Improving falls in nursing homes: a post-fall huddle quality improvement project

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Abstract

Falls are one of the most common preventable health problems in adults 65 years and older (AHRQ, 2013). A fall in this population can have a devastating effect often leading to a significant change in morbidity or death. Adults in assisting living, nursing homes, and skilled facilities (SNF) have an increased risk of falling and having a subsequent fall due to an acute illness, weakness, or confusion. This makes individualizing a plan of care to prevent a secondary fall and identifying the root cause of falls within a facility imperative.

In our agency, the fall rate is nearly triple that of the national benchmark. To address this problem, a Post-Fall Huddle project was implemented. The literature recommends and supports the practice of a post-fall assessment program in fall reduction to identify intrinsic and extrinsic fall risk etiologies. There was found to be a reduction in the absolute values of recurrent patient falls per quarterly reporting after the implementation of the post-fall huddle. The results also provided pertinent data that can be used for recommendations in future fall prevention for the SNF.

Keywords: *Use about five key words or phrases in alphabetical order, Separated by Semicolon.*

1. Introduction

1.1. Problem description

According to the U.S. National Institute for Aging (2017), more than one in three adults aged 65 years and older will suffer a fall each year that puts them at risk for further injury. A fall in this population can have devastating effects including morbidity or death. Adults in assisting living, nursing homes, and skilled facilities (SNF) have an increased risk of falling and having a subsequent fall due to an acute illness, weakness, or confusion. This makes individualizing a plan of care to prevent a secondary fall and identifying the root cause of falls within a facility imperative.

In 2015 the Centers for Disease Control and Prevention (CDC) reported 2.5 million nonfatal falls, 734,000 falls that required hospitalization, and 25,500 falls that were fatal. Twenty to thirty percent of older adults that fell, sustained injuries, such as abrasion or laceration, bone fractures, and head traumas. The CDC (2015) also states that the direct cost related to falls in 2013 was 34 billion dollars, which does not account for fall-related disabilities. The average hospital cost per fall is 35,000 dollars, and the average medical cost per fall is 14,306-21,207 dollars depending on the severity of the injury. Three-fourths of the direct cost is related to traumatic brain injuries and hip fractures. These numbers are expected to increase as the population continues to age (Centers for Disease Control and Prevention, 2015). Thus, the financial impact of falls is significant in the U.S., and is expected to grow.

There are populations that are at higher risk for falls. Falls are of greater concern for those residents in the nursing home compared to the general population due to an acute illness, weakness, or confusion. Five percent of older adults are living in a nursing home, but this subgroup accounts for 20% of fall-related deaths. Fifty to seventy-five percent of nursing home residents fall each year, which is twice the rate of older adults living in the general population. The CDC (2015) reports that a nursing home with one hundred beds typically reports one hundred to two hundred falls per year. Patients often fall more than once, and the individuals that do survive a fall often sustain permanent disabilities and reductions in their quality of life (Centers for Disease Control and Prevention, 2015).

The national benchmark for falls is approximately 5 falls per 1,000 occupied bed days (Courtney, 2011). In our agency, the fall rate is nearly 15 falls per 1,000 occupied beds, as using the calculation per AHRQ (Agency for Healthcare Research and Quality, 2013). Compared to the national benchmark, there is an apparent need for improvement at our agency to reduce falls. All agency stakeholders will positively benefit from a reduction in falls as fall reduction interventions have been shown to improve patient safety, staff communication, and meet the Joint Commission's National Patient Safety Goal #9 to reduce falls.

1.2. Available knowledge

The Joint Commission National Patient Safety Goal #9 (2015) is to reduce the fall rate of older adults. This mandates organizations and facilities to implement a fall prevention program and to evaluate the program's effectiveness. The majority of these programs involve a risk assessment screening on admission, at recertification, with a change in condition, and after a fall (Conley & Lueckenotte, 2009). For individuals deemed at risk for a fall, interventions such as environmental modifications, frequent fall rounding, and bed/chair alarms are instituted. Such fall prevention programs and interventions typically will meet the Joint Commission standard, but these programs are not standardized, regulated, or specific to the patient. Generalized post-fall huddles are widely used. The goal of the post-fall huddle (a post-fall assessment) is two-fold: 1) to determine subsequent falls risk and individualize a fall prevention plan, and 2) to obtain critical information on fall prevention that can be utilized by the organization to prevent an initial fall in similar patient situations (Gray et al, 2006).

