INVESTIGATING FALL PREVENTION IN AN INPATIENT ORTHOPEDIC AND NEUROLOGY UNIT: A QUALITY IMPROVEMENT PROJECT

by

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of the requirements for the degree

of

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DEDICATION

I dedicate this to my parents, Jesus and Gloria, as well as my siblings, Cynthia, Linda, and Vanessa, who have supported and encouraged me throughout my educational journey.

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ABSTRACT

Background: Patient falls are an issue in hospitals nationwide since the Centers for Medicare and Medicaid Services has stopped reimbursing facilities for them. This has led to an increase in the length and cost of hospital stays, costing hospitals and healthcare systems billions of dollars annually across the United States.

Local problem: An Orthopedic and Neurology Unit in North Central Montana has seen a steep increase in in-patient falls over the last two years, which has increased the length of stay, hospital costs, and the number of case reviews.

Methods: The Institute for Healthcare Improvement's (IHI) model for quality improvement was used, and the Plan, Do, Study, Act (PDSA) Cycle was determined to be the best tool for implementing and evaluating the project. The project spanned over 33 days and consisted of two PDSA cycles.

Interventions: Interventions used included: 1) educating staff about the facility's fall prevention policy, 2) correct use of the Morse Falls scale, 3) installing command hooks in each patient room for easy access to gait belts, 4) a daily checklist for nursing staff to document fall prevention interventions and 5) the use of Posey and bed alarms.

Results: Staff compliance with fall prevention interventions was the largest component potentially affecting falls. Lack of staff education and training in the use of the Morse Falls Scale and fall prevention was also a prominent issue, as was resistance to change and cognitive overload.

Conclusion: The facility should consider annual fall prevention training as well as annual Morse Fall Scale training.

CHAPTER ONE
REVIEW OF THE LITERATURE

Introduction

Background

Fall prevention has become a significant priority in healthcare since the Centers for Medicare and Medicaid Services (CMS) ceased paying for injuries or complications resulting from falls in 2008 (CMS, 2008; Fehlberg et al., 2017; King et al., 2018; Scheidenhelm et al., 2020). This initiative was initiated in 2005 after patient safety was introduced as a significant issue in 2000 in the white paper, *To Err is Human*, published by the Institute of Medicine. After the publication of *To Err is Human*, Congress instructed the Secretary of Health and Human Services to identify preventable hospital-acquired conditions for which CMS would no longer reimburse hospitals. Thus, they created a list of thirteen preventable hospital-acquired conditions that align financial incentives with healthcare quality improvement (Fehlberg et al., 2017). One of those thirteen conditions deemed preventable by politicians was inpatient falls, intended to promote research in fall prevention. This initiative has yielded the results sought by Congress and CMS. It has prompted hospitals nationwide to seek ways to prevent falls at their institutions. However, despite extensive research, no definitive solution has been identified, as falls are multifactorial problems. Numerous fall prevention interventions have been tested with mixed results (Fehlberg et al., 2017). Several articles have found that more research is needed since the results for much of the research indicate that some interventions, like education and bundled or multi-component approaches, are adequate but not statistically significant (Chegini et al., 2022, Fehlberg et al., 2017; LeLaurin & Shorr, 2019; McKercher et al., 2024).

Inpatient falls continue to occur at a rate of one million falls annually, which accounts for 70% of patient accidents (Scheidenhelm et al., 2020), despite the research and interventions carried out by health systems. This costs hospitals and health systems an estimated $50 billion annually (Kartiko et al., 2019). As falls increased, the length of hospital stays increased by six to twelve days, and injuries from falls cost between $19,376 and $32,215 (Dykes et al., 2020).

Fall prevention is not only important monetarily but also affects quality of life. Just one fall can lead to fear of falling and can result in reduced mobility, loss of function, and significant risk of falling (Dykes et al., 2010). Falls can also lead to life-threatening outcomes, including head trauma, fractures, and death, and are estimated to be the second leading cause of accidental death worldwide (Cruz et al., 2016).

Objective

This review aims to evaluate and summarize the current fall prevention research, including systematic reviews, randomized trials, cohort studies, and observational studies.

Methods

Overview

This review was conducted in accordance with the PRISMA (Preferred Reporting Items for Systematic Reviews) guidelines. The following steps were undertaken to carry out the review: First, the research question was identified through stakeholder consultations. Next, relevant studies were identified by searching academic databases. Studies were then selected based on specific inclusion criteria. These studies and projects focus on fall prevention in adult patients or medical staff within medical-surgical, orthopedic, or neurology units, as well as evaluating the Morse Fall Risk assessment tool, all of which should be published in English. Subsequently, the data were organized into an evidence table. Finally, the identified information and themes were collated and summarized, and the results were reported.

Search Strategy

For the search, the Academic Search Complete (EBSCO) database, MSU Catsearch, which included databases CINAHL, ProQuest Central, MEDLINE, Journals Ovid, Web of Science, Publicly Available Content, Health Reference Center Academic, Gale Academic, Directory of Open Access Journals, Health and Medical Collection were used. The following keywords were included: falls, hospitalization, prevention, injuries, accidental falls – statistic and numerical data, and accidental falls – prevention and control. Databases were searched for research from 1991-2024. Duplicates were removed, and the abstract review resulted in 68 potential qualifying publications.

Inclusion Criteria

The review encompassed peer-reviewed publications published in English between 2010 and 2024, including systematic reviews, cohort studies, quality improvement initiatives, evidence-based practice, retrospective analyses, and observational studies that assessed the effectiveness of fall prevention interventions. Furthermore, the scoping review process incorporated fall prevention toolkits and evidence-based practice bundles. The articles examined primarily focused on adult patients or medical staff within medical-surgical, orthopedic, or neurology units, utilizing Morse Fall Risk assessment.

Results

Literature Search

The articles underwent a rigorous three-stage selection process: identification, screening, and inclusion. Initially, the articles were screened based on their titles and abstracts, with duplicates removed. Those articles that met the inclusion criteria were then advanced to a full-text review. The initial search yielded 274 articles, which were narrowed down to 68 after applying the relevant filters. These 68 articles were further screened through abstract review, resulting in 28 being read in full, with 23 ultimately included in the synthesis (refer to PRISMA diagram).

Characteristics of the Literature

All studies included in the scoping review focused on adults or healthcare workers. The aims of the selected articles ranged from evaluating interventions and fall toolkits to assessing the cost-effectiveness of fall prevention measures and their impact on staff.

Specifically, the study types comprised (n=1) (King et al., 2016) qualitative study, (n=1) (Dykes et al., 2010) cluster-randomized studies, (n=2) (Turner et al., 2020; Vechter & Drach-Zahavy, 2024) cross-sectional studies, (n=1) (Choi et al., 2024) descriptive cross-sectional studies, (n=1) (Bargmann & Brundrett, 2020) evidence-based practice projects, (n=1) (Baris & Intepeler, 2023) interventional studies, (n=1) (Hakvoort et al,. 2021) mixed method studies, (n=1) (Dykes et al., 2020) nonrandomized controlled trials, (n=2) (Fehlberg et al., 2017; Røyset et al., 2019) observational studies, (n=1) (Morgan et al., 2016) quality improvement initiatives, (n=1) (Cruz et al., 2016) quantitative descriptive and correlational studies, quasi-experimental studies with non-randomized control groups, (n=2) (Baek et al., 2013) retrospective case-control studies, (n=2) (Ji et al., 2023; Gringauz et al., 2017) retrospective cohort studies, (n=1) (Scheidenhelm et al., 2020) retrospective reviews, (n=1) (LeLaurin & Shorr, 2019) reviews of study designs, (n=1) (Strini et al., 2021) systematic literature reviews, and (n=2) (Hempel et al., 2013; McKercher et al., 2024) systematic reviews.

Synthesis of the Literature

A literature review of twenty-three articles revealed several prominent themes, including education, the Morse Fall Scale, cultural behaviors and perceptions, fall prevention bundles, multicomponent interventions, and risk factors. Education was highlighted in twelve studies (Bargmann & Brundrett, 2020; Baris & Intepeler, 2023; Chegni et al., 2022; Choi et al., 2024; Dykes et al., 2010; Dykes et al., 2020; Hakvoort et al., 2021; Hemple et al., 2013; LeLaurin & Shorr, 2019; McKercher et al., 2024; Morgan et al., 2016; Turner et al., 2020). The Morse Fall Scale was addressed in six articles (Baek et al., 2013; Cruz et al., 2016; Gringauz et al., 2017; Hemple et al., 2013; Ji et al., 2023; Strini et al., 2021). Cultural behaviors and perceptions were discussed in two studies (Hakvoort et al., 2021; Vechter & Drach-Zahavy, 2024). Fall prevention bundles and multicomponent interventions were covered in five papers (Bargmann & Brundrett, 2020; Baris & Intepeler, 2023; Hemple et al., 2013; McKercher et al., 2024; Scheidenhelm et al., 2020). Lastly, five articles explored risk factors (Choi et al., 2024; Cruz et al., 2016; Groot et al., 2019; Scheidenhelm et al., 2020).

Education

Education plays a significant role in fall prevention, with evidence-based educational interventions demonstrating a reduction in the incidence of falls (Bargmann & Brundrett, 2020;

Chegini et al., 2022; Dykes et al., 2020; Hakvoort et al., 2021; LeLaurin & Shorr, 2019; McKercher et al., 2024; Turner et al., 2020). The studies highlight education in three forms: staff and patient education, patient education alone, and staff education alone. Five articles addressed combined staff and patient education (Baris & Intepeler., 2023; Dykes et al., 2020; Hempel et al., 2013; McKercher et al., 2024; Turner et al., 2020). Four articles focused solely on patient education (Chegini et al., 2022; Choi et al., 2024; Dykes et al., 2010; LeLaurin & Shorr, 2019). Additionally, three articles evaluated staff education interventions (Bargmann & Brundrett, 2020; Hakvoort et al., 2021; Morgan et al., 2016).

The literature indicates that multi-component interventions, which include education, are more effective in reducing falls (Baris & Intepeler., 2023; Hempel et al., 2013, Mckerscher et al., 2024). Dykes et al. (2010) found that the patient education intervention group experienced twenty fewer falls compared to the control group, a difference that was statistically significant. Chegini et al. (2022) reported that education significantly improves patients' understanding of fall prevention and their self-efficacy, making them more knowledgeable about slips, trips, falls, and how to prevent these incidents. Furthermore, Choi et al. (2024) observed that patients with longer hospital stays often need education to recognize their fall risk adequately. This low risk perception is likely due to their adaptation to the hospital environment. Choi et al. (2024) noted that 43% of patients' self-assessments of fall risk were inconsistent with the assessments made by nurses, further highlighting the need for education to help patients better understand their fall risk. Patients who view their fall risk as low are more inclined to engage in risky behaviors. Moreover, Vechter and Drach-Zahavy (2024) discovered that nurses' low perceptions of unit protocols motivated them to proactively educate patients about fall prevention. This proactive approach is critical for reducing falls; therefore, (Vechter and Drach-Zahavy, 2024) recommend that nursing management foster and encourage proactivity among staff. Turner (2020) identified patient, family, and staff education as crucial elements in fall prevention implementation strategies as it was found that; 98% of hospitals provided patients one on one educational and 85% provided printed education to families, and 78% of hospitals provided training to nursing staff, while of the 78% only 22% offered education to all employees, and 69% provided annual training. Of the 69% of hospitals that conducted yearly training, 41% offered it exclusively to nurses, compared to 28% that included all staff (Turner et al., 2020). Additionally, Morgan et al. (2016) discovered that after educating staff on intentional rounding and subsequently implementing it, falls were reduced by 50%.

The studies incorporating education as part of their interventions provided one-on-one education or general printed materials. Some, like Dykes et al. (2010), tailored handouts to match care plan interventions and the literacy levels of consumers. Education emerged as the most frequently cited intervention in the studies reviewed, and for a good reason; Bargmann and Brundrett (2020) found that within the first four months of implementing their intervention, the fall rate decreased by 55%, which was statistically significant as they achieved a fall rate was 0.54 per 1,000 bed days. Both education and the use of fall scales play a crucial role in preventing falls.

Morse Fall Scale

Fall risk assessments are essential for fall prevention (Baek et al., 2013; Cruz et al., 2016; & Gringauz et al., 2017; Hemple et al., 2013; Ji et al., 2023; Strini et al., 2021). Hemple et al., (2013) found in their systematic review that 83% of the fall prevention studies examined included fall risk evaluations. One fall risk assessment frequently mentioned in the included articles is the Morse Fall Scale (MFS), developed in 1989 by J. Morse. The Morse Fall Scale (MFS) has been tested in acute inpatient settings, long-term care facilities, and both inpatient and outpatient rehabilitation areas (Morse et al., 1989). The testing of the MFS in various areas has led to it being one of the most commonly used fall scales; it also has a validity (accuracy) of 70%, reliability (consistency of its measurements) of 96%, sensitivity (ability to identify those who will fall) of 78%, and specificity (ability to identify those who will not fall) of 83% with proper calibration for the unit (Morse, 2008). The MFS offers a straightforward method to evaluate a patient's likelihood of falling. The scale consists of six components: 1) history of falls, 2) secondary diagnosis, 3) use of ambulatory aids, 4) intravenous therapy, 5) gait type, and 6) mental status (Baek et al., 2013; Ji et al., 2023; Morse, 2008; Strini et al., 2021).

