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Implementing an Evidence-Based Fall Prevention Plan to Address Unintentional Hospital Falls on a Medical/Surgical Unit

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Implementing an Evidence-Based Fall Prevention Plan to Address Unintentional Hospital Falls
on a Medical/Surgical Unit

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Abstract

Background: Falling in the hospital setting is a leading cause of death and disability for patients. For many health care organizations, patient fall prevention strategies have become a priority focus to improve patient outcomes and associated costs.

Project Design: The project was designed to implement a quality improvement project on an adult medical/surgical unit, providing educational activities to nursing staff, and applying a standardized fall prevention plan of care "toolkit" for fall prevention interventions.

Results: Audits completed on 863 patient admits to a 36-bed Medical/Surgical unit during the three-month timeframe, showed the implementation of the project resulted in the creation of a personalized fall prevention plan for 96% of the patients admitted. Unintentional patient falls for the unit decreased from 5.26 falls per 1000 patient days the previous year to 1.78 patient falls per 1000 patient days during the three months the project was implemented. Patient knowledge audits showed 94% of patients were able to identify at least one of their fall risk factors and 93% were able to verbalize a fall prevention intervention.

Recommendations: The results of the pilot study indicate the project should be implemented on other units to help decrease patient falls hospital wide. Ensuring hospital and clinical leadership are engaged in the project is crucial to the success of translating evidence-based care into clinical practice. A patient-care team partnership appears to be beneficial for prevention of falls and fall-related injuries.

Conclusions: The implementation of a standardized fall prevention program decreased patient falls in the medical/surgical setting over a three-month period. On-going monitoring is needed to continue to evaluate the effectiveness of the program.

Keywords: *falls, fall prevention, healthcare acquired conditions, never event*

Problem Description

Patient falls are a common and harmful complication of hospital care, especially in patients older than sixty years of age (Jorgensen et al., 2015; United States Department of Health and Human Services, 2019). Falls are a leading cause of death and disability for hospitalized patients (Dykes et al., 2020). Although numerous fall prevention strategies have been enacted in hospitals over the past several decades, it is estimated that somewhere between 700,000 and 1,000,000 patients, or about 3%, still fall in the hospital setting each year (Agency for Healthcare Research and Quality, 2018). Research studies show that falls in the hospital setting occur at a rate of three to seven falls per one thousand patient bed days (Archer et al., 2011; Weinberg et al., 2011; Dykes et al., 2020; Healey et al., 2008) and account for eighty-five percent of hospital acquired conditions (Calloway, 2020; Cuttler, Barr-Walker, & Cuttler, 2017).

Introduction

According to the Centers for Medicare and Medicaid Services (2020) falls in acute care hospitals are noted as preventable through the application of evidence-based practices and interventions. Medicare and Medicaid quit reimbursing hospitals for costs related to patient falls since this declaration in 2008 (Fehlberg, 2017). For hospitals, falls are associated with a host of other negative sequelae including an increased length of stay, excess cost, lawsuits, and patient and family complaints (Healey et al., 2008; Jorgensen et al., 2015).

Problem Background

Thirty to fifty percent of falls in the hospital setting result in an injury to the patient such as fractures, lacerations, or internal bleeding (Melin, 2018). Thirty-six percent of falls require some type of associated surgery for the patient and ten percent of falls result in death (Nadkarni et al., 2005). Falls with injury are a "serious reportable event" for The Joint Commission and are also deemed a "never event" by the Centers for Medicare and Medicaid Services (Agency for Healthcare

Research and Quality, 2018). These injuries averaged an increased length of stay for the patient by 6.3 days and increased the cost to the patient by $14,000 (Cuttler, Barr-Walker, & Cuttler, 2017). In addition to injury and the financial costs, falls can also cause anxiety and stress to patients, family, and health care workers (United States Department of Health and Human Services, 2019). This anxiety may lead to the start of a negative cycle where a fear of falling leads to activity restriction and consequently further losses of strength and independence for the patient (United States Department of Health and Human Services, 2019). Although it is understood that not all falls in the hospital setting can be prevented, certain evidence-based interventions should be in place to reduce the likelihood of falls occurring (Agency for Healthcare Research and Quality, 2018).

Local Problem

A tertiary care hospital in the Western United States has recently been experiencing higher rates of unintentional falls on its Medical/Surgical Floor. The hospital's measures related to falls were significantly higher when compared to the other medical/surgical units in a report of 904 system hospitals across the United States for 12 months. The rate of falls in the facility per 1,000 patient days was 5.26 compared to the median of 3.56 and the rate of falls with injury was 0.95 compared to the other units' reporting median rate of 0.65 (Press Ganey, 2019). The hospital desires to decrease these fall rates and has set a goal to reach the upper tenth percentile of fewer falls or approximately 2.2 falls per 1000 patient days and no falls with injury per 1000 patient days (S. Doe, personal communication, October 31, 2019).

Available Knowledge

A literature review was completed to help design the DNP project. A searchable question was developed to find studies that included evidence-based practices to decrease patient fall rates. The searchable question used to guide the search for relevant literature was "What evidence-based fall prevention interventions decreases the number of falls for adult patients in the hospital setting?"

Literature Review

A search was conducted utilizing Medline, Psych Info, CINAHL, Health Source and LIRN library databases and search terms "fall" OR "hospital fall" OR "inpatient fall" OR "fall toolkit" OR "fall prevention" OR "fall intervention" OR "fall assessment" were used. This produced 428 articles. To further refine the search, the search parameters were narrowed to only include articles with "hospital" in the title and using the Boolean operator "NOT" to exclude the terms "pediatric", "minor", and "intentional". Exclusion criteria included non-peer-reviewed articles, those with only an abstract available, published in a language other than English, conducted in a setting outside the United States, or not published within the last fifteen years. This resulted in locating sixty-four potentially applicable articles.

The next step in the review process was to evaluate the abstracts and select those that included the use of a fall toolkit or fall interventions (Appendix A). This resulted in identifying twelve articles that were then reviewed using the Johns Hopkins Nursing Evidence-Based Practice Model Evidence Appraisal Tool (Dang & Dearholt, 2018). This tool provides questions to ascertain the level, type, and quality of evidence found in the study (Dang & Dearholt, 2018). After applying the tool, each article is given a ranking based on a five-level tiered system with Level I being the highest and Level V being the lowest (Dang & Dearholt, 2018). To bring the best available evidence into practice, research studies that did not achieve a Level I or Level II using this tool were removed from the body of literature under review.

Synthesis of the Evidence

Twelve articles met the inclusion/exclusion criteria and presented a high level of quality based on the Johns Hopkins Evidence Appraisal Tool. There were several best practices identified by the twelve articles, however, three evidence-based practices were recommended most frequently

in four out of the twelve articles. These practices were: 1) creation of a "Fall Prevention" team (Archer et al., 2010; Ganz et al., 2013; Godlock, Christiansen, & Feider, 2016; Hempel et al., 2013), 2) the use of a Fall Toolkit (Archer et al., 2010; Dykes et al., 2020; Hempel et al., 2013; Weinberg et al, 2011), and 3) patient and family education (Archer et al., 2010; Cuttler, Barr-Walker, & Cuttler, 2017; Ganz et al., 2013; Melin, 2018).

Most of the studies concluded that a "one size fits all" method does not work and that a successful effort must include a mixture of evidence-based clinical interventions (such as limiting psychoactive medications), technological interventions (such as lowering the bed or using bed alarms), environmental measures (such as non-skid floors and use of safe footwear), cultural interventions (such as understanding that fall prevention is a multidisciplinary responsibility), and care process interventions (such as using a fall prevention tool kit) (Cuttler, Barr-Walker, & Cuttler, 2017; Godlock, Christiansen, & Feider, 2016; Krauss et al., 2008; Lang, 2014; Lindros, 2015; Lopez, Gerling, Cary, & Kana, 2010; Melin, 2018). The studies concluded that the best toolkits to decrease falls consisted of creating a multidisciplinary fall prevention committee, classifying patients at risk for falling, using patient-specific approaches to minimize fall risk, and conducting a post-fall multidisciplinary huddle to detect system flaws (Agency for Healthcare Research and Quality, 2018; Cuttler, Barr-Walker, & Cuttler, 2017; Krauss et al., 2008; Institute for Healthcare Improvement, 2020; Lang, 2014). Several studies mentioned the importance of staff and patient education in reducing falls (Archer et al., 2010; Dykes et al., 2020; Hempel et al., 2013; Weinberg et al, 2011). When educating patients, the "teach back" method was found to be the most effective (Cuttler, Barr-Walker, & Cuttler, 2017; Godlock, Christiansen, & Feider, 2016). Another proven tactic was that staff education is best completed for short timeframes and repeated often during the implementation of the fall toolkit (Archer et al., 2010). Finally, some studies discussed the paradox between a fall prevention program and meeting the other goals of the patient's hospitalization

(Dykes et al., 2020; Krauss et al., 2008; Lang, 2014). Overzealous efforts to limit falls may have the unintended consequence of limiting mobility during hospitalization which in turn limits the patient's ability to recover and put them at risk for further complications.

Rationale

Despite long-term and extensive awareness to fall prevention, patients continue to fall, and about thirty percent of these falls result in injury (Health Research and Educational Trust, 2016). Unintentional falls in the hospital setting are preventable and fall rates could be improved using a primary prevention theoretical model. Using the Betty Neuman Systems theoretical model as a guide, a primary prevention needs assessment can be conducted to discover possible areas of opportunity for improvement within the hospital. After determining these areas of opportunity, evidence-based interventions could be found to be incorporated into the fall prevention techniques the hospital will use.

Theoretical Model

The theoretical model used to guide the project was the System Model developed by Betty Neuman (Appendix B). The basic assumptions and key concepts of this theory are: 1) known, unknown, and universal stressors exist and threaten a client or client system's wellbeing, 2) each client or client system's response or normal line of defense to a stressor is unique due to the individual characteristics and other composite factors of the client or the client system, 3) nurses use different levels of prevention intervention for attaining, retaining and maintaining optimal client wellness, 4) the different levels of prevention intervention include primary, secondary and tertiary prevention models (Ahmadi & Sadeghi, 2017; Aronowitz & Fawcett, 2016).

Project Framework – the Logic Model

Primary prevention is a main concept of the Systems Model, and the aim of primary prevention is to prevent disease or injury before it ever occurs (Ahmadi & Sadeghi, 2017). Fall

prevention is a tenant of primary prevention in the Systems Model because the intent is to "keep the system from reacting before the system reacts to a stressor" (Aronowitz & Fawcett, 2016, p. 173). In this project, the stressor is the patient fall. In the Systems Model, primary prevention focuses on strengthening the flexible line of defense through preventing stress and reducing risk factors. Therefore, since the focus of this project is on implementing interventions to identify and respond appropriately to the fall risk or hazard before the fall occurs, the Systems Model's Primary Prevention creates a guide for the interventions of the project.

The project framework is a snapshot or roadmap of how the project elements work together to support the success of the project (Kellogg Foundation, 2004). The Kellogg Logic Model was utilized as a framework to clearly delineate key components of the project activities such as receiving approval from the administrative team, identifying a "fall champion", establishing a multi-disciplinary team, implementing evidence-based interventions or toolkits, and staff training to implement the interventions that support the short-term outcomes. The use of this framework helped to identify and organize outcomes. It also assisted in recognizing specific components to be met during the various project phases and highlighted the activities and resources needed to be successful.

Specific Aims

The aim of the project was to implement evidence-based education related to fall prevention and initiate a fall toolkit to decrease the rate of falls on the medical/surgical unit of the hospital. To implement these interventions correctly, collaboration within the organization was required and included administrative leadership, nursing staff, patients, and patient families. After the interventions were initiated, pre-determined outcomes were reviewed to evaluate the effectiveness of the project.

Context

The scholarly project required an in-depth assessment of the organization where the project was implemented. Through this assessment, the project manager was better able to understand the organization's scope, capabilities, limitations, and concerns. The following are the attributes of the clinical partner's organization.

Population

The population of interest for the project was the nursing staff members on the 24-bed Medical/Surgical unit of the hospital. This unit has an average daily census of nineteen patients that typically range in age from sixty to eighty years old (T. Johnson, personal communication, February 18, 2020). Patients are most often admitted to this unit for the following diagnoses: pneumonia, chronic pulmonary disease, sepsis, cellulitis, renal failure, bowel obstruction, dehydration, and post-surgical care (S. Doe, personal communication, July 15, 2020). Patients treated on this unit typically have several co-morbidities and have also been prescribed various medications to assist in their medical regime (S. Doe, personal communication, July 15, 2020).

The nursing staff for the unit included one full time director, four full time charge nurses, two part time charge nurses, twenty-three full time primary care nurses, fourteen part time primary care nurses, seven full time nursing assistants, and six part time nursing assistants (T. Johnson, personal communication, July 15, 2020). Forty-six percent of the nurses working the unit had a baccalaureate degree and the other fifty-four percent had an associate degree (S. Doe, personal communication, July 15, 2020). This is significant, as it has been shown that fall rates are 5% lower in hospitals if eighty percent or more of their nursing staff are baccalaureate degree prepared (Lake et al., 2010). The annual employee turnover for the unit was nineteen percent (S. Doe, personal communication, July 15, 2020).

Local Care Environment

The project was conducted on a 24-bed Medical/Surgical unit of a non-teaching hospital located in the Western United States. The unit was split into two wings with a nursing station and medication/supply room in the middle of each wing surrounded by twelve private rooms. Patients admitted to the medical/surgical unit of the hospital are cared for by a hospitalist who is on-call twenty-four hours per day, seven days per week (T. Johnson, personal communication, July 15, 2020). Each nursing shift was twelve hours in length and staffed with a charge nurse, a registered nurse for every four patients, and a nursing assistant for every eight patients (T. Johnson, personal communication, July 15, 2020). The Medical/Surgical unit Director reported to the Chief Clinical Officer.

Relevant Elements of Project Setting

Typically, Medical/Surgical nursing staff were updated in person concerning quality metrics including departmental patient fall data at monthly staff meetings. At the time of the project, this process changed, however, due to the COVID-19 pandemic. Staff meetings were changed from being held in person, to being held virtually (T. Johnson, personal communication, July 15, 2020). At the time, staff training was also affected. Instead of training occurring in-person at staff meetings, it was changed to an electronic learning management system (T. Johnson, personal communication, July 15, 2020). The medical/surgical unit also initiated a sitter policy over one year prior to the start of the project to help decrease the fall rates for the unit (S. Doe, personal communication, July 15, 2020). The scope of the sitter's responsibilities at the hospital varied and included sitting with patients who were suicidal, homicidal, combative, confused, distressed, or dying, in addition to being at risk for falling. Although no real data was reviewed, anecdotally the sitter program appeared to be effective at the hospital. In the performed literature review, however, Lang (2014) found mixed results when examining the effectiveness of implementing sitters to reduce falls.

Organizational Culture and Readiness for Change

The hospital's Board of Directors was very concerned with the high rate of patient falls. This is because it did not fulfill the mission of the hospital which was "Above all else, we are committed to the care and improvement of human life" (S. Doe, personal communication, October 31, 2019). The administrative team was desirous to provide a safer environment for its patients. All stakeholders agreed with the importance of decreasing fall rates as part of fulfilling the hospital's mission and were supportive of the project.

The Medical/Surgical nursing staff were accustomed to the ever-changing environment of healthcare. They were particularly ready to change the number of patient falls on their unit because the Nursing Team was seeking to receive Magnet Recognition© from the American Nurses Credentialing Center and decreasing falls would help meet the safety metric requirements of this recognition. In addition, the Medical/Surgical Unit had previously obtained an "Honorable Mention" as a Unit of Distinction for their corporation in 2018. This means the unit was ranked in the top ten percent of more than 400 medical/surgical units that were compared using twenty-one different criteria including nursing leadership, operational practices, and patient outcomes. The unit did not receive this recognition in 2019, however, partly because of the unit's high fall rate. This motivated the director and the unit nursing staff to work to decrease the fall rate (T. Johnson personal communication, February 18, 2020). The hospital also desired to decrease its risk and reach the upper tenth percentile of corporate comparative reports by having fewer falls when compared with its peer hospitals.

Strengths and Weaknesses

Calloway (2020) states the most important aspects of implementing fall prevention initiatives include administrative support, financial backing, and inter-disciplinary oversight. These were all identified strengths of the partner hospital where the scholarly project was to be conducted.

The Chief Clinical Officer of the hospital had already obtained support from the Board of Directors and the Administrative Team, which in turn had already approved financial support for the project (S. Doe, personal communication, February 18, 2020). The Chief Clinical Officer had also approved an interdisciplinary team to be formed to review evidence-based initiatives, assist in staff training as needed, and oversee the data to ensure the project is successfully implemented and reviewed. Another strength is the Medical/Surgical unit had a variety of ways that staff could be trained. Training could be completed in person, via an electronic learning management system, or virtually through interpersonal video sessions (T. Johnson, personal communication, February 18, 2020).