1.3. Rationale

The theoretical framework for this project is based on Rosswurm and Larrabee's (1999) conceptual framework. The Rosswurm and Larrabee conceptual framework is a change model for evidence-based practice. The model is based on the process of translating research into practice, which is needed to address the increased fall rates at our agency. The Rosswurm and Larrabee framework is grounded in nursing principles and focused with the goal of improving outcomes. The model has six components that are the cornerstone of practice change. The components are: 1) assess the need for change in the practice setting, 2) link the problem with current intervention and current outcomes, 3) synthesize best practice, 4) design practice change based on the literature, 5) implement and evaluate the clinical practice change, 6) integrate and maintain the change in practice (Buchda, 2005).

The literature on falls describes the etiology of falls being multifocal with intrinsic and extrinsic factors. Intrinsic causes are acute medical problems (i.e. infection, orthostatic hypotension), chronic medical problems or degenerative changes (i.e. Parkinson's disease, weakness), cognitive impairments and (i.e. dementia), medications (i.e. cardiac, analgesia, or central nervous system drugs). Prior fall history, age, and gender are intrinsic causes as well. Extrinsic factors relate to the individual's environment (i.e. clutter, low light, floor surface), assistive devices, and footwear (Gray et al, 2006).

Both intrinsic and extrinsic factors can be addressed in a post-fall huddle (PFH). A PFH is a post-fall assessment in which clinical interventions are designed to prevent subsequent falls and uncover the cause (or causes) of the initial fall. A systematic review of sixty randomized controlled trials on post-fall prevention concluded that not all interventions were statistically significant in all facilities and populations (Cameron et al., 2010). A more tailored approach to each agency and population is recommended, as well as a multifactorial approach to interventions. Multifactorial interventions create best results in reducing falls and subsequent falls. An example would be a medication review along with assessment of exercise modality to be more effective than standard interventions. Tzeng (2015) used a one-page post-fall review form in a retrospective descriptive chart review study. Though this study was limited by sample size and generalizability, authors reported that a post-fall assessment was a good approach to quality improvement to reduce falls.

In a PFH, an examination of characteristics for those that fell, including a risk assessment helps in the development of an individual plan of care (Daly et al, 2004). For long-term care and skilled facilities, an assessment of the fall, the fall circumstance, and clinical differential on the fall etiology (i. e. medication, infection, or environment) is helpful to designing appropriate and timely interventions that are comprehensive and beneficial to the patient, nursing, and the organization (Draganescu et al., 2006). A study by Bellissimo et al. (2003) utilized a post fall huddle program and found that there was over a 50% reduction in subsequent falls when risk factors, such as underlying illness, an acute disease process, medications, and use of assistive devices were reviewed for a specific intervention. Also, there was a 25% reduction in hospitalization and 17% fewer deaths. Another study by Kluge et al. (2013) of residents in assisted living concluded that post-fall assessments help identify risk factors that are directly related to falls and that a post-fall assessment can help to define and coordinate communication between staff members. This can provide knowledge about falls that is imperative to change.

A PFH is applicable to the inpatient and rehabilitation unit settings. An advanced practice nurse (APN) led post-risk assessment that includes intrinsic and extrinsic factors related to a fall, fall recommendations, and implementation of tailored interventions to prevent a repeat fall were found to be successful. After six months of the program, the repeat fall rate was reduced by 10% and after nine months the subsequent fall rate was at zero (Hatfield, 2007). In the end, an evidence-based post-fall risk assessment program can reduce repeat falls and provide pertinent information for a fall prevention program.

