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Evidence Based Falls Management Program in the Nursing Home

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Capstone Project

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Introduction and Significance

In 2010, approximately 2.3 million older adults were treated in emergency departments and more than 662,000 of these individuals were hospitalized (Falls, 2013). Among older adults, falls are the leading cause of both fatal and nonfatal injuries (WISQARS, 2013). According to the Centers for Disease Control and Prevention (CDC), 20% of deaths related to falls occurred in residents who live in nursing homes (Falls, 2013). Typically, nursing homes are occupied by residents 65 years and older who are admitted because they no longer have the ability to live independently and manage tasks such as taking medications, overseeing households, and managing finances. However, nursing homes also care for patients who are not permanent residents but are in need of medical services that include post-operative care, rehabilitative therapy, or intravenous therapy. Risk factors that affect mobility after knee, hip or other surgeries and generalized weakness from hospitalizations or other medical conditions, make this population vulnerable to falls.

The cost of fall injuries for both nursing homes and patients can be staggering. Facilities can incur large financial penalties following notices of severe deficiencies from regulatory agencies and will incur substantial legal fees in the event of a wrongful injury or death lawsuit. In addition, legal costs can range from $100,000 to $1 million dollars and juries have awarded judgments of thousands to millions of dollars to plaintiffs (Nursing Homes, 2010).

Patients injured in falls are at risk of increased financial costs for care in the nursing home as well as a lower quality of life. They are likely to incur co-pay or coinsurance costs for care by physicians and other professional services, and costs for rehabilitative services, out of pocket expenses, medical equipment, prescription drugs, and hospitalization fees. They are at

risk for symptoms of depression, fractures, and need for increased pain medications; some may develop a fear of standing (Jorgensen, 2011).

Not all risk factors for falls and fall related injuries in the elderly can be changed. However, there are risk factors that can be modified. Evidence based fall prevention programs that include individualized interventions and the participation of all nursing home staff are needed to effect these changes and reduce falls.

Purpose

The purpose of this project was to implement a comprehensive evidence based falls management program in a nursing home. Information gained from a Needs Assessment conducted during the summer of 2013 was used in the development of interventions.

Literature Review

Rate of Falls and Related Costs

Consistently, the literature show that falls and fall related injuries can result in morbidity and mortality (Curtain, 2013; Falls, 2010; Falls, 2010; WHO, 2007). In 2010 approximately 21,700 older adults died from unintentional injuries such as falls (Falls, 2010). The fall fatality rate for people age 65 and older is 36.8 per 100,000 in the United States (WHO, 2007). Most falls result in an injury of some type, usually minor soft-tissue injuries, such as bruises and scrapes. However, 10-15% result in a fracture or other serious injury which increases morbidity and mortality (Curtain, 2013). In addition, the number of individuals affected is expected to continue to rise as the population ages (Quigley, Campbell, Olney, Buerhaus, & Needleman, 2012). Falls occur more frequently in the elderly and continue to be prevalent among nursing home residents with up to 40% of nursing home admissions related to falls (Merck, 2006). According to the CDC, in 2010 there were 2.3 million injuries related to falls in the United States

(Falls, 2013). In 2011, the number of unintentional injury deaths caused by falls was 21,649 (WISQARS, 2011). Direct medical costs of falls were estimated to be approximately $30 billion in the United States (Older Adult Falls, 2010). For an elderly individual who sustains injuries from a fall, the approximate costs of skilled care in a nursing home can range from $4,200 to $5,400 per month. This does not include additional expenses such as transportation to and from appointments with specialists or co-insurance costs.

Quality of Life

The consequences of falls affect the physical health and psychosocial wellbeing of elderly nursing home residents. Residents may develop a fear of falling that causes a loss of confidence in the ability to stand or move about (Cattan, Hughes, Giuntoli, Kime, & Fylan 2010). This fear can lead to a cascade of problems. Once residents become afraid of falling, they may suffer a further loss of independence, social isolation, and depression (Falls, 2013).

Existing dementia in residents can be exacerbated after a fall (Traumatic Brain Injury, 2013). Cognitively impaired residents who are unable to communicate their fears may become agitated in transfer activities, which may cause another fall (Delbaere, Clise, Brodaty, Lord, & Perminder, 2010). In a cohort study of 500 elderly, Delbaere et al. (2010) found that perceived risk of falling caused increased anxiety even when the physiological risk of falling was low.

Family

While it is clear that falls and loss of mobility have a negative impact on the elderly, the literature also shows there is an effect on families. For example, family members may have to decide to seek extended care of their loved one who has lost mobility, resulting in denial, anger and depression as a caregiver makes this difficult decision (Grundy & Henretta, 2006). Further, after the elderly family member is admitted to a nursing home, the caregiver may also experience

depression and higher anxiety despite being relieved of round-the-clock care. Friedeman, Maiberger, and Smith (1997) found the use of anti-anxiety medications among family members increased significantly from 14.6% to 19% following placement of their loved one in a nursing home.

Causes of Falls

Causes of falls are considered to be multifactorial. Medications alone can cause weakness, confusion, and the ability to react to potential barriers. In addition, chronic and acute diseases, environmental factors, gait problems, muscle weakness, and other idiopathic phenomena are also potential causes of falls (Gray-Miceli, Johnson, & Strumpf, 2005;CDC, 2013).

Balance and Gait Abnormalities. Lord and Sturnieks (2005) report consistent findings in their literature review suggesting lower limb muscle weakness as an important risk factor for falls. Rubenstein and Josephson (2006) found balance and gait disorders to be major causes of falls and predicted the risk of future falls more consistently than other identified risk factors. Therefore, evaluation of gait and balance is an essential step in identifying persons at increased risk of falling.

Crocker et al. (2012) proposed that physical rehabilitation may be effective in addressing muscle weakness and resulting falls. However, the effects of reducing muscle weakness were small and not applicable for all residents due to the effects of their various medical conditions as well as physical and cognitive disabilities. Researchers also examined exercise programs as an intervention in reducing the fear of falling. In a randomized control study, Gusi et al. (2012) found that after 12 weeks in an exercise program, the elderly participants significantly reduced their fear of falling. Crocker et al. (2010) conducted exercise programs in seven nursing homes

and found a consistent decrease in fall rates among participants in an exercise program, although the amount of decline was not significant.

Vitamin D. Supplementation with vitamin D has been examined for its role as an intervention to reduce leg weakness and falls. In a systematic review of 41 trials, Cameron et al. (2010) found that the use of vitamin D supplementation significantly reduced fall rates. Bischoff-Ferrari (2009) found in eight randomized control studies of 2,426 elderly, the use of 700-1000 IU's a day of vitamin D reduced the risk of falling among elderly by 19%. Nursing home residents, particularly females, have been found to be vitamin D deficient according to Pitz et al. (2011) in a study of 961 participants. The cohort study showed 93% of the females were deficient, placing them at risk for decreased muscle and bone strength which could contribute to falls.