The hospital and the Medical/Surgical unit did have some weaknesses that needed to be addressed before and during the project. The hospital needed to identify a "Fall Prevention Champion". This was somewhat difficult, as patient falls were not always viewed as an interesting topic. Staff buy-in to implement the interventions would also be difficult due to this same rationale. According to the unit director, falls in the hospital are perceived to be the responsibility of the nursing team (T. Johnson, personal communication, February 18, 2020). This perception needed to be changed to ensure the success of the project and the filling of the interdisciplinary committee with key members (Calloway, 2020). Another weakness was that for certain interventions, hospital staffing metrics may inhibit their implementation. The hospital also had a Director of Quality that was new to her role (T. Johnson, personal communication, 2020). Since it was anticipated that the Director of Quality would be an integral part of the Fall Prevention Committee, this was a weakness until the new director was fully immersed in the organization and her role.

Interventions

Evidence-based practice is used in many facets of health care and these practices have proven effective in increasing quality and positive outcomes for patients and organizations (Ganz et

al., 2013). Evidence-based interventions founded on research offer valuable tools that have been formerly examined and tested (Dykes et al., 2020). By implementing evidence-based fall prevention toolkits, many hospitals have decreased falls and fall risk (Calloway, 2020). Research has shown that to implement and sustain an effective fall prevention program, operational practices must be tailored with the needs of the hospital unit, the multidisciplinary team working on the unit, and the unit's patients in mind (Dykes et al., 2020; Weinberg et al., 2011; Archer et al., 2011). As evidence-based interventions are implemented, the multi-disciplinary team should review outcomes for the interventions to ensure those interventions are meeting the fall prevention need of the hospital (Calloway, 2020) and other interventions could be applied as deemed necessary.

Logic Model

Evidence found in the literature search showed that administrative support and the creation of a multidisciplinary team are vital to the success of any fall prevention program (Archer, et al., 2010; Ganz et al., 2013; Godlock, Christiansen, & Fiedler, 2016; Hempel et al., 2013). Therefore, the creation of a multidisciplinary team was included as an initial step in the project. After performing a literature review, the next step on the logic model was to meet with the administrative team to confirm their support was unwavering (Appendix C). To ensure open communication and understanding of the project, this step also included informing the administrative team of the project details including essential staff training, use of facility space, and auditing requirements. Hospital employees affected by the training and the time required for that training was also reviewed with the administrative team.

The second step of the logic model was to obtain approval to implement the Fall Prevention Toolkit from the multi-disciplinary fall prevention team. Several evidence-based toolkits were examined and resulted in the Fall Tailoring Interventions for Patient Safety (Fall TIPS) Fall Prevention Toolkit being selected. A review of the literature concludes that because not all hospitals

are the same, evidence-based interventions should be reviewed by an interdisciplinary team from the hospital to determine which of the interventions would be of the greatest benefit for their facility (Ganz et al., 2013; Agency for Healthcare Research and Quality, 2018). The literature also states that although some fall prevention interventions can routinely be applied to all patients, when implementing best practice some of the interventions must be tailored to each patient's specific risk profile (Ganz et al., 2013). Given this information, one of the reasons the Fall TIPS program was selected is because it consists of a "formal risk assessment and a tailored plan of care for each patient" (Fall TIPS, 2020, p. 1).

Another reason the Fall TIPS program was chosen to be implemented is that it is an evidence-based program with a proven record of decreasing falls (Fall TIPS, 2020). Research has shown that to be effective, a fall prevention program must provide consistent communication to the care team, involve all stakeholders (the care team, patients, and family members), and be more robust than simply posting generic information at the bedside (Archer, et al., 2010; Ganz et al., 2013; Godlock, Christiansen, & Fiedler, 2016; Hempel et al., 2013). The Fall TIPS program met these requirements. As a pilot project, it was desired that the venture would be completed outside of the hospital's electronic health record, yet still provide the clinical decision support needed to link fall risk factors to evidence-based interventions in the hospital. The Fall TIPS program provided a tool that was easy for nurses and other clinical staff to engage patients and family in the fall prevention process. This was done through the Fall TIPS paper tool which was printed in color on a 11" by 17" piece of paper and laminated (Appendix D). During previous implementations of the Fall TIPS program, it was found staff members had an 80% compliance rating when using this laminated prompt, which in turn produced a clinically significant reduction in falls over a six-month period at two different hospitals (Fall TIPS, 2020). To summarize, the Fall TIPS Program was selected because it is evidence-based, is easy to understand and use, has a high compliance rating,

and proven outcomes. Although it is noted on the Fall TIPS website that the program can be used "free of charge", a letter of authorization was requested and received from the program director (Appendix E).

Training nursing staff on the fall toolkit and evaluating that training after implementation were the next interventions to be performed. Several methods of evaluating training exist and have different levels of merit (Verma, 2020), so the project manager had to review which evaluation method was evidence-based and could reasonably be applied on the medical/surgical unit. An electronic pre and post-test, created by the Fall TIPS program, was used to evaluate nursing staff knowledge before and after using the training resources. The nursing staff was encouraged to complete the training by the Project Manager, administration, the unit director, and the charge nurses. The charge nurses also received training to become "super-users" after the implementation. They were available on each shift to answer questions and assist with the execution of the project as needed. Posters and flyers were also created to assist in reminding the nursing staff on how to properly use the toolkit.

To ensure the implementation of the project was going well, the research confirmed an audit should be performed to review the application of the best practices (Ganz et al., 2013; Agency for Healthcare Research and Quality, 2018; Institute for Healthcare Improvement, 2020). Therefore, the fourth step of the logic model was to implement the fall prevention toolkit and audit its use after the training was completed. The Fall TIPS auditing tool, which is part of the Fall Tips program, was used to audit how the implementation of the project was progressing (Appendix F). Although the Fall TIPS program only recommended conducting five audits per month per unit, during the pilot project, the Charge Nurses and the Project Manager performed at least 75 audits each month to ensure the project was going well and identify possible concerns that could be addressed in real time.

The final step of the logic model included compiling the data and reporting on the results of the project. The training percentages, knowledge assessments, quality audits, and patient falls on the unit were evaluated. A final report was given to the fall prevention team and the hospital administration and was also published in the Boise State University ScholarWorks repository. Project outcomes in sequential order were:

1. By December 2020, the Project Manager and the hospital administration would approve a standardized, evidence-based fall prevention toolkit to be implemented.

2. By April 30, 2021, the electronic Fall Tool Kit training module concerning fall prevention techniques and protocols would be completed by 80% of the Medical/Surgical unit Nurses and Certified Nursing Assistants (CNA).

3. By April 30, 2021, Medical/Surgical Nurses and CNA's would complete the training and show a high level of understanding as demonstrated by 80% of participants scoring 80% or greater on the Fall Prevention Knowledge Test.

4. By August 2021, Patient Fall Prevention Plans would be completed on 80% of the Medical/Surgical patients admitted to the unit. An audit would be completed by the Charge Nurse and the Project Manager to determine if the plans were completed and communicated to the patient and family using the Fall Tips Audit Tool provided by the Fall TIPS program.

5. After implementation of the Fall Prevention Toolkit, the Medical/Surgical unit would see a decrease in unintentional patient falls between June 2021 and August 2021 by 25% as compared to the unit's baseline falls (2020).

6. Although intermediate and long-term goals fall out of the timeframe of this project, it was anticipated the fall prevention toolkit would continue to be implemented by staff nurses on the medical/surgical floors. The toolkit would also be implemented in other departments in

the hospital, and the hospital would have fall rates decrease placing them in the top ten

percent of the corporation.

Correlation of Interventions with the Theoretical Model

Betty Neuman's System Model theory was utilized to systematically appraise the high rate

of falls, use of interventions, and guide the project (Ahamadi & Sadeghi, 2017). The stressor

identified that would harm the patient is an unintentional fall. The System Model states that each

line of defense against the stressor should be unique to the client (Aronowitz & Fawcett, 2016).

This tenet of the theory was applied by ensuring the Fall Prevention Toolkit was modified for the

Medical/Surgical unit and individual patients risk factors and needs. Although several different

types of prevention can be used against stressors in the theoretical model, primary prevention will

be the focus of this project. The primary prevention will be the training of the staff concerning

evidence-based interventions to implement in keeping the patient from having a fall. The System

Model could be used to expand this project facility-wide after the pilot project is completed and is

proved successful.

Timeline

To ensure the project was completed in a timely manner, a timeline was created depicting

the various phases of the scholarly project process (Appendix G). Each of the phases identified the

various steps to be completed by a certain time frame. The first phase was the planning phase. This

phase constituted the steps necessary to prepare for the implementation of the fall prevention toolkit

and staff training. The first few specific steps for this phase were completed by the end of July 2020

and were: 1) a problem statement was refined and completed, 2) research protocol training was

done, 3) a timeline created, and 4) a logic model finished. By December of 2020, evidence-based

fall prevention toolkits were identified, a Fall Prevention Champion determined, and a

Memorandum of Understanding with the hospital completed. By January of 2021, the Project

Manager would also have performed an assessment of current fall prevention toolkits for the medical/surgical unit, met with the Fall Prevention Committee, and presented a fall prevention toolkit for possible implementation. By the end of February 2021, the Fall Prevention Committee had reviewed the fall toolkit and approved it for implementation on the Medical/Surgical unit. After the start of the new year, a budget for the project was created and approved by the hospital administration. An Investigational Review Board approval was obtained for the project in February 2021. Many processes needed to be completed by the end of March 2021, including updating policies and procedures as needed, developing staff training materials, crafting a schedule for staff training, and completing a "train-the-trainer" program. By the middle of May 2021 all staff members were trained as the project moved into the implementation phase.

The fall toolkit was implemented during the months of May, June, July, and August of 2021. The data collection phase was completed simultaneously with the implementation phase, but data collection continued until September 1st to ensure all necessary data was collected and analyzed. The initial findings of the project were shared with the administrative team and the Fall Prevention Committee in October 2021. The project manager then completed the dissemination phase of the project by compiling a final report and prepared to deliver a comprehensive presentation on the project. This phase was completed in February of 2022. The concluding phase of the project was deliverance of the Final Report, and this was given to the hospital's Board of Directors and posted to Boise State University's ScholarWorks in May of 2022.

Measures

The scholarly project was implemented to reduce patient falls on a medical/surgical floor of the partner hospital. For this project, both primary and secondary data were collected using various data collection tools (Appendix H). Initially, secondary data was collected and reviewed from the partner hospital's electronic health record to determine the rate of falls and falls with injury that had

occurred prior to the implementation of the project. Johnson and Sylvia (2018) explain that secondary data must be assessed to determine if it meets the needs of the project and reviewed for quality. Project stakeholders determined this data as appropriate and pertinent since this is the metric they wanted to evaluate. The quality of the secondary medical/surgical unit fall rate data was reviewed with the help of the hospital's Quality Program Director. A subset of fall data was collected over the last year and was analyzed to determine if the data was accurate and correct. Since the Fall TIPS toolkit was used, their definition of a fall (i.e., an unplanned descent to the floor with or without injury to the patient) was used to review the collected secondary data (Fall TIPS, 2020). This review found one incident that did not qualify to be included in the data since it was determined to be an intentional fall. This same secondary data was once again collected and reviewed from the electronic health record after the initiation of the project.

Primary data collected included a knowledge assessment and audit of whether the patient fall care plans were created. To assess the knowledge of the medical/surgical nursing staff concerning fall prevention and development of the patient fall care plans, a Fall Prevention Knowledge Test provided by the Fall TIPS fall prevention toolkit, was taken by all nursing staff that complete the Fall TIPS Fall Prevention Education Module (Appendix I). A pre and posttest was administered to the medical/surgical nursing staff. Unit reminders were ongoing during the implementation phase of the project to ensure at least 80% of the staff members completed the educational module as recommended by the Fall TIPS program (Fall TIPS, 2020). For the pre and posttest, the scoring range, set by Illesanmi and Oluwatosin (2012), was used with 80% and above indicating high knowledge, 59 to 79% indicating moderate knowledge, and below 59% indicating a low knowledge level.

Other primary data collected included an audit of whether the nursing staff were completing a patient fall plan upon admission to the unit, if patient teaching occurred, if family teaching

occurred, and if the auditor followed up with the nurse if a plan was not found to be in place. This data was analyzed during the project timeframe and collected using the Fall TIPS Quality Audit Tool (Appendix J). The audit tool recommended at least five audits per unit per month be completed (Fall Tips, 2020). For this project, to ensure an adequate amount of data was captured to assess compliance, at least 75 admissions per month were reviewed after the project start. This data was analyzed to determine if patient fall rates improved after the implementation of the patient fall plans had been initiated.

Analysis

The quantitative data collected and analyzed for this project were the number of patient falls occurring during the selected timeframe, the number of nursing staff on the unit completing the fall prevention education, the results of the Fall Prevention Knowledge Test scores from the education module, and the number of patients that had fall prevention plans created for them. Descriptive statistics were used to evaluate the quantitative data (Reavy, 2016).

The pre and posttest scores from the validated Fall TIPS Fall Prevention Knowledge Test were also tabulated using descriptive statistics to find a mean score of the staff's knowledge before and after using the training resources. These scores were used to determine if further training was required for the nursing staff to be proficient in the knowledge of how to properly implement the program. A score of at least 80% on the post-test by 80% of the nursing staff was achieved to ensure the staff understood the principles well enough to implement the program.

Descriptive statistics were used to analyze data from the scores and these statistics included a measure of central tendency (mean and median score). Descriptive statistics were also used to analyze patient falls that occurred before and after the project was completed. Patient falls are typically analyzed in frequency as a percentage of hospital admissions or the number of falls per 1,000 patient days (Bouldin et al., 2013). The partner hospital requested the data be analyzed using

the metric of the number of patient falls per 1,000 patient days for review by administration so it can be compared to other hospital data throughout the corporation (Appendix K).

Ethical Considerations

Ethical principles typically assumed in health care settings also apply to clinical audits and quality improvement projects (Healthcare Quality Improvement Partnership, 2017). Because of this, the pilot project had some situations or circumstances that required consideration prior to the project starting. These ethical considerations included protection of the participants, conflicts of interest, biases, and threats to quality of the DNP project.

Ethical Considerations and Protection of Participants

A Memorandum of Understanding (Appendix L) was completed with the hospital in advance of the project's start. Although this is not normally noted as a document of ethical importance, this document did address how the hospital wanted to be referred to during the study. Due to previous concerns with other DNP projects completed at the facility, the hospital did not want to be named and preferred to only be addressed as a "hospital located in the Western United States". This request was strictly adhered to maintain confidentiality.

In June of 2020, the DNP student completed the Collaborative Institutional Training Institute (CITI) for social and behavioral sciences (Appendix M). This training helped the DNP student understand how to protect participants and secure any data collected. The DNP project only involved nurses and health care providers. There was no risk or discomfort to participants. Participation in the project was voluntary and participants were apprised of the time that would be required of them to participate in the project. The educational session was approximately thirty minutes. The post educational survey scores were collected anonymously. There was no identifiable patient, nurse, or provider information collected during the audits.

Electronic data was stored on a USB flash drive that was password protected with a password that was only known by the Project Manager. All electronic files were deleted after data analysis in the Spring of 2021 unless it was necessary to store the data for IRB review or auditing purposes. Manually collected data was stored and transported in a locked box. Collected data was only shared with the Project Mentor and Hospital Champion until it was ready to be disseminated. The participating facility was not named and the data from the surveys were only used in aggregated form in presentations, publications, or reports.

Conflicts of Interest

To ensure the project design was adhered to throughout the project and not changed after its start, these conditions were discussed with the facility representative, agreed upon and documented in the completed Memorandum of Understanding (Appendix L). The Project Manager also presented the scholarly project proposal for approval to the hospital's Investigational Review Board (IRB). The project received IRB approval status after the presentation and a Letter of Determination for the project was received (Appendix N).

There was a potential conflict of interest as the Project Manager was a part-time employee of the hospital at the time of the project, but administration had been notified that the Project Manager would be in the role of a DNP student rather than an employee during the project. Participants were not compensated for participation in the project but thank you cards were mailed to each participant upon project completion. There may have been a motivation for participants to document their contribution in the project in their annual review, which would set them apart from other employees; however, this was not guaranteed to make a change in their annual performance appraisal.

Biases

It was important to recognize that several different types of biases could have developed during the project, including bias on the part of the project manager, participants, or organization. Bias can cause false conclusions and be misleading (Simundic, 2013). To avoid bias in the data collection, reliable data collection methods were applied and a second individual from the hospital assisted with chart audits and reviewing the post education scores. Participants were also asked to review their results for accuracy. These tactics ensured the data was represented correctly (Pannucci & Wilkins, 2010).