Although there is an abundance of literature on primary fall prevention, the literature is limited on post-fall huddle (and post-fall assessment). Also, there is no standard guideline on how to conduct a post fall huddle or assessment. Despite the lack of a standardized, validated tool, there is building evidence to support the practice of a post-fall assessment. Post-fall assessments are instrumental in designing an individualized subsequent fall prevention plans and the data identifies trends in the causes of a primary fall. Additionally, the evidence supports an assessment tool that gathers information on intrinsic and extrinsic factors in the etiologies of falls.

1.4. Specific aims

The purpose of the project was to utilize the post-fall huddle (PFH) as a quality improvement program in a sub-acute and long-term care facility to determine if the PFH can reduce subsequent falls. The primary purpose of the PFH was to provide an organized way to gather information on intrinsic and extrinsic factors related to the fall, in order to design customized interventions into the plan of care and prevent subsequent falls. The secondary goal was to increase communication, collaboration, and coordination amongst the healthcare team. These goals included subsequent follow-up plans for falls prevention. Participation in the huddles helped increase awareness on falls and establish an understanding of risk factors and interventions. The authors sought out to answer the question of: In a rehabilitation and skilled facility, does the implementation of a post-fall huddle reduce the number of recurrent patient falls and reduce the number of falls per quarterly reporting?

2. Methods

2.1. Context

The Post-Fall Huddle program was implemented in a 102-bed skilled nursing facility (SNF) where about one-third of the beds are for long-term residents. All other patients were admitted for rehabilitation, such as status-post joint replacement, weakness, or for skilled care, such as after hospitalization for acute heart failure, sepsis, or wounds. The typical client is an adult aged 65 years or older with high complexity of multiple co-morbid conditions.

The chosen SNF is part of a larger health system where the mission is "to enhance the lives of those we serve." Unfortunately, the SNF does not have a vision statement. The SNF fall rate is nearly triple that of the national benchmark. The national benchmark is approximately 5.08 falls per 1,000 occupied bed days (Courtney, 2011); while the facility's fall rate is nearly 15 falls per 1000 occupied beds. The fall rate was calculated using the total monthly facility census and the number of falls (Agency for Healthcare Research and Quality, 2013). Clearly, the fall rate does not reflect the health system's mission and improvements are needed.

The current fall policy of the SNF involves assessing for risk factors on admission, such as a change in condition, and assessing after a fall. Nursing is required to report the fall to the provider and management, then fill out an incident report form. This project added a more comprehensive and multidisciplinary approach to the assessment of falls to prevent recurrent patient falls.

2.2. Intervention

A new, evidence-based post-fall huddle (PFH) program was implemented to address safety and quality improvement. An overview of PFH program activities include: 1) a brief (5-10 minute) in-person huddle was performed with the nurses and available staff, as well as led by advanced practice nurses (APNs) 2) completion of the PFH form during the huddle 3) input from the multidisciplinary team (nursing, rehabilitation, physicians), 4) a synthesis of information and an individualized fall prevention plan is developed based on intrinsic and extrinsic root causes, and 5) an update of the patient's care plan is documented (National Fall Toolkit, 2014). Additionally, new orders are written in the patient chart (ie; new labwork, bedside commode, Physical Therapy or Occupational Therapy) and shared with the bedside nurse to address prevention of a subsequent fall.

In the PFH program, pertinent and succinct education on falls, fall prevention, and the PFH were given to staff nurses, licensed practical nurses, and certified nursing assistants. The staff education to help falls prevention was designed using information provided by the U.S. Centers for Disease Control's Stopping Elderly Accidents, Deaths, and Injuries (STEADI) initiative on fall prevention (CDC, 2015). The STEADI initiative provides a coordinated approach for an interdisciplinary team to address falls prevention. The approach includes how health care providers can use screening, assessment, and interventions to reduce risk for falls. Staff education was led by the Advanced Practice Nurse (APN) and included sharing of knowledge and discussion among the health care team members. Educational discussions were included to review the assessment of a patient's fall risk, taking into account pertinent medications linked to falls, functional assessments such as checking for orthostatic blood pressure, as well as other ways to prevent falls.