External factors. According to the CDC (2013), environmental hazards in nursing homes cause 16% to 27% of falls. Facility flooring, lighting, bed heights, placement of furniture, tripping over wheelchair foot pedals, and the everyday movement of staff are factors that can cause a resident to fall. In a review of randomized controlled trials, Cameron et al. (2010) found carpet flooring significantly increased the risk of falling versus vinyl flooring. Assistive devices, malfunctioning alarms, unanswered call lights, cluttered areas, seating or positioning problems, and an unfamiliar environment have all been identified as risk factors (Bonner, 2006). Further, a resident's diminished ability to avoid these types of external factors is a contributing factor in the risk of falling (Hill & Osborne, 2007).

Chronic and acute diseases. Literature supports the association of multiple diseases and their physical effects as risk factors for falls. However, there is no single condition or disease that places an individual at unique risk. Intrinsic factors such as arrhythmias, peripheral vascular

disease, obstructive pulmonary disease, incontinence, cognitive impairment, and neurological disorders contribute to falls (Damian et al., 2013). In a review of 16 studies Nyberg, Gustafson and Lundin-Olsson (2003) found that weakness, postural hypotension, and cognitive impairment were significant fall risk factors.

Medications. Elderly residents with more than one health condition and who require several classes of drugs for management are at an increased risk of side effects or drug interactions which can alter cognition or alertness and result in falls. As an example, Baranzini et al. (2009) found the use of seven or more drugs with an antiarrhythmic or antiparkinson medication as part of the regimen was related to falls with injury. Polypharmacy in the elderly, defined as the administration of more medicines than clinically indicated, can also occur and has been found to be a significant risk factor in subsequent falls (Ziere et al., 2005).

Certain classes of drugs place the elderly at unique risk. Psychotropic drugs are medications capable of affecting the mind, emotions, or behaviour (Abrams & Pennington, 2005) and can significantly increase the risks of falls (Bloch, Thibaud, Dugue, Rigaud, & Kemowon, 2011). Researchers in a year-long study of 851 residents, found individuals at risk for falls 2 to 3 days after a change in medications that affected the nervous system, such as a psychotropic medication (Echt, Samelson, Hannan, Dufour, & Berry, 2013). Woolcott et al. (2009), in a systematic review of 21 studies, showed an increased likelihood of falling associated with antipsychotics, benzodiazepines, and sedatives (Woolcott et al., 2009).

Berry et al. (2011) found this same effect in a study of 1,181 nursing home residents in which the use of antidepressants correlated with falls in the days following a new prescription. The maximum effect of falling occurred within two days of the change in a non-SSRI

medication. These findings point to the importance of close monitoring following any change in these medications.

Falls Management Interventions

A need exists to identify residents who are at risk for falls. Hospitals that use intentional rounding have shown that fall rates can be reduced by as much as 60% (Prevention of Falls, 2012). During rounding, staff are able to address the needs of patients, such as repositioning, toileting and making items more accessible in order to prevent residents from risking falls while attempting to retrieve articles. Nursing homes have implemented programs such as 'Falling Stars' or 'Falling Leaves' to identify residents at risk for falling. These programs use stars or leaves on the doors or wheelchairs of the residents to identify those who are a fall risk. This intervention can cue staff to pay close attention to what the resident is doing in order to intervene and assist should the resident attempt to get up and walk. Falling Stars/Leaves have been used as early as 1997 and have shown a 19% reduction in falls (Ray, Taylor, & Meador, 1997).

Although assessment tools are important in addressing risk factors which can lead to the underlying cause of falls, interventions must be developed to correspond with these risk factors. When plans of care are targeted to potential causes, individualized interventions can be identified (Gray-Miceli & Quigley, 2012). Hendrich (2013) believes that post-fall assessments are equally as important as pre-fall assessments. Post-fall assessments of patients using evidence based guidelines can help staff create individualized plans and interventions to prevent future falls (Moreland, Richardson, & Goldsmith, 2004).

Multidisciplinary and multi-interventional approaches can decrease falls. Falls are challenging, but a thorough assessment of risk factors and interventions to address each factor, along with education and involvement of all staff, can contribute to reducing falls of nursing

home residents. As an example, a 12 month trial involving 518 patients in a psychogeriatric ward found that a multifactorial fall prevention program could reduce falls significantly (Neyens et al., 2009). This approach was also successful in reducing falls in four facilities in Ontario that incorporated staff education, communication, identification of fall risk, and interventions (Wagner, Damianakis, Mafrici, & Robinson-Holt, 2010).

A program called CONNECT was developed to increase communication by helping staff identify and bridge communication gaps to realize and appreciate the importance of sharing information across disciplines, and use strategies that foster stronger connections with co-workers to decrease falls (Colon-Emeric, 2012). CONNECT uses storytelling and role playing in the context of falls. This allows discussion between different disciplines and promotes understanding of how each can contribute to falls reduction (Anderson et al., 2012). In a study of CONNECT at eight nursing homes in Virginia and North Carolina, the number of falls decreased by 12% (CONNECTING, 2013).

Communication between all disciplines has been found to be lacking in facility falls programs (Phillips et al., 2008). Post-fall assessment programs have been proposed as a means of including all stakeholders in the causal analysis (Dykes et al., 2009). Researchers at the James A. Haley Veteran's Hospital in Tampa Florida designed a tool called 'Post Fall Huddles' to involve all staff in identifying the root cause of falls. Although these tools have been used primarily in hospitals, the concept of identifying the root causes of falls is also applicable in nursing home settings because many causes of falls are the same.

Clearly, managing falls will take more than assessments. Communication between every staff member involved is necessary. Interventions need to be adapted to the needs and unique requirements of each facility. In summary, successful evidence based falls interventions include

education, communication, identification of high fall risk residents, and interventions that address risk factors.

Theoretical Framework

Lewin's change theory (Change Theory, 2011) was chosen for use in the nursing home. The process includes the stages of unfreezing stage, change, and refreezing. In the unfreezing stage, factors that resist change are called restraining forces, and positive forces that can drive change must be identified. Lewin points out that organizations must recognize these different forces and then strive to strengthen the positive forces in order to facilitate change. It is also important in this stage that people feel supported as they go through the idea of changing. The change stage is also called the movement process which requires staff to change the way they think, feel, and behave in regards to the process undergoing change. In this stage staff begin to feel more liberated and can become more productive. The final stage is refreezing, in which changes made become the new and consistent habit. The continued support of staff must be maintained in order for them to be comfortable with evaluating the change and making any further adjustments. If this stage is not accomplished, the change will not be sustained. Lewin's theory promotes acceptance from staff by involving them in all aspects of the planning and implementation. In using this theory for residents living in nursing homes, staff must be aware that there are changes in practices that must be made to increase the safety of residents.

In the nursing home used as the site for this study, new practices are frequently sent down from the corporate office to the facility without input from facility staff. This practice often leads to emotional changes in the staff such as frustration, anger and confusion. This does not empower staff to own change nor does it sustain practice change. Identified in a Needs Assessment conducted during the summer of 2013, was a feeling of uncertainty among staff

regarding administration's expectations of them in efforts to prevent residents' falls. Also identified was the perception that nursing assistants and supporting staff did not feel they were an important part of the falls program. In order to obtain positive change, it is important that administration talk with staff and find out how they view current practices in dealing with falls.