To avoid bias on the part of the participants, they were ensured the post education scores would be collected anonymously and would not be able to be traced back to the participant. Information was presented in a judgement free manner, so participants were more confident in participating and motivated to also have integrity during the project. Organizational bias was mitigated by the memorandum of understanding and the IRB approval. Audits were only conducted by the project manager and the Falls Champion from the hospital to help decrease the risk of organization bias as well. Results were shared only after the study was completed.

Threats to Quality

By planning and performing the project using evidence-based theories, interventions, and analysis, the threats to the quality of the project were minimal (Pannucci & Wilkins, 2010). There was a possibility the organization may want to add or delete certain interventions or procedures to the project. This type of concern was diminished by making sure the project manager had developed a relationship of trust with the organization and had continuous open communication with them. During the planning and implementation stages, the project manager made sure the facility was well informed concerning the aspects and phases of the project to ensure the facility agreed with the parameters of the project from the start. Other threats to quality included the nursing staff being unwilling to participate or choosing not to participate as intended. Since

administration had previously approved the project, this type of behavior would go against their employment contract and was highly unlikely. The Project Manager stayed vigilant and worked to anticipate and mitigate any quality problems during the project.

IRB Application and Project Determination

A letter of determination, identifying this to be a Quality Improvement Project, was obtained from the Investigational Review Board from the hospital prior to the start of the project (Appendix N). This pilot project was conducted on a Medical/Surgical unit. There was a total of 56 nursing staff who worked on the unit that were eligible to participate in the project. This included charge nurses, staff nurses, and certified nurses' aides. Staff had two weeks to determine if they desired to participate in the project by completing an education module with its accompanying pre and post-test.

Results

Steps of the Interventions

Investigational Review Board (IRB) review was sought prior to the start of the project and the project was deemed by the IRB review to be non-human subjects' research. The Project Manager then attended the hospital's Fall Prevention Committee Meeting to explain the purpose of the pilot project, shared the research from the literature on why the fall prevention program was effective, and explained the different fall prevention techniques and materials with the group. Organizational support for the pilot project was obtained.

The project's timeframe for implementation, expectations and duties of the team members, and staff training requirements were discussed in a meeting with the Chief Nursing Officer and the Medical/Surgical Unit Director. During the meeting, it was discovered that the hospital desired to implement the pilot project sooner than originally planned. The timeline was moved forward. The staff training took place on May 12 and the Fall TIPS Toolkit began being used on May 15.

Details of the Processes Measures and Outcomes

The pilot project had four primary short-term outcomes (Appendix K). A staff meeting was held, and the educational seminar was delivered (Outcome #1). Despite the COVID-19 pandemic, 88.5% (46/52) of the staff members attended the meeting. Individuals who missed the training were later trained on a "one-on-one" basis by the Project Manager or the Charge Nurses.

Outcome 2 was created to ensure the nursing staff obtained the knowledge they needed to implement the fall prevention program correctly. The hospital requested the pre- and post-testing be adapted from an electronic format to a "hard copy" therefore the tests were administered during the staff meeting via a paper format. The tests were delivered directly to the project manager to be reviewed and graded. The hard copy paper testing proved to be more cumbersome and less confidential than originally planned as the tests had to be graded manually and some of the nurses wrote their names on their tests. However, the evaluation method still proved effective, and the desired outcome was met.

To ensure the fall prevention techniques were applied correctly, Outcome 3 required the Charge Nurses to perform an audit on new patient admissions after the project was implemented. Eighty percent of those patients audited were to have a Fall TIPS Paper Tool completed. The audit consisted of four parts: 1) was the fall prevention tool filled out and visible in the patient's room, 2) could the patient remember any of fall risks that the nursing staff discussed with them, 3) could the patient remember any of the fall prevention interventions that the nursing staff discussed with them, and 4) if the patient answered "No" to any of the three previous questions, the Charge Nurse followed up with the Patient Care Nurse to review with them how to implement the fall prevention protocol correctly. Although the audit added to their already busy workload, the Charge Nurses were supportive and completed audits on 83% of patient admits during the pilot project's timeframe. In addition, if any of the patients did not have a completed toolkit or were unable to answer questions concerning fall prevention risks or interventions, they followed up with the

Primary Care Nurse (76% of the time) to ensure the nurse understood the program and completed the requirements of the project correctly.

Outcome 4 was created to examine if patient fall rates on the medical/surgical unit changed during the pilot project's three-month timeframe as compared to previous quarterly fall rates. Only data from the Medical/Surgical pilot unit was evaluated; fall rates were measured by calculating the number of patients falls per 1000 occupied bed days (Agency for Healthcare Research and Quality, 2013).

Outcomes Analysis

Education Results

Microsoft Excel (Office 2019 Version 2105) was used to organize and summarize the data. Nursing staff participating in the educational session took a pre-test, received the fall prevention education, and then took a post-test. A score of 80% or higher was required on the post-test to demonstrate the staff member had acquired the knowledge to successfully implement the fall prevention program. If 80% was not achieved, the staff member was remediated and given the opportunity to retake the test. Eighty-eight percent of the qualified nursing staff working the Medical/Surgical unit completed the education session, including the pre- and post-testing (46 out of 52 total nursing staff). As shown in Table 1 in Appendix O, the mean age of the participants was 34 (SD = 11.1) years, and they were mainly white females (95.7%). Years of service varied from less than one year to 36 years, with the majority having one to five years of service (47.8%). Participants were also surveyed for the highest educational degree earned and which schedule they most routinely worked. Most of the respondents held a baccalaureate degree or higher (65.2%) and there were slightly more respondents working the night shift (56.5%).

The results of the pre- and post-testing demonstrated that the participants increased their knowledge concerning fall prevention and implementing fall prevention interventions. Fall

prevention knowledge had the highest percentage of improvement from pre-test to post-test with an increase of 46.2%. Understanding how to implement fall prevention interventions also showed an improvement of 35.9%. The difference in overall test scores from pre- to post-test increased from 46.3% on the pre-test to 85.0% on the post-test (38.7% difference) (Table 2 in Appendix P). Ninety-five percent (44/46) of the participants completed the post-test with a score of 80% or higher. Those that did not receive a score of 80% or higher were remediated and took the post-test a second time to demonstrate competency. The two staff members needing remediation passed the post-test with an 80% or higher on their second attempt.

Overall, participants increased their knowledge in 10 of the 11 test questions (Table 2 in Appendix P). Six questions were based on general fall prevention knowledge and five questions were on the topic of implementing fall prevention interventions. One question had no improvement as the participants scored 100% correctly on both the pre-test and the post-test. Reviewing test questions that were in the 'least' and 'most' improved categories, two of the topmost improved answers involved understanding how to properly screen patients for fall risk. Prior to the education, only 24% of the participants correctly answered Question 1 and only 13% correctly answered Question 8. Both questions were on the topic of how to properly screen a patient for fall risk. Following the completion of the learning module, 100% of the participants correctly answered both questions, indicating their knowledge increased for this topic. Questions 9 and 10 showed the lease improvement from the pre- to the post-test. These questions discussed the need for a fall plan on all patients and the patient teaching required when implementing the plan – topics most nurses already know and understand. It is important to mention that the pre- and post-test results cannot be correlated with nursing competence (Delmore et al., 2018). A registered nurse may be knowledgeable, but this may not always translate into their nursing practice.

Audit Results

The Fall TIPS Fall Prevention Program was implemented on the Medical/Surgical Floor after the training was concluded. Audits were completed over a three-month timeframe (May 15 to August 15) by the Charge Nurses to ensure the fall prevention toolkit was being applied correctly. Eighty-three percent of patient admissions to the Medical/Surgical unit were audited using the Fall TIPS Quality Audit Tool (Appendices F & Q). The audits revealed that 95% of the patients had a completed Fall TIPS Paper Tool at the bedside. This exceeded the original goal of 80%. Ninety-four percent of the patients that had a Fall TIPS Paper Tool completed verbalized at least one risk they had for falling. In addition, 93% of those same patients identified an intervention put in place to keep them from falling. The nurses were implementing the program and teaching their patients. The importance of this teaching is significant because patient teaching was found to be the key element to having the program prevent falls (Dykes et al., 2020).

The last outcome for review was, "Do all of these interventions translate into fewer patient falls on the Medical/Surgical Floor?" Benchmark data was reviewed to ensure only falls on the Medical/Surgical Floor were included in the data reviewed. The Medical/Surgical Floor had 14 unintentional patient falls throughout 2020. In 2021, prior to the Fall TIPS Program being implemented in May, the Medical/Surgical Floor had 7 falls. Two falls occurred on the Medical/Surgical floors during the three-month timeframe of the pilot project (Appendix R). During 2020, the Medical/Surgical Floor had a fall rate of 5.26 falls per 1000 patient days. Prior to the start of the pilot project in 2021, the Medical/Surgical Floor had 6.01 falls per 1000 patient days, and 1.78 per 1000 patient days during the pilot project (Appendix S).

Contextual Elements that Interacted with the Interventions

Contextual elements that interacted with the interventions positively were the team's leadership support and the team's motivation to change. Leadership from the hospital, including the Chief Nursing Officer and the Unit Director, were supportive of the project and desired a successful

outcome. The Unit Director performed some of the required audits and followed up with the Charge

Nurses to ensure they were completed correctly. To ensure all new admissions to the unit had the

fall prevention toolkit implemented appropriately, one of the Charge Nurses created a special binder

with a unique filing system to place the audit sheets in. This binder made it easier for the Charge

Nurses to review which admits had been audited and which still needed an audit. Given this level of

support from administration, the nursing staff on the Medical/Surgical unit adopted the project as

their responsibility.

Another motivation to participate was, if the pilot project proved unsuccessful in decreasing

the number of patient falls, the hospital's Fall Prevention Committee had determined that a nursing

staff member would need to remain with patients while they were in the bathroom. The possible

enactment of this "bathroom policy" may have further motivated the nursing staff to employ the

pilot project well – with the intent of keeping the "bathroom policy" from being needed.

Contextual elements that interacted with the interventions negatively were 1) the inability of

the training of the nursing staff to take place within the organization's learning management

system, 2) implementation of any kind within the electronic health record, and 3) integration of the

toolkit onto the hospital's communication boards. These items would have made the project more

efficient and the data to be analyzed easier to extract. Although several manual processes could

have been avoided with the use of this technology, the large size and formal nature of the parent

corporation prevented this from occurring on the hospital level.

Associations Between Outcomes, Interventions, and Contextual Elements

The project outcomes and interventions were met within the context of the small, agile,

community hospital. Outcomes #1 and #2 were specifically influenced within this context. Since

the training was unable to be placed in the hospital's electronic learning management system and

due to the small number of participants (n=46), the Project Manager was able to change the training

to an in-person session with a written quiz. This may not have been possible to actualize in a larger hospital with more participants. Similarly, Outcome #2 was easily completed as very few staff members required remediation. A larger facility or department may need several assistants to complete remediation if there were more participants or more of the participants were not able to pass with an 80% on their first attempt.

Outcome #3 may have also been influenced by this same contextual element. In a larger facility, the nursing staff may not have been able to complete the Fall Prevention Toolkit on 80% of their new patient admits. Audits and reminders by the Charge Nurses may not have been able to be performed as effectively either, which in turn would affect the outcome of the project. Depending upon the facility, more staff hours may also be needed to complete these interventions.

Unintended Consequences

The Fall TIPS Paper Tool (Appendix D) was to be completed for all adult patient admissions to the floor. The tool is a colorful document with pictures on it. This proved to be appealing to hospital staff and patients as they could easily find it in the room and identify the patient's fall risks and interventions. Although it was not officially incorporated into the communication boards in the patient rooms as initially intended, after the patient's nurse completed the tool, it was hung by the communication board in a protective sleeve. This central location allowed the tool to readily be seen by the patient and the patient's care team members. Prior to the implementation of the pilot project, fall risks and prevention interventions would need to be reviewed by accessing the electronic health record. Non-nursing staff members (such as radiology, physical therapy, etc.) stated that since the paper tool was readily visible and provided the information quickly, they were more apt to use the fall prevention interventions than when the information was only located in the patient record. The paper tool also served as a visual reminder

to the patient of their enhanced fall risk and the interventions to help them stay safe during their hospital stay.

Another unintended consequence to be considered for this pilot project is that the hospital is part of a larger parent corporation. The Project Manager first began discussing ideas for possible projects with the Chief Nursing Officer of the hospital in 2019. A project focus of fall prevention was chosen at that time. In the interim, the parent corporation also began looking at fall prevention programs to initiate corporate-wide. Neither entity communicated its intentions to the other. In 2021, however, when the pilot project was presented before the IRB for approval, the parent corporation considered denying the application since they were potentially initiating their own fall prevention program within the next year. Coordination of projects between individual hospitals and the larger corporate health care system is recommended.

Missing Data

Six of the Medical/Surgical Nursing Staff Members were not available for the initial fall prevention education session. Although these staff members were trained later, their evaluative testing information was not included in the pre and post test results noted in Appendices O and P. These staff members did demonstrate educational competency, however, after the project was started. Also, Fall Prevention Toolkit Audits were only completed on 83% of the patients admitted to the Medical Surgical Floor. This means it is unknown whether 17% of the Medical/Surgical patients had a fall prevention plan completed for them or not.

Actual Project Revenues and Expenses/Costs and Strategic Trade-Offs

Actual expenses varied somewhat from initial budgetary projections (Appendix T). Project expenses were categorized by the 4 project phases: Planning, Training, Implementation, and Reporting. The Planning Phase initially budgeted for six meetings with administration, but only three meetings were needed. This decreased the budgeted personnel and space costs by half.

Training costs remained as expected due to some offsets. Savings were noted by only holding one training meeting instead of four, as originally intended, but more training hours were used than anticipated as 39 nurses needed training instead of the budgeted number of 37. Also, changing the evaluations from an electronic format to a paper test increased supply cost, but IT Support costs were less. The Implementation costs remained static for the project, but expenses were saved in the Reporting Phase as a laptop computer was not purchased to assist with the project. Overall, the project noted a savings from the expected budgeted amount as actual costs were $13,562.50 as compared to the intended budget of 17,698.50. Even though it was not anticipated the project would produce any income, as noted previously, there are definite positive long-term financial effects when patient falls are decreased.

Summary

The Fall TIPS Toolkit provides individualized, patient-centered fall prevention measures. Properly educating the nursing staff allowed the staff members to effectively implement the fall risk strategies. Patients were able to verbalize a risk of falling 94% of the time and articulate a related prevention strategy 93% of the time. An overall decrease in fall rates over time supported use of innovative, individualized fall prevention strategies. During the pilot project, unintentional patient falls on the Medical/Surgical Floor decreased from 5.26 per 1000 patient days during the year 2020 to 1.78 per 1000 patient days during the project's three-month timeframe (May 15, 2021 to August 15, 2021).

Interpretation

Association Between Interventions and Outcomes

To effectively decrease patient falls, interventions must include all stakeholders (care team members, patients, and family members) (Dykes et al., 2020). The use of the paper Fall TIPS Tool located on the wall assisted in decreasing inconsistent communication between team members in

the fall prevention plan (Fall TIPS, 2020). Prior to the project, the fall prevention plan would only have been viewable in the electronic health record and most of the team members said they would not normally take the time to look up the plan in the computer. Patients and family members stated the large icons on the paper tool served as a reminder to them about their fall risk and the interventions they could use to decrease that risk. Although the intervention would be considered "low tech", it was effective in producing a good outcome.

By properly training the nursing staff before implementing the project, they were able to effectively teach the patients while in the hospital and how to use interventions to minimize their fall risks. Injury prevention aligns with one of the main concepts of the System Model developed by Betty Neuman which was utilized to guide the project. The System Model's goal is the stability of the individual's stress system. As such, primary prevention is a key component of the System Model which focuses on strengthening the patient's flexible line of defense by reducing risk factors. Neuman believed that nursing needed to be aware and react to all variables affecting an individual's reaction to stress, which includes falls (Gonzalo, 2011).

Comparison of Results with Previous Findings/Reasons for Differences Between Observed and Anticipated Outcomes

The results of the scholarly project exceeded the outcomes in the literature. According to previous findings, most evidence-based fall prevention programs decrease unintentional patient falls by 25% (Dykes et al., 2020; Fall TIPS, 2020). The scholarly project decreased patient falls on the Medical/Surgical unit by 67% during its three-month timeframe as compared to the previous year. This high rate of success may not be sustainable over longer periods of time since there is evidence some patient falls are "unavoidable" (Agency for Healthcare Research and Quality, 2018; Bouldin et al., 2013). Even so, a marked improvement has been shown compared to previous findings in comparable projects.