The existing literature indicates that challenges arise during the implementation of the Modified Falls Scale (MFS). For example, nursing staff correctly utilized the MFS only 69.2% of the time (Cruz et al., 2016). Although the MFS can be tailored to suit the specific patient population at a facility, improper adjustment of risk cutoff values—whether set too low or too high—can undermine its effectiveness. A score of 25 or less indicates low risk, a score between 25 and 45 indicates moderate risk, and a score of 45 or greater indicates high risk (Morse, 2008). The optimal cutoff for the MFS is suggested to be 45, with a sensitivity of 60%, meaning it correctly identifies 60% of patients at risk of falling who do indeed fall, and a specificity of 68%, which means it accurately identifies 68% of patients who are not at risk of falling (Ji et al., 2023).

Therefore, it is crucial to ensure that staff members are adequately trained and effectively use the MFS. When calibrated properly, the MFS is a valuable tool due to its quick and reliable nature (Baek et al., 2013; Gringauz et al., 2017). In addition to proper calibration and training, other factors, such as regional educational preferences, should be considered, as some nursing schools may teach different fall assessment scales, leading to staff resistance when learning a new scale. Furthermore, it is important to note that the MFS does not account for high-risk medication use.

Perceptions, Culture, and Behaviors

Qualitative studies suggest staff perceptions, unit culture, and behaviors influence fall prevention (Hakvoort et al., 2021; King et al., 2018; Vechter & Drach-Zahavy, 2024). King et al. (2018) found when hospital management and administration communicated strongly worded messages about minimizing falls, staff felt considerable pressure and guilt about fall prevention. As a result, this led to restrictions on patient mobility as a precaution against falls. Such as not allowing patients to ambulate (King et al., 2018). Moreover, restrictive measures can cause additional complications, including pressure wounds, further deconditioning, and pneumonia.

Hakvoort et al. (2021) found discrepancies among nurses, geriatric specialists, educational experts, and managers regarding the specific behaviors targeted in fall prevention programs. This inconsistency may stem from a lack of interdisciplinary diversity within fall committees, as they primarily comprise nursing staff and very few providers or other medical staff (Turner et al., 2020). Notably, Vechter and Drach-Zahavy (2024) found that the greater the adherence to policies and procedures, the less likely nurses were to proactively provide patient fall prevention education. Although this finding was unique to this study, and there was no other information in the other studies to support or contrast this finding, it is worth mentioning as it provides an insight into human behavior. Hopefully, more research will be done to understand these behaviors better. Nevertheless, policies and procedures are essential as they inform the facility's fall prevention interventions.

Fall Prevention Bundles and Multicomponent Interventions

Bundled and multicomponent interventions are widely used in healthcare settings. While fall prevention bundles advocate for the use of multi-component interventions, there is limited research supporting this approach (Bargmann & Brundrett 2020; Baris & Intepeler, 2023; Hemple et al., 2013; Scheidenhelm et al., 2020; McKercher et al., 2024). A systematic review by Hemple et al. (2013) revealed that 81% of the studies included multi-component hospital interventions. These interventions included risk assessments, visual risk alerts, patient education, intentional care rounds, bed-exit alarms, and post-fall evaluations. Furthermore, 83% of the studies included a fall risk assessment (Hemple et al., 2013). Most recently (Turner et al., 2020) found that 98% of the hospitals assessed had fall assessment tools embedded in their daily nursing assessment.

Baris and Intepeler (2023) suggest a 66.7% (three falls pre-intervention and one fall post-intervention) reduction in patient falls following the implementation of bundled fall interventions; however, this decrease in falls was not statistically significant. Additionally, Baris and Intepeler (2023) reported a 66.7% (pre-intervention = 0.12, post-intervention = 0.04) decrease in falls per 1,000 patient days (number of falls/total patient day x 1000) after the intervention was enacted. However, Scheidenhelm et al. (2020) determined in their retrospective analysis that implementing a fall bundle would reduce the number of falls, as there were 63 falls post-intervention and 235 falls pre-intervention; this was statistically significant p=.044. Bargmann and Brundrett (2020) suggest falls decreased from 1.59 per 1,000 patient bed days to 1.38 per 1,000 patient days post-intervention. A systemic review by (McKercher et al., 2024), found that seventeen of the twenty guidelines reviewed supported multifactorial interventions. The last theme that was identified is fall risk factors.

Risk Factors for Falls

There are various risk factors for falls, including medications, gender, age, balance, and cognitive function (Choi et al., 2024; Cruz et al., 2016; Groot et al., 2019; Scheidenhelm et al., 2020). According to de Groot et al. (2019), 47% of patients who experienced falls were taking anxiolytics or hypnotic drugs (e.g., Buspar and Ambien). Scheidenhelm et al (2020) identified narcotic pain medications and those affecting the central nervous or cardiovascular systems as significant contributors, noting that 84.2% of patients who fell before the intervention and 91.5% post-intervention were using narcotic medications.

Gender also emerged as a significant risk factor; de Groot et al. (2019) reported a gender gap with 58.7% of patients who fell were male and (Scheidenhelm et al., 2020) identified in their literature review that men were more likely to fall. In contrast, Cruz et al. (2016) observed that females had a higher fall risk of 31.8%. However, Cruz et al. (2016) provided no rationale for women having more falls, nor was any found in any reviewed articles. In addition, age appears to play a role in fall risk. Cruz et al. (2016) highlighted that patients over 65 faced a greater risk of falls. Scheidenhelm et al. (2020) corroborated these results, showing that patients who fell had average ages of 68.7 and 66.8 years in their pre- and post-intervention analyses. Balance was also found to be a risk factor for falls, as age causes a decrease in coordination and strength, which can be made worse with medications and chronic disorders.

Balance was identified as a significant risk factor for falls, with 39.0% of incidents occurring among patients with poor balance and 54.1% among those with very poor balance (de Groot et al., 2019). Additionally, the analysis suggests that the number of drugs administered increased for patients who experienced falls from admission to discharge. However, no specific details were provided about the extent of this increase (de Groot et al., 2019). Choi et al. (2024) observed patients with extended stays tended to perceive their risk of falling as low, which led them to engage in fewer fall-prevention behaviors. Education is needed to help patients recognize their risk of falling (Choi et al., 2024). Moreover, Choi et al. (2024) discovered that patients with orthopedic conditions often underestimated their risk of falling due to being younger, having fewer comorbidities, taking fewer medications, and having a shorter hospital stay.

Discussion and Conclusion

Despite extensive research, some interventions continue to lack validity and substantial support. Specifically, non-skid socks, bed alarms, and intentional rounding lack high-quality evidence to justify their use. LeLaurin and Shorr (2019) highlight that alarms can be disruptive, often worsening agitation in confused patients, and do not significantly lower fall rates; moreover, they are not cost-effective. The evidence supporting hourly rounding primarily comes from quality improvement projects rather than rigorous studies (LeLaurin & Shorr, 2019). Furthermore, while non-skid socks are commonly utilized, limited research supports their effectiveness; in fact, they may increase the risk of spreading drug-resistant infections in hospitals (LeLaurin & Shorr, 2019). Notably, eight of the 23 articles reviewed indicated a need for more research on fall prevention and its associated interventions.

This review analyzed 23 inpatient fall prevention articles from the last 14 years, revealing several key themes: education, the Morse Fall Scale, perception, unit culture, behaviors, fall prevention bundles, and multicomponent interventions. Overall, further research is recommended to explore the most effective evidence-based interventions. This is particularly important as the hospital patient demographic has evolved over the past 30 years (McKercher et al., 2024). The Baby Boomer generation, the largest generation ever born in the U.S., is now entering the latter stages of life, necessitating changes in current practices to better address the needs of the rapidly changing population.

Implications for Practice

Fall prevention is essential in all healthcare settings, as it helps avoid negative health outcomes and serious injuries, enhances quality of life, and lowers costs for healthcare facilities, insurers, and patients alike. By minimizing the length of hospital stays, fall prevention not only reduces expenses for all parties involved but also reduces the burden of bed shortages and exceeding long turn around times in the emergecy room and operationg room.

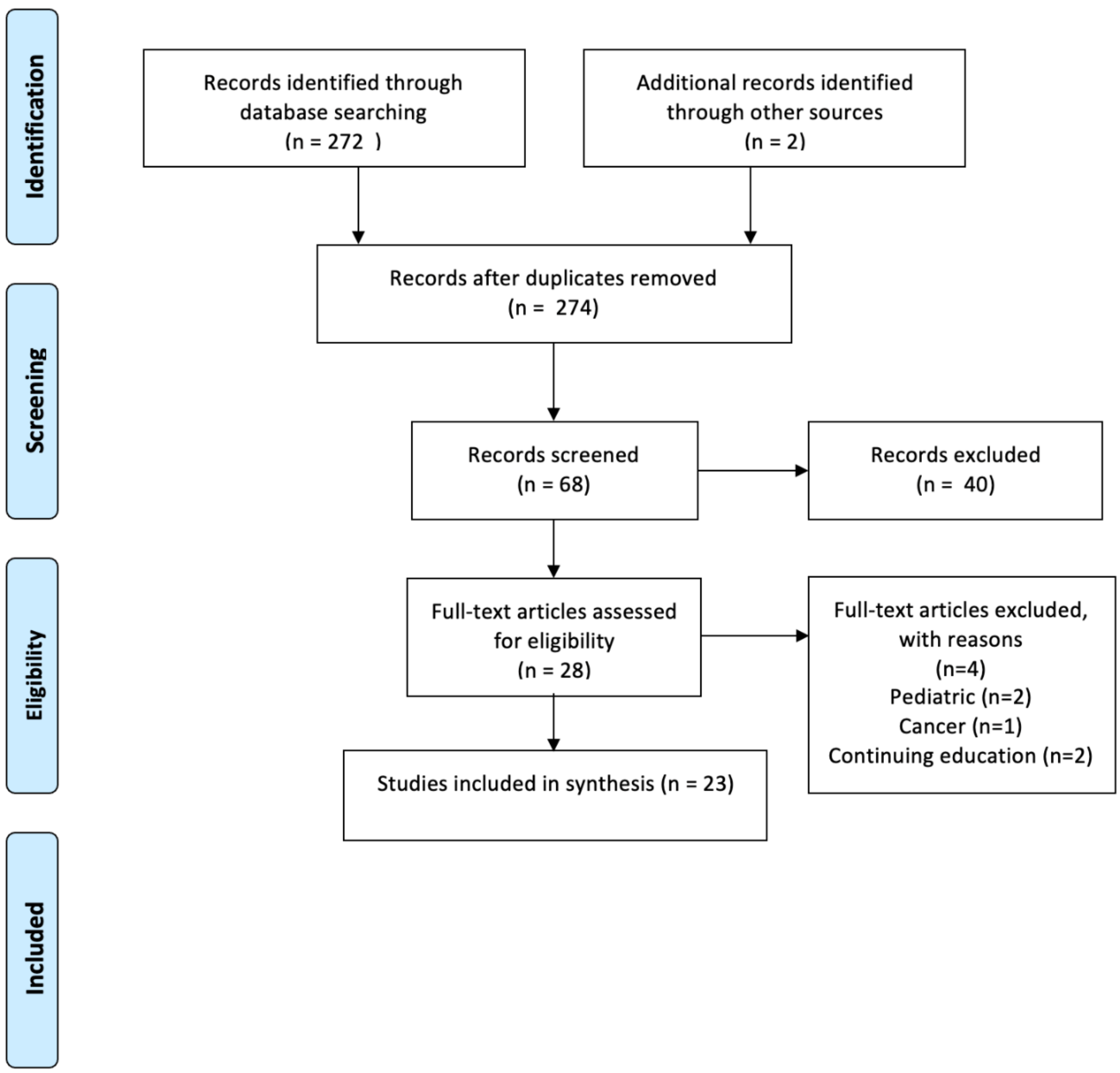

Figure 1. PRISMA Flow Chart

CHAPTER TWO

QUALITY IMPROVEMENT PROPOSAL

Introduction and Poblem

Introduction

Despite implementing fall prevention measures, falls continue to occur, placing significant financial strain on the healthcare system and adversely affecting patients. There is a pressing need for more information on fall prevention, as approximately 700,000 to 1 million patient falls happen annually in U.S. hospitals, leading to around 250,000 injuries and as many as 11,000 fatalities (LeLaurin & Shorr, 2019). Additionally, Montana has been ranked 7th nationally for age-adjusted death rates due to injuries such as falls, accidents, assaults, etc., from 2011 to 2021; however, falls accounted for approximately 17% of deaths from 2009-2018 (Montana Department of Public Health and Human Services [DPHHS], 2022). Patients are negatively affected, and falls are creating a significant cost burden to hospitals and healthcare systems, as falls cost between 1.6% and 13.4% of the annual income in acute care hospitals (Montejano-Lozoya et al., 2020).