In applying Lewin's theory to the nursing home, the first stage of unfreezing involved identifying ways for administration and staff to let go of old patterns and behavior. The existing falls program in the facility needed to be modified to strengthen specific components. A multi-disciplinary approach was used as part of the falls prevention program to ensure its success. This type of approach was needed to ensure that all disciplines were represented and their ideas were included, which is important in changing old patterns. During the change stage, staff were allowed to express their ideas and were supported by all those involved. Change is not sustainable if staff do not feel supported. To gain ownership of change, Lewin (2013) notes that staff must feel they have value and believe that others see their value. In doing this, every staff member will feel capable of being a part of the program and will acquire ownership.

In the refreezing stage the process involves changing the new habit in order for it to become permanent. Lewin noted that the goal of refreezing was to make the change the 'standard operating procedure'. In the Needs Assessment, it was found that although staff completed the incident reports most interventions did not address the risk factors and a gap remained in identification of the root cause of the fall. Also, interventions were not individualized, but rather the interventions used were the same regardless of the various reasons identified. The assessment was reviewed and education of appropriate interventions that addressed the risk factors was done in this stage.

Staff are required to answer the questions on a Falls Risk Screen on admission with every resident. Educating staff to understand the importance of addressing the risk factors and identification of the root cause increased staff understanding of how important their role was in reducing falls. The challenge of getting all staff actively involved in the falls program was an approach that was critical in implementing positive changes that would last.

Needs Assessment

The Nurse Practitioner Project Leader initially met with administrative staff at North Hardin Health & Rehabilitation Center (NHHRC) to determine areas recognized as needing improvement and which could benefit from implementation of evidence based practice changes. The need to reduce falls was identified as a major concern within the facility. The facility agreed to participate in a falls reduction program. In order to determine appropriate interventions for this facility, current practices were examined. A Needs Assessment was conducted during the summer of 2013 to examine the most recent data reported on falls. Current processes for falls prevention, staff perceptions, and identification of residents at risk for falls were reviewed. Review of the falls risk factors was compared with staff interventions. The following section presents findings from the Needs Assessment.

Falls Data

Occurrences, injuries, shifts. During the six month period from December 2012 to June 2013 there were 290 falls in this facility which had an average daily census of 130. There were two residents who sustained fractured hips. Other injuries reported were bruises and skin tears. In reviewing the incident reports, 50% of the falls occurred during the hours of 7 a.m. to 3 p.m. when there are many staff members working including support staff who regularly walk through the hallways. Thirty percent of falls occurred on the 3 p.m. to 11 p.m. shift when there is a

reduction in nursing and support staff. Falls occurred around the evening mealtime and before 10 p.m. The remaining 20% percent of falls occurred on the 11 p.m. to 7 a.m. shift which is also a period of reduced staffing. The majority of falls on this shift occurred between 1 a.m. and 3 a.m.

Location. Nearly 60% of the falls occurred in the residents' rooms for various reasons. Some of the falls occurred while the resident was bending over or reaching for something and other falls occurred due to the resident rolling off the bed. The remaining falls occurred in the hallways or activity room where residents are typically not in sight of staff. Less than 3% were 'near' falls which involved staff lowering the resident to the floor.

Reasons for falls and interventions. Reasons given for 60% of the falls were related to getting to or from the bathroom or wanting to get out of the bed or chair. The remaining 40% of the incident reports indicated possible causes of the fall but many did not explain exactly what the resident was doing. Seventy percent of falls occurred with residents who were physically or cognitively impaired. Fewer than 10% of residents were able to explain how they fell.

Facility Practices Prior to Intervention

Falls program. The facility's Falls Management Policy included screening for falls risk on each patient and a Falls Alert Team. A six item Falls Risk Screen was conducted on every new admission, readmission between days 10 to 14, then quarterly and with any significant change. Factors such as mobility, clinical manifestations, environmental and functional risks, cognition, medications, and history of falls were evaluated. Based on the screening, a plan was designed for staff to address each factor. Included was a list of possible interventions that staff may consider. However, plans did not consistently reflect interventions specific to unique risk factors. Rather, two interventions, alarms and reminding the resident to use their call light, were

used almost exclusively. In addition, instead of using the Falls Risk Screen to identify residents with a high risk for falls, each patient was identified as a fall risk, regardless of mobility status.

The Falls Alert team consisted of a minimum of three staff members which could include any of the following: assistant director of nursing, nursing assistant, or staff from dietary, social services, and the activities department. Per policy, residents were placed on the Falls Alert list if they were admitted with any history of falls, injury related to a fall, or had sustained a fall in the facility. The resident's fall risk status was placed on the master care plan and the nursing assistant care plan but there was no communication with other support staff. The Falls Alert team met once a week with unit managers to discuss resident falls, effectiveness of current interventions, and any new interventions that could be initiated. The Falls Alert team made a determination regarding when a resident could come off the falls list based on the number of falls the resident had incurred in the current and previous month and other co-morbidities the resident might have.

Identification of fall risk. There was no visual indicator that could cue any staff member of a resident who was a fall risk. Both nursing and support staff indicated they knew a resident was a fall risk if there was an alarm in place. The facility used sensor pads which were attached to alarms that signal when a resident's weight is lifted off the pad, such as when they try to get out of the bed or chair. This alerted staff to provide assistance.

Post fall reporting and communication. The incident report was 4-5 pages and not all reports were completed entirely. Categories in the report include: mobility; clinical manifestations such as dizziness or incontinence; poor positioning; environmental risks; and medical equipment such as oxygen, catheters, or air mattress. Cognition, medications, and history of falls in the last 30 days were additional categories. Although the assessment was

thorough and had appropriate categories, what was lacking was modification of interventions to address the resident's identified deficits or needs. For example, residents who had multiple falls in a day or month continued with the same interventions or new ones that did not fit the risk factor.

When a fall occurred, the RN or LPN was summoned to conduct an assessment for injuries and determine if anyone saw the fall. Staff were asked to determine why the fall occurred. Although various reasons were identified for falls, the interventions suggested on the incident report to prevent any further falls were consistently the same; use of alarms or instructing the resident to use the call light. The oncoming shift was informed of any falls in shift report. However, nursing assistants were not involved in these reports and there was no formal report for them. The falls were discussed the next morning during the department head meeting.

Staff perception of role and communication. The staff knew that consequences of falls could be fatal and were aware of deficiencies from the regulatory agency. Staff were not consistently informed of residents who had non-injury falls and were not asked for their input regarding possible contributing factors or ideas for changes in interventions. Staff reported that they relied on the nurse's instructions regarding falls interventions. Any new interventions were placed on the nursing assistant worksheet.

Conversations with nursing and other staff members revealed knowledge of falls and the falls protocol. However, there was not a clear understanding of how each person could contribute to reducing falls. The support staff such as those in housekeeping, dietary, laundry, maintenance, and the office were aware of falls but did not feel they had any role in the falls program. The nursing assistants were aware of what constituted falls but they looked to the nursing staff to

determine what interventions were to be done. Post Fall Huddles were not being done. There was no formal report system of communicating fall rates.

Patient rounds. Nursing staff did not make routine hourly rounds on patients. Nursing staff did not think they could do hourly rounding due to current staffing ratios. They did, however, think this would be a possibility with increased staffing.

