

Summer 7-31-2021

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DOI: <https://doi.org/10.46409/sr.QFKW5470>



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Recommended Citation

Maprel, M. (2021). *Reduction of Inpatient Fall Rate in an Adult Acute Care Setting*. [Doctoral project, University of St Augustine for Health Sciences]. SOAR @ USA: Student Scholarly Projects Collection. <https://doi.org/10.46409/sr.QFKW5470>

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Reduction of Inpatient Fall Rate in an Adult Acute Care

Setting

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This Manuscript Partially Fulfills the Requirements for the

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July 31, 2021

Abstract

Practice Problem: Falls are among the most reported hospital-acquired conditions and can lead to severe injuries, increased length of hospital stays, pain, distress, and emotional trauma in the elderly. The Centers for Medicare and Medicaid Services (CMS) identifies falls as preventable and no longer authorizes reimbursement to healthcare systems for treating inpatient fall-related injuries.

PICOT: The PICOT question that guided this project was: In adult acute care patients admitted to the telemetry unit (P), how does implementing evidence-based multimodal fall prevention strategies (I) compared to routine fall prevention strategies (C) affect inpatient fall rate (O) over a period of 6-8 weeks (T)?

Evidence: The literature review revealed that using multimodal risk prevention strategies effectively reduces fall risk and fall-related injuries and thus improves patient safety and outcomes.

Intervention: A multimodal fall prevention strategy was developed, according to the Morse Fall Risk Assessment score, utilizing tools such as bed alarm on, lights on, a urinal within reach, purposeful hourly rounding, and bedside reporting during shift change. The oncoming shift nurse checked with the off-going shift nurse at the patient's bedside to ensure that the fall risk patients' fall precaution strategies had been initiated and maintained throughout the shift.

Outcome: The EBP project did not result in an overall reduction in the fall rates; however, the fall rate with injury was low in the telemetry unit. The project resulted in an increase in the staff's knowledge and awareness of multimodal fall prevention strategies.

Conclusion: The reduction in the incidence of falls after the implementation of the EBP project in the telemetry unit was not statistically significant. However, the result indicated a clinically

meaningful improvement in fall-related injury outcomes and increased staff knowledge and awareness of the fall prevention strategies.

Reduction of Inpatient Fall Rate in an Adult Acute Care

Setting

Falls and their related injuries continue to rise in healthcare organizations and affect both patients and healthcare organizations. Inpatient falls represent a critical clinical and legal problem attributing to severe injuries and even death in adult acute care patients (Fridman, 2019). Falls can significantly affect elderly inpatients and decrease their ability to function independently. The injuries resulting from inpatient falls are considered hospital-acquired conditions that affect the effectiveness of care delivery. Falls are among the most reported hospital-acquired conditions (Hoke, 2016).

The purpose of the project was to evaluate the effect of implementing multimodal fall prevention strategies to reduce fall rates. This project ensured that nurses become well-informed and educated about fall prevention strategies and increase compliance with guidelines. Evidence-based fall prevention initiatives contained a multistep approach requiring effective leadership and innovation (Fridman, 2019).

Significance of the Practice Problem

According to the Agency for Healthcare Research and Quality (AHRQ), (2013), approximately 700,000 to 1,000,000 people fell in hospitals every year in the United States (para.1). According to the Centers for Disease Control and Prevention (CDC), (2020), “In the United States, about one in four adults age 65 and older report falling each year” (para.1). Falls can lead to increased mortality, disability, increased healthcare costs and decreased quality of life (AHRQ, 2013). Falls in acute care settings can lead to severe injuries, increased length of hospital stays, pain, distress, and emotional trauma in the elderly. Falls can cause a

physiological, psychological, and financial impact on patients, and some will experience post-traumatic stress disorder, depression, and decreased quality of life (Zhao, 2016).

The national average of adults 65 years and older falling each year was about 28% (CDC, 2020). In the state of Texas, the rate is 33.9%. Falling was the leading cause of injury-related deaths in adults 65 years and older (CDC, 2020). According to the CDC (2020), “Each year about \$50 billion is spent on medical costs related to non-fatal fall injuries, and \$754 million is spent related to fatal falls” (para.1).

Inpatient falls negatively affect the healthcare organization. The Centers for Medicare and Medicaid Services (CMS) no longer reimbursed healthcare systems for treating preventable injuries, such as inpatient fall-related injuries (AHRQ, 2013). This initiative imposed a substantial financial burden on the healthcare system.

