of falls by implementing hourly rounding and nursing staff should be educated on hourly rounding at least quarterly.

Summary

Without doubt, falls among the elderly is a serious issue. As such, implementing an evidence-based practice intervention like hourly rounding which is capable of reducing the incidence of falls will be of great advantage in the skilled nursing facility. Hourly rounding reduced falls from 38 before hourly rounding to 24 after hourly rounding. It reduced falls with injury from 6 before hourly rounding to 2 after hourly rounding. It also reduced falls with bed alarm from 18 before hourly rounding to 8 after hourly rounding. Therefore, hourly rounding and bed alarm decreased the number of falls when compared to only bed alarm.

Summary Statement

The capstone project has helped to meet the Regis University and DNP program outcomes by assuring quality improvement and safety methods, tools-hourly rounding, performance measures- staff training and standards in a skilled nursing organization.

Figure 3- Logic Model Development Hourly Rounding

Logic Model Development – Hourly Rounding

Resources	Activities	Outputs	Short & long term outcomes	Impact
> Identify the current and past fall rate > Identify the number of residents that are fall risk based on assessment risk tool > Identify the residents that are using bed alarms as intervention > Time allotted for staff education > Fall assessment tool > Educational materials on hourly rounding > Tools/ logs to record the rounding process or checks	> Educate the staff on the fall assessment tool > Educate the staff on supervision/ tool monitoring > Analyze the fall rate of the facility > Analyze the number of falls that had bed alarms as a preventive measure > Create an action plan on how to monitor the residents hourly	> Reduction in the fall rate > Staff perceptions of the importance of frequent monitoring/ checking of residents to prevent falls > Staff perceptions of alarms alone as a fall intervention. It often gives a false sense of protection > Staff will be familiar with the fall assessment tool	**1 – 3 months:** > The fall rate will be reduced by 50% > Reduction in the use of bed alarms by 50% > Increase in supervision of residents by nursing staff **3 months – 1 year** > With increased supervision or monitoring, the fall rate will be reduced by 75% > Reduction in the use of bed alarms by 75% > Fall prevention will be one of the cardinal goals in skilled nursing facility	> The fall rate in skilled nursing facilities will be reduced by 90% > Nursing staff will increase their alertness on the supervision of residents > The use of bed alarms will be reduced in skilled nursing facilities.

Appendix A

Systematic Review

	Article/Journal	**Nursing home alarm**	**Hourly Rounding: A replication study.**

	elimination program: It's possible to reduce falls by eliminating resident alarms	**MEDSURG. Nursing**
Author/Year	**Masspro (2006)**	**Olrich, Kalman & Nigolian (2012)**
Database/Keywords	**Paper provided by clinical mentor**	**Ebscohost**
Research Design	**Descriptive studies**	**Quasi-experimental study. Controlled trial without rando**
Level of Evidence	**Level VI (Houser & Oman, 2011)**	**Level III (Houser & Oman, 2011)**
Study Aim/Purpose	**It summarizes the elimination of resident pressure alarms and the relationship to fall prevention**	**To determine the effect of hourly rounding on fall rates, c in an inpatient medical-surgical patient population**
Population/Sample size Criteria/Power	**Intervention occurred within a Massachusetts nursing home's 45-bed unit**	**The site was a 506-bed teaching hospital in the northeast U**
Methods/StudyApprais al Synthesis Methods	**Alarms were removed from several residents who had not had any falls for a significant period of time because the causative factor for their previous falls had resolved**	**Measures of central tendency and spread were calculated rank sum tests were used to compare baseline and post-in and reasons for call-light usage between experimental and**
Primary Outcome Measures/Results	**The residents that there alarms were removed remained fall free.**	**The fall rate on the experimental unit was 3.37/1000 patie patient days with the rounding intervention. While this wa the 23% reduction in falls was significant clinically**
Conclusions/Implicatio ns	**Preliminary anecdotal data suggests that a relationship between elimination of resident pressure alarms and fall prevention.**	**Results of the study show potentially promising effects of satisfaction, and patient call-light usage. If nursing leader protocols successfully, attention should be focused on enli rounding behaviors are preformed consistently on all shif**
Strengths/Limitations	**The facility has three units which include; a sub-acute, long term care and end-stage dementia units. The study did not specify the unit that the study was done. This is because the dynamics of each unit differs as well as application of this study.**	**The major limitation of this study was a non-randomized such, replication of the study with a large sample may be**
Funding Source	**None noted**	**None noted**
Comments	**Provides an insight on the alarm elimination and its effect on fall intervention**	**Provides an insight on the importance of the rounding sys patient care.**

Article/Journal	**The Impact of Nurse Rounding on patient Satisfaction in a medical-surgical hospital Unit. *MEDSURG Nursing***	**Effects of an Intervention to increase bed alarm use to prevent falls in hospitalized patients. *Annals of internal medicine***

Author/Year	**Blakley, D., Kroth, M., & Gregson, J. (2011)**	**Shorr, R. et al. (2012)**
Database/Keywords	**EBSCO**	**EBSCO**
Research Design	**Case study Method**	**Pair-matched, cluster randomized.**
Level of Evidence	**Level IV (Melnyk & Overholt, 2005)**	**Level III (Melnyk & Overholt, 2005)**
Study Aim/Purpose	**Examine the impact of rounding on the delivery of patient Care from the nursing staff's perspective as it relates to Safety.**	**To investigate whether an intervention aimed at increasing bed Alarm use decreases hospital falls and related events.**
Population/Sample size Criteria/Power	**In a 150-bed acute care community hospital. The study was Conducted on the hospitals 37-bed medical-surgical unit**	**16 nursing units in an urban community hospital. 27,672 inpatients in general, surgical, and specialty units. .**
Methods/Study Appraisal Synthesis Methods	**Two measure, test-retest investigation with electronic data collection. Do the two methods have internal consistency among items, temporal stability for assessing change over time, responsiveness to measure changes in grad students reflective thinking and expected conceptual direction for QRT scores.**	**Pre-post difference in change in falls per 1000 patient-days (primary end point); number of patients who fell, fall-related Injuries, and number of patients restrained (secondary end points)**
Primary Outcome Measures/Results	**Preliminary patient satisfaction scores, interviews, and other Findings showed the 4 P rounding process made a difference In patient and employee satisfaction**	**Prevalence of alarm use was 64.41 days per 1000 patient-days on Intervention units and 1.79 days per 1000 patient-days on control Units (p = 0.004). There was no difference in change in fall rates Per 1000 patient-days.**
Conclusions/Implications	**The 4 rounding program demonstrated meeting basic Patient needs are related closely to overall patient satisfaction. Regular rounding increased patient satisfaction scores and is expected to continue to improve HCAHPS scores.**	**An intervention designed to increase bed alarm use in an urban Hospital increased alarm use but had no statistically or clinically Significant effect on fall-related events or physical restraint use**
Strengths/Limitations	**Inclusion of the nursing director's interview result further explains the rounding system as it relates to the 4 P's**	**The study was conducted at a single site and was slightly under Powered compared with the initial design**
Funding Source	**None noted**	**The National Institutes of health and national institute on aging Provided funding for the study.**
Comments	**The study talks about the 4 P's in the rounding program**	**The study shows the effect of bed alarm use in the prevention of fall**