Medication changes. On the incident report staff could indicate medication changes in the last 14 days. However, there was no action taken proactively to cue staff that a medication change had been made that placed the resident at risk for the next 2-3 days, as was found in the research of Woolcott et al. (2009).

This needs assessment identified several areas upon which to base recommendations to the nursing home directors. These proposed changes were introduced to the administrative staff during the intervention phase of this project.

Methods

Design

This project used a pre/post intervention design.

Setting

NHHRC is a 148 bed facility with three levels of care: personal care, intermediate care, skilled care and rehabilitation. In personal care, residents are fairly independent but are not able to cook for themselves or manage their medications. Skilled care involves those residents who have medical conditions or physical disabilities that require the services of a licensed nurse, 24 hours a day. NHHRC also provides the services of physical, occupational and speech therapy for residents who need rehabilitation. The facility has residents of varying degrees of cognitive and physical deficits which require different levels of caregivers.

Sample

Staff were invited from all levels within the organization, including administration, nursing, physical and occupational therapists, and support staff. The sample included 169 voluntary participants from staff at NHHRC. The sample was predominately female, between the ages of 18-49, and working in the nursing department (see Table 1). Nearly half of the sample had a high school education. A large percentage (45%) had been employed less than a year, and 43% for 1-11 years.

Table 1

Characteristics of Sample (N=169)

Characteristic	n	%
Gender		
Male	17	10
Female	152	90
Age		
18-29 years	70	42
30-49 years	63	37
50+ years	36	21
Education		
High School	79	47
Two Year College	39	23
4 Year College	15	9
Other	36	
Length of time in position		
1-11 years	73	43
12-23 years	20	12
<1 year	76	45
Position		
Nurse	42	25
CNA	71	42
Housekeeping	19	11
Dietary	16	10
Receptionist	5	2
Maintenance	2	1
Therapist	1	0.5
Department Head	5	2
Administration	1	0.5
Activities	5	2
Job Status		
Full- time	132	78
Part-time	37	22
Certification	113	78
No Certification	56	22

Interventions

The interventions at NHHRC focused on incorporating current evidence based strategies identified in successful falls prevention programs. The need to reduce falls was initially identified by the Management Team as one of the major concerns within the facility. This need was verified with data gained from the Needs Assessment. As identified in the literature, falls are an expensive consequence for any nursing home. This has been true for NHHRC and the management team was invested in making changes. The following outlines the evidence-based strategies that were shared with the management team, the recommendations suggested, and implementation of changes.

Identification of Residents at Risk

Staff knew there were residents at risk but there was no system for all staff in the facility to identify resident's fall risk status other than the care plan.

Recommendation - visual cueing. Current evidence shows visual cueing for staff can be effective in reducing falls (Ray, Taylor, & Meador, 1997; Briefings on Patient Safety, 2007). The Joint Commission 2008 Safety Goal recommends the use of identifiers to be active and prominent to every department that is dealing with patients. Members of the health care team in all departments should be educated in recognizing these cues (Prevention, 2012). Since falls occur not only in the resident's rooms but throughout the facility, an identifier on a resident's wheelchair would be helpful for other staff who come in contact with the resident. The goal is to aid staff in knowing patient's fall risk status (Prevention of falls, 2008). The use of visual cues, such as those used in Falling Stars or Falling Leaves programs, could be used on resident doors and wheelchairs to alert staff in all departments about the risk status of residents. Other visual identifier cueing programs have been developed. One program is Ruby Slippers, which uses red

stickers on doors or red socks on residents. Stay Alert for Fall Event (SAFE), Look at Me Please (LAMP), and I Require Intensive Surveillance (IRIS), are all programs using yellow signs on resident doors.

The use of a Falling Leaf as an identifier was recommended to the nursing facility. However, there was concern that staff would forget to place the leaf on the resident's chair or bed which could lead to a deficient practice and penalties from regulatory agencies. Alternatively, staff proposed placing the resident's room number on the Huddle Board which was placed inside the charting room. This practice was adopted making this information accessible for all staff at any time.

Recommendation - medication alerts. Falls have been shown to be associated with changes in psychotropic medications within 2 to 3 days (Echt, Samelson, Hannan, Dufour, & Berry, 2013). The facility had no system in place for monitoring the effects of medications. Unfortunately the facility does not have an electronic medication administration system that could alert staff as they administer medications. Potential solutions were explored with pharmacy staff and the Director of Nursing to alert nurses to days when residents are at unique risk for falls due to medication changes. It was decided that nurses would highlight within the first 72 hours, any psychoactive or cardiovascular medication that was prescribed. Staff were to monitor for signs of lethargy, agitation, sedation, and weakness.

Staff Communication and Patient and Family Involvement

The nursing department managed all falls tracking, assessment, careplanning, and development of interventions. Also, nursing assistants or other staff were not routinely included in assessing the reasons for falls or suggesting ideas for changes in interventions. Families were

typically not educated about falls prevention or included in planning interventions unique to the resident.

Recommendation – family involvement. Recent healthcare trends include patient and family involvement in falls programs. Patients and families need to be involved at the time of admission to provide information important for care planning interventions.

The facility decided that Life History assessments would be initiated by social services staff for all new admissions. These assessments were conducted with the resident and also the family member/caregiver when possible to identify the resident's customary routines in order to incorporate as many familiar routines and practices into their care plan as possible. Previously an Activities Questionnaire was done by the Activities staff to aid in providing socialization for the resident. With the change to Life History assessments the aim became provision of a more familiar and therefore safer environment.

Recommendation – post-fall huddles. Involvement of all staff in identifying the root cause of falls has been identified as an important component of a post-fall assessment program (Phillips et al., 2008). This strategy was explored to enhance communication among all care givers regarding causes of falls and potential interventions unique to the resident and the nature of the fall. Interventions after a fall did not consistently address as the unique factors involved in the fall. The nurses addressed the falls and decided on interventions to be used with little input from other caregivers and without matching interventions with identified risk factors.

It was recommended that post-fall huddles be done within 30 minutes after the fall and no less than before the shift ended. Any staff member who had been in the area of the fall was to be interviewed for possible causative factors. Also, to make the falls team totally interdisciplinary, it

was agreed that a nursing assistant would be included when falls were discussed in staff weekly meetings.

Recommendation – intentional rounding. Intentional rounding by nursing staff has shown dramatic reductions in falls in hospitals, even as much as 60% (Prevention of Falls, 2012). However, the limited nursing staff in this facility prohibited continuous rounds on all patients throughout a 24 hour day. Additional staff was not a feasible solution due to financial constraints and qualified applicants.

Creative ideas were discussed that included using other departments within the facility in conducting patient rounds. Falls have been correlated with pain, the need to toilet, the desire for a change in position, and reaching for personal items. All staff could ask residents about these concerns and alert nursing staff. Giving other departments a specific hour to make rounds during the hours when most falls occur could increase resident visibility and safety. It also had the added benefit of involving all staff throughout the facility in playing an important part in reducing falls. Unit 'champions' were selected by managers to encourage and support their co-workers in using the interventions to reduce falls.

It was decided that hourly rounding would be done from 8 a.m. to 5 p.m. and then every 2 hours by the House Supervisors and nursing staff. An Hourly Rounding Documentation Log (Appendix A) was placed on the two units for staff to document every hour as to indications of pain, need for toileting or repositioning, and reaching for personal items.