The project site experienced an increase in patient falls and identified the need for fall prevention strategies related to assessment and intervention to prevent patient falls. Even with a fall prevention protocol in place, falls and related injuries continued to increase in acute care settings. Nursing practice and knowledge gaps had been identified in the project site with fall prevention strategies. In the calendar year 2020, the inpatient fall rate at the project site steadily increased. (From the fall committee meeting on 09/18/2020, by M. Zubiate -RN) From January to October 2020, the hospital experienced 118 falls. From July through September of 2020, they reported 65 falls. Occurrences in the telemetry unit accounted for 30 falls. The fall rate for the previous quarter was 4.06%, and the institution endeavors to reach the national average of 2.18%.

Inpatient falls affected not only the patients and families but also healthcare providers. Several national policies and initiatives are in place to prevent falls and related injuries. The

CMS considers falls a never event and will not reimburse for the additional treatment resulting from falls. According to Chaudhry (2020), “fall prevention is one of the national patient safety goals, and the Joint Commission had included prevention of falls in the 2009 sentinel event alerts, a reportable event to the Joint Commission” (p. 2).

PICOT Question

In adult acute care patients admitted to the telemetry unit (P), how does implementing evidence-based multimodal fall prevention strategies (I) compared to routine fall prevention strategies (C) affect inpatient fall rate (O) over a period of 8 weeks (T)?

Even with a fall prevention protocol in place, falls and related injuries continued to increase in acute care settings. This project was proposed to pilot at the acute care unit of a 320-bed hospital located in the South Texas area. The project site experienced an increase in patient falls and identified the need for fall prevention strategies related to assessment and an intervention to prevent patient falls. The question answered in this evidence-based project was how to reduce the inpatient fall rate.

The current practice included fall risk assessment using the Morse Fall Risk Scale and standard fall prevention protocol such as hourly rounds, using fall signs, non-skid socks, fall risk armbands, and bed alarms. The proposed intervention was to implement a consistent use of the Morse Fall Scale and the fall prevention strategy. This project included fall prevention strategies such as fall signs, purposeful hourly rounding, activating bed exit alarms, yellow fall risk patient armbands, two nurses verifying the prevention strategies, use of non-skid socks, and staff education on fall risk assessment. Two staff members ensured a safe environment once every shift. The oncoming shift nurse checked with the off-going shift nurse at the patient’s bedside to ensure that the fall risk patients’ fall precaution strategies were initiated and maintained

throughout the shift. An existing gap in compliance with the protocol was identified after meeting with the quality council and fall committee. These strategies were not followed consistently. The proposed outcome was to reduce the fall rate after the implementation and to improve staff knowledge and compliance with the fall prevention strategy.

Evidence-Based Practice Framework and Change Theory

An evidence-based practice (EBP) framework was instrumental for this change project to guide the research process, explain the research findings, and translate the research findings into practice. The theoretical framework helped to translate the research findings into clinical practices. Selecting the suitable models that are appropriate to the organization and the practice problem was vital to ensure the effectiveness of the EBP model and avoid poor outcomes or failure (Schaffer et al.,2013). The Johns Hopkins Nursing Evidence-Based Practice (JHNEBP) model focuses on translating the best evidence for bedside nurses to use in clinical decision-making (John Hopkins Medicine, n.d.).

The JHNEBP model uses a three-step process called PET: *practice question, evidence,* and *translation*. The steps are:

- Identification of practice question,
- Collection of evidence including evidence search, critiquing, summarizing, evaluating the strength of recommendation, and making recommendations
- Translation of evidence into practice; including assessing the practicability of adopting change and creating an action plan for implementation

This model offers the following tools for the users: a question development tool, an evidence rating scale, and appraisal criteria for research and non-research evidence (Schaffer et al.,2013).

Change Theory

Kurt Lewin(1951) developed one of the most influential organizational change models (as cited in Connelly, 2020). According to Connelly (2020), the three-stages of the theory of change are Unfreeze, Change, Freeze (or Refreeze). Lewin's theory of change fit this project well because it aligned with the project objective of promoting positive clinical practice change and promoting a culture of safety. Unfreezing made it possible for the staff to let go of what was done in the past and create positive change motivation. It was essential to develop an awareness for the nurses to understand a problem that existed and unfreeze the current practice.