Article/Journal	**Outcomes and challenges in implementing Hourly rounds to reduce falls in orthopedic Units. *Worldviews Evidence Based Nursing.***	**The latest evidence on hourly rounding and rapid response teams in decreasing adverse events in hospitals. *MEDSURGICAL Nursing***
Author/Year	**Tucker, S. et al, (2012)**	**Melnyk, B. (2007)**
Database/Keywords	**EBSCO**	**EBSCO/World views on Evidence-Based Nursing**
Research Design	**Descriptive and repeated measure design**	**Quasi-experiment**
Level of Evidence	**Level V ((Melnyk & Overholt, 2005)**	**Level III (Melnyk & Overholt, 2005)**
Study Aim/Purpose	**To evaluate the feasibility of adapting and translating a Structured nursing rounding intervention to reduce the Risk and incidence of patient falls on two orthopedic Inpatient units**	**To assess the frequency of and reasons for patients call light use as well as the effects of 1-and 2-hour nursing rounds on patients' use of the call light, patient satisfaction, and rate of patient falls**
Population/Sample size Criteria/Power	**682 hospitalizations and at least 670 unique patients in each period. A two 29-bed postoperative orthopedic units**	**Twenty-seven nursing units in 14 hospitals**
Methods/Study Appraisal Synthesis Methods	**Used a descriptive and repeated measures design, fall rates and risk Assessment data were collected at baseline, during a 12-week SNRI implementation, and 1-year following implementation.**	**Nurses in two experimental study groups followed a specific protocol, either performing hospital rounds on their patients every hour or every two hours.**
Primary Outcome Measures/Results	**Fall rates declined during SNRI (borderline trend), yet 1-Year follow-up rates drifted back toward baseline. SNRI dosage and fall risk score did not predict fall rates.**	**Findings indicated that hourly rounding was more effective than 2-hour rounding and no rounding on call light usage, patient satisfaction and number of patient falls. Two hour rounding was more effective than no rounding on patient satisfaction.**
Conclusions/Implications	**SNRI appeared to reduce fall rates initially, but fidelity to the SNRI implementation and documentation was variable and fall reduction gains appeared lost 1 year later. Nurses expressed the importance of balancing inter -vention fidelity and individualizing patient interventions**	**In facilities that choose to implementing hourly rounding, it will be important to measure outcomes of this practice within each of the units in order to generate internal evidence for support of this practice. Despite substantial threats to the validity of this study, the evidence is compelling and suggests that hourly rounding may lead to a decrease in patient falls.**

Strengths/Limitations	**The study did not include random assignment or a control group. It is thus possible that the fall rates were influenced by the increased attention to falls rather than specific SNRI.**	**The research used a quasi-experimental design that did not randomly assign hospital units to one of the three intervention groups, which resulted in non-equivalent groups at the beginning of the experiment**
Funding Source	**None noted**	**None noted**
Comments	**The study shows the importance of educating and following up with the staff on a regular basis about the rounding process.**	**The study brings up the idea of notifying the patients about a rounding system in the facility**

Article/Journal	**Fall and fall risk among nursing home residents.** ***Journal of Clinical Nursing***	**Person-Environment interactions contributing to Nursing home resident falls.** ***Research in Gerontological Nursing.***
Author/Year	**Fonad, E. et al. (2008)**	**Hill, E., et al. (2009)**
Database/Keywords	**EBSCO**	**EBSCO/Reflection**
Research Design	**Systemic Review**	**Review**
Level of Evidence	**Level V (Melnyk & Overholt, 2005)**	**Level V (Melnyk & Overholt, 2005)**
Study Aim/Purpose	**To identify risk factors for falls in older people living in Nursing homes.**	**Explore advanced practice nursing students experiences of reflection after completion of reflective practice module used in Masters level program. Evaluate experience, inform curriculum, assess reflection as transforming (part 1).**
Population/Sample size Criteria/Power	**21 nursing home units in five municipal homes for older. The study covered 2343 reported incidents. The investigated group consisted of 743 males and 1908 females from 40 – 105 years of age with diagnosis of somatic illnesses, dementia or both**	**Four focus groups, with a total of 17 participants both licensed and Unlicensed nurses. Group sizes ranged from 3 to 6 participants: one group Had 3, two groups had 4, and one group had 6 participants.**
Methods/Study Appraisal Synthesis Methods	**The study was carried out over four years in Stockholm, Sweden. A questionnaire was sent to staff nurses, including questions on fall risk assessments, falls, fractures, medication and freedom restricting measures. The data were aggregated and not patient-bound.**	**Focus groups were conducted to gain insight into the range of person, Environment, and interactive circumstances that lead to falls in nursing Homes. This method provided an opportunity to capitalize on group Interactions and dynamics to yield a wide range of experiential data.**
Primary Outcome Measures/Results	**There was a significant correlation between falls and fractures, Fall risk and use of wheel chairs, safety belts and bed rails and between the occurrence of fractures and**	**There is significant interactions between person and environment factors as significant contributors to resident falls.**

	the use of sleeping pills with benzodiazepines	
Conclusions/Implications	**In clinical practice, patient safety is very important. Preventive measures should focus on risk factors associated with individuals, including their environment.**	**The study findings are currently being used to create a PEAFA tool to allow for a more comprehensive understanding of the specific contributors to these falls, to better predict and prevent repeat falls in nursing home settings.**
Strengths/Limitations	**The data collected were based on reported circumstances and not patient Bound. They did not know how many times each individual had fallen; They only knew the number of falls. These may affect the true number of falls in the facility. Hence, affecting the accuracy of the results.**	**A potential shortcoming of this study involves the possibility of bias result-ing from use of a nonprobability purposive sample, having only 3 participants in one of the groups, and the lack representation of night shift staff.**
Funding Source	**Grant from Stockholm County Council to Edit Fonad**	**None noted.**
Comments	**Addresses some of the causes of falls in nursing home as well as source of collecting data for falls.**	**Addresses environmental and personal causes of falls in the nursing home .**