The major components of the PFH program was to complete the PFH form (Appendix B) for data collection and to assess the impact of the PFH program. The VA's National Center for Patient Safety Falls Toolkit was used to guide implementation and evaluation of outcomes. As a leader in health care, the VA is a trusted source of evidence-based practice and recommendations to guide health systems. The toolkit consists of a publicly-available instrument developed by the U.S. Department of Veterans Affairs' Palo Alto Health Care System. The instrument which is the PFH form was comprehensive and takes into consideration multiple factors in the assessment of risk for falls and fall-related injuries (i.e. intrinsic and extrinsic fall etiologies, the type of fall, and specific recommended interventions for preventative measures). The PFH form was not a permanent part of the patient's chart and used for quality improvement purposes only. The timeframe or implementation and data collection was approximately 10 weeks.

Appendix B

Date: _____ Time of Fall: _____ Time of Huddle: _____ Room #: _____ SHIFT (circle one): D/PM/NOC
Diagnosis: _____ Pertinent   Medical   Hx:
_____
LOCATION of FALL:
 Bed/ Bedside Commode Chair Gurney Hallway Room Restroom
 Other:
_____
_____
BACKGROUND: Fall risk factors / risk for injury (check all that apply):
Altered Mental Status Pain or Discomfort: Location Age (>85)
Dizziness/Lightheadedness Diagnosis r/t (Hypoglycemia/ Prior Fall History
Change in Vital Signs Seizure/ Hypotension/Parkinson /Dementia)
Impaired Communication
Medications (Benzodiazipines, Bones (Osteoporosis)
New infection or Illness
Pain meds, B/P meds, hypnotics) Surgery (recent/Fracture/amputee) Environmental Factors
SOB Physical condition (poor balance, weakness) (equipment)
Anti -coagulation Sensory or Neural Deficit Other: _____
s/p OD or intoxication ETOH use

Post Fall Huddle Form Information Related to Fall Event	FINDINGS
• Was fall assessment completed?	_____ YES _____ NO
• Was patient on fall precaution?	
• Intentional hourly rounds performed?	_____ YES _____ NO
• Describe in patient's own words what they were doing prior to fall.	
• Elimination problems : (_____ urgency; _____ diarrhea, _____ incontinence)	_____ YES _____ NO
TYPE of FALL	DESCRIPTION
• _____ Accidental Fall	_____ Slip _____ Trip
• _____ Anticipated Physiological Fall Related to: _____ loss of balance _____ impaired gait or mobility _____ impaired cognition/confusion _____ impaired vision	

_____ functional deficits _____ disease process
_____ unrealistic assessment of their ability
• _____ Unanticipated Physiological Fall (created by condition that cannot be predicted, e.g. unexpected orthostasis, extreme hypoglycemia, stroke or heart attack.)
• _____ Intentional Fall: (Patient who voluntarily alters body position to lower level).

NURSING OBSERVATION/ASSESSMENT	FINDINGS
	____ Changes in MS (Mental Status)
Neuro checks:	____ Headache ____ Vomiting ____ Bleeding
Glasgow Coma Scale: _____	
	_____ YES
	_____ NO
Did Patient hit his/her head?	_____ YES
	_____ NO
Fall witnessed?	__ Injury __ Pain __ Functional change
	__ Other:
What were the provider's findings and orders?	
ACTION/RECOMMENDATION/PREVENTATIVE MEASURES	
____ Assistive device (e.g. walker, cane) ____ Hip protectors	____ PT/OT evaluation
____ Bed Alarm ____ Non-skid socks	
____ Close Observation ____ Moved patient (higher visibility)	____ Removed Clutter / equipment
____ Behavioral Management Plan _____Pain Management Assessment	____ Toileting plan

(National Fall Toolkit, 2014).

2.3. Measures

The primary outcome measured was the number of falls. Falls were defined as an event that results in a person inadvertently coming to rest on the floor, ground, or other lower level with or without injuries (World Health Organization, 2012). Data collection involved review of medical records for qualified participants. Data were collected during the PFH meeting with the multidisciplinary team but completeness and accuracy of data were determined by the principal investigator. The data collection time frame involved the pre-intervention quarters (3rd and 4th quarters of 2015), and a post-intervention quarter (1st quarter of 2016). During this time, the 10-week implementation of the PFH program occurred. Falls were measured as "No Subsequent Falls" and "Subsequent Falls."