Problem and Aim Statement

This quality improvement project aims to implement evidence-based interventions to reduce rates of extrinsic falls. Falls are a complex issue and can be caused by intrinsic factors such as seizures and syncopal episodes; these types of falls are typically unavoidable, as they stem from conditions that cannot be controlled or mitigated. In contrast, falls resulting from extrinsic factors such as poor lighting, lack of non-skid footwear, and lack of use of adaptive equipment such as walkers, canes, or gait belts are preventable, as measures can be put in place to mitigate the associated risks (Strini et al., 2021).

Project Site Context

A local hospital with a fourteen-bed orthopedic and neurology unit has experienced increased patient falls over the past few years. The stakeholders involved in this project include nurse managers, clinical educators, staff nurses, certified nursing assistants, patients, and their families. The need for this project was identified after meetings with unit managers and conducting a SWOT (strengths, weakness, opportunities, and threats) analysis. After meeting with the unit managers, it was discovered that as of October 2024, the unit was one fall away from exceeding the previous year's total of 11 extrinsic falls. The facility considers a fall "A sudden, uncontrolled, unintentional, downward displacement of the body to the ground or other object, excluding falls resulting from violent blows or other purposeful actions" (VHA National Center for Patient Safety, 2004). A SWOT analysis conducted by the lead investigator in October of 2024 revealed that the unit has undergone several changes in the last year, including implementing a new electronic health record (EHR) system and a fall risk assessment tool. Previously, the Johns Hopkins Fall Risk Assessment tool was used with Meditech, the old EHR as it was a built-in tool for the program. The new EHR, Epic, employs the Morse Falls scale as it is a copyrighted tool built into the program that cannot be changed.

In addition to the new EHR and fall risk scale, staffing changes have resulted from turnover and the hiring of temporary staff to meet the facility's needs. The SWOT analysis conducted in October 2024 identified that the hospital already has a fall prevention policy incorporating multicomponent interventions. This policy includes multi-component/bundles for low, moderate, and high fall-risk patients, such as providing grip socks, gait belts, low beds, yellow stars or lights on doors, and video monitoring.

Low Fall Risk

- Maintain a hazard-free environment.
- Bed in low position (as appropriate for patient height).
- Top two side rails up at all times.
- Ambulatory devices within reach.
- Personal items within in reach.
- Non-skid footwear for ambulation/activity Encourage patient and family to ask for assistance for any patient activity.
- Consider need for additional lighting.
- Lock all movable equipment (as equipped)
- Educate patient and visitors on fall risk protocol.

Moderate and High Fall risk

- Yellow star magnet posted on outside of patients door.
- Yellow non-skid socks.
- Yellow door light activated on units where applicable.
- Safety alarms activated – Medline bend and chair alarm, bed alarm (manufacturer installed).
- Do not leave unattended while in bathroom or on bedside commode.
- Assistance with ambulation/transfers.

- Gait belt use during ambulation and patient transfers.
- Educate patient and visitors of high fall risk protocol during handoff.
- Posey bed.
- Low bed.
- Diversion activities.
- Floor mat.
- Reorient patient.
- Video monitoring.

However, the SWOT analysis (Figure 2) further revealed that, despite this multicomponent fall prevention policy, the facility lacks annual fall prevention training and does not have a fall committee. After discussions with the managers and staff, it was found that while training was provided on the new EHR, staff had yet to receive training on using the Morse Falls scale. Furthermore, it was noted that the current fall prevention policy aligns with the recommendations from the Agency for Healthcare Research and Quality (AHRQ); however, falls continue to occur. Due to the numerous changes implemented in a short time frame, along with a lack of training and the findings from the SWOT analysis, staff may be experiencing cognitive overload, which may hinder their ability to process information effectively. Therefore, a teaching method that addresses cognitive overload should be utilized when implementing an educational intervention. This would include an interactive learning activity to stimulate learning.

Figure 2 SWOT Analysis

Quality Improvement Model

The Institute for Healthcare Improvement (IHI) model was employed to select a framework for this quality improvement project. The PDSA cycle from IHI was chosen as the framework for this QI project because it is specifically designed to test and adapt changes for process improvement initiatives or studies (Institute for Healthcare Improvement [IHI], n.d.). This quality improvement project will examine various fall prevention strategies, including staff education and training, as well as the facility's comprehensive multicomponent fall prevention policy, to assess their effectiveness in reducing falls. The literature suggests that a multicomponent fall prevention intervention is the most effective approach (Bargmann &

Brundrett, 2020; Baris & Intepeler, 2023; Hemple et al., 2013; McKercher et al., 2024). Notably, education serves as the primary intervention in half of the reviewed studies, and multicomponent fall interventions typically include an educational component.

Purpose Statement

The objective of this project is to enhance fall prevention in the orthopedic and neurology unit. A SWOT analysis has identified the increase in falls within this unit is likely attributed to several factors, including changes in electronic health records (EHRs), the introduction of a new fall scale, staff turnover, and insufficient annual training. This project will focus on implementing key interventions such as educating staff about the facility's fall prevention policy, effectively utilizing the Morse Falls scale, and installing hooks in each patient room for easy access to gait belts. Furthermore, a checklist will be introduced to ensure that fall prevention measures, such as Posey alarms, are correctly in place and operational. Given the significant risks associated with patient falls, it has been decided that a Plan-Do-Study-Act (PDSA) cycle will be implemented to improve fall prevention strategies.

Quality Improvement Model or Framework

The framework being utilized is the Institute for Healthcare Improvement's (IHI) Plan, Do, Study, Act (PDSA) model (Agency for Healthcare Research and Quality [AHRQ], 2024). This continuous improvement model consists of four steps: 1) Plan, 2) Do, 3) Study, and 4) Act. Originally developed for manufacturing as Deming’s Wheel, the model was later adapted and refined by the Japanese auto manufacturer Toyota in the 1950s, where it became known as PDCA. Since its inception, it has evolved through various iterations and is now widely recognized as the PDSA cycle. It is commonly employed in healthcare for quality improvement.

The PDSA cycle helps investigators understand how interventions or planned changes operate in a specific setting by systematically planning, implementing, observing the results, and applying what is learned. This framework facilitates necessary changes through its cycles, which allow for issues to be identified and changes to be made after every cycle, and it often requires multiple cycles.

During the "plan" phase, a problem with falls was identified, highlighting the need for change. The causes of the problem were analyzed through a SWOT analysis. Insights from this analysis were then utilized to develop a structured plan for implementing interventions aimed at addressing the underlying issues. This plan included staff education on utilizing the Morse Fall scale and understanding the facility's fall policy, as well as ensuring that essential equipment such as gait belts, Posey alarms, and beds are available in each room, properly connected, and in good working order. The "do" phase involves the execution of the project. This begins with conducting pre-intervention quizzes, followed by staff education sessions. At the end of the education sessions, the staff will be given a fall knowledge quiz again to assess if there were changes in their knowledge. In the “study” phase, after the interventions have been implemented, data and feedback will be collected weekly to assess the need for any changes or adjustments. If there are any changes that need to be made, they will be made at three-week intervals, and the next round of the study phase will be started. Finally, in the "act" phase, findings from the study phases will be analyzed and compared to the initial expectations, providing the lead investigator and stakeholders with evidence regarding the effectiveness of the interventions.

Methods

Implementation Summary

This quality improvement project will take place in the fourteen-bed neurology and orthopedic unit, with the full support of the unit managers and the risk department. Scheduled for spring 2025, the project will run for six to eight weeks. Its primary objective is to educate staff, including registered nurses, licensed practical nurses, and certified nursing assistants, since staff education is a crucial intervention for fall prevention, as emphasized in several of the literature sources reviewed. Additionally, the project will incorporate supplementary measures to enhance fall prevention efforts. These measures will involve regular inspections to ensure the availability and functionality of gait belts and Posey alarms and verify that bed alarms are operational in every room.

Prior to the educational intervention, a pre-intervention quiz will be conducted to evaluate the staff's knowledge of fall prevention. The educational content will be delivered through a voice-over PowerPoint presentation, enhanced by an interactive activity designed to engage participants. Additionally, a checklist will be employed to ensure that each room is equipped with a hook for a gait belt and that the necessary equipment, such as Posey alarms, is available and in good working condition. A post-intervention quiz will be administered after the educational intervention to reassess the staff's fall prevention knowledge. Planning began in October of 2024 and continued until December of 2024, with four stakeholder meetings from October to December. In mid-January, the PDSA cycle is to start, and every two weeks, evaluated until early March. (See Figure 3)

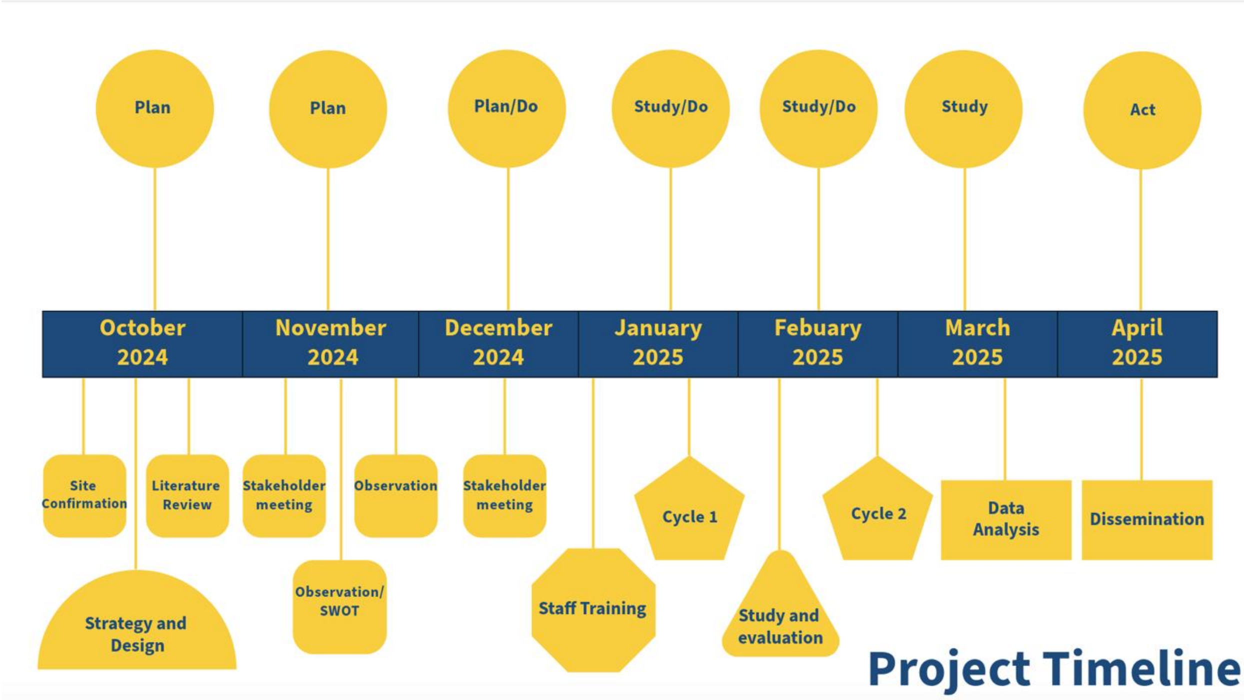

Figure 3. Project Timeline

<u>Intervention and Implementation</u>

Following the development of the PowerPoint presentation and interactive activity, these materials will be administered to the unit staff, including nurses and CNAs, as part of an in-service training program. The objective of this training is to educate staff on the use of the Morse Fall Risk Assessment, to provide an understanding of fall prevention strategies, and to familiarize them with the hospital's fall prevention policy. To assess the effectiveness of the training, pre- and post-education quizzes and surveys will be conducted to measure learning outcomes.

To ensure gait belts are readily available and easily accessible in each patient room, a dedicated 3M Command Hook will be installed specifically for this purpose. The estimated cost is approximately $10 for an eight-pack, totaling around $20 for the entire unit. Management has approved this purchase. A checklist, adapted from the AHRQ Rounding Checklist, will be created and placed on a covered clipboard at each door. This will enable staff to conduct daily checks to confirm that gait belts are present, and that Posey and Stryker bed alarms are properly connected and functioning.