Article/Journal	**Development of a fall prevention program for elderly Japanese people.** ***Nursing and Health Sciences***	**Hourly Rounding: A strategy to improve patient satisfaction Scores.** ***Medsurg Nursing***
Author/Year	**Kato, M., et al. (2008)**	**Ford, B. M (2010)**
Database/Keywords	**EBSCO/Reflection**	**EBSCO/Reflective Practice**
Research Design	**Action research methodology was chosen to complete the development of the program, which entailed quality care giving skills and increased motivation for fall prevention and a triangulation approach for evaluation.**	**Expert opinion paper.**
Level of Evidence	**Level V (Melnyk & Overholt, 2005)**	**Level VII (Melnyk & Overholt, 2005)**
Study Aim/Purpose	**The purpose of the study was to develop a fall prevention program adapted to the individual risks of elderly patients in a long-term care facility by increasing the caregiving skills and motivation of the staff members.**	**To determine if patient satisfaction including safety increases significantly As the new strategy (hourly rounding) is implemented.**
Population/Sample size Criteria/Power	**There were 54 beds in the intervention ward and 36 beds in the control ward. The candidates were elderly patients recruited from two wards in a long-term care facility**	**Baltimore Washington Medical Center. 51-patient sample included 29 Females (57%) and 22 males (43%). Patients ranged in age from 21 to 90, with the mean age 58. All patients were alert, oriented and able to communicate their needs to nursing staff, and received hourly rounding by one nurse.**
Methods/Study Appraisal Synthesis Methods	**The fall prevention program was created by synthesizing information based on evidence-based practice and action research methodology was chosen to complete the development of the program. The general**	**In the studer study, staff explained to patients they would be checking on them hourly to enhance their safety and address personal needs. Staff were taught to enter the patient room, identify themselves and tell the patients**

	-ized self-efficacy scale and the social support scale was used to evaluate fall prevention skills the motivation of the staff members.	**they were preset to their rounds. Before leaving the room, nurses addressed the four P's: pain, personal needs, positioning, and placement.**
Primary Outcome Measures/Results	**The significant outcomes were that the fall prevention program helped to reduce the number of injuries among the elderly participants and increased the emotional support and self-efficacy of the staff members. .**	**No falls were reported during the study period, possibly due to the higher frequency of patient contact.**
Conclusions/Implications	**The fall prevention program was shown to be acceptable for use among elderly individuals in a long-term care facility by increasing the care giving skills and motivation of the staff members .**	**On patient falls, hospitals that incorporate hourly rounding note positive improvements in patient safety; patient falls occur less frequently. No additional data were collected because of the brevity of the study. According to the researcher, when the study is completed, results are expected to be similar to the national findings. .**
Strengths/Limitations	**One of the strengths is that the number of falls and injuries were examined retrospectively for 6 months before the intervention period and prospectively during the 6 month intervention period on the same partipants in order to evaluate the effectiveness of the fall prevention Program.**	**The study was done with patients who were alert & oriented. As such, it might not be applicable or with good result for patients who are not alert & oriented. Also, the sample size might not be enough to arrive at a significant conclusion**
Funding Source	**Japan Society for the promotion of science**	**None Mentioned**
Comments	**The study highlights on the importance of changing the skill set of the Employees.**	**The article shades more light on the four P's which is a huge part of the rounding process.**

Article/Journal	**Round Bounty. *Marketing Health Services***	**The merry-go-round of patient rounding: Assure your patients get the brass Ring. *MEDSURG Nursing***
Author/Year	**Meade, C. (2007)**	**Kessler, B., Claude-Gutekunst, M., Donchez, A., Dries, R., & Snyder, M. (2012)**
Database/Keywords	**Copy provided by clinical mentor.**	**EBSCOhost**
Research Design	**Quasi experimental design.**	**Expert opinion paper.**
Level of Evidence	**Level III (Melnyk & Overholt, 2005)**	**Level VII (Melnyk & Overholt, 2005)**
Study Aim/Purpose	**Effects of nursing rounds on patients' call light use, satisfaction, and safety**	**To study whether the implementation of hourly patient rounding would have a positive impact on patient and staff satisfaction scores, and the nurse-sensitive clinical indicators of falls and nosocomial pressure ulcers.**
Population/Sample size Criteria/Power	**A total of 22 hospitals and 46 nursing units participated; however only 14 hospitals and 27 units data in the final analyses.**	**The study conducted in 14 U.S hospitals on 27 patient care units.**
Methods/Study Appraisal	**Every experimental unit had a corresponding control unit. There were two conditions in**	**The staff's first step was to perform a more in-depth assessment of patients desires. In designing the rounding**

Synthesis Methods	**each experimental unit; (1)baseline measurement that listed for two weeks and (2) either one-hour or two-hour rounding on patients, which lasted for four weeks.**	**protocol, council members believed that to most improve staff perception of unit teamwork, a process was necessary in which both registered nurses and technical partners equally shared responsibility. The staff met every 2 weeks for the first 2 months following implementation to discuss what was working well and what needed to be changed.**
Primary Outcome Measures/Results	**Decrease in falls of 50%. This means a total of $143,546 in savings. Falls cost a hospital an average of $11,042 per fall**	**The immediate qualitative results were positive. While the quantitative results, hourly rounding can promote patient and staff satisfaction as well as patient safety. Outcome data demonstrated sustained improvements compared to scores before rounding implementation.**
Conclusions/Implications	**The study's findings suggest that one-hour rounding positively affects patient and nursing staff member welfare. Considering the nursing shortage and the growing healthcare demands of the baby boomer generation, nursing units could use a rounding protocol to achieve improved efficiency.**	**As with any evidence-based practice change, the hourly rounding process must be studied. The 6 –year longevity of hourly rounds on 6T and the associated, sustained positive outcomes offer valuable contributions to the Literature.**
Strengths/Limitations	**The study had a quasi-experimental design, which doesn't guarantee equivalence between groups. All factors that each hospital considered when making decisions about assignments to control or one-hour and two hour is not known.**	**The strength of this study is the length of time (6 years) that an hourly patient rounding protocol has been executed on medical surgical unit within an acute care setting, all the while achieving and sustaining positive, defined outcomes.**
Funding Source	**None noted**	**None noted**
Comments	**Describes the importance of one hour rounding as it Positively influences patients and staff members .**	**Suggests the need for the use of champion in a facility when implementing the rounding program. Also it highlights ten key strategies to sustain hourly patient rounds.**