In reviewing the literature, this higher rate of success may be attributed to some variances in how different projects were completed. Other projects were completed in larger facilities with less oversight of the project in the bigger hospitals. In addition, other project managers used an electronic version of the Fall TIPS Tool, instead of a paper copy completed at the bedside. Not having the Fall TIPS Tool prominently located on the wall in the patient's room may have decreased its effectiveness. Comparatively, other projects had lower utilization of the toolkit when audits were completed (95% vs 81%). The higher utilization rate may have produced better results as well.

Impact of Project on People and Systems

The pilot project decreased unintentional patient falls on the Medical/Surgical unit. The nursing staff received the training on how to implement the fall prevention toolkit. The patients benefitted from the shared knowledge by being safe from unintentional falls. Improved results were noted soon after implementation of the project started. In addition to improved patient outcomes, the nursing administration also noted a change in the attitude of the nursing staff toward patient falls. Apathy was replaced with empowerment as the staff members began noticing positive results. When an unintentional patient fall occurred towards the end of the pilot project, the nursing staff were quick to point out the toolkit was used and the patient educated, but the patient refused to follow the recommended fall prevention plan. It was evident the staff members had become engaged in the fall prevention process.

Policy Implications

The pilot project resulted in appeals for several policy changes. The Chief Clinical Officer (CCO) at the hospital requested the pilot project be continued for an additional 90-days on the Medical/Surgical unit past the original 90-day commitment. This request determined if the outcomes of the project could be sustained. After the additional 90-days were completed, the CCO reviewed

the results and recommended that the project's protocols be initiated on other units in the hospital. Encouraged by the results, the CCO has also recommended the project be reviewed by corporate leadership to see if the policies should be trialed in other facilities within the corporation. This may result in a system wide policy change for mandatory training on the Fall TIPS Program and documentation in the electronic health record.

Other hospital-based policies and procedures were affected by the project. The hospital's Fall Prevention Committee has recommended that the Fall TIPS Paper no longer be laminated and hung below the patient communication board, but instead be incorporated onto the patient communication board itself. This recommendation was proposed to ensure the room remained aesthetically pleasing. Over time, the laminated paper hanging below the communication board became tattered or soiled and looked unkempt. In addition, because the project illustrated how nursing contributes to evidence-based practice, the CCO requested the project be presented to the Magnet Review Committee during their site visit later in the year.

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Limitations

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Limitations of the project included the short timeframe of the implementation phase, the small number of patients that were involved, and the fact the project was only implemented on one unit of the hospital. A longer implementation timeframe with an increased number of patients from several units would produce more data for review and potentially increase the reliability of the data. In addition, the project was accomplished in a smaller community hospital with a limited number of staff members. It is uncertain if the staff training in a larger hospital with a greater number of staff members could be effectively accomplished in the same manner or not.

Another possible limitation was the lack of racial and ethnic diversity among the nursing staff and the patients. As noted in Appendix B, over 95% of the nursing staff were Caucasian. Although patient race and ethnicity were not collected as part of this project, the hospital

administration states that the nursing staff reflected the general population of the area. This led the Project Manager to conclude that about 95% of the patients were Caucasian as well. This is a concern because people of different races and ethnicities may react differently to the interventions completed through the fall prevention toolkit.

The consistency of the project was also limited due to the COVID-19 pandemic. During the pilot project, some of the Medical/Surgical rooms were designated as "COVID-19 Beds". Normally, any type of Medical/Surgical patient would have been placed in these rooms. Instead, those rooms were limited to COVID-19 patients only. These COVID-19 patients were restricted to receiving care from their primary care nurse and a respiratory therapist only. Other nursing staff, including CNA's, were not allowed in the COVID-19 rooms. This limited the number of caregivers that had access to teaching fall prevention to those patients and the auditing of the fall prevention toolkits. This led to less opportunities for the patient to be taught initially and have that training reinforced thereafter.

Conclusions

Usefulness of the Work

Applying an evidence-based quality improvement plan can provide a hospital with improved patient outcomes. This quality improvement pilot project was implemented to decrease unintentional patient fall rates on a Medical/Surgical Floor using the Fall TIPS Toolkit as a guide. Prevention tactics require hospitals to employ a comprehensive approach that is tailored to their institution as process improvement can be multifaceted. Staff education, use of an evidence-based standardized toolkit, and continuous auditing and evaluation are essential for sustained transformation (Godlock, Christiansen, & Feider, 2016).

Sustainability

Incorporating a new standardized plan of care into the nursing staff members' daily processes will take time. On-going monitoring of the newly implemented program will ensure continued progress is being made. Ebrahimian et al. (2015) found that although quality improvement education programs will expand nursing knowledge, that knowledge begins to decline after three to four months of the original instruction. Given this information, the hospital will need to complete follow up instruction to counterbalance this loss of knowledge. Various teaching methods can be used to provide educational updates on a routine basis to confirm that the new knowledge has been effectively ingrained into nursing practice.

After the project's successful initiation on the medical/surgical floor, the project will be applied to other departments throughout the hospital over the next two to three years. A proposed budget for these implementations has been created (Appendix T). The expenses to implement the project on these subsequent units will be less since the educational module and materials may be reused and will not need to be recreated. This will save the hospital time and money during implementation. Savings in expenses will also be noted in meeting room space as implementation can take place during regularly scheduled departmental meetings. The administrative costs will have a slight increase, as oversight of the project will be transferred from the Project Manager to the Quality Program Director.

The act of changing current nursing practice can be difficult. It is important that the fall prevention toolkit be given continued support from nursing leaders and follow up audits continued. Without this support and continued oversight, the project may not sustain its current level of results. As the project may be implemented on other units within the hospital, it may be worth noting these other units may not be as accepting of the toolkit as the Medical/Surgical unit was. Issues such as lack of awareness, lack of agreement, lack of outcome expectancy, and other external barriers may be a factor in how well the project is implemented. It is recommended that these factors and

strategies such as those suggested by Cabana et al. (1999) be considered to mitigate them if the project is applied on other units.

Potential to Spread to Other Contexts/Implications for Practice and Further Study

The project will be applied to other units in the hospital, even though the same outcomes may not be attainable on all units. The Fall TIPS Toolkit has been proven to be successful in different hospitals (Dykes et al., 2020). The toolkit has also been trialed in various healthcare settings including long-term care centers, veteran hospitals, and psychiatric units (Padilla, 2020; Schoen, 2019; Bonner et al., 2007) although the results have been mixed in these settings. Nonetheless, the impact produced by the Fall TIPS Toolkit on people and systems has been widespread.

Next Steps and Dissemination

The results of this DNP project were reviewed with the Medical/Surgical Nursing Staff Members and to the organization's Fall Prevention and Administrative Teams. Enthusiastic about the results, the hospital's Fall Prevention Team is determining the timing of starting the fall prevention program on the other hospital units. In addition, the Hospital Administrative Team has petitioned regional leadership to review the project to determine if the program should be used in additional corporate hospitals within the area.

Dissemination of project outcomes were shared with the hospital's Fall Committee, leadership, and staff in organizational meetings. The project will be presented in detail to the hospital administration where the project was based, to the Magnet Committee reviewing the hospital, and to student colleagues, professors, and luminaries at Boise State University. The project will be published in ScholarWorks and potentially submitted to other publications.

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Appendices

Appendix A: Literature Review Summary Table

Literature Review Summary Table

CATEGORY & ARTICLE TITLE	AUTHOR	AIM OF ARTICLE	TYPE OF STUDY	LEVEL OF EVIDENCE	DESCRIPTION OF SAMPLE	OUTCOME MEASURES	RESULTS/KEY FINDINGS
Fall Interventions: Ambulatory Aids							
Reducing hospital falls by empowering nurses to provide ambulatory aids.	Lindros, M. S. (2015)	Evaluate effectiveness in preventing falls by providing an ambulatory aid to patients who use an aid at home	Randomized Control Trial	Level IB	6-month review of one Med/Surg Unit in one hospital that included 863 patients	Baseline of 7.8 falls per 1000 patient days	Decrease in falls from 7.8 to 4.6 per 1000 patient days after ambulatory aids provided by nurses and PCT's
Fall Interventions: Bed Alarms							
Reducing medical-surgical inpatient falls and injuries with patient education videos, icons, and bed alarms.	Cuttler, S. J., Barr-Walker, J., & Cuttler, L. (2017)	Evaluate the effectiveness of patient education videos and fall prevention icons when added to bed exit alarms in improving med/surg inpatient fall and injury rates	Randomized Control Trial	Level IA	4 Med/Surg units in one acute care hospital were studied for 18 months with a 12 month follow up	Baseline fall rate of 4.78 per 1000 patient days	Falls decreased from 4.78 to 3.8 per 1000 patient days after interventions began. Icons were not fully implemented. Education videos and bed exit alarms were fully utilized and evaluated in the study.

CATEGORY & ARTICLE TITLE	AUTHOR	AIM OF ARTICLE	TYPE OF STUDY	LEVEL OF EVIDENCE	DESCRIPTION OF SAMPLE	OUTCOME MEASURES	RESULTS/KEY FINDINGS
Reducing falls in the inpatient hospital setting	Melin, C. (2018)	Assess if a process change will reduce fall rates for a hospital inpatient medical-surgical unit.	Quasi-experimental	Level IIB	1. 493 pts on a 38-bed med/surg unit over 3-months. 2. Staff educated using a Self Study with evaluation.	Baseline of 8.67 falls per 1000 patient days	Education and consistent risk stratification for bed/chair alarm use decreased fall rate to 5.07 per 1000 patient days.
Fall Interventions: Fall Committee Creation							
Implementation of an evidence-based patient safety team to prevent falls in inpatient medical units.	Godlock, G., Christiansen, M., & Feider, L. (2016)	Will creating a Patient Safety Team engage frontline staff in patient safety and fall prevention.	Quasi-experimental	Level IIB	Patient falls occurring in 2 medical units in one hospital over a 6-month timeframe	Baseline of 1.9 falls per 1000 occupied bed days	The creation of the Patient Safety Team and their interventions decreased fall rates from 1.9 to 0.69 falls per 1000 occupied bed days
Focusing on patients to reduce falls	Archer et al. (2010)	Can the creation of a falls team and fall prevention tool kit decrease patient falls in a 325-bed hospital?	Quasi-experimental	Level IIA	Hospital patient fall rates occurring in a 325-bed hospital	Baseline of 4.2 falls per 1000 patient days.	The implementation of the Fall Team and the Tool Kit reduced falls to 3 per 1000 patient days.

CATEGORY & ARTICLE TITLE	AUTHOR	AIM OF ARTICLE	TYPE OF STUDY	LEVEL OF EVIDENCE	DESCRIPTION OF SAMPLE	OUTCOME MEASURES	RESULTS/KEY FINDINGS
Preventing falls in hospitals: a toolkit for improving quality of care.	Ganz et al. (2013)	Will implementing a fall prevention team and specific interventions decrease patient falls?	Controlled Trial	Level IIA	The interventional group are adult inpatients (n=2460) as compared to 2451 control patients.	Fall rate of 14.24 per 100 patient days prior to intervention.	Fall rate decreased to 6.02 per 1000 patient days post interventions.
Review of the evidence on falls prevention in hospitals.	Hempel, S., Newberry, S., Wang, Z., Shekelle, P. G., Shanman, R., Johnsen, B., Perry, T., Saliba, D., & Ganz, D. A. (2013)	What evidence already exists on fall prevention in hospitals?	Systematic Review	Level V	103 studies were reviewed for protocols and interventions proving best practice to reduce falls in the hospital setting.	Compilation of interventions, evaluation tools, and published resources.	Interventions, tools, and resources to be implemented per hospital needs.

CATEGORY & ARTICLE TITLE	AUTHOR	AIM OF ARTICLE	TYPE OF STUDY	LEVEL OF EVIDENCE	DESCRIPTION OF SAMPLE	OUTCOME MEASURES	RESULTS/KEY FINDINGS
Fall Interventions: Medication Review							
Focusing on patients to reduce falls	Archer et al. (2010)	Can the creation of a falls team and fall prevention tool kit decrease patient falls in a 325-bed hospital?	Quasi-experimental	Level IIA	Hospital patient fall rates occurring in a 325-bed hospital	Baseline of 4.2 falls per 1000 patient days.	The implementation of the Fall Team and the Tool Kit reduced falls to 3 per 1000 patient days.
Zolpidem is independently associated with increased risk of inpatient falls	Kolla, B. P.; Lovely, J. K.; Mansukhani, M. P.; Morgenthaler, T. I. (2013)	Does administering zolpidem to hospital inpatients increase their risk of falling?	Retrospective Cohort Study	Level IIB	Fall rates for adult inpatients that were prescribed zolpidem and were not located in the ICU of a tertiary care center	No baseline for this comparative study	The fall rates for patients that were prescribed and received zolpidem on units other than an ICU were 3.04% as compared to the patients located on the same units who were prescribed but did not receive zolpidem (0.71%).

CATEGORY & ARTICLE TITLE	AUTHOR	AIM OF ARTICLE	TYPE OF STUDY	LEVEL OF EVIDENCE	DESCRIPTION OF SAMPLE	OUTCOME MEASURES	RESULTS/KEY FINDINGS
Fall Interventions: Patient and Family Education							
Reducing medical-surgical inpatient falls and injuries with patient education videos, icons, and bed alarms.	Cuttler, S. J., Barr-Walker, J., & Cuttler, L. (2017)	Evaluate the effectiveness of patient education videos and fall prevention icons when added to bed exit alarms in improving med/surg inpatient fall and injury rates	Randomized Control Trial	Level IA	4 Med/Surg units in one acute care hospital were studied for 18 months with a 12 month follow up	Baseline fall rate of 4.78 per 1000 patient days	Falls decreased from 4.78 to 3.8 per 1000 patient days after interventions began. Icons were not fully implemented. Education videos and bed exit alarms were fully utilized and evaluated in the study.
Reducing falls in the inpatient hospital setting	Melin, C. (2018)	Assess if a process change will reduce fall rates for a hospital inpatient medical-surgical unit.	Quasi-experimental	Level IIB	1. 493 pts on a 38-bed med/surg unit over 3-months. 2. Staff educated using a Self Study with evaluation.	Baseline of 8.67 falls per 1000 patient days	Education and consistent risk stratification for bed/chair alarm use decreased fall rate to 5.07 per 1000 patient days.
Focusing on patients to reduce falls	Archer et al. (2010)	Can a falls team and fall prevention tool kit decrease patient falls in a 325-bed hospital?	Quasi-experimental	Level IIA	Hospital patient fall rates occurring in a 325-bed hospital	Baseline of 4.2 falls per 1000 patient days.	The implementation of the Fall Team and the Tool Kit reduced falls to 3 per 1000 patient days.

CATEGORY & ARTICLE TITLE	AUTHOR	AIM OF ARTICLE	TYPE OF STUDY	LEVEL OF EVIDENCE	DESCRIPTION OF SAMPLE	OUTCOME MEASURES	RESULTS/KEY FINDINGS
Preventing falls in hospitals: a toolkit for improving quality of care.	Ganz et al. (2013)	Will implementing a fall prevention team and specific interventions decrease patient falls?	Controlled Trial	Level IIA	The interventional group are adult inpatients (n=2460) as compared to 2451 control patients.	Fall rate of 14.24 per 100 patient days prior to intervention.	Fall rate decreased to 6.02 per 1000 patient days post interventions.
Fall Interventions: Rounding							
Focusing on patients to reduce falls	Archer et al. (2010)	Can the creation of a falls team and fall prevention tool kit decrease patient falls in a 325-bed hospital?	Quasi-experimental	Level IIA	Hospital patient fall rates occurring in a 325-bed hospital	Baseline of 4.2 falls per 1000 patient days.	The implementation of the Fall Team and the Tool Kit reduced falls to 3 per 1000 patient days.
Fall Interventions: Safe Room Arrangement							
Focusing on patients to reduce falls	Archer et al. (2010)	Can the creation of a falls team and fall prevention tool kit decrease patient falls in a 325-bed hospital?	Quasi-experimental	Level IIA	Hospital patient fall rates occurring in a 325-bed hospital	Baseline of 4.2 falls per 1000 patient days.	The implementation of the Fall Team and the Tool Kit reduced falls to 3 per 1000 patient days.