Staff Knowledge of Falls and Interventions

The needs assessment revealed gaps in staff knowledge regarding falls and potential interventions for preventing falls. Staff in this facility had not been routinely informed of the

numbers, consequences, or facility penalties of falls. There was a lack of individualized interventions based on identified risk factors.

Recommendation – staff education. Staff education was needed to involve several components, one of which was a comprehensive understanding of the nature of falls in nursing home residents. This included potential causes, consequences for patients and families, related costs, and financial penalties to the facility. Staff needed current data within their own facility in order to understand the scope of the problem and to invest in the changes that would be asked of them.

A second education component concerned the range of interventions that can be used with nursing home residents. Alarms and reminders to patients about the call light were the only interventions recognized. Along with this was the need to help staff develop ways to individualize interventions to address identified risk factors. Interventions could be individualized based on information from residents and family recorded in the newly implemented Life History assessment.

A third component was to educate all staff regarding their role in the project. Staff needed to understand how these programs contribute to falls reduction, how the new processes would be incorporated in their facility, and their part in contributing to the success of the changes. It was important that the education sessions include all staff within the facility in order for everyone to realize this as a facility-wide initiative. The PowerPoint presentation used in the education sessions, outlining these program components, is included in Appendix B.

Education sessions were conducted for each shift and department and included use of the huddle board, medication alerts, post-fall huddles, and rounding. Ideas were generated about how to use each resident's risk factors to determine interventions helpful in reducing falls. Scenarios

were used to illicit discussion from staff regarding how they would choose appropriate interventions.

A program was added to the new hire orientation which included: causes of falls, consequences of falls for families and residents, assessment of risk, identifying root causes, interventions to prevent falls, individualizing interventions according to the risk factors, interventions for each discipline within their scope of practice, and family involvement in prevention strategies and their role in the processes. The newly hired employees, regardless of position, received this education before going to work on their units. The education PowerPoint developed for this study was provided to the facility for their continuing use in orientation.

Discussions took place with the care plan team about reviewing the Falls Risk Screen and the Life History assessment when deciding on appropriate interventions. Support from the Project Leader was available to all staff via phone or in person throughout the project for a total of four weeks. Unit Managers provided additional staff support and as did the unit 'champions'.

Instruments

A Knowledge of Fall Survey (Appendix C) consisting of 13 questions was used to assess staff knowledge about causative factors of falls and their role as employees in preventing falls in the nursing home. Questions were developed to determine knowledge in the following categories: (a) causative factors identified in the literature, such as cognitive loss, pain, and medications; (b) what constituted a fall in a nursing home and who was responsible for prevention; and (c) scope of the problem such as the numbers and the financial impact on the facility.

Weekly process audits were conducted by the Project Leader to determine staff success with implementing the evidence-based interventions: care plan identification of risk factors,

matching of interventions with risk factors, post-fall huddles, use of the huddle board, hourly rounding, and medication alerts.

Data Collection Plan

Education sessions were conducted January through February 2014. A sociodemographic survey (Appendix D) and the Knowledge of Falls Survey were distributed at the beginning of each education session. Informed consent was also obtained at this time. The Knowledge of Falls Survey was again distributed at the end of March when all education sessions were completed. The Hourly Rounding Documentation Log was placed inside the charting room on each unit for staff to document rounds. Process audits were conducted weekly by the Project Leader on the following practices: risk factors identified in the care plan, interventions address identified risk factors, post-fall huddles, use of huddle board, and medication alerts.

Data Analysis

Data were analysed using SPSS version 22.0 for Windows. Sociodemographic data were analysed using descriptive statistics. Wilcoxon signed-rank test was used to determine changes in the Knowledge of Falls Survey pre- and post-intervention. Proportion analysis was used to determine compliance of staff with the interventions.

Ethical Considerations/Approval

Participation in the program was voluntary. Informed consent procedures were in place to provide participants with needed information about the project. All surveys were identified by a code number only in order to link pre- and post-surveys. Surveys and code lists were kept in a locked cabinet in the Project Leader's office. The study was approved by Bellarmine University's Institutional Review Board.

Falls Data

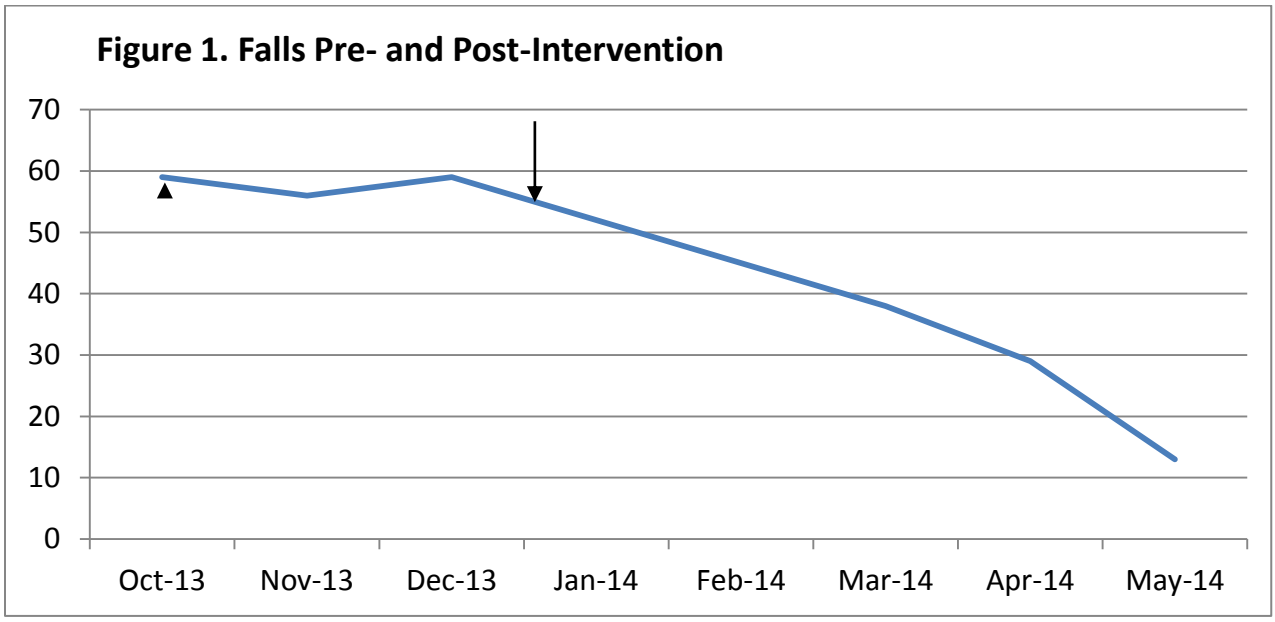
Following completion of the interventions, falls data were compared to the previous three months (see Table 2). Each month post-intervention showed a decline from the previous three months, for a total of 63 fewer falls post-intervention. The overall rate of falls decreased from 42% to 19%. Figure 1 plots falls data pre- and post-intervention.