Article/Journal	**Hourly rounding with a purpose. *Iowa Nurse Reporter***	**A qualitative investigation of injurious falls in long-term care: Perspective of staff members. *Disability and Rehabilitation***
Author/Year	**Berg, K. (2011)**	**Williams, J. , et al.(2011)**
Database/Keywords	**EBSCO/Reflection**	**EBSCO/Reflection**
Research Design	**Longitudinal research design.**	**Qualitative review of the literature.**
Level of Evidence	**Level V (Melnyk & Overholt, 2005)**	**Level V (Melnyk & Overholt, 2005)**
Study Aim/Purpose	**To describe the results of a study, which**	**To identify obstacles for optimal falls**

	assessed the reason and Usage of the nurse call light for safety, prior to and after implem- enting hourly rounding. .	prevention and to elicit opinions of LTC staff about falls and fall prevention given least restraint policies
Population/Sample size Criteria/Power	The study setting was a 28 bed medical-surgical inpatient unit.	Does not review the databases used or articles reviewed beyond reference list. Narrative discussion.
Methods/Study Appraisal Synthesis Methods	To objectively determine efficiency and document the effects of hourly rounding, a specific tool was developed to document the ability to meet specific patient care needs. These were pain, toilet ing(potty), and positioning	Theory-driven conceptual exploration of the concept of curiosity. Research and studies from fields of cognitive psychology and education reveal common practices may inadvertently suppress curiosity.
Primary Outcome Measures/Results	Descriptive statistics were performed to determine the total call- light usuage before and after hourly-rounding (HR) was implemented. The results indicate that the range of call-lights decreased from 4-21.5 to 1-19 per day.	Curiosity related to inquisitiveness, reflection, and mindfulness. Some educational practices can suppress by confusing haste with efficiency, neglecting negative emotions, promoting overconfidence, and using teaching techniques that encourage passive learning. Introduces concept of how mindfulness and reflection are bridge between curiosity and higher cognitive skills. Problem solving, CT, and self-assessment.
Conclusions/Implications	The results of this study indicate that hourly rounding does decrease call-light usage. Hourly rounding also appears to increase patient satisfaction. Thus implementing this activity should be considered by healthcare facilities, as an evidence-based practice.	Curiosity and related habits of mind can be supported in education through specific evidence-based instructional approaches. Defines terms and how domain leads to reflective habits. Utilizes interprofessional literature to support discussion. Discusses how to nurture concepts in students. Provides example of how to use concepts in classroom.
Strengths/Limitations	Data were obtained for this study using one medical-surgical unit within a regional healthcare setting, located rurally, in a mid-western state. This healthcare setting limits applicability of these results to other inpatient units, healthcare settings, or other states.	Concise, seemingly thorough review of concepts that support authors premise. Limitation- application is only medical students, however, I believe concepts applicable to APN education, and do not take away from purpose/aim of review.
Funding Source	None noted	None
Comments	The study shows the significance of hourly rounding to patient care and satisfaction.	As an underliner, I underlined 90% of this article's content. I was awed by conciseness and introduction of concepts for educators to consider as well as student responses.

Article/Journal	**Connect for quality: protocol of a cluster randomized control-lized trial to improve fall prevention in nursing homes**	**Predict validity of a modified fall assessment tool in nursing homes: Experience from Slovenia**
Author/Year	**Anderson, R. (2012)**	**Jakovljevic, M. (2009)**
Database/Keywords	**EBSCO/Critical Thinking**	**EBSCO/Reflective Practice.**
Research Design	**Cluster randomized, blinded trial.**	**Expert opinion paper with reflective journal writing model.**
Level of Evidence	**Level V (Melnyk & Overholt, 2005)**	**Level VI (Melnyk & Overholt, 2005)**
Study Aim/Purpose	**To compare the impact of the CONNECT intervention, plus a falls reduction QI intervention, to the falls reduction QI inter-vention alone**	**To evaluate the predictive validity of the Modified Fall Assessment Tool (MFAT) in a nursing home setting.**
Population/Sample size Criteria/Power	**69 facilities in North Carolina that participate in Medicare and Medicaid. Eligibility criteria include: > 65 years of age .**	**The study involved 83 residents from a nursing home in Slovenia with an average age of 81 years.**
Methods/Study Appraisal Synthesis Methods	**A CONNECT intervention was used to foster systematic use of management practices, which we propose will enhance effect-iveness of a nursing home Falls QI program by strengthening the staff-to-staff interactions necessary for clinical problem-solving about complex problems such as falls.**	**The staff members were informed briefly about the fall registration and the importance of reporting all falls coming to their knowledge. They registered each fall by using an exist-ing fall report form, which was composed of resident data and fall data. .**
Primary Outcome Measures/Results	**Preliminary results from the study suggest that local interact-ion behaviors can be improved in ways that effectively enable the staff to adopt evidence-based current practice for fall prevention.**	**During the 12 weeks, 18 residents out of 83 (22%) suffered one fall, and only one fell twice. Therefore, the estimated proportion of residents with atleast one fall during the obser-vation period was 23%.**
Conclusions/Implications	**CONNECT is feasible, acceptable and appropriate. CONNECT is expected to maximize staff's ability to implement content learned in a falls QI program and integrate it into knowledge and action.**	**Good risk assessment tools with excellent predictive ability have to be specific to environments, residents, and staff. Prospective predictive validation is necessary in any nursing home before a risk assessment tool is adopted for routine use.**
Strengths/Limitations		**The residents who did not meet the inclusion criteria like bed ridden residents are still considered to be at risk for falls.**
Funding Source	**National Institutes of Health, National Institute of nursing Research.**	**None noted**
Comments	**Review on fall prevention strategies.**	**The study talks about the importance of**

		fall assessment as it relates to fall prevention.

Article/Journal	**Interventions to prevent falls in older adults: An Updated systematic preview. *AHRP***	**Effects of an intervention to increase bed alarm use to Prevent falls in hospitalized patients: a cluster Randomized trial. *Annals of Internal Medicine***
Author/Year	**Michael, Y. (2010)**	**Shorr, R. et al. (2012).**
Database/Keywords	**PubMed.gov**	**PubMed.gov**
Research Design	**Systematic Review.**	**Pair-matched, cluster randomized trial**
Level of Evidence	**Level V (Melnyk & Overholt, 2005)**	**Level III (Melnyk & Overholt, 2005)**
Study Aim/Purpose	**To assess the benefits and harms of interventions for reducing falls and improving health outcomes in older adults in primary care settings...**	**To investigate whether an intervention aimed at increasing bed alarm use decreases hospital falls and related events.**
Population/Sample size Criteria/Power	**47 intervention trials with a total of 23,980 Participants.**	**16 nursing units in an urban community hospital. 27,672 inpatients in general medical, surgical, and specialty units**
Methods/Study Appraisal Synthesis Methods	**Searched the Cochrane database, abstracts of review, Medline, health technology and NICH for systematic reviews. Data was abstracted into standardized evidence tables, with data abstraction checked by another investigator.**	**Pre-post difference in change in falls per 1000 patient-days (primary end point); number of patients who fell, fall-related injuries, and number of patients restrained (secondary end points) .**
Primary Outcome Measures/Results	**Vitamin D supplementation among participants with mean ages of 71-77 years showed significant reduced falls. Small single trials of medication management, protein supplementation, and behavioral counseling**	**Prevalence of alarm use was 64.41 days per 1000 Patient-days on control units (P=0.004). There was no difference in change in fall rates per 1000 patient-days or in the number of patients who fell, injurious fall**