CATEGORY & ARTICLE TITLE	AUTHOR	AIM OF ARTICLE	TYPE OF STUDY	LEVEL OF EVIDENCE	DESCRIPTION OF SAMPLE	OUTCOME MEASURES	RESULTS/KEY FINDINGS
Preventing falls in hospitals: a toolkit for improving quality of care.	Ganz et al. (2013)	Will implementing a fall prevention team and specific interventions decrease patient falls?	Controlled Trial	Level IIA	The interventional group are adult inpatients (n=2460) as compared to 2451 control patients.	Fall rate of 14.24 per 100 patient days prior to intervention.	Fall rate decreased to 6.02 per 1000 patient days post interventions.
Fall Interventions: Sitters							
Do sitters prevent falls: A review of the literature	Lang, C. E. (2014)	Does implementing a sitter program decrease unintentional patient falls in hospitals	Systematic Review	Level V	59 articles published between 1995 and 2013 were reviewed to determine if starting a sitter program or if sitter usage increased / decreased hospital fall rates.	If implementing a sitter program decreased fall rates. For facilities with a sitter program, if sitter hours were decreased, did fall rates increase.	Articles that implemented a sitting program showed conflicting results. Articles that included a reduction in sitter hours showed no increase in fall rates.

CATEGORY & ARTICLE TITLE	AUTHOR	AIM OF ARTICLE	TYPE OF STUDY	LEVEL OF EVIDENCE	DESCRIPTION OF SAMPLE	OUTCOME MEASURES	RESULTS/KEY FINDINGS
Fall Interventions: Education of Staff Members							
Intervention to Prevent Falls on the Medical Service in a Teaching Hospital	Krauss et al. (2008)	Is educating nurses and PCT's about fall prevention effective as an intervention to prevent hospital patient falls	Quasi Experimental Intervention with historical and contemporaneous control groups	Level IIA	Nursing staff and PCT's on four medical floors in one academic hospital. Two of the floors served as intervention floors and the other two served as a control group. Both floors had a patient acuity rating of 1.3 based on a 1-6 scale.	1. Pre intervention knowledge assessment of staff was administered with a baseline of 72% knowledge rating. 2. Baseline of 6.64 falls per 1000 patient days.	1. Post intervention knowledge assessment was 91% knowledge rating. 2. Falls decreased to 3.81 falls per 1000 patient days for 5 months after the intervention, but reduction was not sustained as falls increased to 5.09 per 1000 patient days thereafter.
Reducing falls in the inpatient hospital setting	Melin, C. (2018)	Assess if a process change will reduce fall rates for a hospital inpatient medical-surgical unit.	Quasi-experimental	Level IIB	1. 493 pts on a 38-bed med/surg unit over 3-months. 2. Staff educated using a Self-Study with evaluation.	Baseline of 8.67 falls per 1000 patient days	Education and consistent risk stratification for bed/chair alarm use decreased fall rate to 5.07 per 1000 patient days.

CATEGORY & ARTICLE TITLE	AUTHOR	AIM OF ARTICLE	TYPE OF STUDY	LEVEL OF EVIDENCE	DESCRIPTION OF SAMPLE	OUTCOME MEASURES	RESULTS/KEY FINDINGS
Fall Interventions: Fall Prevention Toolkit Use							
Fall prevention in acute care hospitals: a randomized trial.	Dykes et al. (2020)	Investigate whether Fall Prevention Tool Kit usage decreases hospital patient falls.	Randomized Trial	Level IA	6-month study comparing 4 hospitals, 4 units, and 10,264 patients	Baseline patient fall rate of 4.18 per 1000 patient days	Use of the FPTK reduced falls from 4.18 per 1000 patient days to 3.15 with 95% CI
Implementing an inpatient fall prevention toolkit in a tertiary care hospital	Weinberg et al. (2011)	Determine if a fall prevention toolkit could decrease the rate of falls for hospital patients	Retrospective Quality Improvement Study	Level IIA	Adult patients staying at least one night in a 714-bed tertiary care hospital over a 4-year period	Baseline of 3.9 falls per 1000 patient days	Falls decreased by 63.9% over the 4-year period after the fall prevention toolkit was implemented.
Focusing on patients to reduce falls	Archer et al. (2010)	Can creation of a fall team and prevention tool kit decrease patient falls in a 325-bed hospital?	Quasi-experimental	Level IIA	Hospital patient fall rates occurring in a 325-bed hospital	Baseline of 4.2 falls per 1000 patient days.	The implementation of the Fall Team and the Tool Kit reduced falls to 3 per 1000 patient days.
Review of the evidence on falls prevention in hospitals.	Hempel et al. (2013)	What evidence already exists on fall prevention in hospitals?	Systematic Review	Level V	103 studies were reviewed for best practice protocols and interventions to reduce falls in the hospital setting.	Compilation of interventions, evaluation tools, and published resources.	Interventions, tools, and resources to be implemented per hospital needs.

CATEGORY & ARTICLE TITLE	AUTHOR	AIM OF ARTICLE	TYPE OF STUDY	LEVEL OF EVIDENCE	DESCRIPTION OF SAMPLE	OUTCOME MEASURES	RESULTS/KEY FINDINGS
Problem Identification: Increased Cost							
Falls in the acute hospital setting – impact on resource utilization	Hill, K. D., Vu, M., & Walsh, W. (2007)	What resources must patients that fall in the hospital utilize to recover? How much burden does this place on healthcare?	Retrospective observational study	Level IIA	All patient admissions to a 323-bed facility over the 18-month timeframe	Analyze the patients that fell and the total associated cost of the DRG compared to those that did not fall	Inpatient length of stay and total associated costs for patients that fell were substantially higher (increase of 2.8 days and $14,000 more)
Problem Identification: Increased LOS Medicare Nonpayment, Hospital Falls, and Unintended Consequences	Inouye, S. K., Brown, C. J., & Tinetti, M. E. (2009)	Do hospital falls increase length of stay and treatment costs?	Review of patient accounts for one hospital over three years	Level IIIA	Admissions over a one-year period	Length of stay and cost of hospitalization for patients with falls vs those without, number of injuries and malpractice lawsuits	Patients with falls had an increased length of stay by three days, increased charges of over $4000 per incident, malpractice lawsuits were also increased by 150% as compared to those patients in the same facility that did not fall

CATEGORY & ARTICLE TITLE	AUTHOR	AIM OF ARTICLE	TYPE OF STUDY	LEVEL OF EVIDENCE	DESCRIPTION OF SAMPLE	OUTCOME MEASURES	RESULTS/KEY FINDINGS
Utah Complete Health Indicator Report of Fall Injury (Unintentional)	Utah Department of Health (2019)	Identify number of 57ospitalization or deaths related to unintentional falls in Utah and probable cost	Data collection from all Utah health care facilities for ICD-9 codes: E880-E886.9, E888; ICD-10: W00-W19	Level IIIA	Population of Utah	Fall related deaths and cost	691 unintentional fall-related deaths from 2016-2018, higher rates in urban areas, inpatient hospital costs more than $185 million for falls in 2014
Problem Identification: Increased Length of Stay							
Falls in the acute hospital setting – impact on resource utilization	Hill, K. D., Vu, M., & Walsh, W. (2007)	What resources do patients that fall utilize to recover? How much burden does this place on healthcare?	Retrospective observational study	Level IIA	All patient admissions to a 323-bed facility over the 18-month timeframe	Analyze the patients that fell, and the associated cost compared to those that did not fall	Inpatient LOS and associated costs for patients that fell were substantially higher (increase of 2.8 days and $14,000 more)
Medicare Nonpayment, Hospital Falls, and Unintended Consequences	Inouye, S. K., Brown, C. J., & Tinetti, M. E. (2009)	Do hospital falls increase length of stay and treatment costs?	Review of patient accounts for one hospital over three years	Level IIIA	Admissions over a one-year period	LOS and cost for patients with falls vs those without, number of injuries and malpractice lawsuits	Patients with falls had an increased LOS by three days, increased charges of $4000 per incident, lawsuits also increased by 150%.

CATEGORY & ARTICLE TITLE	AUTHOR	AIM OF ARTICLE	TYPE OF STUDY	LEVEL OF EVIDENCE	DESCRIPTION OF SAMPLE	OUTCOME MEASURES	RESULTS/KEY FINDINGS
Problem Identification: Injury to Patient							
Nationwide time trends and risk factors for in-hospital falls-related major injuries	Jorgensen, T. S. H., Hansen, A. H., Sahlberg, M., Gislason, G. H., & Torp-Pedersen, C. (2015)	Are hospital falls a problem? If so, what causes them?	Retrospective Review using Administrative Databases from across the nation from the years 2000-2012	Level IIA	4754 patients in hospitals over the age of 65 having a fall resulting in injury	Analyzing data to review patient odds ratio for falls r/t comorbidities, analyze if rate of falls is increasing in facilities and if fall injury is increasing	Falls and fall related injuries increased over the study timeframe, several comorbidities have an increased incidence of fall related injuries while in the hospital
Orthopedic Injuries following Falls by Hospital In-Patients	Nadkarni, J. B., Iyengar, K. P., Dussa, C., Watwe, S., & Vishwanath, K. (2005)	Identify orthopedic injuries sustained from in-hospital falls, treatments required, and morbidity associated with the fall	Retrospective Analysis	Level IIA	Review of 900 incident reports and subsequent patient charts from one hospital	How many patients sustained an orthopedic injury from their in-hospital fall and their sequelae	5% of fall patients received an orthopedic injury, 36% of those required surgery with ten percent resulting in death

CATEGORY & ARTICLE TITLE	AUTHOR	AIM OF ARTICLE	TYPE OF STUDY	LEVEL OF EVIDENCE	DESCRIPTION OF SAMPLE	OUTCOME MEASURES	RESULTS/KEY FINDINGS
Utah Complete Health Indicator Report of Fall Injury (Unintentional)	Utah Department of Health (2019)	Identify number of hospitalization or deaths related to unintentional falls in Utah and probable cost	Data collection from all Utah health care facilities for ICD-9 codes: E880-E886.9, E888; ICD-10: W00-W19	Level IIIA	Population of Utah	Fall related deaths and cost	691 unintentional fall-related deaths from 2016-2018, higher rates in urban areas, inpatient hospital charges totaled more than $185 million for falls in 2014
Problem Identification: Prevalence of Falls							
Falls Among Adult Patients Hospitalized in the United States: Prevalence and Trends	Bouldin, E. D., Andresen, E. M., Dunton, N. E., Simon, M., Waters, T. M., Liu, M., Daniels, M. J., Mion, L., & Shorr, R. I. (2013)	What is the prevalence and type of hospital falls in the United States and which hospital units have the most falls?	Literature Review	Level IIA	More than 88 million patient days of observation from 6100 medical and surgical nursing units in 1263 hospitals across the United States.	Number of falls per 100 patient days for each type of unit.	Hospital falls occur at a rate of 3.65 falls per 1000 patient days. 26.1% result in injury. Highest rate of falls occurred in the medical units (4.03 per 1000 patient days and lowest in surgery units (2.76 per 1000 patient days.

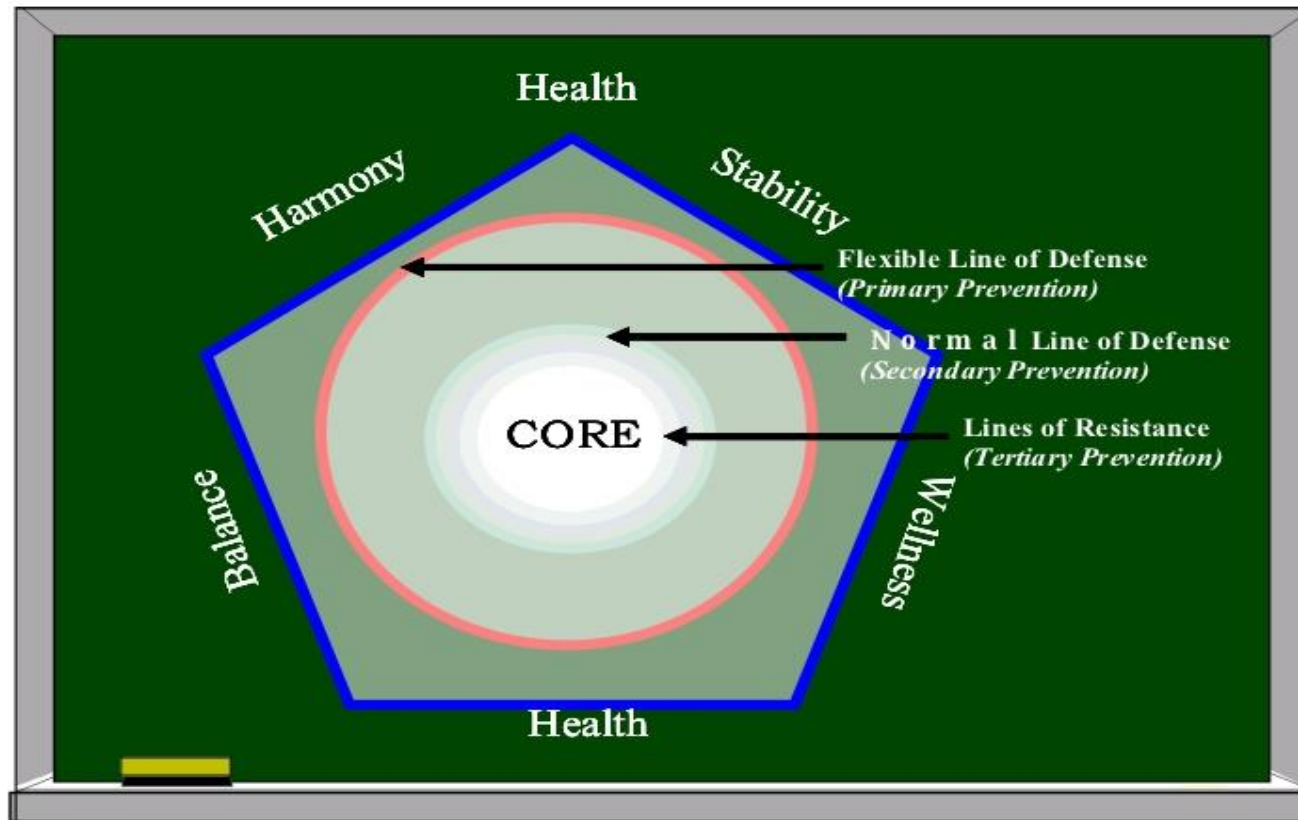**Appendix B: Theoretical Diagram**

Theoretical Diagram

Diagram for Betty Neuman's System Model. From "Betty Neuman's System Model", by R. Secillano, 2008 (https://image.slidesharecdn.com/1-1216478044525007-9/95/betty-neumans-system-model-12-728.jpg?cb=1220802969). In the public domain.

Appendix C: Logic Model

Logic Model

Resources/Inputs	Activities	Outputs		Outcomes: Short Term	Outcomes: Intermediate	Outcomes: Long Term
Personnel **~Hours to perform the project and education by the Project Manager and Hospital Staff including:** • **Chief Nursing Officer (CNO)** • **Quality Director** • **Educational Director** • **Medical/Surgical Unit Director** **Materials/Supplies** **~Printed materials for Meeting using Printer, and Paper** **~Fall Prevention Toolkit** **Space** **~Classroom with an overhead projector** **IT** **~Computer Technology and Internet including Electronic Educational System, Electronic Health Record, and Email for Training and Communication Purposes**	~Project Manager, CNO, and Directors review current fall prevention practices on Medical/Surgical Unit as compared to the Fall Prevention Toolkit ~ Ensure multi-disciplinary fall team is in place ~Training reviewed with Project Manager, CNO, and Directors ~ Introduction of Auditing Tool ~Auditing needs reviewed ~Quality Director trained to evaluate audits by PM ~Charge Nurse responsibilities and requirements reviewed	~A review of current fall prevention tactics ~Approval to use of Evidence Based Fall Prevention Toolkit ~Approval to use Auditing Tool ~Auditing Tool Training ~Status reports	~Medical/Surgical Unit Patients ~Medical/Surgical Unit Patient Family Members ~Quality Committee Members ~Hospital Administration ~Medical/Surgical Unit Nurses ~Medical/Surgical Unit CNA's	1) By May 2021, a standardized, evidence-based fall prevention toolkit will be implemented on the Medical/Surgical Unit (CO).	6) By August 31, 2022, the fall prevention toolkit is continued to be followed by staff and fall rates for the unit are in the tenth percentile for the corporation.	13) The fall prevention toolkit that was piloted on the medical/surgical unit of the hospital has been implemented into the five other units that treat adult patients.