The second stage of Lewin's change theory is moving or changing (as cited in Connelly, 2020). This change stage occurred when there was a transition of behavior and involvement of employees. The organization and the employees needed to comply with the new EBP to promote patient safety and reduce harm. To ensure a change in behavior and acceptance of the new process, support from the stakeholders, leaders, and staff is essential during the implementation of fall prevention strategies (Ramasamy, 2019).

The final refreezing stage occurred by establishing a new habit. This new habit became the new standard of practice. The success of this stage was greatly affected by the commitment and motivation of stakeholders, leaders, and staff nurses (Ramasamy, 2019). The new habit became a culture of practice to assess the patients every shift and, as needed, to ensure that fall prevention strategies were implemented. Through continuous support, education, and a reward system, the organization sustained the practice change.

Evidence Search Strategy

A thorough literature search was conducted to address the PICOT question. A comprehensive electronic literature search was conducted using Cumulative Index to Nursing

and Allied Health Literature (*CINAHL*), *ProQuest*, and *PubMed* databases. The search terms used were; falls in acute care settings, fall prevention, inpatient fall reduction, fall prevention in acute care settings, and fall prevention in hospitals. Inclusion criteria were articles from 2015-2020, peer-reviewed journals, full text, and English.

The search results were as follows; *CINAHL* produced 100 articles, *ProQuest* produced 13233 articles, and *PubMed* produced 6472 articles. Applying the term “adult acute care setting” reduced the number of articles to 1842. All items were reviewed carefully for relevance, and any articles that included pediatrics and long-term care facilities were excluded. Relevant articles were reviewed, and editorials and periodicals were removed. Thirty relevant articles remained. After further review of the quality and level of the research, the number of articles was reduced to 11.

Evidence Search Results

A comprehensive electronic literature search using *CINAHL*, *ProQuest*, and *PubMed* databases yielded 19,805 total articles. Applying the term “adult acute care setting” reduced the number of articles to 1842. The result included peer-reviewed articles from the years 2015-2020 written in the English language and contained data for adults over the age of 18. A PRISMA diagram is used for illustration (see Appendix E for illustration).

The quality and strength of the articles were critically appraised using the John Hopkins Nursing Evidence-Based practice tool. This tool divides the evidence into five levels; from Level I to Level V, Level I included randomized controlled trial (RCT) articles, an experimental study, and a systematic review (SR) of RCTs with or without meta-analysis. Level II included systematic review (SR) with a combination of RCTs and quasi-experimental or quasi-

experimental studies only with or without meta-analysis or quasi-experimental study (John Hopkins Medicine, n.d.).

Level III consisted of non-experimental studies, SR of a combination of RCTs, quasi-experimental and non-experimental studies with or without meta-analysis, or non-experimental studies only. Also, a qualitative study or SR with or without a meta-synthesis belonged to Level III. Level IV included clinical practice guidelines and consensus panels, and Level V included literature reviews, case reports, program or financial evaluation, and experts' opinions on experimental evidence (John Hopkins Medicine, n.d.).

The quality of the article was rated as A for high-quality, B for good-quality, or C for low-quality. Quality A was used for material officially sponsored by a government organization or by a professional, private, or public organization, developed or revised within the last 5 years, that stated clear aims and objectives and produced consistent results across multiple settings. Quality A materials also showed evident expertise and definitive conclusions and provided a scientific rationale (John Hopkins Medicine, n.d.).

Good-quality or B-rated articles were officially sponsored by a government agency or a professional, public, or private organization, that stated reasonably clear aims and objectives and produced consistent results in a single setting. B articles were written or revised within the last 5 years. Quality B materials show credible expertise and relatively definitive conclusions and provide logical arguments (John Hopkins Medicine, n.d.)

Low-quality or C articles contains materials not sponsored by an official organization or agency, that are poorly defined and offered insufficient evidence, and where poor results with a limited literature search strategy and conclusions could not be drawn. C articles had not been revised within the last 5 years. The results were inconsistent, the aims and objectives were either

missing or unclear, recommendations could not be made, and expertise is dubious or not discernable (John Hopkins Medicine, n.d.).

Most of the studies used for this EBP change proposal were pre-post interventional studies and systematic reviews. Out of the ten articles reviewed, one article was Level I, seven articles were level II, one article was level III, one article was level IV, and one article was level V. Eight of the articles were graded B, and one article graded A, and one article graded C. A summary of the article review can be found in Appendix A, Table A1, and Table A2.