	showed no benefit.	**rates, or the number of patients physically restrained on intervention units compared with control units.**
Conclusions/Implications	**There is strong evidence that several types of primary care applicable falls intervention reduce falls among those selected to be at higher risk for falling.**	**An intervention designed to increase bed alarm use in an urban hospital increased alarm use but had no Statistically or clinically.**
Strengths/Limitations	**The body of research is of fair quality and rarely reports important health outcomes, such as falls-related injuries**	**The study was conducted at a single site and was Slightly underpowered compared with the initial design.**
Funding Source	**None noted**	**National Institute on Aging**
Comments	**Suggestion that interventions work for patients Identified as high fall risk.**	**Beneficial information on the effect of bed in fall prevention.**
Article/Journal	**Beyond the 'tick and flick': facilitating best practice Falls prevention through an action research approach.** ***Journal of clinical nursing.***	**Falls and fall risk among nursing home residents.** ***Journal of clinical nursing***
Author/Year	**Lea, E. (2012).**	**Fonad, E.et al, (2008)**
Database/Keywords	**PubMed.gov**	**PubMed.gov**
Research Design	**Fall risk assessments were undertaken in the context of an action research project .**	**Expert opinion of authors.**
Level of Evidence	**Level VII (Melnyk & Overholt, 2005)**	**Level VII (Melnyk & Overholt, 2005)**
Study Aim/Purpose	**To examine residential aged care facility staff views on using fall risk assessment tools and the implications for developing falls prevention practices in the context of an action research project.**	**To identify risk factors for falls in older people living in nursing homes.**
Population/Sample size Criteria/Power	**178 residents from two residential aged care facilities.**	**Study was carried out of four years (2000-2003) and 21 nursing home units in Stockholm, Sweden participated**
Methods/Study Appraisal Synthesis Methods	**Twelve staff members from two residential aged care facilities (RACFs) in**	**A questionnaire was sent to staff nurses, including questions on fall risk assessments,**

	Tasmania formed a single Falls Action Research Group providing the study's qualitative data. During this time, the key group members assessed the residents using a new fall risk assessment tool (FROP-Resi)	**falls, fractures, medication and freedom-restricting measures, such as wheelchairs with belts and bed rails.**
Primary Outcome Measures/Results	**Group members perceived the process to be more meaningful and enjoyable for staff involved in the assessment process resulting in higher quality of assessments and leading to improved levels of falls awareness among staff, residents and family caregivers**	**There was a significant correlation between falls and Fractures, fall risk and use of wheelchairs and between the occurrence of fractures and the use of sleeping pills with benzodiazepines.**
Conclusions/Implications	**An action research process is useful for facilitating a new approach to falls risk assessments, engaging aged care facility staff with fall prevention and prompting improvements in falls prevention practices.**	**Preventive measures should focus on risk factors associated with individuals, including their environment.**
Strengths/Limitations	**It does not examine staff procedures and views related to conducting fall risk assessments.**	**Very good review, some new concepts. These author's opinions.**
Funding Source	**None noted**	**None noted**
Comments	**The study highlights on the importance of having a fall risk assessment for fall intervention**	**The study looks into fall risk of residents in nursing home.**

Article/Journal	**Interventions for preventing falls in older people in care facilities and hospitals.**	**Fall risk care processes in nursing home facilities. *Journal of American Medical Director Association***
Author/Year	**Cameron, I. (2012)**	**Wagner, L. M. (2011)**
Database/Keywords	**Cochrane database**	**PubMed.gov.**

	systematic review.	
Research Design	**Systematic review.**	**Observational cohort study**
Level of Evidence	**Level V (Melnyk & Overholt, 2005)**	**Level IV (Melnyk & Overholt, 2005)**
Study Aim/Purpose	**To assess the effectiveness of interventions designed to reduce falls by older people in care facilities and hospitals.**	**To explore the relationships between fall risk factors and care plan intervention and implementation**
Population/Sample size Criteria/Power	**60 trials (60,345 participants), 43 trials (30,373 part-icipants) in care facilities, and 17 (29,972 participants) in hospital.**	**Residents (n=635) of 8 nursing homes across Ontario, Canada.**
Methods/Study Appraisal Synthesis Methods	**Searched Cochrane library, MEDLINE, EMBASE,& CINAHL. Two review authors independently assessed risk of bias and extracted data. A rate ratio and 95% confidence to compare the rate of falls between intervention and control groups.**	**Chart reviews and observational rounds on nursing units were carried out to examine how well nursing staff identified fall risk, documented nursing care plan interventions, and implemented nursing care plan interventions in residents who had fallen in the preceding year.**
Primary Outcome Measures/Results	**Overall, there was no difference between intervention and control groups in rate of falls or risk of falling.**	**Of the 635 fallers, two thirds (65.9%) had a history of falls. A total of 94 fallers across the 8 facilities had no fall risk care plan included in their medical record, despite having fallen previously**
Conclusions/Implications	**There is evidence that multifactorial interventions reduce falls in hospitals but the evidence for risk of falling was inconclusive.**	**The study revealed significant breakdowns in care related to the lack of documented care plan interventions for residents with a history of falls, and lack of implementation in cases where care plan interventions were made.**
Strengths/Limitations	**Evidence for multifactorial interventions in care facilities suggests possible benefits, but this was in conclusive.**	**The study includes residents who have sustained a fall in the preceding year.**
Funding Source	**None noted.**	**None noted**
Comments	**Important to the PICO as it addresses the effectiveness of interventions like**	**The study discusses the importance of documenting intervention as well as following up with interventions.**

	rounding.	