Personnel	~Uploading of fall	~Training for	~Medical/Surg	2) By April 30,	7) The Fall Tool	14) Training for the
~Hours to perform the project and education by the Project Manager and Hospital Staff including:	prevention toolkit materials to be used to educate the Medical/Surgical Nurses and CNA's in the hospital's learning managements system so that training can start March 15, 2021	the Medical/Surgical Nurses and CNA's	ical Unit Nurses	2021, the Fall Prevention Tool Kit training module with fall prevention techniques and	Kit training will be completed by 80% of Nurses and CNA's	Fall Tool Kit and an evaluation of that training will be a standard part
• **Chief Nursing Officer**			~Medical/Surg ical Unit CNA's	protocols will be completed by	throughout the hospital during 2022.	of the perpetual education and the
• **Quality Director**		~Training tools to be used for		80% of the Medical/Surgical		orientation education for all
• **Educational Director**		new hire orientation to	~Hospital Administration	Unit Nurses and CNA's (PO).	8) Nurses and CNA's hired by	hospital patient care staff
• **Med/Surg Unit Director**	~Communicate to the Medical/Surgical	the Medical/Surgic	specifically the Chief Nursing		the hospital will all be trained on	members.
• **Med/Surg Nurses**	Nurses and CNA's to	al Unit and for	Officer,		the Fall Tool	
• **Med/ Surg CNA's**	complete the fall prevention educational	perpetual learning	Quality Director, and		Kit while attending	
Space	module in the hospital learning management		Medical/Surgi cal Unit		hospital orientation	
~Classroom Space and Time	system		Director		during 2022.	
IT	~The educational					
~Computer Technology and Internet including Electronic Learning Management System and Microsoft Outlook for Training and Communication Purposes	materials will be made available through April 2021 in the hospital learning management system for the Medical/Surgical Nurses and CNA's to					
Materials/Supplies	complete					
~Printer, Ink, and Paper						
~Fall Prevention Toolkit with approved policies and procedures						
Marketing/Advertising						
~Doughnuts, Pizza, Fruit, Granola, Milk						

Personnel **~ Hours to perform the project and education by the Project Manager and Hospital Staff including:** • **Chief Nursing Officer** • **Quality Director** • **Educational Director** • **Medical/Surgical Unit Director** • **Medical Surgical Nurses** • **Medical Surgical CNA's** **Space** **~Classroom Space and Time** **IT** **~Computer Technology and Internet including Electronic Educational System Usage (Healthstream), Electronic Health Record, and Microsoft Outlook for Training and Communication Purposes** **Materials/Supplies** **~Printer, Ink, and Paper** **~Fall Prevention Toolkit with approved policies, procedures, and documentation** **Marketing/Advertising Posters, Flyers, Gum, Candy Bars**	~Uploading of electronic materials to be used to educate the Medical/Surgical Nurses and CNA's on the Fall Prevention Toolkit into the hospital learning management system ~Uploading of the Fall Prevention Knowledge Test to be administered after the Fall Prevention Toolkit education is completed ~Communicate with Medical/Surgical Nurses and CNA's how to register for the Fall Prevention Toolkit educational sessions electronically ~Fall Prevention Tool Kit learning materials accessible through April 2020 ~Administration of the test after the Fall Prevention Toolkit learning has been completed ~Project Manager to review learning weekly on the	~Training of the Medical/Surgical Unit Nurses and CNA's on Fall Prevention ~Assessment of the training after the Fall Prevention Toolkit education was completed ~Training materials for the newly hired nurses and CNA's to the Medical/Surgical Unit ~Training materials for perpetual learning	~Medical/Surgical Unit Nurses ~Medical/Surgical Unit CNA's ~Hospital Administration specifically the Chief Nursing Officer, Quality Director, and Medical/Surgical Unit Director	3) By May 15, 2021, 80% of the Medical/Surgical Nurses and CNA's will achieve a score of 80% or higher on the Fall Prevention Knowledge Test showing they have attained the knowledge on fall prevention techniques and protocols (PO).	9) Nurses and CNA's throughout the hospital will obtain a score of 80% or higher showing the attainment of knowledge on fall prevention techniques and protocols by December of 2022.	15) Fall prevention knowledge was obtained and applied consistently by the nursing staff resulting in sustained fall reductions at or below national benchmarks.

	Medical/Surgical Unit by visiting the unit during shift change and providing incentives ~Project Manager to complete a presentation at the monthly Medical/Surgical Unit Staff Meeting to reiterate training and answer questions on Fall Prevention Toolkit					
Personnel **~ Hours to perform the project and education by the Project Manager and Hospital Staff including:** • **Chief Nursing Officer** • **Quality Director** • **Educational Director** • **Medical/Surgical Unit Director** • **Medical Surgical Nurses** • **Medical Surgical CNA's** **~ Time to perform audits by the Project Manager** **Materials/Supplies** **~Printed materials for the Quality Team Meeting using a Printer, Ink, and Paper**	~Begin use of the Fall Prevention Toolkit in June 2021 ~Education on an audit tool to be used beginning June 2021 to evaluate the usage of the Fall Prevention Toolkit ~Charge nurses trained and accessible to assist in the use of the toolkit starting June 2021 ~Fall Prevention Toolkit posters and information available to assist Nurses and CNA's during implementation	~Evidence-based fall prevention plans are provided by Medical/Surgical Unit Nurses and CNA's ~Charge nurses available to help fellow nurses throughout implementation ~Audit tool ~Reduction of falls on the Medical/Surgical Unit	~Medical/Surgical Unit Patients ~Medical/Surgical Unit Patient Family Members ~Hospital Administration ~Medical/Surgical Unit Nurses ~Medical/Surgical Unit CNA's	4) A patient fall prevention plan was completed consistently on 65% of the Medical/Surgical patients by August 2021 (PO).	10) A patient fall prevention plan was consistently completed and applied on 80% of the Medical/Surgical patients by December 2022.	16) A patient fall prevention plan was completed on all patients throughout the hospital.

~Fall Prevention Toolkit with approved policies, procedures, and documentation **Space** **~Classroom Space and Time** **IT** **~Computer Technology including the Electronic Health Record** **Marketing/Advertising Posters, Flyers**	~Beginning June 2021, the Project Manager and Quality Director will perform thirty audits per month to ensure the toolkit is implemented and documented on correctly					
Personnel **~ Hours to perform the project and education by the Project Manager and Hospital Staff including:** • **Chief Nursing Officer** • **Quality Director** • **Educational Director** • **Medical/Surgical Unit Director** • **Quality Committee Team Members** • **Medical Surgical Nurses** • **Medical Surgical CNA's** **~ Time to perform audits by the Project Manager and Quality Director** **Space** **~Classroom Space and Time**	~Begin use of the Fall Prevention Toolkit in June 2021 ~Audits to begin June 2021 to evaluate the usage of the Fall Prevention Toolkit ~Beginning June 2021, the Project Manager and Quality Director will perform thirty audits per month to ensure the toolkit is implemented and documented on correctly ~Status report and audit results will be shared monthly at the Quality Committee and Medical/Surgical	~Evidence-based fall prevention is provided by Medical/Surgical Unit Nurses and CNA's ~Audit tool ~Monthly report to Quality Committee and Medical/Surgical Unit Leadership ~Reduction of falls on the Medical/Surgical Unit	~Medical/Surgical Unit Patients ~Medical/Surgical Unit Patient Family Members ~Hospital Administration ~Medical/Surgical Unit Nurses ~Medical/Surgical Unit CNA's	5) After implementation of the Fall Prevention Toolkit, the Medical/Surgical Unit will see a decrease in unintentional patient falls between June 2021 and August 2021 by 10% as compared to the hospital's baseline falls (2020) (CO).	11) During 2022 unintentional patient falls in the Medical/Surgical Unit were reduced by 25% as compared to the unit's baseline falls (2020). 12) During 2022 unintentional patient falls in the hospital were reduced by 25% as compared to the hospital's baseline falls (2020).	17) During 2022 unintentional patient falls in the Medical/Surgical Unit were reduced by 30% as compared to the unit's baseline falls (2020). 18) During 2022 unintentional patient falls in the hospital were reduced by 30% as compared to the hospital's baseline falls (2020).

~Printed materials for the Quality Team Meeting using a Printer, Ink, and Paper **IT** **~Computer Technology including the Electronic Health Record** **Materials** **~Fall Prevention Toolkit with approved policies, procedures, and documentation** **Marketing/Advertising** **~Thank You Cards**	Unit Staff Meeting by the Project Manager post-implementation ~Status report shared with Executive Team at the August 2021 Board Meeting					

Adapted from: Logic Model Foundation Development Guide, pg. 4.
http://www.wkkf.org/resource-directory/resource/2006/02/wk-kellogg-foundation-logic-model-development-guide

Appendix D: Fall TIPS Paper Tool

Fall TIPS Paper Tool

Appendix E: Approval to Use the Fall TIPS Program

Approval to Use the Fall TIPS Program

2/17/2021

To Whom it May Concern,

This message grants ███████████████ permission to implement Fall TIPS (Tailoring Intervention for Patient Safety) within their domains. This is an evidence-based tool that has been developed, tested, and validated over the past decade at Brigham and Women's Hospital and other collaborating hospitals. Given that the Fall TIPS tool is our property, we ask that you do not alter the tool without written permission from us. You may add your logo, but please send us the final version of the poster for approval.

Sincerely,

███████████████, FAAN, FACMI
Program Director Research
Center for Patient Safety, Research, and Practice
Brigham and Women's Hospital
Associate Professor of Medicine
Harvard Medical School

Office: ███████ | Mobile: ███████

Fall TIPS Quality Audit Tool

Please circle "Yes", "No", or "N/A".

Audit Question #1	Yes	No	
Is the patient's Fall TIPS Report at the bedside?	Yes, the Fall TIPS Report at the bedside is for the correct patient.	No, there is no Fall TIPS Report at the bedside or it is for the incorrect patient.	
Audit Question #2	**Yes**	**No**	**N/A**
Can the patient/family verbalize the patient's fall risk factors?	Yes, the patient/family can verbalize any of the fall risk factors displayed on the Fall TIPS Poster.	No, the patient/family cannot verbalize any of the fall risk factors displayed on the Fall TIPS Poster.	N/A, the patient is non-verbal or not alert and oriented and no family is present at the bedside.
Audit Question #3	**Yes**	**No**	**N/A**
Can the patient/family verbalize any of the fall preventions displayed on the Fall Tips Poster?	Yes, the patient/family can verbalize any of the fall prevention interventions displayed on the Fall TIPS Poster.	No, the patient/family cannot verbalize any of the fall prevention interventions displayed on the Fall TIPS Poster.	N/A, the patient is non-verbal or not alert and oriented and no family is present at the bedside.
Audit Question #4	**Yes**	**No**	**Notes**
If any questions were answered with a "No", did you provide peer-to-peer feedback?	Yes, I followed up with the nurse of the patient that was audited.	No, I did not follow up with the nurse of the patient that was audited.	Please share why the nurse did not complete the toolkit or why you did not provide peer-to-peer feedback if it was warranted.
Notes: The peer-to-peer feedback piece is especially important for implementation. By following up with the nurse, you can identify if there is a gap in knowledge or another barrier to Fall TIPS completion that we can address.			

Appendix G: Timeline for Scholarly Project
Timeline for Scholarly Project

Project Title: Implementing Evidence Based Interventions to Address Unintentional Hospital Falls on a Medical/Surgical Unit

PROJECT PHASE/SEMESTER	Summer 2020			Fall 2020				Spring 2021					Summer 2021			Fall 2021				Spring 2022				
Planning	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May
Problem Statement Refined and Completed	X	X																						
CITI Research Protocol Training Completed	X	X																						
Complete Scholarly Project Timeline	X	X																						
Complete Logic Model, Goals, & Outcomes	X	X																						
Literature Review for Best Practices Completed	X	X	X	X	X																			
Memorandum of Understanding Complete							X	X	X															
Unit Fall Committee Reviewed Fall Protocols									X															
IRB Approval Completed if needed									X															
Budget for the Project Created and Approved							X	X																
Committee Decides on Toolkit to Implement								X																
Administration Approval									X															
Policies and Procedures Updated as Needed										X														
Develop Staff Training Materials										X														
Create Schedule for Staff Training										X														

PROJECT PHASE/SEMESTER	Summer 2020			Fall 2020				Spring 2021					Summer 2021			Fall 2021				Spring 2022				
Planning (Continued)	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May
Train the Trainer Program to be Completed										X														
Complete Training for Unit Staff Members											X	X												

Implementation

PROJECT PHASE/SEMESTER	Summer 2020			Fall 2020				Spring 2021					Summer 2021			Fall 2021				Spring 2022				
Implementation	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May
Implement Fall Prevention Toolkit													X	X	X									

Data Collection

PROJECT PHASE/SEMESTER	Summer 2020			Fall 2020				Spring 2021					Summer 2021			Fall 2021				Spring 2022				
Data Collection	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May
Collect Initial Fall Data for the Medical/Surgical Unit							X	X																
Collect Data after Implementation of Toolkit Completed													X	X	X	X								

Data Analysis

PROJECT PHASE/SEMESTER	Summer 2020			Fall 2020				Spring 2021					Summer 2021			Fall 2021				Spring 2022				
Data Analysis	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May
Compare Pre and Post Implementation Results																	X							
Have Data Reviewed and Analyzed by Statistician																	X							
Share Initial Findings with Fall Committee for Review																		X						

Dissemination

PROJECT PHASE/SEMESTER	Summer 2020			Fall 2020				Spring 2021					Summer 2021			Fall 2021				Spring 2022				
Dissemination	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May
Complete Final Project Report																			X	X	X			
Prepare for Final Presentation																						X	X	

Final Report

PROJECT PHASE/SEMESTER	Summer 2020			Fall 2020				Spring 2021					Summer 2021			Fall 2021				Spring 2022				
Final Report	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May
Deliver Report to Board of Directors and University																								X

Appendix H: Data Collection Tools Table

Data Collection Tools Table

Outcome #1 and #2: 1) By May 2021, a standardized, evidence-based fall prevention toolkit will be implemented on the Medical/Surgical Unit (CO). 2) 80% of all nurses and CNA's on the Medical/Surgical unit will complete an education module on the electronic fall tool kit training with fall prevention techniques and protocols by April 30, 2021 (PO).	**Tool for Outcome #1 and #2:** Education Module Completion Tool	Characteristics: A tool will be created using Excel by the project manager with input from the education and quality department directors to evaluate the completion of the education module by all nursing staff who work on the Medical/Surgical Unit. This information will be used to ensure the nursing staff are completing the training in a timely manner. Data categories: 1. Total count of nursing staff on the Medical/Surgical floor completing the education session. 2. Total count of nursing staff on the Medial/Surgical floor assigned the education session (All Medical/Surgical Nursing Staff including FT, PT, and PRN).	The data will be pulled from the partner hospital's learning management system and entered in the tool created by the project manager with permission from the facility. A plan is in place for protection of the data and all HIPPA protections will be followed.	Fall TIPS Education Module: 1. The Fall TIPS Education Module is noted as "free of charge to use" on the Fall TIPS website but a formal letter officially granting permission was obtained from Dr. Patricia Dykes, the founder (Appendix F). Facility's administration: 1. Chief Nursing Officer 2. IT Director 3. Quality Director 4. Education Director
Outcome #3: After completing the learning module by April 2021, results from the Fall TIPS Knowledge Test will show each of the nursing faculty to achieve a score of 80% or greater in attaining the necessary knowledge (PO). If this goal is not obtained, remedial education will occur until the goal is achieved before initiating the fall toolkit.	**Tool/Instrument #3:** Education Assessment Tool	Characteristics: A tool will be created with input from the Directors of Education and Quality to evaluate the learning of the Medical/Surgical Unit Nursing Staff on fall prevention techniques and tactics. The Medical/Surgical Nursing Staff will be assigned to complete an education module in the hospital's learning management system. After completing the education module, staff will be required to complete post-education Fall TIPS Knowledge Test after completing the education session. A tool will be created to evaluate post-test scores of the nursing staff knowledge. Descriptive Statistics will be used to measure the mean, median, and standard deviations of the scores for evaluation of knowledge attainment. Data categories: 1. The Fall TIPS Fall Prevention Knowledge Test will be used to obtain post-educational module test scores for evaluation.	The data will be pulled from the partner hospital's learning management system and entered in the tool created by the project manager with permission from the facility. A plan is in place for protection of the data and all HIPPA protections will be followed.	Fall TIPS Knowledge Test: 1. The Fall TIPS Knowledge Test is noted as "free of charge to use" on the Fall TIPS website but a formal letter officially granting permission was obtained from Dr. Patricia Dykes, the founder (Appendix F). Facility's administration: 1. Chief Nursing Officer 2. IT Director 3. Quality Director

		2. Post training scores will be evaluated after being pulled from the learning management system used by the partner hospital.		4. Education Director
Outcome #4: Patient Fall Plans were created as indicated by the Fall Prevention Toolkit on 65% of the Medical/Surgical patients by August 2021 (PO).	**Tools/Instruments for Outcome #4:** 1. Fall TIPS Audit Tool 2. Fall TIPS Audit Data Collection Tool	Characteristics: The Fall TIPS Audit Tool will be used by the project manager to compile data from audits to determine if the nursing staff are creating patient fall charts, training patients, training family, and if the auditor followed up with the primary care nurse if these interventions had not been completed. Ten audits will be completed monthly and the results of the audits will be compiled. The use of descriptive statistics will be employed to review for any additional education opportunities with the nursing staff members to improve performance and patient outcomes. Data categories: 1. Data will be compiled using the Fall TIPS Audit Tool and reviewed to determine if further educational opportunities need to be implemented.	The data will be compiled from using the Fall TIPS Audit Tool. A plan is in place for protection of the data and all HIPPA protections will be followed.	Fall TIPS Audit Tool: 1. The Fall TIPS Audit Tool is noted as "free of charge to use" on the Fall TIPS website but a formal letter officially granting permission was obtained from Dr. Patricia Dykes, the founder (Appendix F). Facility's administration: 1. Chief Nursing Officer 2. IT Director 3. Quality Director
Outcome #5: After implementation of the Fall Prevention Toolkit, the Medical/Surgical Unit will see a decrease in unintentional patient falls between June 2021 and August 2021 by 10% as compared to the hospital's baseline falls (2020) (CO).	**Tool/Instrument #1:** Patient Fall Tracker	Characteristics: A tool imbedded in the hospital's electronic health record to calculate patient fall rates. The information is pulled on a quarterly basis for review and was created by the facility's corporate IT Department. Data categories: 1. Total number of unintentional patient falls for the medical surgical unit per 1000 patient days. Reliability/validity: Dependent upon correct entry of the data. Validation is completed by the Quality Department quarterly.	Proprietary tool of the partner hospital's electronic health record and will be used with permission from the hospital. A plan is in place for protection of the data and all HIPPA protections will be followed.	Facility's administration: 1. Chief Nursing Officer 2. IT Director 3. Quality Director

Fall TIPS Fall Prevention Knowledge Test

To preserve your anonymity, in the space below, please write a linking number.