Evaluation and Analysis

Pre- and post-education quizzes adapted from the AHRQ Fall Knowledge Quizzes will be administered, and the results will be compared. The AHRQ Fall Knowledge Quizzes have a validity that was tested with a tetrachoric coefficient of 0.73 and a paired t-test = 12.4, $p < .001$ (Dykes et al., 2018). Fall rates will be analyzed before and after the intervention. Quantitative and qualitative data will be gathered from incident reports, checklists, and pre-and post-knowledge quizzes; the data will be compared pre-and post-intervention. The data obtained from the incident reports will be requested through the Risk Department and supplied in an Excel sheet that contains de-identified data. Data obtained from the checklists will also be transcribed to an Excel sheet, and all data will be stored in the lead investigator’s facility associated with the Microsoft 365 account. Qualitative and quantitative analyses paired t-tests will be conducted to determine whether any statistically significant changes have occurred. Descriptive statistics such as mean, median, mode, range, and standard deviation will be used. The data will be presented in charts and tables to highlight fall prevention improvements and explore any potential correlations.

SMARTIE Goal Reduce falls by 25% in six to eight weeks by implementing education and training interventions.		
Staff education and training in Morse Fall Scale. Staff education and training in fall prevention policy. Adding hooks for gait belts in each patient room and ensuring equipment such as posy alarms and Stryker beds are in each room and in working order.		
Data to be collected	Collection Process	Planned data analysis
Pre and post intervention fall rates, location of falls, Morse fall risk scores, interventions in place when fall occurred, high fall risk medication use. Use of interventions.	Data will be accesses through deidentified Midas reports and chart reviews. Data will be requested through the risk department. De-identified data will be stored in an excel sheet in the lead investigators account on the facilities office 365 software.	Descriptive and qualitative data will be analyzed using charts, tables and fall rates will be calculated as well as rates of implementation of interventions.

Table 1 SMARTIE Goal

Safety and Confidentiality

Approval and support have been secured from the unit managers. Verbal informed consent will be obtained from the staff on the unit, and all information will be de-identified to protect their privacy. Additionally, approval from the Montana State University Bozeman Institutional Review Board (IRB) will be obtained before starting the project to ensure compliance with all applicable rules and regulations. To further safeguard privacy, only the minimum necessary data will be collected. The data will be stored in the lead investigator's Office 365 account associated with the facility. Furthermore, checklists will be maintained on covered clipboards to enhance privacy during the interventions.

CHAPTER THREE

QUALITY IMPROVEMENT MANUSCRIPT

Contribution of Authors and Co-Authors

Manuscript in Chapter 3

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Manuscript Information

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Abstract

Background: Patient falls are considered a "never" event, prompting the Centers for Medicare and Medicaid Services to stop reimbursing facilities for these avoidable occurrences in 2008 as part of the CMS no-pay policy. Falls can potentially lead to an increase in the length and cost of hospital stays, costing hospitals and healthcare systems approximately $50 billion annually across the United States (Kartiko et al., 2019). Nationally 11,000 people die each year from injurious falls (LeLaurin & Shorr, 2019).

Local problem: An Orthopedic and Neurology Unit in North Central Montana has seen a steep increase in inpatient falls over the last two years, which has increased the length of stay, hospital costs, and increased case reviews.

Methods: The Institute for Healthcare Improvement's (IHI) model for quality improvement was used, and the Plan, Do, Study, Act (PDSA) Cycle was determined to be the best tool for implementing and evaluating the project. The project spanned over 4.7 weeks and consisted of two PDSA cycles.

Interventions: Interventions used included: 1) educating staff about the facility's fall prevention policy, 2) correct use of the Morse Falls scale, within the electronic health record. 3) installing command hooks in each patient room for easy access to gait belts, 4) a daily checklist for nursing staff to document fall prevention interventions and 5) correct use of Posey and bed alarms.

Results: Staff compliance with fall prevention interventions was determined as the largest component potentially affecting falls. Lack of staff education and training in using the Morse Falls Scale and fall prevention was also a prominent issue, as was resistance to change and cognitive overload.

Conclusion: The facility should consider annual fall prevention training as well as annual Morse Fall Scale training.

Clinical Problem

Fall prevention has become a significant priority in healthcare since the Centers for Medicare and Medicaid Services (CMS) discontinued reimbursing hospitals for injuries or complications resulting from falls in 2008 as part of the CMS no-pay policy (CMS, 2008; Fehlberg et al., 2017; King et al., 2018; Scheidenhelm et al., 2020). This initiative arose in 2005 after the identification of patient safety as a critical issue in the 2000 white paper, *To Err Is Human*, published by the Institute of Medicine. Following the publication of *To Err Is Human,* Congress instructed the Secretary of Health and Human Services to create a task force to identify preventable hospital-acquired conditions, known as “never events,” for which CMS would no longer reimburse hospitals. As a result, a list of thirteen preventable conditions was developed to align financial incentives with the improvement of healthcare quality (Fehlberg et al. 2017). Among these conditions, inpatient falls were designated as preventable to encourage further research into fall prevention (Fehlberg et al. 2017).

The CMS no-pay policy initiative has prompted hospitals nationwide to explore ways to prevent falls. Despite these efforts, inpatient falls continue to occur, causing significant financial strain on the healthcare system and adversely affecting patients. There is an urgent need for more information on fall prevention, as an estimated 700,000 to 1 million patient falls occur annually in U.S. hospitals, leading to around 250,000 injuries and as many as 11,000 fatalities (LeLaurin & Shorr, 2019). Which represents 70% of hospital inpatient accidents (Scheidenhelm et al., 2020). This results in an estimated cost of $50 billion annually to hospitals and health systems in the U.S. (Kartiko et al., 2019). Falls increase hospital stay length by six to twelve days, and injuries from falls can cost between $19,376 and $32,215 (Dykes et al., 2020). This accounts for between 1.6% and 13.4% annual income loss in acute care hospitals (Montejano-Lozoya et al., 2020). Additionally, Montana has been ranked 7th nationally for age-adjusted death rates due to injuries such as falls, accidents, assaults, etc., from 2011 to 2021; however, falls accounted for approximately 17% of deaths from 2009-2018 (Montana Department of Public Health and Human Services [DPHHS], 2022).

Fall prevention is critical not only from a financial perspective but also due to its impact on the quality of life. A single fall can lead to a fear of falling, reduced mobility, loss of function, and an increased risk of subsequent falls (Dykes et al., 2010). Falls can also result in life-threatening outcomes, such as head trauma, fractures, and death, making falls the second leading cause of accidental death worldwide (Cruz et al., 2016). However, despite extensive research, no definitive solution has been found, as falls are multifactorial problems with extrinsic and intrinsic causes. Extrinsic or preventable falls are caused by poor lighting, lack of non-skid footwear, and lack of adaptive equipment such as walkers, canes, or gait belts (Strini et al., 2021). Intrinsic refers to nonpreventable falls caused by uncontrollable factors such as seizures and syncopal episodes (Strini et al., 2021). Various fall prevention interventions have been tested with mixed results (Fehlberg et al., 2017). Research suggests further research is needed, as the outcomes for many interventions—such as education and bundled or multi-component approaches—are adequate but not statistically significant (Chegini et al., 2022; Fehlberg et al., 2017; LeLaurin & Shorr, 2019; McKercher et al., 2024).

Review of the Literature

A literature review of twenty-three articles revealed several prominent themes, including education, the Morse Fall Scale, cultural behaviors and perceptions, fall prevention bundles and multicomponent interventions, and risk factors.

Education is emphasized in twelve studies as a key factor in fall prevention, with effective educational interventions leading to a reduction in falls (Bargmann & Brundrett, 2020; Chegini et al., 2022; Dykes et al., 2020; Hakvoort et al., 2021; LeLaurin & Shorr, 2019; McKercher et al., 2024; Turner et al., 2020). Multi-component interventions, which include education, have proven more effective in reducing falls (Baris & Intepeler., 2023; Hempel et al., 2013; McKercher et al., 2024). Morgan et al. (2016) demonstrated that educating staff on intentional rounding resulted in a 50% decrease in falls. Overall, education emerged as the most frequently cited intervention.

Fall risk assessments are crucial for preventing falls. Hemple et al. (2013) noted that 83% of studies on fall prevention included fall risk assessments. A commonly used fall assessment is the Morse Fall Scale (MFS), created by J. Morse in 1989, which uses six components: history of falls, secondary diagnosis, use of ambulatory aids, intravenous therapy, gait type, and mental status (Baek et al., 2013; Ji et al., 2023; Morse, 2008; Strini et al., 2021). When properly calibrated at the suggested optimal risk cutoff of 45, the MFS has a validity of 70%, reliability of 96%, sensitivity of 78%, and specificity of 83% (Morse, 2008). Proper calibration and staff training are essential for the MFS to be effective.

Qualitative studies indicate that staff perceptions, unit culture, and behaviors significantly impact fall prevention (Hakvoort et al., 2021; King et al., 2018; Vechter & Drach-Zahavy, 2024).

King et al. (2018) noted that strong management messages about minimizing falls made staff hesitant to moving patients, leading to restricted patient mobility, which can lead to pressure wounds and pneumonia. Hakvoort et al. (2021) identified discrepancies in perception due to a lack of interdisciplinary diversity in fall committees as an issue (Turner et al., 2020).

Bundled and multicomponent interventions are commonly used in healthcare for fall prevention, though research supporting their effectiveness is limited (Bargmann & Brundrett, 2020; Baris & Intepeler, 2023; Hemple et al., 2013; Scheidenhelm et al., 2020; McKercher et al., 2024). Hemple et al. (2013) found that 81% of included studies utilized multi-component interventions, such as risk assessments and patient education, with 83% incorporating fall risk assessments. A review by McKercher et al. (2024) indicated that 17 of 20 guidelines support multifactorial interventions.

Falls are influenced by various risk factors, including medications, age, gender, balance, and cognitive function (Choi et al., 2024; Cruz et al., 2016; Groot et al., 2019; Scheidenhelm et al., 2020). de Groot et al. (2019) found that 47% of patients who fell were taking anxiolytics or hypnotics and Scheidenhelm et al. (2020) noted that 84.2% of patients who fell pre-intervention and 91.5% post-intervention were using narcotics. Additionally, de Groot et al. (2019) reported that 58.7% of fall incidents involved males. However, Cruz et al. (2016) found a higher fall risk in females (31.8%), although no explanation was provided for the higher rates. Age affects risk, with those over 65 at greater risk (Cruz et al., 2016). Balance is another risk factor, with 39.0% of falls occurring in patients with poor balance (de Groot et al., 2019). Choi et al. (2024) found that patients with extended stays or orthopedic conditions often perceived their fall risk as low, leading to fewer preventive actions.

Conceptual Framework

The Institute for Healthcare Improvement (IHI) model was employed to select a framework for this quality improvement project. The PDSA cycle from IHI was chosen as the framework for this QI project because it is specifically designed to test and adapt changes for process improvement initiatives or studies (Institute for Healthcare Improvement [IHI], n.d.). To assess their effectiveness in reducing falls, this quality improvement project examined various fall prevention strategies, including staff education and training and the facility's comprehensive multicomponent fall prevention policy.

The Institute for Healthcare Improvement's (IHI) Plan, Do, Study, Act or PDSA Cycle is defined by the Agency for Healthcare Research and Quality (AHRQ, 2024) as a continuous improvement model consisting of four steps: 1) Plan, 2) Do, 3) Study, and 4) Act. The model was initially developed for manufacturing as Deming’s Wheel; the model was later adapted and refined by the Japanese auto manufacturer Toyota in the 1950s, where it became known as PDCA. Since its inception, it has evolved through various iterations and is now widely recognized as the PDSA cycle. It is commonly employed in healthcare for quality improvement.

The PDSA cycle helps investigators understand how interventions or planned changes operate in a specific setting by systematically planning, implementing, observing the results, and applying what is learned. This framework facilitates necessary changes through its cycles, which allow for issues to be identified and changes to be made after every cycle, and it often requires multiple cycles.

Aim/Purpose

This project aimed to enhance fall prevention in the orthopedic and neurology unit. A Strengths, Weaknesses, Opportunities, and Threats (SWOT) analysis identified that the fall increase within this unit is likely attributed to several factors, including changes in electronic health records (EHRs), the introduction of a new fall scale, staff turnover, and insufficient annual training. This project focused on implementing five interventions. These include 1) educating staff about the facility's fall prevention policy, 2) correct use of the Morse Falls scale, 3) installing command hooks in each patient room for easy access to gait belts, 4) a daily checklist for nursing staff to document fall prevention interventions, and 5) the use of Posey and bed alarms, and ensuring they are in place and operational.

Methods

Context

This quality improvement project took place in a fourteen-bed orthopedic and neurology unit that has experienced increased patient falls over the past few years. The stakeholders involved in this project include nurse managers, clinical educators, staff nurses, certified nursing assistants, patients, and their families. The need for this project was identified after meetings with unit managers and conducting a SWOT analysis. As of October 2024, the unit had experienced 10 falls one fall short of the previous year’s total of 11 extrinsic falls. The unit was averaging one fall per month as of October 2024. The facility considers a fall “A sudden, uncontrolled, unintentional, downward displacement of the body to the ground or other object, excluding falls resulting from violent blows or other purposeful actions” (VHA National Center for Patient Safety, 2004).