Article/Journal	**Preventing of falls in nursing homes: subgroup Analyses of a randomized fall prevention trial**	**Implementation and evaluation of a nursing home fall management Program. *Journal of American Geriatric Society***
Author/Year	**Rapp, K. (2008)**	**Rask, K., et al. (2007)**
Database/Keywords	**PubMed.gov**	**PubMed.gov**
Research Design	**Secondary analysis of a cluster-randomized, control -led trial**	**A quality improvement project with data collection throughout FMP Implementation.**
Level of Evidence	**Level II (Melnyk & Overholt, 2005)**	**Level IV (Melnyk & Overholt, 2005)**
Study Aim/Purpose	**To evaluate the effectiveness of a multifactorial fall prevention program in prespecified subgroups of nursing home residents.**	**To evaluate the feasibility and effectiveness of a falls management Program (FMP) for nursing home.**
Population/Sample size Criteria/Power	**Six nursing homes in Germany. Seven hundred twenty-five long-stay residents; median age 86; 80% female.**	**All residents in 19 nursing homes in Georgia**
Methods/Study Appraisal Synthesis Methods	**Staff and resident education on fall prevention. Time to first fall and the number of falls. Falls were assess ed during the 12-month intervention period. Univariate regression analyses were performed, Including a confirmatory test of interaction**	**The FMP is a multifaceted quality improvement and culture change intervention. Process-of-care documentation using a detailed 24-item audit tool and fall and physical restraint use rates derived from quality improvement software currently used in all Georgia NHs (MyInnerView).**
Primary Outcome Measures/Results	**The intervention was more effective in people with cognitive impairment, than in those who were cognitively intact, in people with a prior history of falls than in those with no prior fall history.**	**Fall rates remained stable in the interventions NHs, whereas fall rates increased 26% in the NHs not implementing the FMP**
Conclusions/Implications	**The effectiveness of a multifactorial fall prevention program differed between subgroups of nursing home residents.**	**Implementation was associated with significantly improved care process documentation and a stable fall rate during a period of substantial reduction in use of physical restraints. In contrast, fall rates increased in NHs owned by the same organization that did not implement the FMP.**
Strengths/Limitations	**The number of participants was**	

	really adequate for The study.	
Funding Source	**None noted**	**None noted**
Comments	**The study reflects on the different groups in the Nursing home and how they could be affected by fall intervention.**	**The study highlights the system of implementation and evaluation of a fall management program like rounding program.**

Article/Journal	**The evaluation of a fall management program in a Nursing Home Population. *Gerontologist***	**Ensuring evidence-based practices for falls Prevention in a nursing home setting. *Journal of American Medical Director Association.***
Author/Year	**Burland, E. (2013)**	**Gama , Z., Medina-Mirapeix, F., & Saturno, P. (2011)**
Database/Keywords	**PubMed.gov**	**PubMed.gov**
Research Design	**Quasi-experimental, pre-post, comparison Group design**	**Internal quality improvement cycle**
Level of Evidence	**Level III (Melnyk & Overholt, 2005)**	**Level V (Melnyk & Overholt, 2005)**
Study Aim/Purpose	**To evaluate a nursing home fall management program to see if residents mobility and injurious falls decrease**	**To evaluate the effectiveness of an ad hoc multifaceted program to improve structure, professional behavior, and outcomes related to falls prevention**
Population/Sample size Criteria/Power	**2 rural health regions in Manitoba, Canada from June 1, 2003 to March 31, 2008**	**Nursing home in Spain with 130 residents.**
Methods/Study Appraisal Synthesis Methods	**Administrative health care use and fall occurrence report data were analyzed. Data collectors entered occurrence report inform-ation into spreadsheets.**	**Quality of falls prevention was assessed using reliable evidence-based criteria, at baseline and 6 months after a specific intervention to improve.**
Primary Outcome Measures/Results	**The program appeared to have benefitted residents-fall trended upward, injurious falls**	**Baseline structure and fall prevention practices were poor. After the intervention, all structure criteria were**

	remained stable, and hospitalized falls decreased significantly.	**present and 8 of 9 process criteria improved significantly. 32 falls occurred 6 months before and 21 after the intervention started, showing a significant decrease in the fortnightly incidence.**
Conclusions/Implications	**This research provides some support for the benefits of being proactive and implementing injury prevention strategies universally and pre-emptively before a resident falls, helping to minimize injuries while keeping residents mobile and active.**	**Adherence to evidence-based recommendations was poor in our setting, but the internal quality improvement cycle was useful in ensuring safe practices and in achieving better outcomes.**
Strengths/Limitations	**This is a small scale research. As such, a large scale research is needed to identify the true effectiveness of the Fall Management program and generalizability of results.**	**The study did not show professional behavior of staff Before the ad hoc multifaceted program. Only talks About the professional behavior after the intervention.**
Funding Source	**None noted**	**None noted**
Comments	**Highlights the evaluation of a fall management Program like the rounding program.**	**The study shows the behavior of professionals with regards to fall prevention program .**

Article/Journal	**Effects of nursing rounds: on patients call light use, Satisfaction, and safety. *The American Journal of Nursing***	**Hourly rounding implementation: a multisite Description of structures, processes, and outcomes. *Journal of Nursing Administration.***
Author/Year	**Meade, C., Bursell, A., & Ketelsen, L. (2006)**	**Rondinelli, J., et al. (2012)**
Database/Keywords	**PubMed.gov**	**PubMed.gov**
Research Design	**Quasi-experimental**	**Action research design**

	nonequivalent groups design	
Level of Evidence	**Level 111(Melnyk & Overholt, 2005)**	**Level V (Melnyk & Overholt, 2005)**
Study Aim/Purpose	**To determine the frequency of and reasons for patients call light use, the effects of one-hour and two-hour nursing rounds on patients use of the call light, as well as patient safety as measured by the rate of patient falls.**	**To identify structures, processes, and outcomes Associated with hourly nurse rounding**
Population/Sample size Criteria/Power	**27 nursing units in 14 hospitals.**	**11 Southern California hospitals**
Methods/Study Appraisal Synthesis Methods	**A six-week nationwide study was performed using a quasi-experimental nonequivalent groups design. Analyses were performed on data from the units in the hospitals in which members of the nursing staff performed rounds either at one hour or two-hour intervals using a specified protocol.**	**Using an action research design, project leads implementing hourly rounding at 11 Southern California hospitals agreed to recorded telephone interviews. Transcribed interviews underwent content analysis.**
Primary Outcome Measures/Results	**Specific nursing actions performed at set intervals were associated with statistically significant reduced patient use of the call light overall, as well as a reduction of patient falls and increased patient satisfaction.**	**Analysis revealed 15 major themes. Patient Satisfaction and patient perception of being well cared for are 2 common outcome themes.**
Conclusions/Implications	**A protocol that incorporates specific actions into nursing rounds conducted either hourly or once every two hours can reduce the frequency of patients call light use, increase their satisfaction with nursing care, and reduce falls.**	**The study provided evidence that frequent reevaluation of structures and processes promote achievement of desired outcomes in relation to hourly rounding.**
Strengths/Limitations	**The study does not show whether the changes are due to hourly rounds or two hourly.**	**The study did not specify how the people they where interviewed were selected.**
Funding Source	**None noted**	**None noted**
Comments	**The study highlights on the importance of nursing**	**The study discusses the process, structure and**

	Rounds with regards to safety.	**outcomes of hourly rounding which is project intervention**