Please pick a 4 digit number you will remember below. The numbers can be the last 4 of your cell phone or any numbers you will remember.
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.		

12. 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 to 10 = Very much so)	

13. 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   Not reporting

5. Highest nursing degree: Diploma   ASN   BSN   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   6A-6P   6P-6A

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   Orthopedic Neuro Other _____

Appendix J: Fall TIPS Quality Audit Tool Instructions

Fall TIPS Quality Audit Instructions

1) Is the patient's Fall TIPS report hanging at the bedside?

Instructions: Record "Yes" if there is a Fall TIPS poster hanging at the bedside and it is for the correct patient. Record "No" if there is no Fall TIPS poster hanging at the bedside or if it is for the incorrect patient (i.e. wrong patient name).

2) Can the patient/family verbalize the patient's fall risk factors?

Instructions: Record "Yes" if the patient/family can verbalize any of the fall risk factors that are displaying on the Fall TIPS foster. Record "No" if the patient/family cannot verbalize any of the fall risk factors that are displaying on the Fall TIPS poster. Record "N/A" if the patient is nonverbal or not alert and oriented, and no family is present.

3) Can the patient/family verbalize the patient's personalized fall prevention plan?

Instructions: Record "Yes" if the patient/family can verbalize any of the fall prevention interventions that are displaying on the Fall TIPS poster. Record "No" if the patient/family cannot verbalize any of the fall prevention interventions that are displaying on the Fall TIPS poster. Record "N/A" if the patient is nonverbal or not alert and oriented, and no family is present.

4) If you answered "No" to any question, did you provide peer-to-peer feedback?

Instructions: Record "Yes" if you followed up with the nurse whose patient you audited. Record "No" if you did not follow up with the nurse whose patient you audited. Record "Other" if you would like to share why you did not provide peer-to-peer feedback.
**We have found that the peer-to-peer feedback piece is especially important for implementation. By following up with the nurse, you can identify if there is a gap in knowledge or another barrier to Fall TIPS completion that we can address.

Appendix K: Outcomes Evaluation Table

Outcomes Evaluation Table

Outcome	Data Collection Instrument / Data	Analysis Goal	Analytic Technique
#1) On or before April 30, 2021, 80% of all nurses and CNA's (nursing staff) on the Medical/Surgical unit will complete a fall prevention toolkit educational model created by the Fall Tailoring Interventions for Patient Safety (Fall TIPS) Program. The educational module includes techniques and protocols approved by the hospital. The training will be supervised and conducted by the Scholarly Project Manager with hospital oversight from the Director of Education.	**Instrument: Education Module Completion Tool** 1) A report compiled by the Medical/Surgical Department Director will be submitted to the Scholarly Project Manager with the names of all employed nursing staff members. 2) A second report will be compiled by the Education Director noting the number of Medical/Surgical nursing staff members that have completed the educational session from the hospital's learning management system. 3) The two reports will be compared using the Education Module Completion Tool created by the Scholarly Project Manager. **Data:** 1) Names of nursing staff members that work the Medical/Surgical Unit, which shift they typically work (Day Shift or Night Shift), and their employment status (Full Time, Part Time, or PRN). 2) 2)The names of the nursing staff that have completed the educational module. 3) Both reports will be protected so the employee information is kept private.	1) To quantify the number of employees that are eligible to complete the training. 2) To quantify the number of employees who complete the training. 3) To quantify the number and percentage of Medical/Surgical nursing staff participating in the educational component of the scholarly project.	1) Quantitative data will be analyzed using descriptive statistics in a percentage format. The percentage will represent the number of employees trained so the Project Manager can determine if interventions are needed to increase the number of trained nursing staff members to reach the goal. Report provides data for determining nominal count and percentage of staff participating in the education intervention.

#2) After completing the educational module by April 2021, 80% of the nursing staff will show the learning objectives have been met by achieving a score of 80% or higher on the Fall TIPS Fall Prevention Knowledge Test. If this goal is not obtained, remedial education will occur until the goal is achieved before initiating the fall toolkit.	**Instrument: Education Assessment Tool** 1) Medical/surgical nursing staff members will complete the Fall TIPS educational module in the hospital's learning management system. After completing the educational session participants will be required to take the Fall TIPS Fall Prevention Knowledge Test. Scores from the test will be input into the Education Assessment Tool so the quantitative data can be reviewed to evaluate if the learning objectives have been met. 2) Quantitative data will include the utilization of the test scores. **Data:** 1) Scores for the Fall TIPS Fall Prevention Knowledge Test will be pulled from the hospital's learning management system. 2) This test was approved for use by the stakeholder group members of the Scholarly Project. 3) A plan is in place to keep all scores confidential.	1) To determine if the educational session assisted the nursing staff in attaining knowledge concerning fall prevention techniques.	1) Descriptive Statistics will be used to measure the mean, median, range of scores, and standard deviations between the Fall TIPS Fall Prevention Knowledge Tests scores.
#3) Upon being admitted to the Medical/Surgical Floor, 80% of patients will have a Fall TIPS Report documented at the patient's bedside from May through August of 2021.	**Instrument: Fall TIPS Audit Tool** 1) The Fall TIPS Audit Tool will be utilized to obtain quantitative aggregated data on the following topics: - Is the patient's Fall TIPS Report on the patient's whiteboard? (Yes or No) - Can the patient/family verbalize the patient's fall risk factors? (Yes or No) - Can the patient/family verbalize the patient's personalized fall prevention plan? (Yes or No)	1) To generate quantitative data to evaluate if nursing staff are implementing the knowledge they have obtained.	1) The audit will determine if the knowledge gained has not been implemented correctly, feedback will be given to the primary care nurse by the auditor. Descriptive statistics will be used to

	- If any of the above questions were answered "No", did you provide feedback to the patient's nurse? (Yes or No) **Data:** Specific quantitative data metrics will be compiled by performing audits to determine if the Fall TIPS Reports are being created correctly and used effectively or not.		determine overall implementation rates.
#4) The Medical/Surgical Unit will see a 25% decrease in unintentional patient falls between June 2021 and August 2021 as compared to the unit's baseline fall rates for the year 2019.	**Instrument: Patient Fall Tracker** 1) A report is generated from the hospital's electronic health record which calculates patient fall rates. The information is pulled monthly for review by the Quality Department and Administrative Team. **Data:** Quantitative data for the following: 1) Total number of unintentional patient falls for the medical surgical unit per 1000 patient days. 2) A plan is in place to keep the data confidential.	1) To determine the number of patient falls occurring per 1000 patient days for the Medical/Surgical Unit. 2) To track and trend the number of patient falls for the Medical/Surgical Unit over time to determine if the implementation of the Fall Prevention Toolkit was successful.	1) The Patient Fall Tracker report will provide descriptive statistics that can be used to evaluate, measure, and analyze the impact of the project on patient falls. Data will be presented in the form of a table and line graph to display progress and potential trends over time.

Appendix L: Memorandum of Understanding

Memorandum of Understanding

Memorandum of Understanding

Memorandum of Understanding

Between

David Haskell, Doctor of Nursing Practice (DNP) student

Boise State University

and

██████████████████

This Memorandum of Understanding (MOU) outlines the terms and understanding between David Haskell, a DNP student at Boise State University, and ████████████████, to pilot a performance improvement project to reduce patient falls on the medical/surgical floor.

Background

Patient falls are used as a patient safety indicator in the acute care setting and the Centers for Medicare and Medicaid (2020) consider them a "never" event. Patient falls negatively impact patients in the acute care setting by potentially causing an increased length of stay, excessive costs, injuries, or even death (Healey et al., 2008; Jorgensen et al., 2015; Melin, 2018; Nadkarni et al., 2005). Timpanogos Regional Hospital is dedicated to delivering quality patient care and is continuously seeking to improve and standardize the delivery of care for the betterment of their patients. As frontline staff, nursing has the unique ability to apply the knowledge and skills of evidence-based practices when delivering patient care. Having an appropriate knowledge of patient falls including characteristics that enhance the risks of falling when admitted to the hospital is vital to improving patient outcomes (Hempel et al., 2013; Weinberg et al, 2011). Patient outcomes can be and have been impacted by the lack of consistent nursing knowledge surrounding falls and missed opportunities of applying evidence-based prevention practices.

Purpose

This is a pilot performance improvement project to be conducted on the medical/surgical unit to reduce the rate of patient falls by providing education to nursing staff. The educational component will include best practices of the fall prevention process as well as the fall prevention documentation standards. During the planning phase of the project (December 2020 through April 2021), educational materials will be created by the project manager and a guided team on the fall prevention toolkit and appropriate documentation methods to be used in the hospital's electronic health record. During the implementation phase (May 2021 through August 2021), education sessions will be conducted with medical/surgical nursing staff with a pre and post educational questionnaire designed to evaluate baseline and post-education knowledge on patient falls, fall prevention, and documentation standards. The long-term outcomes of the project are to reduce the rate of unintentional patient falls on the medical/surgical floor by utilizing evidence-based practices for fall prevention, develop consistency with documentation of the nursing interventions, implement prevention activities based on identified patient risk, and to initiate an electronic tracking tool to monitor prevention practices.

Intended Project Outcomes
- Improve nursing knowledge on patient falls and risk awareness
- Improve nursing knowledge on the fall prevention toolkit
- Increase consistency of fall prevention interventions and documenting those interventions using a fall prevention plan
- Reduction in patient fall rates for patients admitted to the medical/surgical floor

Duration

The DNP Scholarly Project will begin December 2020 with the guided team reviewing and completing the educational modules. Any changes being made to hospital practice surrounding the project will be agreed upon and implemented by April 2021. Completion of the educational module and the auditing tools will be completed by April 2021. The implementation of the DNP Scholarly Project will begin May 2021 and will include educational sessions for the Medical/Surgical nursing personnel. The implementation phase will end August 2021. Audits to review use of the fall prevention interventions will begin in June 2021. The DNP Scholarly Project will be completed by February 2022.

Reporting

The DNP Scholarly Project will include a final report, an abstract, an oral presentation of the report, and potential publication. The DNP student will present the final report to the organizational stakeholders February 2022 as well as presenting monthly interim reports to the Falls and Quality Committees from June 2021 through February 2022. The DNP Student will submit a final report in ScholarWorks for publication as part of the requirements for the DNP Program. ScholarWorks is a collection of services designed to capture and showcase all scholarly output by the Boise State University community, including doctoral dissertations and doctoral project reports.

No personal identifiers will be included, and all data will be reported in aggregate form. The author welcomes any comments or suggestions from ▇▇▇▇▇▇▇▇▇▇▇▇▇▇▇▇▇ but reserves the right to publish findings and analysis according to professional standards and principles of academic freedom. For any work of a scholarly nature, the author agrees to follow the organization's preferences in how it is to be named (or not) in the work.

Agency preferences for how they are named/referred to within the student's work:

General type of agency within a region

- An acute care hospital located in the Western United States

Faculty Contact Information

▇▇▇▇▇▇▇▇▇▇▇▇▇, Boise State University Associate Professor DNP Program
▇▇▇▇▇▇▇▇▇▇▇▇▇▇▇▇

Student Contact Information

▇▇▇▇▇▇▇▇▇▇▇▇▇▇▇▇▇

▇▇▇▇▇▇▇▇▇▇▇_____Date: 2-4-2021
(*DNP Student signature*)
▇▇▇▇▇, Boise State University DNP Student

▇▇▇▇▇▇▇▇_____Date: 2-4-2021
(*Organizational Contact signature*)
▇▇▇▇▇▇▇▇▇▇▇▇▇

Appendix M: CITI Training

CITI Training

Completion Date 05-Jun-2020
Expiration Date 05-Jun-2023
Record ID 36910888

This is to certify that:

David Haskell

Has completed the following CITI Program course:

GCP – Social and Behavioral Research Best Practices for Clinical Research (Curriculum Group)
GCP – Social and Behavioral Research Best Practices for Clinical Research (Course Learner Group)
1 - Basic Course (Stage)

Not valid for renewal of certification through CME. Do not use for TransCelerate mutual recognition (see Completion Report).

Under requirements set by:

Boise State University

Collaborative Institutional Training Initiative

Verify at www.citiprogram.org/verify/?w62e6a284-b895-4bf2-8e57-17cdab3e4875-36910888

Appendix N: IRB Letter of Determination

IRB Letter of Determination

March 1, 2021

Dear David,

████████████████████ Institution Review Board has reviewed your request as principal investigator for the "██ Fall Prevention and Risk Assessment" scholarly project.

During the Institutional Review Board meeting held in December, the hospital IRB approved the project as an exempt project. This letter is to confirm approval of the members on February 24, 2021.

Notice of IRB Exemption Decision:
Your submitted research plan has been determined as not needing IRB oversight. This is because your you are either a) not engaging in research with human subjects as defined by federal regulations; b) engaging in research with human subjects deemed excluded from IRB oversight per 45CFR46.102(l) OR c) engaging in research with sufficient human subject protections in the design to meet one or more IRB exemption criteria set forth at 45CFR46.104.

Even though your research activity has been determined to be exempt from IRB oversight, you still must adhere to the submitted research plan, all institutional policies and the principles of research ethics as set forth in The Belmont Report to maintain that exempt status.

Scope of Exemption:
While you do not need to submit continuing review requests to this IRB, **all other reporting obligations to the IRB and your institution apply and the IRB reserves the right to contact you in the future to verify that there have been no changes to this research plan.**

Requesting Changes To Your Research Plan: If you wish to modify this activity, you must submit a request to the IRB and receive IRB approval in writing before implementing the proposed modification (unless the change is necessary to eliminate an apparent immediate hazard to subjects, then notification is due within 5 calendar days). This not only includes modifying the protocol or consent form but all research activity affiliated with this approval, such as adding advertisements, identifiable data fields, questionnaires etc.

Interim Reporting Requirements: Any of the following occurrences are expected to be reported to the IRB within five (5) business days of your becoming aware. Failure to timely report on any of the following is a serious violation of IRB requirements and regulations may require the IRB to report such noncompliance to federal authorities. Note that this report to the IRB does not substitute for any other reporting obligations (i.e. to the sponsor or other institution committee/official).

- **Unanticipated Problems Involving Risks To Subjects Or Others**

- o **Adverse events** are considered reportable unanticipated problems if they are a) Serious; b) Unexpected; and c) Related (or probably related) to the research. For the avoidance of doubt, an event is automatically deemed "serious" if it v) death or a life-threatening condition (i.e. places the subject at immediate risk of death from the event as it occurred); w) an inpatient hospitalization or prolongation of an existing hospitalization; x) a persistent or significant disability/incapacity; y) a congenital anomaly/birth defect; OR z) an event that requires intervention intended to prevent one of the above.
  - o **Other unanticipated problem**s that are not adverse events (i.e. problems associated with a medical device under investigation, breach of subject confidentiality such as through theft or loss of study data etc.) must be reported if they suggest that the research places subjects or others at a greater risk of harm (including physical, psychological, economic, or social harm) than was previously known or recognized.
- **Deviations from the approved research plan or regulations.**
- **Unresolved subject complaints.**
- **Notification of audit/inspection or other inquiry by a state or federal agency.**

Suspensions or termination of the research activity by the study sponsor or your institution.