The needs assessment revealed that the unit has undergone several changes in the last year, including implementing a new electronic health record (EHR) system and a fall risk assessment tool. Previously, the Johns Hopkins Fall Risk Assessment tool was used with Meditech, the old EHR, as it was a built-in tool for the program. However, the new EHR, Epic, employs the Morse Falls scale. Staff training was provided for the new EHR, but staff had not received training on using the Morse Falls scale. Additionally, staffing changes have resulted from turnover and the hiring of temporary staff to meet the facility's needs. The facility already has a fall prevention policy incorporating multicomponent interventions aligning with the Agency for Healthcare Research and Quality (AHRQ) recommendations. This policy includes multi-component/bundled interventions for low, moderate, and high fall-risk patients, such as providing grip socks, gait belts, low beds, yellow stars or lights on doors, and video monitoring. Despite this multicomponent fall prevention policy (see Table 2), the facility lacks annual fall prevention training and does not have a Fall committee. The Fall committee was disbanded during COVID-19 in 2020 due to a shift in staffing priorities.

Fall Risk Level	Interventions
Low Fall Risk	• Maintain a hazard-free environment. • Bed in low position (as appropriate for patient height). • Top two side rails up at all times. • Ambulatory devices within reach. • Personal items within in reach. • Non-skid footwear for ambulation/activity • Encourage patient and family to ask for assistance for any patient activity. • Consider need for additional lighting. • Lock all movable equipment (as equipped) • Educate patient and visitors on fall risk protocol.
Moderate and High Fall risk	• Yellow star magnet posted on outside of patients door. • Yellow non-skid socks. • Yellow door light activated on units where applicable. • Safety alarms activated Medline bend and chair alarm, bed alarm (manufacturer installed). • Do not leave unattended while in bathroom or on bedside commode. • Assistance with ambulation/transfers. • Gait belt use during ambulation and patient transfers. • Educate patient and visitors of high fall risk protocol during handoff. • Posey bed. • Low bed. • Diversion activities. • Floor mat. • Reorient patient. • Video monitoring

Table 2. Facility Intervention Bundles

Interventions/Practice Changes

During the "plan" phase, a problem with falls was identified, highlighting the need for change. The causes of the problem were analyzed through a SWOT analysis. Insight from this analysis was used to develop a structured plan for implementing interventions to address the underlying issues. This plan included staff education on utilizing the Morse Fall Scale and understanding the facility's fall policy, as well as ensuring essential equipment such as gait belts, Posey alarms, and beds are available in each room, properly connected, and in good working order. A PowerPoint presentation was created for staff education, including pre- and post-education quizzes from the Agency for Healthcare Research and Quality (AHRQ). The pre/post quiz was adapted by the lead investigator to evaluate pre and post-intervention knowledge. The AHRQ Fall Knowledge Quizzes (2021) have a validity that was tested with a tetrachoric correlation coefficient of 0.73 and a paired t-test = 12.4, $p < .001$ (Dykes et al., 2018). A checklist, adapted from the AHRQ Rounding Checklist, was employed to keep track of staff implementation of fall prevention interventions.

The "do" phase involved the execution of the project. Command hooks were installed, and posey and bed alarms were inspected on February 4th and 5th. Educational handouts, daily checklists, and pre- and post-education quizzes were also printed. The project implementation began in February and ended in March. This began with conducting pre-intervention quizzes, followed by staff education sessions. At the end of the education sessions, the staff were asked to complete the post-intervention quiz to assess if there were changes in their knowledge. The lead investigator conducted the first in-service via PowerPoint presentation during a shared governance meeting, and a second in-service was provided the following day. Staff who could not attend the initial two in-services were provided one-on-one education during their next scheduled shifts. Pre- and post-educational quizzes were done by the staff participating in the February 6th and 7th educational in-service. In the “study” phase, the interventions were implemented, and data and feedback were collected several times a week to assess the need for any changes or adjustments. Based on feedback and observations, changes were made at the two-week mark, and the next study round was initiated. The first PDSA cycle was evaluated on February 20, 2025, and the second PDA cycle started on February 21, 2025. Finally, in the "act" phase, findings from the study phase were analyzed and compared to the initial expectations.

Measures

Scores of the pre- and post-education quizzes adapted from the AHRQ Fall Knowledge Quizzes were compared. Before the project's implementation, management estimated three falls from January 1, 2025, to February 5, 2025. Post-intervention, there was possibly one fall, but no information regarding this possible fall has been found. Rounding data regarding intervention implementation and compliance was analyzed. Daily checklist completion rates were also compared. Unfortunately, the facilities risk department did not provide fall data on the three falls that occurred pre-implementation and the one possible fall post-project implementation after it was requested by the lead investigator and the unit manager.

Analysis

Descriptive statistics, paired t-tests, and histograms were used to analyze data through Intellectus Statistics software (Intellectus Statistics, 2025) and Microsoft Excel Version 16.95.4 (Microsoft, 2025).

Results

Participating Staff

The unit has 11.4 nurses on staff. Of that, 9.4 nurses are fully employed by the hospital, and two are travel nurses under contract through a travel agency. There are 2.4 CNA (certified nursing assistants) on staff. Of the staff that participated in the in-service education, n = 8 were nurses, and n = 1 were CNAs. Of the (n = 8, 88.89%) were female, non-Hispanic (n = 9, 100.00%) and White (n = 9, 100.00%) (Intellectus Statistics, 2025). The majority had a bachelor's degree (n = 3, 33.33%), most staff were not working on a degree (n = 8, 88.89%), and most participating staff worked 7 AM - 7 PM (n = 4, 44.44%) (Intellectus Statistics, 2025). All the participating staff worked in Orthopedic/ neurology (n = 9, 100.00%) and (n = 7, 77.78%) were in Direct Patient Care positions (Intellectus Statistics, 2025). The average age was 40.33, the average number of years employed as a nurse was 7.70, and the average number of years employed at the hospital was 11.56 (Intellectus Statistics, 2025). (Tables 3 and 4)

Frequency Table for Nominal Variables

Variable	*n*	%
Gender		
Female	8	88.89
Male	1	11.11
Missing	0	0.00
Ethnic_group		
Non-hispanic	9	100.00
Missing	0	0.00

Note. Due to rounding errors, percentages may not equal 100%.

Table 3. Nominal Demographic Data.

Table 3 Continued.

Variable	*n*	%
Race		
White	9	100.00
Missing	0	0.00
Highest_degree		
Bachelor	3	33.33
Associate	2	22.22
Master	2	22.22
Diploma	2	22.22
Missing	0	0.00
Working_on_degree		
No	8	88.89
Yes	1	11.11
Missing	0	0.00
Shift		
7 PM - 7 AM	3	33.33
7 AM - 4:30 PM	2	22.22
7AM - 7 PM	4	44.44
Missing	0	0.00
Type_unit		
Orthopedic/ neurology	9	100.00
Missing	0	0.00
Weekly_Schedule		
M-F	2	22.22
Rotate	7	77.78
Missing	0	0.00
Current_Position		
Direct Patient Care	7	77.78
Management	2	22.22
Missing	0	0.00

Note. Due to rounding errors, percentages may not equal 100%.

Table 3. Nominal Demographic Data Continued.

Statistics Table for Interval and Ratio Variables

Variable	*M*	*SD*	*n*	SE_M	Min	Max	Skewness	Kurtosis
Age	40.33	8.41	9	2.80	24.00	52.00	-0.69	-0.16
Years employed as a nurse	7.70	6.63	8	2.34	0.41	17.00	0.12	-1.59
Hours worked per week	40.44	7.60	9	2.53	36.00	60.00	2.15	3.23
Years employed at hospital	11.56	8.31	9	2.77	2.00	24.00	0.53	-1.12

Note. '-' indicates the statistic is undefined due to constant data or an insufficient sample size.
Table 4. Interval and Ratio Demographic Data.

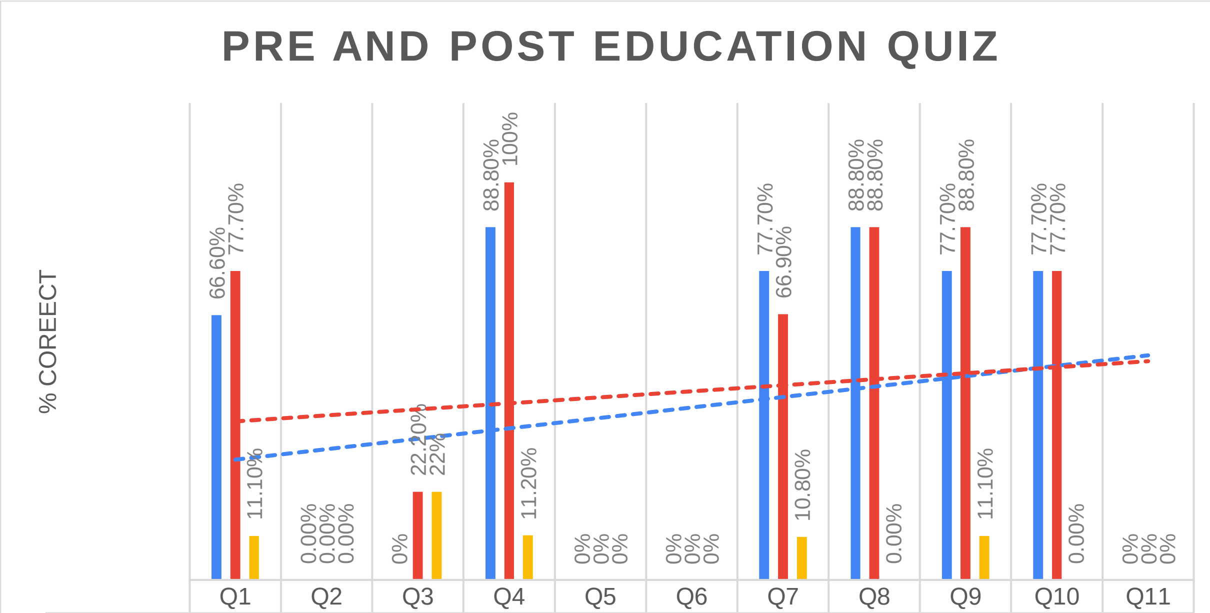
Quiz Scores

The pre-education quiz scores had an average of 4.78 (SD = 1.30, SEM = 0.43, Min = 3.00, Max = 6.00, Skewness = -0.29, Kurtosis = -1.55) (Intellectus Statistics, 2025). The post-education quiz scores had an average of 5.30 (SD = 1.06, SEM = 0.33, Min = 3.00, Max = 7.00, Skewness = -0.63, Kurtosis = 0.64) (Intellectus Statistics 2025). A two-tailed paired t-test was conducted to determine the significance of the quiz scores. The two-tailed paired samples t-test results (Table 5) indicated that although there was an improvement in the quiz scores, it was not significant based on an alpha value of .05, t(8) = -1.18, p = .272 (Intellectus Statistics, 2025). See Figure 4 for changes in pre and post-quiz answers to individual questions.

Two-Tailed Paired Samples t-Test for the Difference Between Pre_Total_Score and Post_Total_Score

Pre_Total_Score		Post_Total_Score				
M	*SD*	*M*	*SD*	*t*	*p*	*d*
4.78	1.30	5.22	1.09	-1.18	.272	0.39

Note. N = 9. Degrees of Freedom for the *t*-statistic = 8. *d* represents Cohen's *d*.
Table 5. Paired *t-test* results.



	Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Q10	Q11
Pre	66.60%	0.00%	0%	88.80%	0%	0%	77.70%	88.80%	77.70%	77.70%	0%
Post	77.70%	0.00%	22.20%	100%	0%	0%	66.90%	88.80%	88.80%	77.70%	0%
% Change	11.10%	0.00%	22%	11.20%	0%	0%	10.80%	0.00%	11.10%	0.00%	0%

Figure 4. Pre and Post Quiz Individual Question Percentage Changes.

Daily Checklist

The daily checklists were only completed during the first PDSA cycle. A total of 27 were completed (see Figure 5). Despite regular requests and reminders for staff to fill out the forms, staff failed to use the forms consistently. Nineteen checklists were completed during the first PDSA cycle. During the first PDSA cycle evaluation, the staff moved the checklist forms to a bin at the nurse’s station instead of keeping them in the chart cubbies with the clipboards. Following the evaluation of the initial PDSA Cycle and subsequent feedback from the staff, the checklist forms were kept in the bin. The feedback consistently indicated that personnel encountered difficulties in completing the form due to their demanding workloads. Additionally, the lack of an electronic format within the Electronic Health Record contributed to frequent oversight. The evaluation of the checklist posed significant challenges, as it relied on the staff's willingness to complete it daily.