To continually assess the contextual elements of falls, we examined relevant items on the PFH form. Similar tools to the PFH form, that incorporate multiple etiologies for falls, have been found to have a 70% sensitivity for predicting falls (Anderson et al, 2015). To our knowledge, there is not a validated tool to address prevention of recurrent falls available but what has been recommended is using a tool that covers intrinsic and extrinsic risk assessment to reduce falls. One of these items is the location of falls to help identify high-risk areas for falls prevention. Fall location was collected using the medical record and documented on the PFH form. Also, the way in which falls were reported were examined for its impact on the recommendations for fall prevention. This item was collected using the PFH form or the medical record.

2.4. Analysis

Quantitative methods were used to analyze falls and fall reduction. Data were gathered in discrete counts in nominal categories. Descriptive statistics were used to describe fall location, way in which falls occurred, PFH recommendations for fall reduction, and root cause of falls post-intervention. Chi-Square Test of Independence was used to determine if there was a significant relationship between variables.

Ethical Considerations

This project was reviewed by the IRB and determined to not meet criteria for human subjects research, and therefore did not require IRB oversight. There were no real or potential conflicts of interest to report by the investigators. Upon admission, all residents were invited to participate in the PFH program by the primary investigator whether they had previously fallen or not. An informed consent was obtained for those able to provide consent and the Power of Attorney was contacted for consent for participants that was cognitively impaired to make their own decisions. All data collected were kept confidential. Patient identifiers were not used. Participants were given a project identification number when a fall occurred (ie; fall number 1, fall number 2…..) without any linking information to patient identifiers. Once the project concluded all data were shredded at the facility.

2.5. Results

The results were multifactor consisting of root cause of the falls, fall location, way in which fall occurred, and recommendations. During the 10-week project, there was a total of 16 patients that suffered a fall. No major injuries to patients occurred. In this project, there was no statistically significant difference in falls from before the PFH program (either quarter 3 or 4) and first quarter after implementation (Quarter 3: x^2 = .339, df = 1, p = 0.560), (Quarter 4: x^2 = .466, df = 1, p = 0.495). However, there was seen a reduction in the absolute values for falls after PFH implementation.

2.6. Root cause of falls post-intervention

For the 16 falls post-intervention, a root cause for each of those falls were identified. The majority of falls were due to toileting (n = 7; 43%), transferring (n = 4; 25%), impaired gait or mobility (n = 2; 1.25%), unrealistic assessment of ability (n = 2; 1.25%) and other (n = 1; 0.06%). Unrealistic assessment refers to a situation where the resident assumed their strength was at baseline, but they were weaker than their personal assessment in strength. See Figure 1.
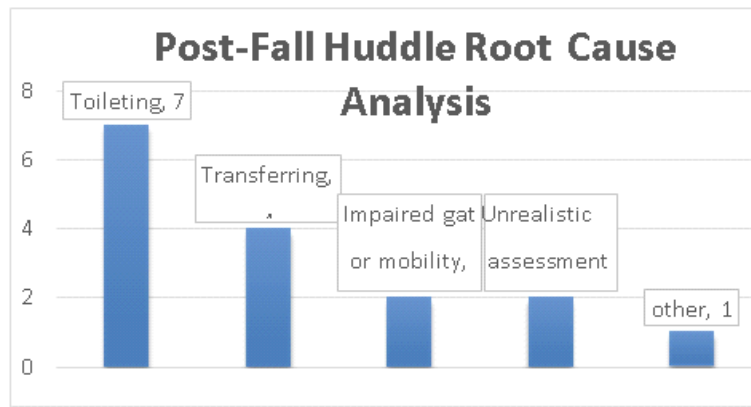
Fig. 1: Root Cause Fall Analysis.