Themes with Practice Recommendations

The literature synthesis revealed evidence that multidisciplinary fall prevention strategies could reduce the inpatient fall rate and improve staff knowledge and compliance with fall prevention. The literature showed that falls could result in significant injury, extended hospital stays, increased health care costs, loss of independence, and even death. Most of the studies showed how an appropriate tool could help identify and address the fall risk appropriately. Since national initiatives aimed to prevent patient harm from falls, prevention programs were necessary for healthcare organizations. Implementing an appropriate evidence-based fall reduction program could significantly improve patient outcomes and decrease the costs associated with fall complications. Fall risk assessments could identify patients at greater risk of injury to implement individualized prevention strategies as needed.

Fall Risk Assessment and Screening Tool

According to the American Nurses Association (ANA, 2020), hospitals should complete fall risk assessments for every patient at admission and with each status change. In acute-care settings, screening every day or even every shift may be required. After completing the fall risk screening, each patient should receive a personalized plan to address each identified risk factor

(ANA, 2020). Consistency in implementing the fall prevention plan and discussing it with the patient and family was essential. Re-designing the current practice with an optimized, consistent, and transformational multidimensional approach was required to manage inpatient falls effectively. Davies (2019) revealed that appropriate screening tools could predict those at high risk for falls and reduce fall incidence in acute care settings. Campbell (2016) reported that evidence-based fall safety bundles and staff education could reduce the number of falls and improve staff knowledge and understanding.

Staff Education

According to Thierry (2018), educational training in Hourly Rounding and Morse Fall Risk Score procedural tools are essential in improving fall outcomes. Education and training to address the fall prevention initiative were optimal in acute care settings. Belcher (2020) reported that educating nursing staff on fall prevention policies decreased falls in the acute care setting and kept the patient safe. Ramasamy (2019) revealed that an educational program on evidence-based fall prevention strategies using the American Medical Directors Association clinical guidelines improved staff members' knowledge in recognizing, assessing, and managing falls. The educational project resulted in positive social change for the patients, staff, and organization. Staff education improved the nurse's knowledge and understanding of fall risk and injuries and reduced the number of falls in acute care settings.

Multimodal Fall Prevention Program

Ward (2015) suggested that hospitals implement multifactorial fall prevention programs using evidence-based interventions to reduce falls and injuries. The result from a quasi-experimental study suggested that implementing multimedia programs contributed to changes in fall risk awareness among hospitalized adults. A systematic literature review by Hudson (2020)

recommended that identifying fall risk factors and implementing multifactorial fall prevention interventions could reduce the number of inpatient falls. Examples included a unit-based fall prevention team, fall champions, and a risk assessment tool to reduce the number of inpatient falls. An interprofessional team with evidence-based interventions significantly reduced the number of falls in acute care settings. Mendoza (2018) reported that multidimensional fall prevention strategies such as bed alarm on, lights on, a urinal within reach, and purposeful hourly rounding provided significant measures to prevent fall occurrence.

Evaluation of Fall Prevention Strategy

McCracken (2019) revealed that evaluating the current fall prevention strategies and educating the staff on using the process were essential in reducing the inpatient fall rate. Staff involvement in assessing and improving the current fall prevention strategy created a positive outcome for the patients and enhanced staff morale. Staff education created awareness of fall prevention.

A synthesis derived from the literature review identified evidence-based interventions to assess fall risk and prevention. Most of the studies were conducted in hospital settings and included patients from acute care settings. The main themes emerging from the synthesis were multidimensional fall prevention strategies, use of fall risk assessment tools, and developing protocols for using the tool. Fall self-efficacy was an essential factor in helping older adults become more engaged in fall prevention efforts (Cerilo, 2016).

Practice Recommendation

Based on a thorough literature review, the PICOT question was answered, recommending using a multidimensional fall prevention strategy to reduce the number of falls in acute care settings. Spano-Szekely et al. (2019) reported that staff education created an awareness that fall

prevention was a shared responsibility and that through teamwork, patient safety could be improved. Involving the staff in an action plan built a sense of ownership and responsibility. According to the Morse Fall Risk Assessment score, a multimodal fall prevention strategy should be developed. France et al. (2017) revealed that multifaceted risk prevention strategies effectively reduce fall risk and fall-related injuries more than single-intervention strategies.