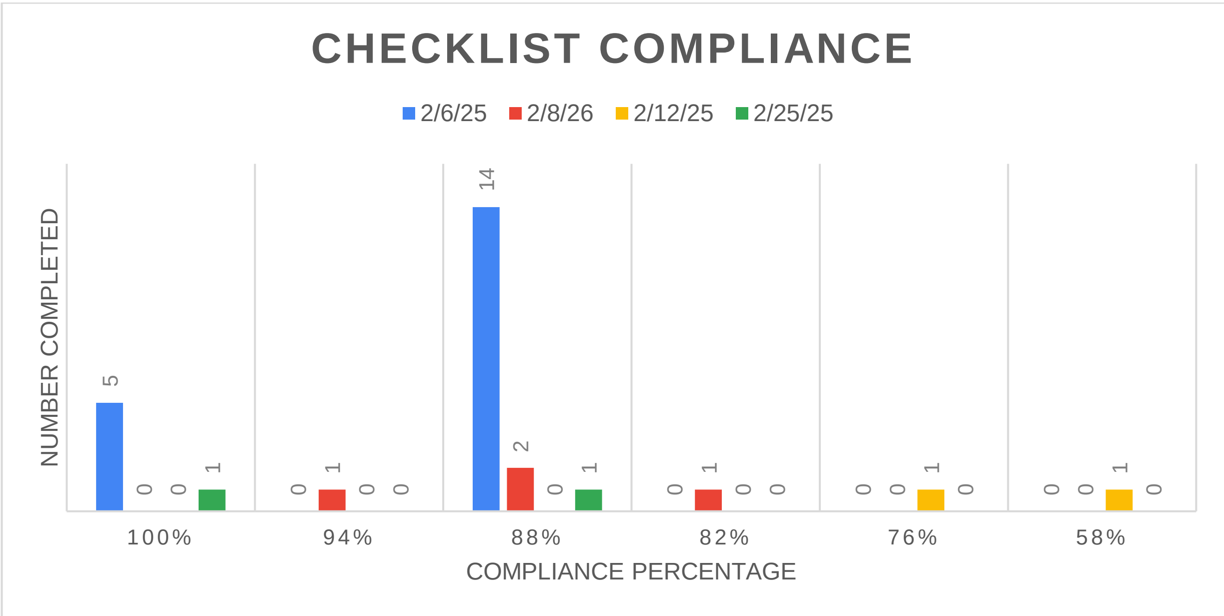


Figure 5. Rounding Checklist Compliance.

Rounding

Rounding was done randomly throughout the project implementation to assess staff compliance with fall prevention interventions and the use of the gait belt hooks. The collected data included whether the yellow fall light was on, whether the gait belts were hung on the hooks, posey alarm use, bed alarm use, and fall risk scoring. Overall, staff struggled to consistently use the yellow fall light, posey alarms, and bed alarms. However, improvements were noted regarding use of the gait belt hooks and scoring of the Morse Fall Scale. Upon providing on the proper use of the Morse Fall Scale, several staff were concerned that if patients scored as high fall risk on the MFS, it was a negative or bad assessment. Staff was educated that if a patient scored as a fall risk, it did not mean it was an erroneous assessment if the MFS was used correctly.

The use of the fall light was minimally maintained during the first PDSA cycle, with an average usage of 27.0% and a non-usage average of 72.9% (Figure 6). The gait belt hook usage was maintained steadily throughout both PDSA cycles, with the average use at 55.6%. However, it is essential to note that several rooms were found to have no gait belts, with an average of 10.8% of rooms not having a gait belt (Figure 7). Posey and bed alarm use remained low during both PDSA cycles, with an average use of 21.2% and 28.9%, respectively (Figures 8 and 9). Fall risk scoring improved and was maintained over the two PDSA cycles, with nurses correctly scoring an average of 88.5% of patients as a high fall risk (Figure 10). Unfortunately, since no data from the event reporting system was provided by the risk department, it is not possible to compare the Morse Fall Scale scores before and after the implementation. It was determined that the use of the MFS improved as several staff provided feedback during and after the education, stating that they were unaware that the patient would be given full points if they had intravenous access, regardless of whether it was saline-locked or actively infusing. After reviewing the handout tailored to match the hospital's scoring scale, several voiced a better understanding of the MFS and its scoring.

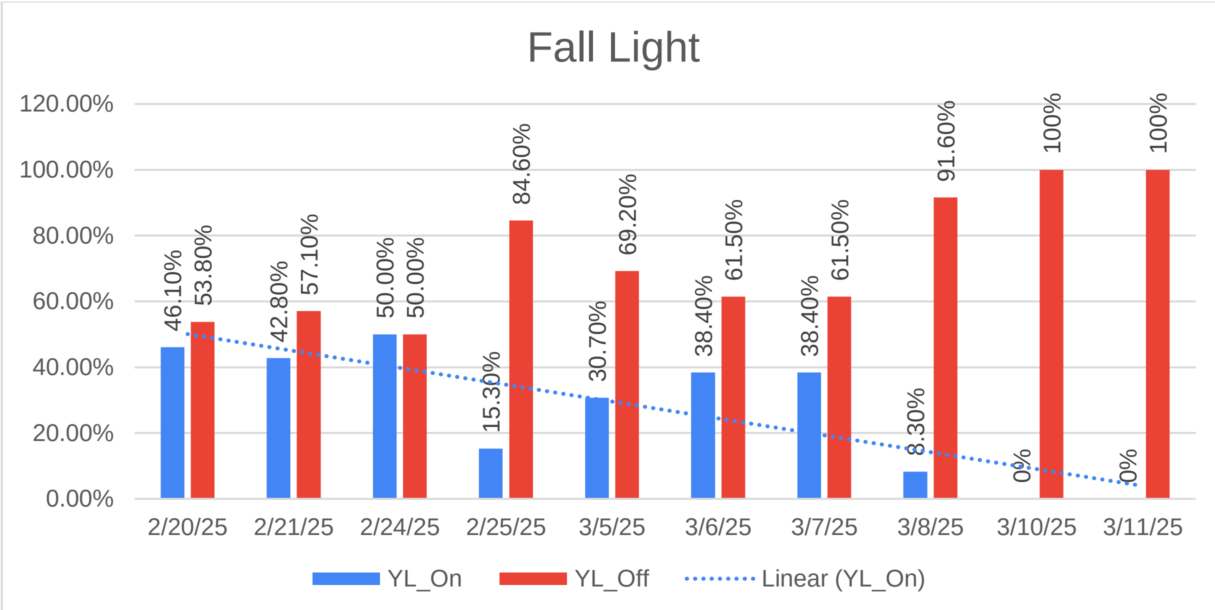


Figure 6. Yellow Fall Light Compliance Percentage.

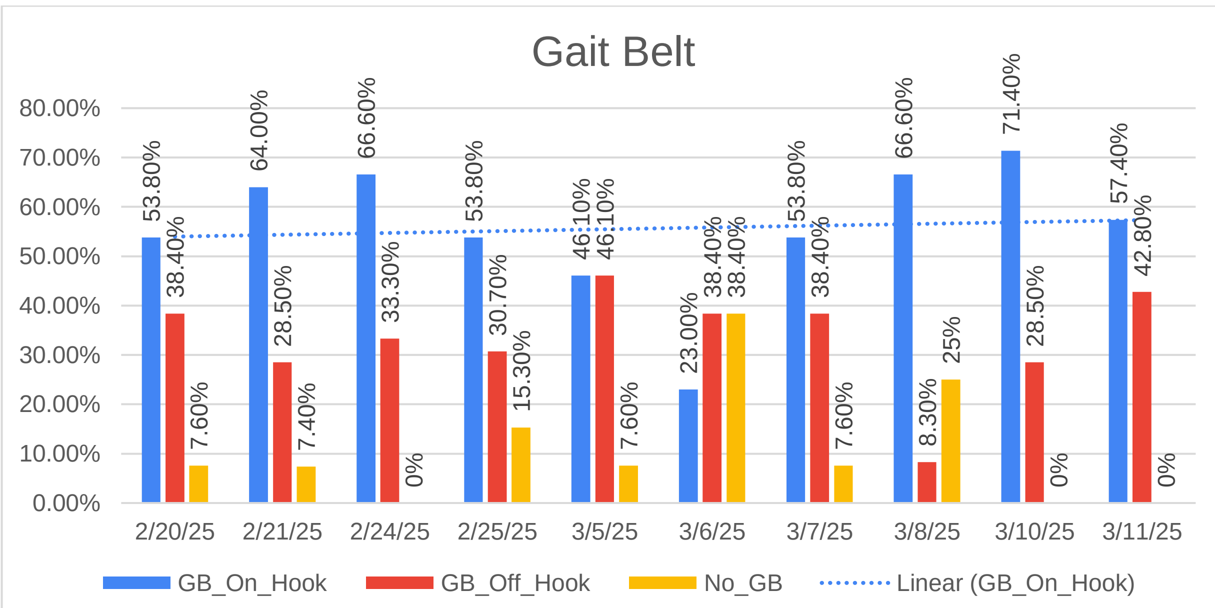


Figure 7. Use of Gait Belt Hook.

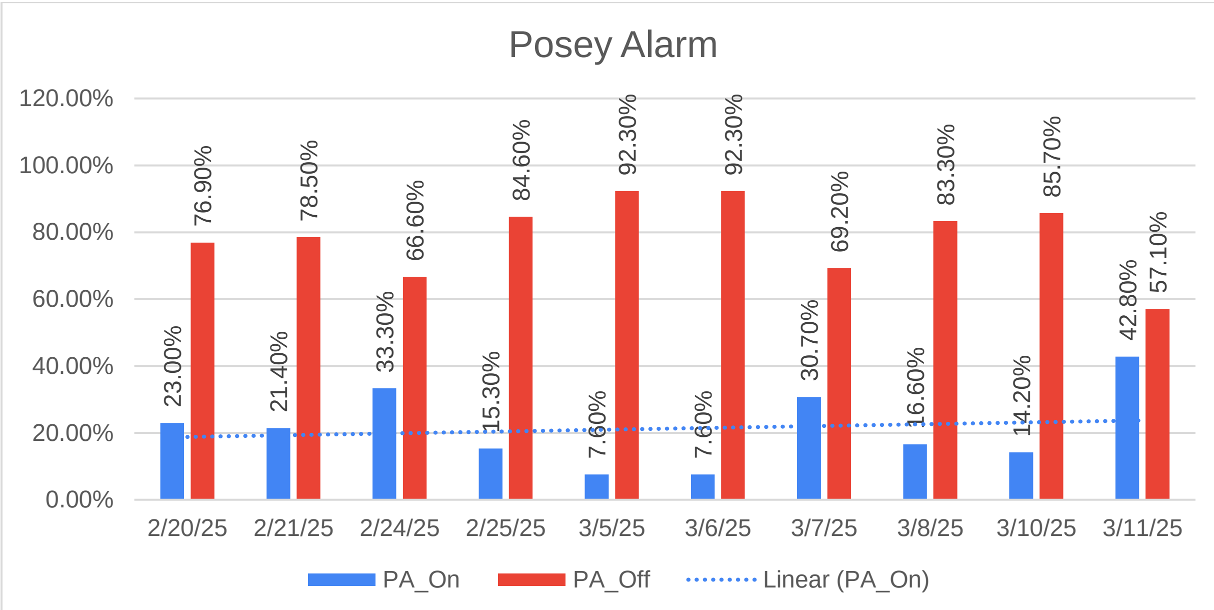


Figure 8. Posey Alarm Compliance.