2.7. Fall location:

In Figure 2, the majority of falls happened in the resident's room (3rd quarter: n = 40, 57%), (4th quarter: n =59, 75.73%), and (post-intervention quarter: n = 9, 56.25%). The remainder of falls occurred in the resident's bathroom (n = 6, 8.5%).
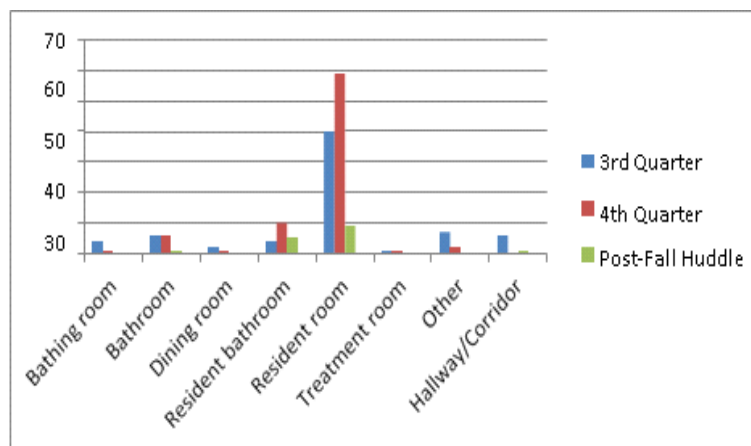

Fig. 2: Fall Locations.

2.8. Way in which falls occurred:

The way in which falls occurred and reported has an impact on the recommendations for fall prevention. Pre-intervention in the 3rd and 4th quarter combined (n =148), the majority of falls (n = 120, 81.1%) were unwitnessed (visually observed on the floor, self-reported and self-lowered down) as compared to witnessed (falling but caught, staff-lowered down and witnessed fall) which was 28 (18.9%) falls. See Figure 3.
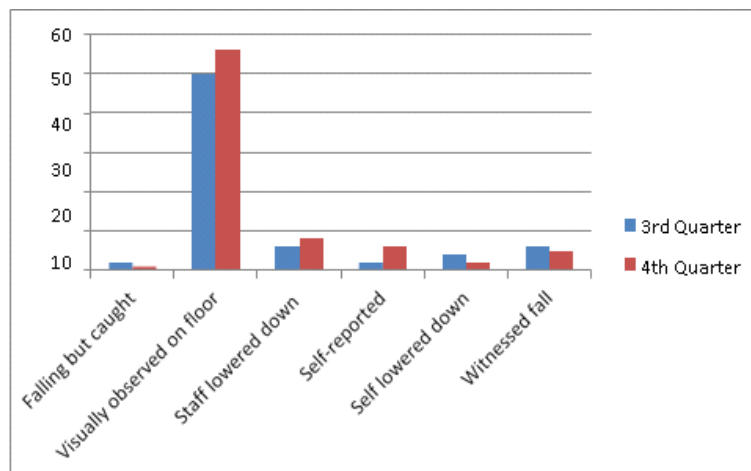

Fig. 3: Way in Which Fall Occurred.

2.9. Recommendations by huddle for reducing falls

The PFH intervention participants, which included the APN, RN, and other support staff, conducted a total of 16 meetings, one for each fall occurrence. There were no more than 2-3 people in attendance at each meeting. During the PFH, the group made recommendations of what can be done to reduce falls among patients. In the PFH, recommendations were based on what was appropriate for the resident which could include multiple recommendations. The 2 most common recommendations were closer observation and using an alarm on the bed