The current strategy was evaluated and revised to provide a multifactorial fall prevention strategy utilizing tools such as bed alarm on, lights on, a urinal within reach, purposeful hourly rounding, and bedside report during shift change. A protocol was established to use the Morse Fall Risk Assessment tool. The oncoming shift nurse checked with the off-going shift nurse at the patient's bedside to ensure that the fall risk patients' fall precaution strategies were initiated and maintained throughout the shift. Two staff members ensured the safe environment once every shift. Educational programs were selected for the staff, and they received education on the use of the assessment tool and the protocol. A charge nurse or designee conducted a chart review every shift to identify errors in fall risk assessment scores. A process was created for remediating the nurses who did not follow the strategy or incorrectly used the assessment tool.

Project Setting

The proposed DNP project setting was a 320 -bed acute care hospital located in the South Texas area. This facility houses a general medical and surgical facility operated by the Tenet Healthcare Corporation. Specialties at this hospital include; cardiovascular, cancer, obstetrics and gynecology, urology, orthopedics, joint replacement, and stroke care.

This hospital's mission is to help people achieve health for life through compassionate service inspired by faith. This organization's vision is to provide quality compassionate care based on the values of compassion, safety, excellence, accountability, innovation, and faith. This

healthcare system offers outstanding, compassionate care to the patients when and where they need it. The hospital is part of the largest healthcare system network in the South Texas area, with five campuses offering five types of care. This healthcare system is well known for its dedication to positively impacting the lives of patients, their families, and the community.

Organizational Structure and Culture

Each medical center is individually accountable and focuses on the geographical area they serve with a wide variety of services. The leadership team consists of the chief executive officer (CEO), president of the site, CEO for the medical center, chief medical officer for the area, and chief operating officer. These leaders are dedicated to bringing expert health care to the communities through world-class innovation and service.

Members of this organization are culturally diverse and competent to serve their community. By maintaining close relationships with the people in the community, leaders have access to consistent, reliable feedback that helps the organization to strengthen the care processes and improves the health of everyone they serve. Every employee of the organization is accountable and expected to follow the rules, regulations, policies, procedures, and standards. Employees are encouraged to be responsible for providing safe, quality patient care.

Organizational Need

An organizational need assessment and a gap analysis were conducted to identify the current practices and areas for improvement. The organization's fall prevention strategy was identified, but a lack of compliance with this protocol exists. The current practice included fall risk assessment using the Morse Fall Risk Scale and standard fall prevention protocol such as hourly rounds, using fall signs, non-skid socks, fall risk armbands, and bed alarms. Since CMS no longer reimburses the healthcare system for the treatment of fall-related injury, and the

hospital had to pay for the treatment expenses, this project enabled the healthcare system to reduce falls and fall-related injury and reduced overall cost. After receiving the facts, the leaders decided to implement this project.

The organization had wanted to implement this project for some time, so the leadership was entirely supportive of this project. The assistant chief nursing officer (ACNO) expressed the need to evaluate the current process and implement evidence-based practice changes to reduce inpatient falls. The different stakeholders in this project were the ACNO, various department leaders, the director of quality and safety committee, fall committee champions, inpatient nurses, physicians, patient care assistants (PCAs), physical therapists, pharmacists, informaticists, support staff (housekeeping, dietary), and patients. The ACNO confirmed organizational support.

Sustainability for this project involved continuous monitoring of the use of the fall risk assessment tool. Since this assessment was part of the nursing assessment in the EHR for every shift, it was easy to monitor score accuracy and compliance. The fall committee champion continued to monitor the fall prevention strategies weekly to determine the nurses' use of risk assessment tools and the effective use of multidimensional prevention plans and compliance. The charge nurses monitored the assessment score for completeness and relevance every shift and reported non-compliance to the fall committee. Education was provided to the nurses and PCAs before implementing the project and for new hires.

Interprofessional collaboration and teamwork were essential for the success of this project. Fall prevention strategies and team collaboration were integral in keeping the patient safe from falls and fall-related injuries. The different team members included the project manager, department leaders, the director of the quality and safety committee, fall committee champions, inpatient nurses, physicians, PCAs, physical therapists, pharmacists, informaticists,

and support staff. Everyone who saw and interacted with the patient was part of the fall prevention team. All the team members worked towards the common goal of reducing inpatient falls and fall-related injuries.