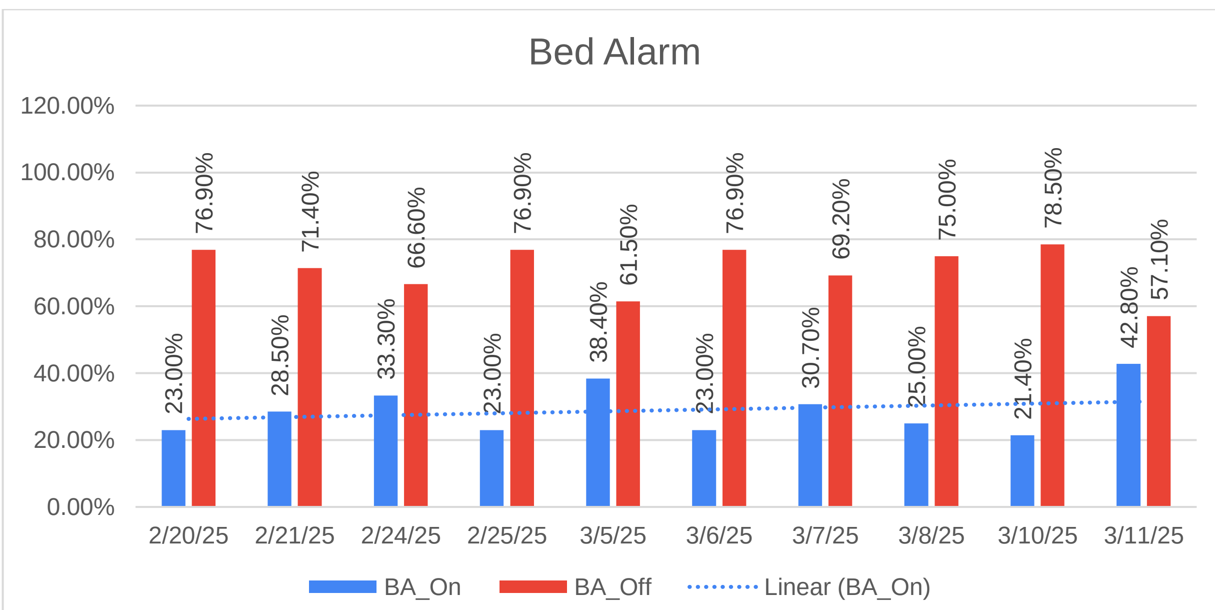


Figure 9. Bed Alarm Compliance

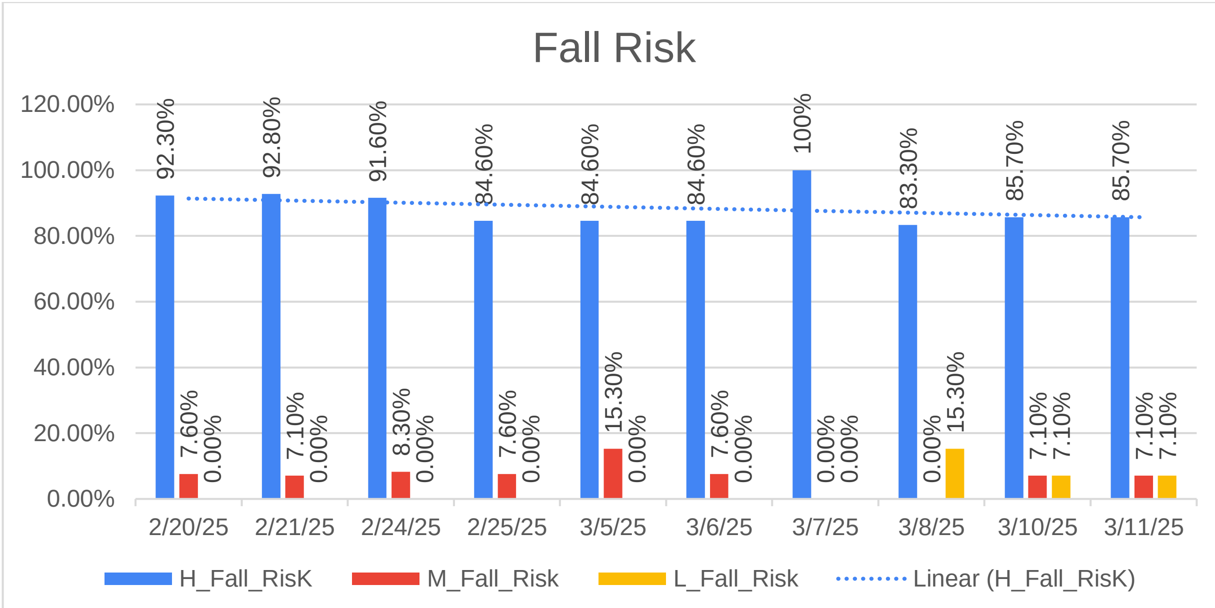


Figure 10. Fall Risk Scoring

<u>Pre and Post Fall Rate</u>

Thus far, no information regarding any falls after the project started has been reported. There was possibly one fall during the project's implementation; however, it could not be confirmed as the risk department did not provide the fall data from the event reporting system. Based on dialogue with the nurse manager, it can be surmised there were no known falls during the project implementation phase.

Discussion

Overall, the findings were encouraging, as they shed more insight into the cause of the increase in falls before the quality improvement project. The facility employs a multi-component fall prevention policy as is what current research indicates is best at reducing falls (Baris & Intepeler., 2023; Hempel et al., 2013, Mckerscher et al., 2024). The facility's multicomponent fall prevention policy includes interventions such as using gait belts, grip socks, and bed alarms. It has bundled interventions for low, moderate, and high fall-risk patients. This allows nurses to select interventions for low, moderate, or high fall-risk patients based on the fall risk assessment score. However, despite having all the tools recommended by the current research, the unit continues to experience high fall rates.

This quality improvement project found a strong possibility that the lack of staff understanding of the bundled interventions is one of the most significant factors contributing to the fall problem in this unit. It was determined that Fall Light, Posey Alarm, and Bed Alarm had poor compliance rates, with average Fall Light compliance at 27.0%, Posey Alarm compliance at 21.2%, and Bed Alarm compliance at 28.9%. Additionally, no Gait Belt was present in 10.8% of rooms. The lack of staff education and training in fall prevention and the appropriate use of the Morse Fall Scale also contributed to the increased fall rate, as there were three falls on the unit from January to February before the implementation of the quality improvement project, and there were no reported falls during the implementation of the quality improvement project from February to March; this correlates with research suggesting that education-based interventions are key in reducing falls (Bargmann & Brundrett, 2020; Chegini et al., 2022; Dykes et al., 2020; Hakvoort et al., 2021; LeLaurin & Shorr, 2019; McKercher et al., 2024; Turner et al., 2020). Aside from noncompliance and lack of education or training, factors that affected the results included resistance to change and cognitive overload. Staff were resistant to change, as some were unwilling to modify how they scored the Morse Fall Scale, while others continuously questioned the validity of the MFS and the legitimacy of the AHRQ. Additionally, some had difficulty adapting to the change due to cognitive overload caused by all the changes over the last year, including a new EHR, a new fall scale, and new staff.

Limitations

One of the main limitations of this project is time constraints. Approximately six weeks were allotted to implement the project and collect data. This limited the ability to rule out entirely or include some potential causes of the increased fall rates, such as poor staffing ratios or nursing level of education. Another factor contributing to the limitations of this project was that the completion of the checklist depended not only on the staff's willingness to complete the task but also on their accuracy when filling out the forms. Also, the inability or unwillingness of the risk department to provide fall data from the facility’s event reporting system limited the ability to prove or disprove a correlation between proper MFS use and fall rates.

Recommendations

Recommendations include annual staff training on fall prevention, annual staff training on the appropriate use of the Morse Falls scale, and continued use of the gait belt hooks. This would require the facility to update its education on fall prevention and fall scale usage, as the current education in its education portal, Workday, pertains to the John Hopkins Fall Scale and does not include any information on the Morse Fall Scale. The fall policy was recently updated to include the Morse Fall Scale.

Conclusion

In conclusion, falls were again proven to be a multifaceted problem that requires multidimensional interventions. This nursing unit must use the multicomponent fall prevention policy and appropriately use the intervention bundles for low, moderate, and high fall-risk patients. With the education and training provided on using the Morse Fall Scale correctly and the improved scoring, it should be easier for staff to select and implement the correct fall interventions for patients. Nurse educators should also use teaching methods geared towards cognitive overload when training staff.

CHAPTER FOUR

ADVANCED NURSING ESSENTIALS REFLECTION

The rigorous curriculum of the Doctor of Nursing Practice program enabled me to meet the essential standards set by the American Association of Colleges of Nursing (AACN, 2021). I learned about Essential Two: person-centered care; Essential Four: scholarship in the nursing discipline; Essential Seven: systems-based practice and informatics; and Essential Eight: healthcare technologies (AACN, 2021). These essentials were consistently addressed throughout my coursework in the program. For example, the second essential—person-centered care—was emphasized in courses such as Evidence-Based Practice I and II, Advanced Pharmacology I and II, Advanced Health Assessment, and Advanced Clinical I, II, III, and IV. II, III, and IV.

For example, Evidence Practice I and II trained me to find evidence-based information regarding various disorders and medical issues, synthesize that information, and disseminate it effectively. In the Evidence-Based Practice course, students were required to create a PDSA (Plan-Do-Study-Act) project on a topic of their choice, outlining how it would be implemented and evaluated. This allowed me to meet the fourth essential.

Advanced Pharmacology I and II helped me meet essential competency number two, Person-Centered Care, by teaching me how to select appropriate treatments and medications based on the comorbidities and complex backgrounds of individual patients while also considering insurance coverage and the affordability of medications. For instance, Coumadin might seem like the more cost-effective option when determining the appropriate anticoagulation therapy for a patient on a fixed income. However, it may not always be the best first choice due to a patient's comorbidities and the high cost of regular lab testing required for its management.

In some cases, the expense of ongoing blood tests can make Coumadin a prohibitive treatment option. An alternative could be Xarelto, which does have a generic option available. However, Coumadin would still be the necessary treatment for a patient with a mechanical heart valve.

Advanced health assessment and advanced clinical I, II, III, and IV help me meet essential number two by training me to assess for specific conditions in specific symptoms across different populations. Advanced Clinical I, II, II, and IV were instrumental in highlighting the importance of holistic care as well as compassionate care, as there were patients at different clinical sites that were complex and came from different socioeconomic backgrounds, nationalities, ethnicities, religious beliefs, and the advanced clinical courses allowed me to learn how to provide care for diverse individuals. One instance that comes to mind was during my women's health clinical rotation, a young woman presented with symptoms of pelvic inflammatory disease; however, she had not established care with the facility, and she had sought care at two different local ERs, and her symptoms were dismissed by both facilities until the provider I was precepting with called one of the local ER and requested that this woman's symptoms be taken seriously and that she be examined and that lab work be done by the ER. The provider I was following was notified by the county health department two days later that the patient was positive for chlamydia and gonorrhea after having lab work done at the hospital. However, despite the hospital testing the patient, they refused to treat the infection. The provider I was following went out of their way to call that patient in and see them that day to establish care and begin treatment for the pelvic inflammatory disease and the chlamydia and gonorrhea.

Essential four: scholarship for the nursing discipline was met in evidence-based practice I and II, program planning and evaluation, outcomes and quality improvement, design of healthcare systems, and healthcare informatics. The evidence-based practice courses taught me how to find resources and use those resources to find evidence-based treatment for patients and education. Additionally, I learned how to evaluate research articles for validity. As well as how to search databases, filter articles, and understand the importance of peer-reviewed literature. This was applied by writing an allopathic and integrative matrix for Evidence-Based Practice II. The Scholarly project course allowed me to combine the components of statistical application, evidence-based practice, design of healthcare systems and program planning and evaluation, outcomes, and quality improvement courses. This was done by identifying a problem and developing a quality improvement project based on current research and standards of care. Followed by the implementation of the project after development, monitoring the project as it progresses, and collecting and analyzing the data. Lastly, the information provided by the data and observations was then synthesized into information that can be disseminated.

Essential number seven: system-based practice was met in Advanced Clinical, Advanced Pharmacology I and II, and Vulnerability and Healthcare in Diverse Communities. This was met on several occasions. In the Vulnerability and Healthcare in Diverse Communities course, students had to identify a vulnerable group and develop a plan to improve their access to care, education, and necessary resources. In advanced Pharmacology, I learned to be mindful of patients' socioeconomic status when prescribing medication, as it does no good to prescribe a medication a patient cannot afford. Also, during all the Advanced Clinical courses, there were several instances where providers modified treatment for patients due to poor cognition, cost, or living situation. One patient had a traumatic brain injury and had a hard time remembering to take medication; when he was diagnosed with Gonorrhea, the provider prescribed Azithromycin as it was a one-time dose treatment. Another instance was during my rheumatology clinical rotation; as the medications are very costly, the office will often use samples to get patients started on the medication while they file appeals to have the medications covered by their insurance or to bridge gaps in health insurance for patients.

Essential number eight, informatics and Healthcare Technologies, was met in the Healthcare Informatics and Design of Healthcare Systems courses. This was done in different ways; healthcare informatics highlighted the importance of informatics as it is helpful in several ways, including allowing for personalized care, ensuring confidentiality, providing connected care, and allowing for a better understanding of patient needs as providers and medical staff can see how many times a patient has visited the emergency room, what medications were prescribed and why. In the Healthcare Informatics and Design of Healthcare Systems course, students were required to complete several assignments that allowed for students to gain a better understanding of the intricacies of healthcare system designs. One project required a tour of a medical laboratory, and a value streaming map and spaghetti diagram were created to determine where the issues were in the workflow. Another assignment had students evaluate a recent medication at their work facility and determine where the system failed and how it could be improved to prevent future failures.

Overall, the quality improvement project has allowed me to meet several of the criteria set forth by the American Association of Colleges of Nursing. Using the Institute for Healthcare Improvement (IHIs) model for quality improvement, I had to identify an ongoing problem (in-patient falls), assess its potential causes, and identify possible solutions. I also had to research for the latest studies, information, and resources regarding that problem. Then, I took the information gathered from the research articles and formulated a plan to solve this ongoing problem.

The PDSA cycle was the best fit for implementing and evaluating the project to solve the problem of in-patient falls. It allows for understanding how interventions or planned changes operate in a specific setting by systematically planning, implementing, observing the results, and applying what is learned. This framework facilitates necessary changes through its cycles, which allow for issues to be identified and changes to be made after every cycle. It often requires multiple cycles.