Table 2

Comparison of Falls Cases and Rates Pre- and Post-Intervention

		Month			Total
Pre-Intervention 2013		October	November	December	
	Cases	59	56	59	174
	Rates	42%	40%	44%	42%
Post-Intervention 2014		March	April	May	
	Cases	38	29	13	111
	Rates	27%	21%	9%	19%

Note. Rates based on 100 patient days



Note. Down arrow indicates beginning of intervention

Staff Implementation of Interventions

Table 3 demonstrates the monthly percentage of staff implementation with the new interventions. Three interventions that showed increasing rates of implementation were matching interventions with risk factors, use of huddle boards, and hourly rounding. May, the final month of data collection, showed the highest rates of implementation which also coincided with the lowest number of falls in the facility. Huddle board use demonstrated the most successful implementation, with 92% in the final month. Care plans reflecting interventions that address residents' unique risk factors improved during the second month, but decreased in May to below first month levels. The medication alert could not be analysed since there were no new orders for psychoactive or cardiovascular medications during the project for any of the resident with falls**.**

Table 3

Proportion Analysis of Staff Implementation of Interventions

	Falls in March (n=38)	Falls in April (n=29)	Falls in May (n=13)
Interventions	Percent Implementation		
Intervention/Risk Factor	.44	.65	.69
Care Plan/Risk Factor	.36	.62	.30
Post fall Huddle	.42	.41	.38
Huddle Board Used	.84	.86	.92
Hourly Rounds	.60	.62	.76
Medication Alert	.18	.0	.07

Knowledge of Falls

The answers on the Knowledge of Falls Survey were recoded into dichotomous variables based on correct or incorrect responses. The summative scores pre- and post-intervention were analysed using a Wilcoxon signed-rank test. Significant improvement was found in staff knowledge following the intervention, $Z = 4.398$, $p = .000$.

Facility Quality Measures

Additional indication of the facility's improvement in reducing falls is found in required reporting data. The facility is required to run a Certification and Survey Provider Enhanced Report (CASPER) every 6 months to determine performance on various quality indicators. These reports are stored in the Centers for Medicare and Medicaid Services (CMS) database. Table 4 shows the facility's falls report for January 1, 2014 to June 30, 2014. Initially the facility scored high in the Group National Percentile (83rd percentile) which indicated a possible investigative survey of the facility. The facility wanted to avoid this and reducing falls was an incentive for them to work on implementing new strategies. There was a significant decrease to the 55th percentile by the end of this project.

Table 4

Facility Fall Rates Reported to CMS

	Residents with a Fall	Residents at Risk for Fall	Facility Observed Percentile	Facility Adjusted Percentile	State Group Mean	National Group Mean	National Group Percentile
Pre-	70	121	57.9%	57.9%	47.2%	44.5%	83*
Post-	58	122	47.5%	47.5	47.3%	44.4%	55

Note. Facility observed percentile calculated by dividing number of residents with the condition (a fall) by the number of residents who could have the condition (at risk for fall). *Indicates high ranking and need for facility investigation.

Discussion

This project demonstrates that implementation of evidence based strategies can reduce falls in nursing homes. Prior to the project in 2013, the total fall rate for a 3 month period was 42% and post was 19%. Overall there was a 23% decrease in falls. This project was important to the facility and was identified as a priority for intervention. In 2013 NHHRC had a high number of residents identified as at risk for falls. The facility's Comparison Group National Percentile (CASPER) was 83% which is above the investigative threshold of 75%. This high ranking could potentially target the facility to be investigated or emphasized on survey. It also means the facility's performance could be viewed as a quality of care concern. Following the interventions in 2014, the Comparison Group National Percentile decreased to 55% which was significant to the facility.

Interventions

Staff knowledge. The education sessions increased staff knowledge in understanding the impact of falls to the organization as well as the negative effects of falls on the health and quality of life for elderly residents. Staff became more knowledgeable regarding what constitutes a fall which is important in knowing when to report and incident to the appropriate staff member. Education is now part of new employee orientation and prepares staff to assume the duty of caring for residents that could potentially sustain a fall.

There was also a better understanding of the role of staff in preventing falls. Prior to the project there was a misconception that only nursing staff were responsible for prevention of falls in the nursing home. The non-licensed staff's perception was that nurses had the responsibility for determining how to keep residents from falling. Through education and awareness the certified nursing assistants became more involved in deciding what interventions might be

effective in preventing future falls. Support staff also became involved in falls prevention and became accustomed to giving input regarding causes and identifying potential interventions for deterring future falls.

There was increased awareness by staff regarding interventions that did not consistently address the risk factors or reasons a fall occurred. The most frequently used intervention was an alarm which has proved to be ineffective. Staff was made aware of the importance of addressing the risk factors on the Falls Risk Screen and post fall factors. However, these areas showed the least improvement post-intervention. Understanding related to identifying the main causes of falls and identifying residents at high risk for fall both did not change. Interestingly, this coincides with low utilization of Post Fall Huddles and matching interventions with identified risk factors.

Huddle board. The most successful strategy was the use of the huddle board. Prior to this intervention, only the nursing staff had access to the care plan. The nursing assistants had limited knowledge of interventions and other support staff had little or no knowledge of residents at risk. A Huddle Board with the resident's room number and indication of risk for fall was placed just inside the charting room. This location gave all staff members the ability to identify residents with a high fall risk. This strategy was identified by staff and replaced the proposed visual 'cue' on the resident's door or wheelchair. The Huddle Board's effectiveness was demonstrated in the third month of the project which had the highest rate of compliance with the intervention and the lowest number of falls.

Post-fall huddle. Although the post-fall huddle was successful, it did not reach its full impact due to shortage in staffing. The evening shift supervisors were not able to consistently follow through in overseeing compliance due to their heavy workloads. Nurses have many duties

that must meet compliance and many of these tasks must be done before the shift ends. In addition, nursing assistants are also very busy completing their own tasks. Future recommendations would be to adjust schedules so that staff is able to evaluate causes of falls when they occur and identify the most appropriate interventions for each resident.

Hourly rounding. To include all staff members in identifying residents at risk for fall, hourly rounding was instituted. It was difficult for nursing to continually monitor residents due to staffing issues and there was no system for staff to focus on certain behaviors that could alert them to a possible fall. Most falls occurred in the resident's room in which continuous monitoring was most difficult. As nursing and support staff went down the hallways they made a conscious effort to look in these rooms for any signs that a fall might occur. The Administrative staff was also educated on fall risks and became part of the team to help observe residents for potential falls.

Hourly rounds were not consistently done due to staffing shortages particularly on the evening shift. On the day shift there are more tasks to complete and staff would become involved in these and shift their focus away from observing those residents in the rooms. Unfortunately residents are most at risk when they attempt to get up without supervision. Most falls did occur while residents were in their room and staff utilization of the 4P's could help prevent a fall from occurring. Continuous education about rounding and supervision is strongly recommended in order to decrease fall rates even more.

Nurse Practitioner support. The presence of the Nurse Practitioner (NP) and her support added emphasis and creditability to the importance of falls reduction. The staff responded positively to the outside influence as they viewed the NP as an expert in the field. The NP brought evidence based practice changes to the facility and helped staff understand the

importance of those recommendations. The addition of an NP also displayed an important commitment by the facility to reduce falls by embracing evidence based practices, believing in the importance of staff engagement, and a trust in their ability to reduce falls. Having an NP as a leader of a falls program ultimately led to a successful program and helped the facility reduce the number of falls.