Article/Journal	**Falls prevention for the elderly. *GMS Health Technological Assessment***	**Development and alarm threshold evaluation of A side rail integrated sensor technology for the Prevention of falls. *Int J Med Inform*.**
Author/Year	**Balzer, K., et al. (2012)**	**Hilbe, J., Schulc, E., Linder, B., & Them, C. (2010)**
Database/Keywords	**PubMed.gov**	**PubMed.gov.**
Research Design	**Sytematic Review**	**Experimental study**
Level of Evidence	**Level V (Melnyk & Overholt, 2005)**	**Level II (Melnyk & Overholt, 2005)**
Study Aim/Purpose	**It seeks to address the effectiveness of single interventions and complex programmes for the prevention of falls and fall-related injuries.**	**To present the research and development process of the integrated, universally applicable Bucinator Bed-exit-alarm system.**
Population/Sample size Criteria/Power	**31 databases covering the publication period from January 2003 to January 2010. The target population are the elderly (>60 years)**	**Add**
Methods/Study Appraisal Synthesis Methods	**Systematic literature searches. Study selection and critical appraisal were conducted by two independ ent assessors.**	**An experimental study was carried out to collect data regarding preliminary sensitivity and specificity for alarm set-off.**
Primary Outcome Measures/Results	**It appears that the performance of tests or the application of parameters to identify individuals at risk of falling yields little or no clinically relevant information.**	**Both the preliminary sensitivity (96.0%) and the specificity (>or=95.5%) of the trigger level indicate a satisfactory alarm/false alarm ratio which is now to be evaluated in a clinical trial.**
Conclusions/Implications	**The assessment of clinical effectiveness of interventions for fall prevention is**	**After experimental testing, Bucinator shows great Potential to be a reliable bed-exit**

	complicated by inherent methodological problems and meaningful clinical heterogeneity of available studies	**alarm system. In general, bed-exit alarm systems with extended features could play a major role in ambient assisted living technologies.**
Strengths/Limitations		**Besides the theoretical evaluation, it will be imperative to perform more tests and to gather more data about the effect on fall rates and resulting injuries**
Funding Source	**None noted**	**None noted**
Comments	**The study talks on the prevention of falls in the Elderly.**	

Appendix B

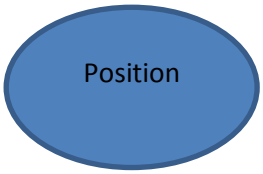
Evidence of CITI Modules Completion

Required Modules	Date Completed	
Introduction	11/23/12	no quiz
History and Ethical Principles - SBR	11/24/12	5/5 (100%)
The Regulations and The Social and Behavioral Sciences - SBR	11/23/12	4/5 (80%)
Assessing Risk in Social and Behavioral Sciences - SBR	11/23/12	4/5 (80%)
Informed Consent - SBR	11/24/12	4/5 (80%)
Privacy and Confidentiality - SBR	11/24/12	5/5 (100%)
Regis University	11/24/12	no quiz

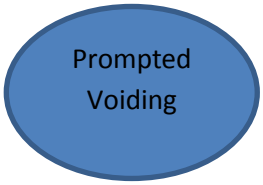
Appendix C

THE 4 Ps

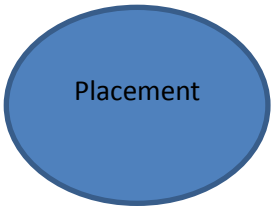
How is your pain?



Are you Comfortable?



Do you need to use the bathroom?



Do you need us to move the phone, call light, trash can, water pitcher, or the over-bed table within reach?

Appendix D

HOURLY ROUNDING- DOCUMENTATION LOG

Purpose: This log is used for the staff to document hourly rounds. The logs are collected at the end of 24 hours and given to the nurse/ unit manager .
Staff should report rounding results to the charge nurse.

Date:_____ Room #_____ Bed #_____

Day: _____M _____T _____W _____Th _____F _____Sat _____Sun_____

TIME PERIOD	STAFF INITIAL	Sun	Mon	Tues	Weds	Thurs	Fri	Sat
12AM								
1AM								
2AM								
3AM								
4AM								
5AM								
6AM								
7AM								
8AM								
9AM								
10AM								
11AM								
12PM								
1PM								
2PM								
3PM								
4PM								
5PM								
6PM								
7PM								
8PM								
9PM								
10PM								
11PM								

Appendix E

Time frame

1. Work Planning	Project proposal	Fall 2013
	Project management tools: milestones, timeline, budget	Fall 2013
2. Planning for Evaluation	Develop evaluation plan	Fall 2013
	Logic model development	Fall 2013
3. Implementation	IRB approval (site and Regis)	Fall 2013
	Threats and barriers	Fall 2013
	Monitoring/ implementation phase	Spring 2014
	Project closure	Spring 2014
4. Giving Meaning to the Data	Qualitative data/Quantitative data analysis	Spring 2014
5. Utilizing and Reporting Results	Written dissemination	Spring 2016
	Oral dissemination	Spring 2016

Appendix F

December 2, 2013

Regis University Institutional Review Board

Denver, Colorado

To Whom It May Concern:

Obinna Ogundu is a Regis University Doctoral candidate conducting research and education at Medford Rehabilitation and Nursing Center in Medford Massachusetts. Medford Rehabilitation and Nursing Center is a skilled nursing facility caring for 100 residents. We do not have an institutional Review Board.

This letter serves as approval for Obinna Ogundu to conduct training and research with residents at Medford Rehabilitation and Nursing Center. He will conduct educational interventions and programs for the residents.

Sincerely,

Donna Cecchini, RN, DNS

Director of Nursing

Medford Rehabilitation and Nursing Center.

300 WINTHROP STREET, MEDFORD, MA 02155 | TEL 781-396-4400 | FAX 781-396-8348

Appendix G

B. Informed

consent

documents: Text:

HOURLY ROUNDING STUDY INFORMATION SHEET

The purpose of the hourly rounding intervention using the 4 P's is to reduce the incidence of falls among the patients in the nursing home. The hourly rounding will involve the assessment or checking of the patients for pain, prompted voiding, positioning and placement of belongings. The hourly rounding intervention involves educational intervention for the nursing staff. Also, the hourly rounding intervention could improve the quality of care for the patients by meeting their needs in a timely fashion.

CONTACT INFORMATION

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Appendix H

REGIS UNIVERSITY

Academic Grants

3333 Regis Boulevard, H-4
Denver, Colorado 80221-1099

303-458-4206
303-964-5528 FAX
www.regis.edu

IRB – REGIS UNIVERSITY

May 19, 2014

Obinna Ogundu
120 Arlington Street
Hyde Park, MA 02136

RE: IRB #: 14-193

Dear Mr. Ogundu:

Your application to the Regis IRB for your project, "Fall Reduction among Elderly Residents in a Skilled Nursing Facility," was approved as an exempt study on May 17, 2014. This study was approved per exempt study category of research 45CFR46.101.b(#2).