Once the framework had been determined, an evaluation had to be done to determine the necessary interventions. Based on the information gathered from the SWOT analysis indicated that the increase in falls within the unit was likely attributed to several factors, including changes in electronic health records (EHRs), the introduction of a new fall scale, staff turnover, and insufficient annual training. Using current EBP and current research, it was determined that an educational intervention would be appropriate, as well as pre and post-education quizzes, a daily rounding checklist, and installation of hooks for gait belts and monitoring of equipment like posey and bed alarms.

The project lasted about 4.5 weeks, and the data showed the increased fall rate is a multifaceted problem requiring a multifaceted solution. The most significant contributor, however, is staff compliance, as it was found that even after scoring patients appropriately using the Morse Fall Scale, nursing staff continued to neglect implementing interventions such as turning on the yellow fall light, using posey alarms and bed alarms, and ensuring gait belts were available in each room, as was a lack of staff education. Utilizing skills from Statistical applications, the data collected was analyzed, and it was determined that lack of education and training is also a large contributor to the increased fall rate. Based on these findings, recommendations for annual fall training and Morse Fall Scale training were made. Overall, the MSU DNP program has helped me meet all the criteria the American Association of Colleges of Nursing set forth.

It has also prepared me for my new role as a provider. Not only did the program help me check off the boxes of the requirements set forth by the governing bodies, such as the American Association of Colleges of Nursing, but it also helped me develop interpersonal skills such as active listening, empathy, teamwork, and conflict resolution. I have also learned to see patients holistically and beyond their demographic and comorbidities, understanding that we must treat the patient as a whole to manage and treat disorders. After completing the MSU DNP program, I look forward to taking on my new role as a doctorate-prepared Family Nurse Practitioner.

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APPENDICES

APPENDIX A:

PRE-EDUCATION KNOWLEDGE TEST

Fall Prevention Knowledge Pre-Test

We are asking you to take this test twice, before and after learning about Fall Prevention. While preserving your anonymity we would like to link your forms with each other. In the space below, write your first initial and date of birth, e.g., A01021994.

Linking number: ___________.

Please mark whether you believe the statements below to be true (T) or false (F).

Item	T	F
1. Bedside nurses know their patients and are better than a standardized screening scale at identifying patients likely to fall.		
2. The 3-step fall prevention process is comprised of 1) screening for fall risks, 2) developing a tailored fall prevention plan, 3) completing fall prevention documentation.		
3. A 75 year old male with history of recent falls and osteoporosis is admitted for severe abdominal pain. He is at increased risk for injury if he falls due to his age.		
4. A common reason why hospitalized patients fall is that their fall prevention plan is not followed.		
5. Falls can be prevented in patients who are susceptible to falling because of physiological problems by providing a safe environment; e.g. clear path to bathroom, room free of clutter, good footwear.		
6. Patient engagement in fall prevention means that the nurse completes the fall risk assessment and prevention plan, and then teaches the patient about their personal fall risk factors and prevention plan.		
7. All hospitals are different; therefore they should develop their own fall risk assessment forms.		
8. A fall risk screening scale identifies those patients who are likely to fall because they have one or more physiological problems.		
9. When nurses communicate with patients about their increased risk for injury if they fall, this improves the likelihood that patients will follow their personalized fall prevention plan.		
10. Patients at low risk for falls do not require a fall prevention plan.		
11. Bed and chair alarms should be activated for all patients who screen positive for being at a high risk of falling.		

Overall, how confident are you with your current ability, either in a direct care capacity or teaching others or in a leadership/management position, to prevent hospitalized patients from falling? Please use a 10-point scale (0=not at all <--> 10=very much so) ______.

Compared to your nursing peers in positions similar to yours, how do you rate your ability to prevent hospitalized patients from falling? above average average below average

Demographic Information:

Please provide the following information by filling in or circling your response.

1. Gender ____
2. Age _____
3. Ethnic group: Hispanic Non-Hispanic Not reporting
4. Race: American Indian/Alaska Native Asian Native Hawaiian or Pacific Islander Black or African American White More than one race Nor reporting
5. Highest nursing degree: Diploma AS/AD BS/BSN MS/MSN DNP/PhD/DNSc
6. Working on degree: BS/BSN MS/MSN DNP/PhD/DNSc non-nursing
7. Number of years employed as a nurse ___
8. Number of years employed at current hospital _____
9. Number of hours worked in a typical week _____
10. Typical shift rotation schedule: all shifts evenings nights rotate D/E rotate D/N all days 7A-7P 7P-7A
11. Typical weekly schedule: mostly weekend/holiday mostly Monday-Friday rotate weekdays/weekends/holidays
12. Current position: direct patient care leadership/management education other __________
13. Type unit: medical surgical oncology neurology orthopedic other __________

APPENDIX B:

POST-EDUCATION KNOWLEDGE TEST

Fall Prevention Knowledge Post-Test

We are asking you to take this test twice, before and after learning about Fall Prevention. While preserving your anonymity we would like to link your forms with each other. In the space below, write your first initial and date of birth, e.g., A01021994.

Linking number: ___________.

Please mark whether you believe the statements below to be true (T) or false (F).

Item	T	F
1. Bedside nurses know their patients and are better than a standardized screening scale at identifying patients likely to fall.		
2. The 3-step fall prevention process is comprised of 1) screening for fall risks, 2) developing a tailored fall prevention plan, 3) completing fall prevention documentation.		
3. A 75 year old male with history of recent falls and osteoporosis is admitted for severe abdominal pain. He is at increased risk for injury if he falls due to his age.		
4. A common reason why hospitalized patients fall is that their fall prevention plan is not followed.		
5. Falls can be prevented in patients who are susceptible to falling because of physiological problems by providing a safe environment; e.g. clear path to bathroom, room free of clutter, good footwear.		
6. Patient engagement in fall prevention means that the nurse completes the fall risk assessment and prevention plan, and then teaches the patient about their personal fall risk factors and prevention plan.		
7. All hospitals are different; therefore they should develop their own fall risk assessment forms.		
8. A fall risk screening scale identifies those patients who are likely to fall because they have one or more physiological problems.		
9. When nurses communicate with patients about their increased risk for injury if they fall, this improves the likelihood that patients will follow their personalized fall prevention plan.		
10. Patients at low risk for falls do not require a fall prevention plan.		
11. Bed and chair alarms should be activated for all patients who screen positive for being at a high risk of falling.		

Overall, how confident are you with your current ability, either in a direct care capacity or teaching others or in a leadership/management position, to prevent hospitalized patients from falling? Please use a 10-point scale (0=not at all <--> 10=very much so) ______.

Compared to your nursing peers in positions similar to yours, how do you rate your ability to prevent hospitalized patients from falling? above average average below average

Demographic Information:

Please provide the following information by filling in or circling your response.

1. Gender ____
2. Age _____
3. Ethnic group: Hispanic Non-Hispanic Not reporting
4. Race: American Indian/Alaska Native Asian Native Hawaiian or Pacific Islander Black or African American White More than one race Nor reporting
5. Highest nursing degree: Diploma AS/AD BS/BSN MS/MSN DNP/PhD/DNSc
6. Working on degree: BS/BSN MS/MSN DNP/PhD/DNSc non-nursing
7. Number of years employed as a nurse ___
8. Number of years employed at current hospital _____
9. Number of hours worked in a typical week _____
10. Typical shift rotation schedule: all shifts evenings nights rotate D/E rotate D/N all days 7A-7P 7P-7A
11. Typical weekly schedule: mostly weekend/holiday mostly Monday-Friday rotate weekdays/weekends/holidays
12. Current position: direct patient care leadership/management education other __________
13. Type unit: medical surgical oncology neurology orthopedic other __________

APPENDIX C:

ROUNDING CHECKLIST

Shift Check List

ROOM #

1	Assess patient pain levels using a pain-assessment scale (if staff other than RNs are doing the rounding and the patient is in pain, contact an RN immediately so the patient does not have to use the call light for pain medication).	DATE	YES/NO
2	Put medication as needed on RN's scheduled list of things to do for patients and offer the dose when due.		
3	Offer toileting assistance.		
4	Check that patient is using correct footwear (e.g., specific shoes/slippers, nonskid socks).*		
5	Check that the bed is in locked position.*		
6	Place hospital bed in low position when patient is resting; ask if patient needs to be repositioned and is comfortable.*		
7	Make sure the call light/call bell button is within the patient's reach and patient can demonstrate use.*		
8	Put the telephone within the patient's reach.		
9	Put the TV remote control and bed light switch within the patient's reach.		
10	Put the bedside table next to the bed or across bed.*		
11	Put the tissue box and water within the patient's reach.		
12	Put the garbage can next to the bed.		
13	Prior to leaving the room, ask, "Is there anything I can do for you before I leave? I have time while I am here in the room."		
14	Tell the patient that a member of the nursing staff (use names on white board) will be back in the room in an hour to round again.		
15	Ensure Posey alarm is connected to call light and pad, and in working order (e.g. batteries).		
16	Ensure the Bed is connected to the call light system and that the bed alarm is turned on.		
17	Ensure gait belt is in room and on hook when not in use.		

Nurse Initial _________

APPENDIX D:

MORSE FALL SCALE HANDOUT

Morse Fall Scale

(Adapted with permission, SAGE Publications)

The Morse Fall Scale (MFS) is a rapid and simple method of assessing a patient's likelihood of falling. A large majority of nurses (82.9%) rate the scale as "quick and easy to use," and 54% estimated that it took less than 3 minutes to rate a patient. It consists of six variables that are quick and easy to score, and it has been shown to have predictive validity and interrater reliability. The MFS is used widely in acute care settings, both in the hospital and long-term care inpatient settings.

Item	***Scale***	***Scoring***
1. History of falling; immediate or within 3 months	No 0 Yes 25	______
2. Secondary diagnosis	No 0 Yes 15	______
3. Ambulatory aid Bed rest/nurse assist Crutches/cane/walker Furniture	0 15 30	______
4. IV/Heparin Lock	No 0 Yes 20	______
5. Gait/Transferring Normal/bedrest/immobile Weak Impaired	0 10 20	______
6. Mental status Oriented to own ability Forgets limitations	0 15	______

The items in the scale are scored as follows:

***History of falling*:** This is **scored as 25** if the patient has fallen during the present hospital admission or if there was an immediate history of physiological falls, such as from seizures or an impaired gait three months prior to admission. If the patient has not fallen, this is **scored 0**. Note: If a patient falls for the first time, then his or her score immediately increases by **25**.

***Secondary diagnosis*:** This is scored as **15** if more than one medical diagnosis is listed on the patient's chart; if not, **score 0**.

***Ambulatory aids*:** This is **scored as 0** if the patient walks without a walking aid (even if assisted by a nurse), uses a wheelchair, or is on a bed rest and does not get out of bed at all. If the patient uses crutches, a cane, or a walker, this item **scores 15**; if the patient ambulates clutching onto the furniture for support, score this item **30**.

Intravenous therapy**:** This is **scored as 20** if the patient has an IV, heparin (saline) lock or is attached to equipment (e.g., monitoring equipment or Foley catheter; if not, **score 0**.

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Gait**:** A *normal gait* is characterized by the patient walking with head erect, arms swinging freely at the side, and striding without hesitant. This gait **scores 0**. With a *weak gait* (**score as 10**), the patient is stooped but is able to lift the head while walking without losing balance. Steps are short and the patient may shuffle. With an impaired gait (**score 20**), the patient may have difficulty rising from the chair, attempting to get up by pushing on the arms of the chair/or by bouncing (i.e., by using several attempts to rise). The patient's head is down, and he or she watches the ground. Because the patient's balance is poor, the patient grasps onto the furniture, a support person, or a walking aid for support and cannot walk without this assistance.

Mental status**:** When using this Scale, mental status is measured by checking the patient's own selfassessment of his or her own ability to ambulate. Ask the patient, *"Are you able to go the bathroom alone or do you need assistance?"* If the patient's reply judging his or her own ability is consistent with the ambulatory order on the Kardex®, the patient is rated as "normal" and **scored 0**. If the patient's response is not consistent with the nursing orders or if the patient's response is unrealistic, then the patient is considered to overestimate his or her own abilities and to be forgetful of limitations and **scored as 15**.

Scoring and Risk Level**:** The score is then tallied and recorded on the patient's chart. Risk level and recommended actions (e.g. no interventions needed, standard fall prevention interventions, high risk prevention interventions) are then identified.

Important Note: The Morse Fall Scale should be calibrated for each particular healthcare setting or unit so that fall prevention strategies are targeted to those most at risk. In other words, risk cut off scores may be different depending on if you are using it in an acute care hospital, nursing home or rehabilitation facility. In addition, scales may be set differently between particular units within a given facility.

Sample Risk Level

Risk Level	**MFS Score**	**Action**
Low Risk	<25	Implement Low Fall Risk Prevention Interventions
Moderate Risk	25 - 45	Implement Moderate Fall Risk Prevention Interventions
High Risk	≥ 45	Implement High Risk Fall Risk Prevention Interventions