If you have any questions, please contact me at ▮▮▮▮▮▮▮▮▮.

Sincerely,

▮▮▮▮▮▮▮▮▮▮▮▮

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IRB Chairman

▮▮▮▮▮▮▮▮

Appendix O: Demographics of Education Participants

Table 1: Demographics of Education Participants

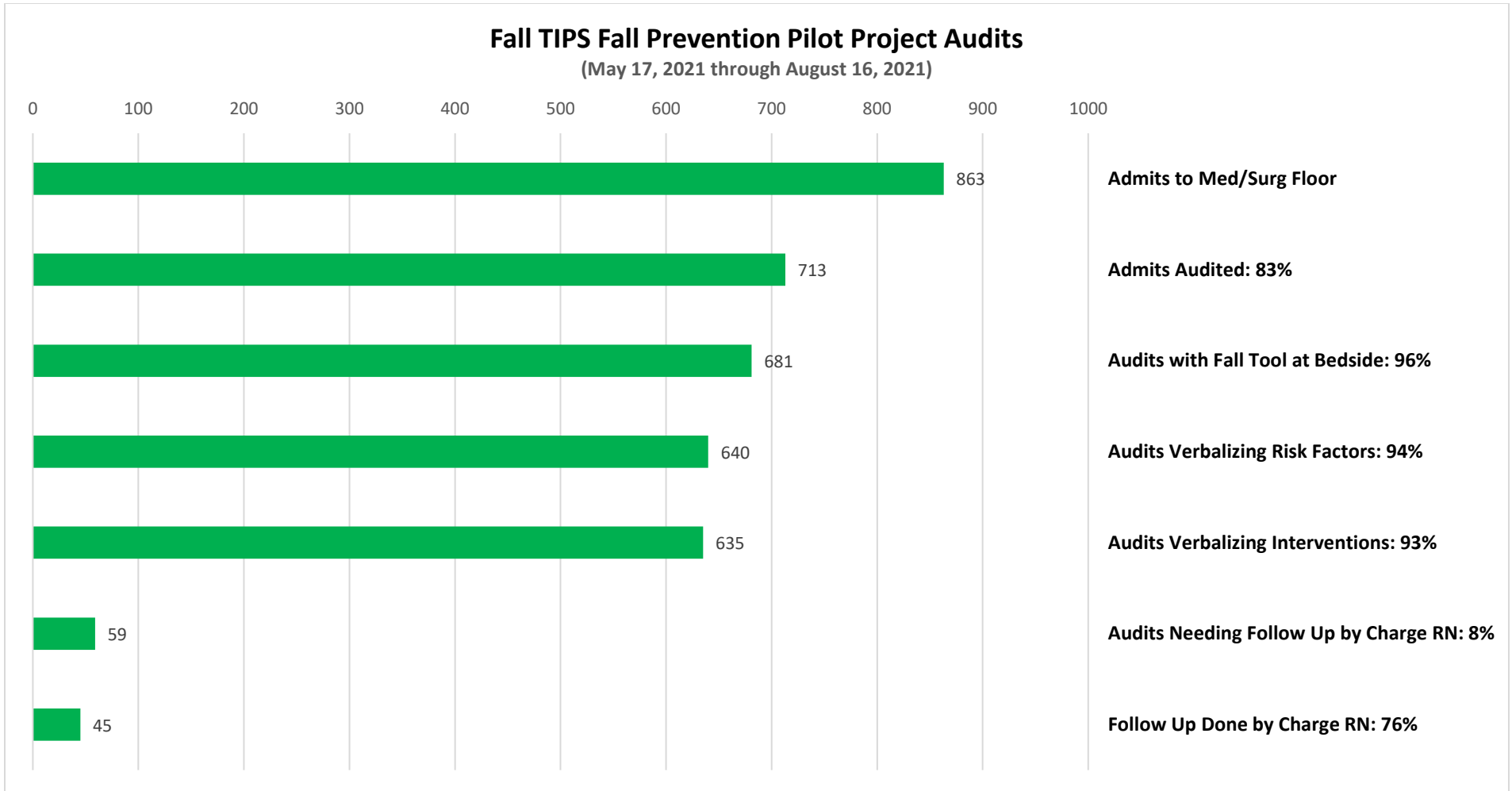|	n	%
Highest Educational Degree		
Certificate	7	15.2
Associate	9	19.6
Baccalaureate or Higher	30	65.2
Race		
Caucasian	44	95.6
Non-Caucasian	2	4.4
Schedule		
Mostly Day Shift	18	39.1
Mostly Night Shift	26	56.5
Rotating	2	4.3
Service Years		
1-5	22	47.8
6-10	13	28.3
11-20	7	15.2
21 or More	4	8.7
Sex		
Female	44	95.6
Male	2	4.4
Age (years)		
30 or Less	16	34.8
30-40	19	41.3
40-50	6	13.0
50 or More	5	10.9
Average Age	34	SD = 11.1

Appendix P: Average Percentage of Correct Scores and Percentage Change on Pre and Post Tests

*Table 2: Average Percentage of Correct Scores and Percentage Change on Pre and Post Tests*

	Pre-test	Post-test	% Change
Question 1 (Fall Prevention Knowledge)	24.4%	100.0%	75.6%
Question 2 (Fall Prevention Knowledge)	22.2%	58.7%	36.5%
Question 3 (Fall Prevention Knowledge)	66.7%	82.6%	15.9%
Question 4 (Fall Prevention Knowledge)	95.6%	100.0%	4.4%
Question 5 (Fall Prevention Interventions)	17.8%	56.5%	38.7%
Question 6 (Fall Prevention Interventions)	6.7%	69.6%	62.9%
Question 7 (Fall Prevention Knowledge)	60.0%	91.3%	31.3%
Question 8 (Fall Prevention Knowledge)	13.3%	100.0%	86.7%
Question 9 (Fall Prevention Interventions)	100.0%	100.0%	0.0%
Question 10 (Fall Prevention Interventions)	91.1%	93.5%	2.4%
Question 11 (Fall Prevention Interventions)	11.1%	82.6%	71.5%
Average Fall Prevention Knowledge Score	36.0%	82.2%	46.2%
Average Fall Prevention Interventions Score	54.8%	90.7%	35.9%
Average Overall Score	46.3%	85.0%	38.7%

Note. n = 46

Appendix Q: Results of the Fall Toolkit Audits

Fall TIPS Fall Prevention Pilot Project Audits
(May 17, 2021 through August 16, 2021)

Category	Value
Admits to Med/Surg Floor	863
Admits Audited: 83%	713
Audits with Fall Tool at Bedside: 96%	681
Audits Verbalizing Risk Factors: 94%	640
Audits Verbalizing Interventions: 93%	635
Audits Needing Follow Up by Charge RN: 8%	59
Follow Up Done by Charge RN: 76%	45

Axis: 0, 100, 200, 300, 400, 500, 600, 700, 800, 900, 1000

Appendix R: Medical/Surgical Floor Unintentional Patient Fall Rates

2021 Medical/Surgical Floor Unintentional Patient Falls
(Fall TIPS Pilot Project started May 2021)
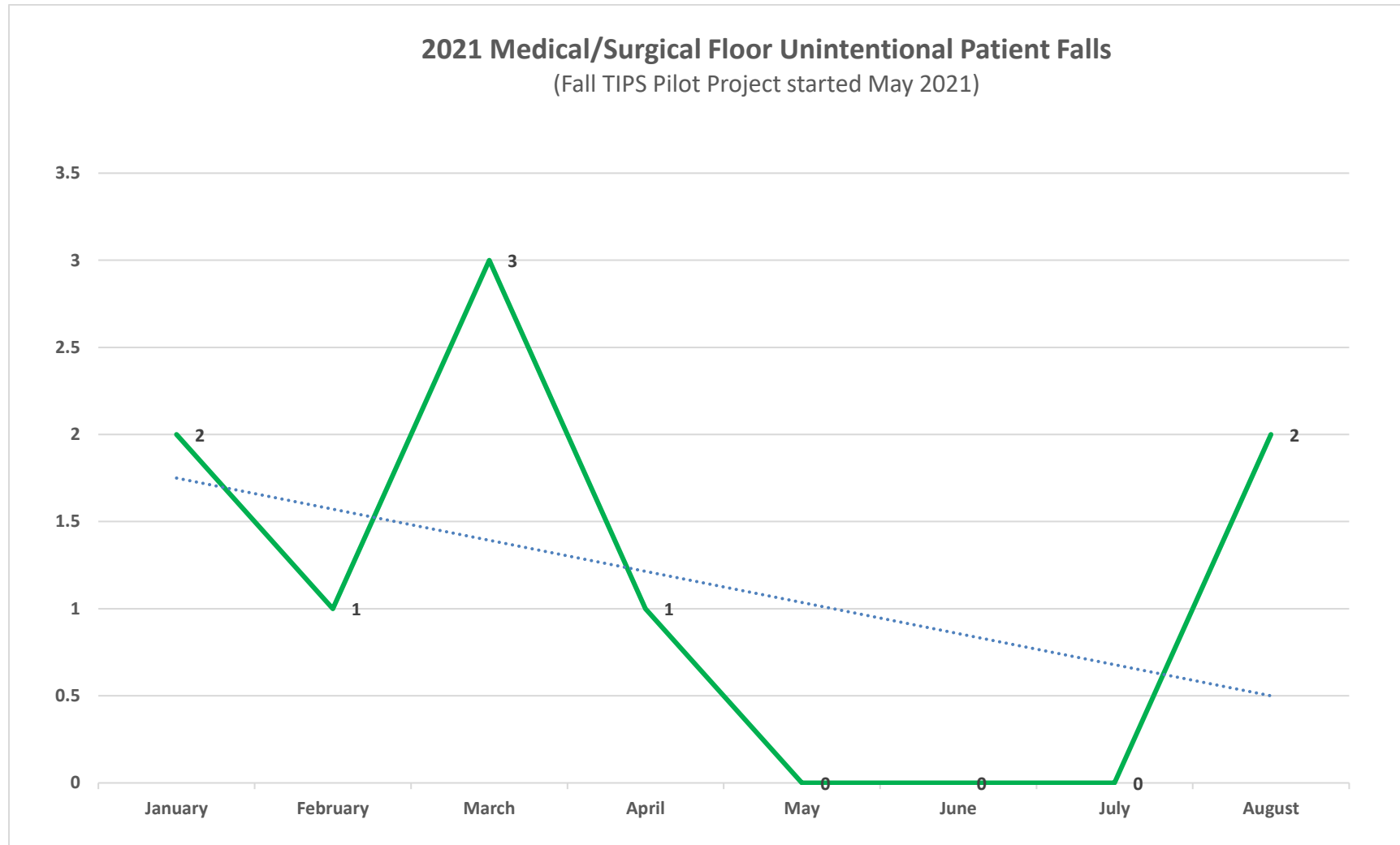
Appendix S: Medical/Surgical Floor Unintentional Patient Fall Rates per 1000 Patient Days

Medical/Surgical Floor Unintentional Patient Falls Per 1000 Patient Days
(Falls/Patient Days*1000)
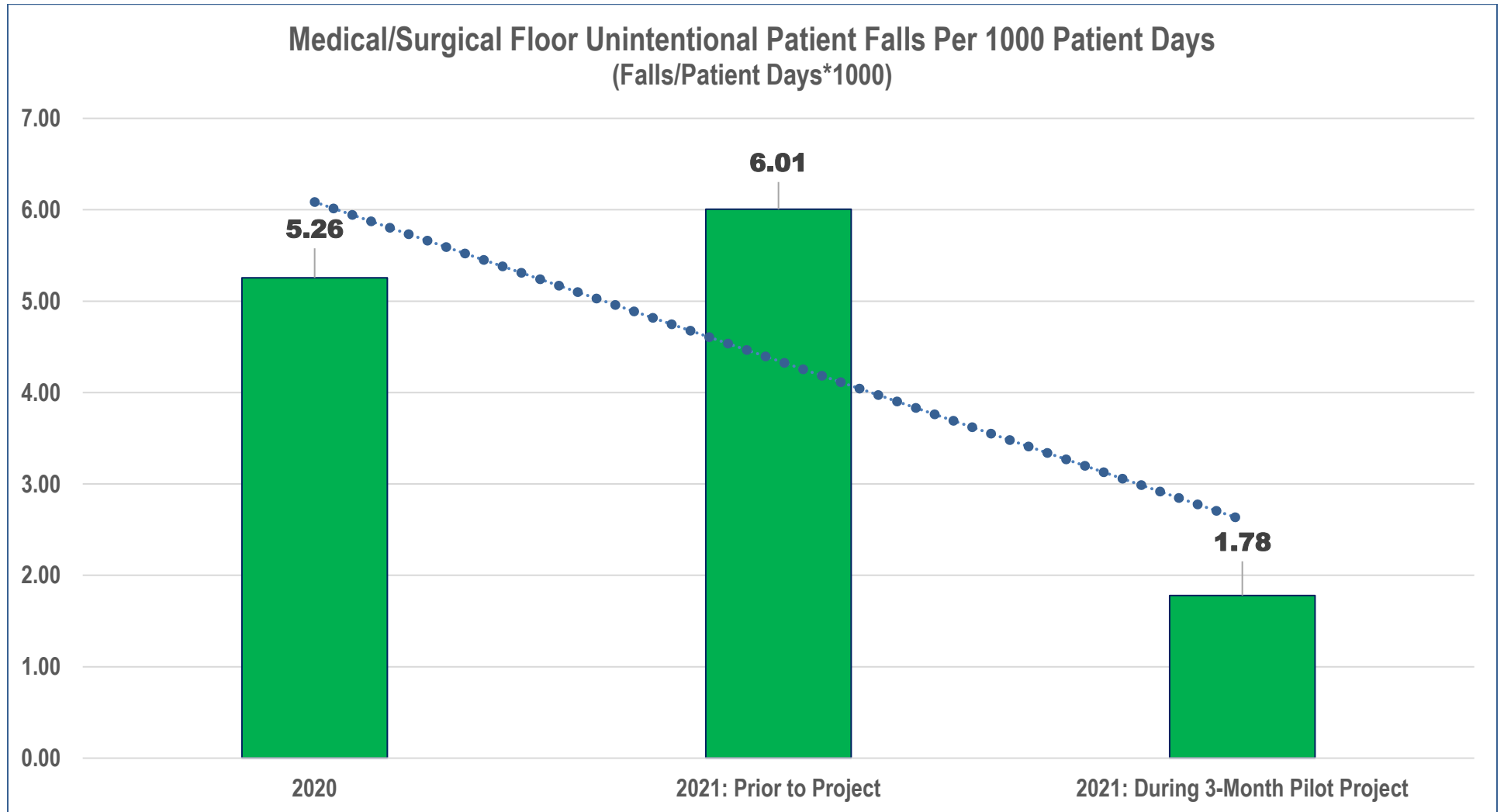
Appendix T: Yearly Budget Estimates

3 Year Budget

Yearly Totals:	$ 17,698.50	$ 12,855.00	$ 11,350.00	
Expense Category	**Year 1**	**Year 2**	**Year 3**	**Rationale**
Personnel	$ 14,181.50	$ 9,128.00	$ 8,124.00	Year 1: Pilot on Medical/Surgical Floor with 50 staff members. Year 2: Expand to ICU, SDS, OB, and L&D units (Average training of 40 staff members each and 20 hours of Charge Nurse implementation per unit.) Year 3: Expand to ED, Pediatrics, PACU, and Radiology (Average of 30 staff members each and 20 hours of Charge Nurse implementation per unit.) After Year 1: Administrative costs will revert to the Quality Director = $46 per hour for 52 hours per year.
Material & Supplies	$ 501.00	$ 1,503.00	$ 1,002.00	Training and reporting of 4 additional hospital units per year. Reuse training supplies as able.
Space	$ 1,000.00	$ -	$ -	After initiation, the fall prevention toolkit will be included in the Fall Prevention Meetings held by the Quality Department.
Equipment	$ 800.00	$ -	$ -	Laptop computer

IT	$ 990.00	$ 1,320.00	$ 1,320.00	Initially $55 per hour for three hours per month for six months, then $55 per hour up to 2 hours per month to ensure the educational materials are updated and running well.
Travel	$ -	$ -	$ -	
Marketing/Advertising	$ -	$ -	$ -	
Fees	$ -	$ -	$ -	
Incentives	$ 226.00	$ 904.00	$ 904.00	Training of additional 4 hospital units per year.