Challenges

From the first week of the project there were challenges which made it difficult to get the program started. There was a change in administration the first week and staff focus was towards the uncertainty of who was going to lead the nursing department and possible changes that might occur. Staffing challenges on the various shifts caused problems not only with the nursing assistant turnover but supervisors were needed to perform staff nurse duties due to shortages. The time for conducting a thorough Huddle in determining causative factors and getting input from staff regarding appropriate interventions was impeded by staffing.

Unit managers and supervisors have a lot of paperwork which takes them from being on the unit to monitor compliance and provide education on falls prevention interventions. Despite these major challenges staff did make efforts to keep residents as safe as possible.

Recommendations

This facility has made a good start in implementing a broad evidence based falls prevention program. Continued emphasis and support will be for sustained change. The presence of an NP with expertise and long term care experience played a key role in introducing change, demonstrating effective approaches, and championing staff efforts. This role needs to be continued not only to sustain this program but also for other initiatives that are needed to bring best practices to this facility.

Additional steps toward sustainability include conducting quarterly reports on compliance with interventions and recognition of the units with the best compliance rate. This would maintain awareness of falls and the interventions that need to be used by all staff members. Quarterly reports involving all staff and their contribution would sustain awareness. Additional emphasis needs to be placed on the interventions with lowest compliance. For example, staff training could include videos or role play of post-fall huddles; case studies could be used to increase understanding of addressing risk factors in care plans.

Summary

Falls continue to be a major cause of decreased quality of life for the elderly nursing home resident and puts facilities at risk for lawsuits and a reputation for poor performance. The savings from legal fees and awards can be thousands of dollars. Facilities can save from $5000 to $100,000 in fines related to falls injuries or deaths. This project demonstrates that despite the many challenges nursing homes face, particularly with staffing, successful strategies can be implemented and result in reducing falls. The expertise and presence of an experienced NP was a key factor in achieving these outcomes.

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Appendix A

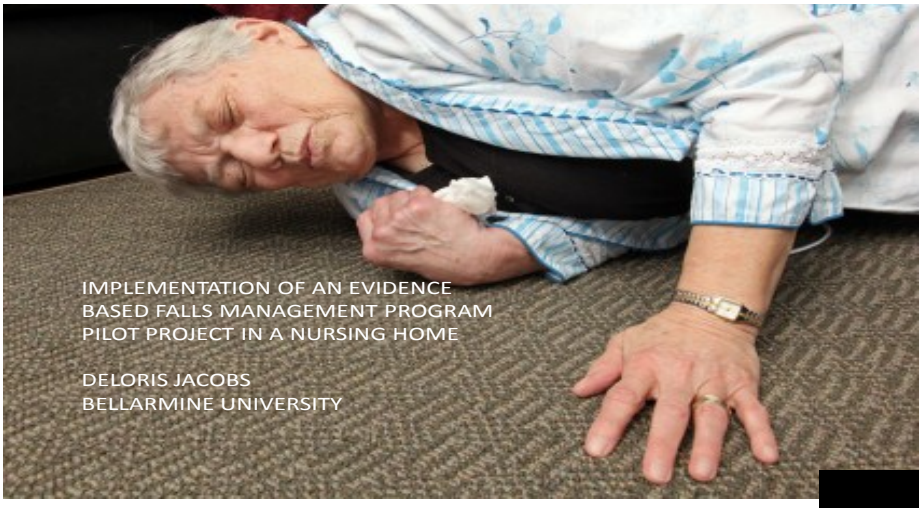
Hourly Rounding Documentation Log

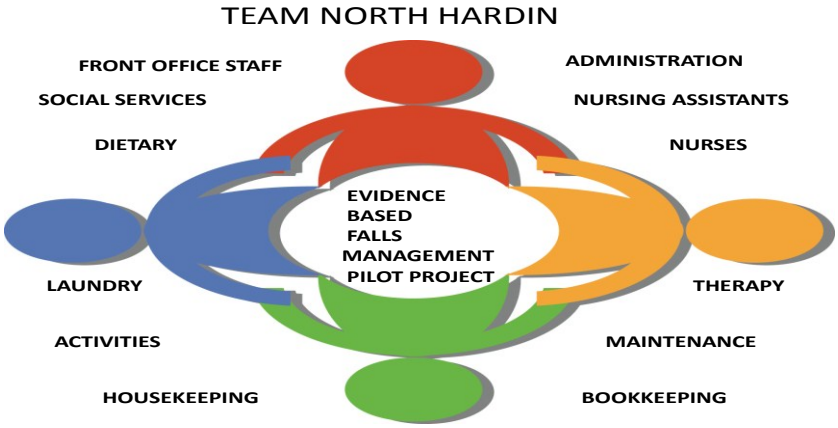
Staff are to inquire about the 4 P behaviors and document on the log any that are addressed. Logs are collected every 24 hours by medical records. Rounds begin at 8am -5Pm, then every 2 hours by designated staff.

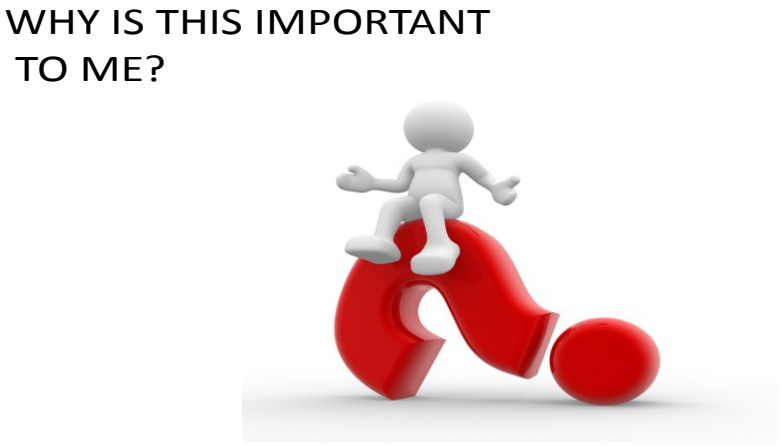
Date: Unit: West _____ East_____

Time period	Staff Name	Time rounding	Pain	Position	Toilet	Possessions	Comments
8am							
9am							
10am							
11am							
12pm							
1Pm							
2PM							
3PM							
4PM							
5PM							
6PM							
8PM							
10PM							
12AM							
2AM							
4AM							
6AM							

Appendix B


IMPLEMENTATION OF AN EVIDENCE
BASED FALLS MANAGEMENT PROGRAM
PILOT PROJECT IN A NURSING HOME
DELORIS JACOBS
BELLARMINE UNIVERSITY


TEAM NORTH HARDIN
FRONT OFFICE STAFF
ADMINISTRATION
SOCIAL SERVICES
NURSING ASSISTANTS
DIETARY
NURSES
EVIDENCE
BASED
FALLS
MANAGEMENT
PILOT PROJECT
LAUNDRY
THERAPY
ACTIVITIES
MAINTENANCE
HOUSEKEEPING
BOOKKEEPING


WHY IS THIS IMPORTANT
TO ME?

BECAUSE…..