The designation of "exempt" means no further IRB review of this project, as it is currently designed, is needed.

If changes are made in the research plan that significantly alter the involvement of human subjects from that which was approved in the named application, the new research plan must be resubmitted to the Regis IRB for approval.

Sincerely,

Patsy Cullen

Patsy McGuire Cullen, PhD, PNP-BC
Chair, Institutional Review Board
Professor & Director
Doctor of Nursing Practice & Nurse Practitioner Programs
Loretto Heights School of Nursing
Regis University

cc: Dr. Alma Jackson

A JESUIT UNIVERSITY

References

Blakely, D., Kroth, M., & Gregson, J. (2011). The impact of nursing rounding on patient satisfaction in a medical surgical hospital unit. *Medsurg Nursing 20(6*), 327-332. Retrieved from http://web.a.ebscohost.com.dml.regis.edu/ehost/pdfviewer/pdfviewer?sid=3caf0266-e0e9-4d96-ad18-378bf0881d2c%40sessionmgr4001&vid=12&hid=4109

Capezuti, E., Brush, B., Lane, S., Rabinowitz., & Secic, M. (2009). Bed-exit alarm effectiveness. *Archives of Gerontology and Geriatrics 49(1*), 27-31. Retrieved from http://www.ncbi.nlm.nih.gov/pmc/articles/PMC2744312/

Center for disease control and prevention (2015). *Costs of falls among adults.* Retrieved from http://www.cdc.gov/homeandrecreationalsafety/falls/fallcost.html

Center for disease control and prevention (2013). *Falls among older adults: An overview*. Retrieved from http://www.cdc.gov/homeandrecreationalsafety/falls/adultfalls.html

Center for disease control and prevention (2012). *Falls in nursing home*. Retrieved from http://www.cdc.gov/HomeandRecreationalSafety/Falls/nursing.html

Chow, S., Lai, C., Wong, T., Suen, L., Kong, S., Chan, C., & Wong, I. (2007). Evaluation of the Morse fall scale: Applicability in Chinese hospital populations. *International journal of nursing studies 44* (2007) 556- 565. Retrieved from http://ac.els-cdn.com.dml.regis.edu/S0020748905002610/1-s2.0-S0020748905002610-

main.pdf?_tid=08487a9a-c584-11e5-b52d-00000aab0f6c&acdnat=1453960837_c866f031bd99857fbdeac4715646a102

Christenbery, T. (2011*). Building a schematic model: A blueprint for DNP students. Nurse Educator*. *36*(6) 250-255**.** Retrieved from http://www.ncbi.nlm.nih.gov/pubmed/22024678

Ford, B. M. (2010). Hourly rounding: Challenges with implementation of an evidence-based process. *Journal of nursing care quality 27* (1) 13-19. Retrieved from http://www.nursingcenter.com/journalarticle?Article_ID=1265838

Fortenberry, J. L. (2010). *Health care marketing tools and techniques*. Sudbury, MA: Jones and Bartlett publishers

Kessler, B., at el, (2012). The merry-go-round of patient rounding: assure your patients get the brass ring. *Medsurg Nurs 21* (4), 240 – 245. Retrieved from http://web.a.ebscohost.com.dml.regis.edu/ehost/pdfviewer/pdfviewer?sid=3caf0266-e0e9-4d96-ad18-378bf0881d2c%40sessionmgr4001&vid=35&hid=4109

Kim, K., Kim, J., Choi, Y., Kim, J., Park., & Kim, H. (2011). A comparative study on the validity of fall risk assessment scales in Korean hospitals. *Asian Nursing Research 5* (1) 28-37. Retrieved from http://www.kan.or.kr/new/kor/sub3/filedata_anr/201101/28.pdf

MASSPRO (2006). Nursing home alarm elimination program: It's possible to reduce falls by eliminating resident's alarm. Retrieved from http://www.masspro.org/HS/HC/docs/casestudies/elimalarmsrehab.pdf

Meade, C. (2007). Round bounty. *Marketing health services 27* (1) 23-27. Retrieved from http://web.a.ebscohost.com.dml.regis.edu/ehost/pdfviewer/pdfviewer?sid=3caf0266-e0e9-4d96-ad18-378bf0881d2c%40sessionmgr4001&vid=32&hid=4109

Meade, C., Bursell, A., & Ketelsen, L. (2006). Effects of nursing rounds: on patients call light use, satisfaction, and safety. *The American journal of nursing 106* (9), 58 -70. Retrieved from

Melynk, B. (2007). The latest evidence on hourly rounding and rapid response teams in decreasing adverse events in hospitals. *Medsurg Nursing*. Retrieved from

Nientimp, D. & Peterson, E. (2012). Hourly rounds & patient falls. *Advance healthcare network for nurses*. Retrieved from http://nursing.advanceweb.com/Features/Articles/Hourly-Rounds-Patient-Falls.aspx

Olrich, Kalman & Nigolian (2012). Hourly Rounding: A replication study. Medsurg Nursing 21 (1), 23-26. Retrieved from http://web.a.ebscohost.com.dml.regis.edu/ehost/pdfviewer/pdfviewer?sid=3caf0266-e0e9-4d96-ad18-378bf0881d2c%40sessionmgr4001&vid=5&hid=4109

Parker, M. E., & Smith, M. C. (2010). *Nursing theories & nursing practice.* Philadelphia, PA: F. A. Davis Company.

Polit, D. F., & Beck, C. T. (2008). *Nursing research: Generating and assessing evidence for nursing practice*. Philadelphia, PA: Lippincott Williams & Wilkins.

Rondinelli, J., et al. (2012). Hourly rounding implementation: a multisite description of structures, processes, and outcomes. Journal of nursing administration 42 (6), 326-332

Terry, A. J. (2012). *Clinical research for the doctor of nursing practice*. Sudbury, MA: Jones & Bartlett Learning.

Tucker, S. et al (2012). Outcomes and challenges in implementing Hourly rounds to reduce falls in orthopedic units. *Worldviews Evidenced Based Nursing 9* (1), 18- 29. Retrieved from http://web.a.ebscohost.com.dml.regis.edu/ehost/pdfviewer/pdfviewer?sid=3caf0266-e0e9-4d96-ad18-378bf0881d2c%40sessionmgr4001&vid=18&hid=4109

Zaccagnini, M. E., & White, K. W. (2011). *The doctor of nursing practice essentials: A new model for advanced practice nursing*. Sudbury, MA: Jones and Bartlett Publishers.