and/or chair (n = 16). Other recommendations from the PFH meetings included toilet planning (n = 4), non-skid socks and assistive device (n = 3) and pt/ot (n = 1). Toilet planning refers to when the resident will be scheduled for the next assisted transport to the bathroom. See Figure 4.
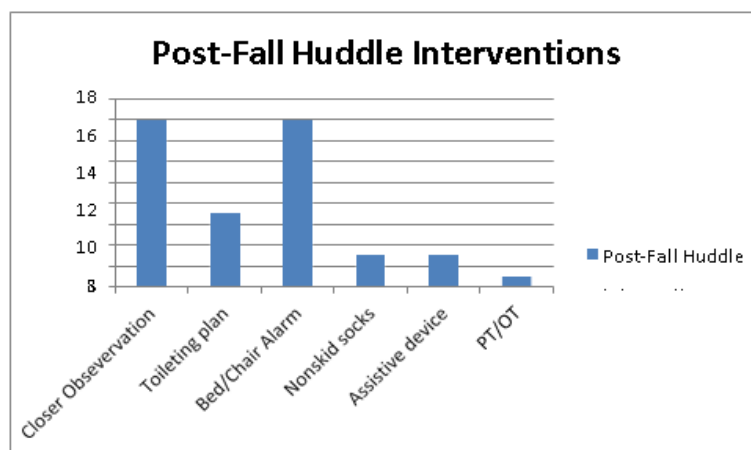

Fig. 4: Post-Intervention Huddle Recommendations.

3. Discussion

3.1. Summary

This quality improvement project sought out to address whether the implementation of a PFH reduces the number of recurrent patient falls. Before the project, there were a total of 148 falls, and the quarter after implementation there were 16 falls that occurred. These findings show a reduction in the absolute values of recurrent patient falls per quarterly reporting after the implementation of the PFH. The PFH identified root causes, fall locations, context for how falls occurred, and recommendations for avoiding future falls.

3.2. Interpretation

A PFH program can be feasibly implemented and lead by an APN. There was a reduction in the absolute values of recurrent patient falls after the implementation of the PFH. The PFH program provided an organized way to gather information on intrinsic and extrinsic factors related to the fall, in order to design customized interventions into the plan of care and prevent subsequent falls. Our project goals were met. Additionally, during the project, there was an increase in communication, collaboration, and coordination amongst the healthcare team. However, there is more work to be done to continue and sustain a PFH program to address quality improvement of care for the reduction of subsequent patient falls.

A PFH helps to evaluate and improve clinical practice, including unanticipated changes, such as regular quality improvement meetings for falls prevention. Fall prevention programs can be based on data from the post-fall assessment as evidenced by Anderson et al (2015) in which a post-assessment led to the creation of agency-level fall policies that addressed patient confusion and ways to prevent related falls.

3.3. Limitations

During the project, it was found to be difficult to study processes of the PFH program, its support from leadership, and sustainability of the program. Throughout implementation, staff participation was challenging. Buy-in of organizational leadership was also challenging and likely a reason for the lack of motivation for project participation as well as sustaining the project.

A major challenge was the lack of participation in the project by staff. The facility was a part of a larger health system. In the large system, a single facility cannot make changes to policies, such as the continued implementation of the PFH program, unless systematically accepted throughout the organization. The adoption of a system-wide PFH program would need a longer time line than allotted for this project as well as compounded evidence and resources to support the change. Another consideration is the sustainability of a PFH program. Programs should be continuously assessed over a period of time. As noted in Hilsenbeck & Trepan (2014), there was a 50% reduction in falls over a two-year period and Hatfield (2007) had successfully achieved zero repeat falls after nine months of a PFH program. There was minimal support from system-wide leadership for adopting and sustaining the program. At the time, leadership deemed sufficient the adopting of only the new PFH form that would be filled out by nursing. However, adopting only the form may be too general an approach that does not individualize care to the patient that had a fall, or the associated injuries, to prevent subsequent falls. Despite investigator recommendations, the PFH program is not in place and fall rates continue to be high.

3.4. Conclusions

In conclusion, this quality improvement project demonstrates a feasible example of a PFH program led by APNs for SNFs and long-term care facilities. There is value in the implementation of a PFH program to reduce subsequent falls. Our PFH program provided an organized way to gather information on intrinsic and extrinsic factors related to the fall, in order to design customized interventions into the plan of care and prevent subsequent falls. Furthermore, during the project the PFH and the PFH form was used to assist with communication, collaboration, and coordination amongst the healthcare team. However, there is more work to be done to address quality improvement in the care of SNF patients to reduce fall and subsequent falls. In addition, a project is indicated to measure an improvement in communication between healthcare providers when using the PFH form.

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