•WE WANT QUALITY OF LIFE FOR THE RESIDENTS
•WE WANT LESS PAPERWORK
•WE DON'T WANT SKIN BREAKDOWN
•WE DON'T WANT DEFICIENCIES FOR FALLS
•WE DON'T WANT LAWSUITS

•WE WANT
•TRUST FROM RESIDENTS AND FAMILIES
•FALL RATE LESS THAN THE STATE AVERAGE
•INDIVIDUALIZED INTERVENTIONS TO ADDRESS RISK FACTORS

WHAT KIND OF EVIDENCE BASED FALLS PRACTICES HAVE BEEN SUCCESSFUL IN MINIMIZING THE RISK OF FALLS AND FALL RELATED INJURIES CAN WE USE?

Post Fall Huddle is:
brief staff gathering following a fall to determine
•What happened
•Why it happened
•What can be done to prevent it from Happening again

Involves:
•Looking back at what they had been doing
•Asking all staff that have been near the resident what they observed about the resident
•Asking about residents usual life routines
•Looking for any pattern such as time of day, relation to noises, or after meals
•Sharing any ideas you have about what you have come to learn about the resident

POST FALL

WHAT RISK FACTORS CAN WE LOOK OUT FOR?

- **WEAKNESS FROM ILLNESS**
- **DEMENTIA**
- **MALNUTRITION**
- **DEHYDRATION**
- **BROKEN HIP, ARMS,LEGS**
- **PAIN**
- **TRYING TO LIVE OUT THEIR LIFETIME ROUTINES**
- **DEPRESSION**
- **INCONTINENCE**
- **POOR BALANCE**
- **POST SURGERY**
- **NEED TO GO TO B/R**

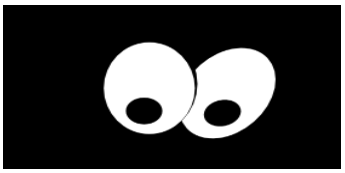
How to Identify High Risk Residents

- **Their room number will be placed on the Huddle Board inside the charting room Each unit.**
- **All staff are to check for names on the Huddle Board for identified at risk residents**

HOURLY ROUNDING

8-5 STAFF GOING DOWN HALLS EVERY HOUR AND OBSERVING FOR ANY SIGNS OF A RESIDENT POSSIBLY GETTING UP

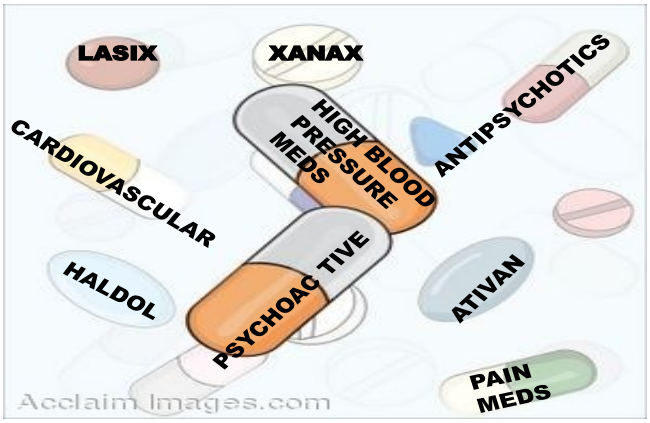
6P-8A EVERY 2 HOURS INTENTIONAL ROUNDS DOWN HALLS OBSERVING RESIDENTS ACTIVITY



WE SHOULD LOOK FOR THE 4 P'S:

- **P-AIN-GRIMACING, MOANING, FIDGETY, YELLING**
- **P-OTTY-ASKING FOR B/R, SQUIRMING, YELLING**
- **P-OSSESSIONS- REACHING OUT FOR IE REMOTE, CANDY,CLOTHES,**
- **P-OSITIONING- LEANING, SLUMPING, MOANING, RESTLESS**
- ***if a resident tells you someone is needing something or is trying to get up - DO CHECK IT OUT**

MONITOR RESIDENT FOR 72 HOURS AFTER BEING STARTED ON ANY OF THE FOLLOWING MEDICATIONS:



FOR THE FOLLOWING RISK FACTOR FOR FALLS:

•CONFUSION

•UNSTEADY GAIT

•AGITATION

•WEAKNESS, LETHARGY

CAN YOU MAKE A DIFFERENCE?

BELIEVING IN WHAT YOU CAN DO IS THE FIRST SECRET OF SUCCESS!

NORTH HARDIN STAFF...YES YOU CAN MAKE A DIFFERENCE!!!

Appendix C

Knowledge of Falls Survey

1. How many falls, both injury and non-injury, do you think have occurred at NHHRC in the past 6 months?
   a. 20
   b. 100
   c. 200

2. What would you estimate as the financial cost of a fall that results in a broken hip?
   a. $50,000
   b. $100,000
   c. $200,000
   d. $30,000

3. What do you think are the main reasons residents fall at NHHRC? Write a number after each reason, with number 1 being the most frequent reason, and number 4 being the least frequent reason.
   a. acute illness
   b. cognitive loss
   c. pain
   d. medications

4. Which show the impact falls may cause in the elderly? Circle all that apply.
   a. cognitive decline
   b. depression
   c. fear of falling

5. Once a resident has fallen, what intervention do you see used most frequently to prevent another fall?
   a. alarm
   b. restraints
   c. therapy
   d. private sitters

6. Once a resident has fallen, what is your role, if any, in assisting or follow up?
   a. none
   b. vital signs only
   c. offer suggestions on how to prevent resident from falling

7. What is the most common way you identify residents who are at a high risk for falls?
   a. resident is in a wheelchair
   b. resident has an alarm on
   c. resident is confused

8. Who do you see as the person responsible for preventing falls at NHHRC?
   a. director of Nursing
   b. nurses
   c. physician
   d. nursing assistants
   e. housekeeping
   f. therapy
   g. all of the above

9. The individuals in **my department** have a responsibility to prevent falls.
   a. true
   b. false

10. Mr. Jones is walking down the hall and loses his balance. He's able to steady himself by leaning against the wall and does not fall to the floor. Is this a fall?
   a. yes
   b. no

11. Mrs. Jones is found near her low bed on the floor. Is this a fall?
   a. yes
   b. no

12. The nurse is walking Mr. Jones down the hall when he suddenly begins to fall. The nurse is able to lower him to the floor. Is this a fall?
   a. yes
   b. no

13. Mrs. Jones slides out of her wheelchair and is not hurt. Is this a fall?
   a. yes
   b. no

Appendix D

Sociodemographic Survey

1. Age_____

2. Gender
    a. F
    b. M

3. Highest education obtained
    a. High School
    b. Junior College
    c. 4 year degree
    d. Other

4. Primary Position
    a. Licensed nurse
    b. Nursing Assistant
    c. Housekeeping
    d. Dietary
    e. Office staff
    f. Maintenance
    g. Therapy
    h. Department Head
    i. Administrative staff
    J. Activities

5. Length of time in position: _____

6. Number of hours worked per week
    a. 32 hours/week
    b. Less than 32 hours/week

7. Shift:
    a. 7A – 3P
    b. 3P - 11P
    c. 11A – 7P

9. Does your position require any certification?
    a. Yes
    b. No