Strengths, Weaknesses, Opportunities, and Threats Analysis

The Strengths, Weaknesses, Opportunities, and Threats (SWOT) Analysis is a technique for assessing the organization's current position before implementing any new strategies (Mind Tools, n.d). The SWOT analysis determines an organization's internal capacity, such as strengths and weaknesses, to deal with external opportunities and threats. The assessment's strength and weakness components reveal an organization's current situation, and opportunities and threats focus on its future state (McDonald et al., 2011). The SWOT analysis of the organization revealed various strengths, weaknesses, opportunities, and threats.

The existing fall committee and champions were a strength for this project, especially in terms of sustainability. Interdisciplinary team support and organizational support were other areas of strength. Inaccurate or false assessment scores and non-compliance were weaknesses. This project provided an excellent opportunity to reduce the number of falls and fall-related injuries. The increased workload for nurses and false assessment scores were threats. A summary of the analysis can be found in Appendix F.

Systems Change

This project brought positive system change in terms of improving the quality and safety of patient care. This project closed the gap between research and current practice and improved patient safety, which was later applied in everyday operations. The practice change improved the reimbursement of care by reducing the incidence of falls and fall-related injuries. Educating nursing staff on fall prevention measures enhanced their knowledge and skills regarding fall

prevention and helped them provide safe and effective care. This project positively affected patient safety reduced the length of hospital stays, and reduced health care expenses to patients and health care organizations.

Project Overview

The project's vision was to reduce the number of inpatient falls in acute care settings by using the Morse Fall Risk assessment tool and prevention strategy. The project's mission was to use a multidimensional fall prevention program to reduce the number of falls and improve nurses' knowledge and compliance. This project's vision and mission aligned with the organization's vision and mission to help people achieve and maintain health by providing compassionate care based on quality, safety, compassion, innovation, and faith.

Objectives

The short-term objectives were to use an evidence-based fall risk assessment tool to identify patients at risk for falls. Davies (2019) revealed that appropriate screening tools could predict those at high risk for falls and reduce fall incidence in acute care settings. A protocol was developed for the use of the tool. In acute-care settings, screening every day or even every shift was required. Re-screening was necessary when there is a change in status. After completing the fall risk screening, each patient received a multidimensional intervention to address each identified risk factor (ANA, 2020).

Another short-term goal was educating the nurses on how to use the tool effectively before implementing the project. Staff education improved nurses' knowledge and understanding of fall risk and injuries and reduced falls in acute care settings. According to Thierry (2018), educational training in hourly Rounding and Morse Fall Risk Score procedural tools was an essential step in improving fall outcomes.

Continued evaluation by the fall committee on the use of tools for accuracy and completeness was needed. Charge nurses were auditing the charts every shift to assess errors in assessment. An appropriate teaching method was used to re-train the staff. Upon successful implementation of this project, information was disseminated to the other units. Using a pilot unit to evaluate the efficiency of the program helped to identify potential barriers and risks and address them before using the protocol in the other units.

The long-term objectives were to reduce the rate of falls by $\leq 2.8\%$ during the period of the project. This brought positive outcomes to the organization and improved the quality and safety of patient care. The hospital costs were lowered by improving the reimbursement and reducing the cost of treating the injuries caused by falls. It decreased the substantial financial burden on the healthcare system.

Risks and Unintended Consequences of the Project

One risk of this project was inaccurate or false fall risk assessment leading to the wrong risk score. It was essential to teach the nurses and train them on how to use the assessment tool correctly. Since the prevention strategies depended on the assessment score, incorrect assessment scores led to nurses' poor judgment. Other risks were lack of compliance from nurses to adhere to the protocol and proper documentation. Proper education and having a fall champion overlook the assessment process and documentation eliminated this risk.

Chart audit of the patients admitted to the telemetry unit occurred to see if the fall risk assessment tool was used consistently and correctly and the documentation of fall prevention strategy every shift. If the assessment tool was not used correctly, the nurse was reeducated. If the nurses were not compliant with the assessment and documentation of prevention strategy, corrective actions were initiated by the fall champion.

Project Implementation Plan

Lewin's theory of change model was used for the implementation of this project. Because healthcare grew increasingly complex every day; it was essential to improve and sustain the best outcomes for high quality and safe patient care. The interprofessional collaboration provided a crucial component for achieving it. Lewin's change model consists of three steps: unfreezing or awareness creation of the problem, changing or creating the needed change, and refreezing, so the change becomes a habit (as cited in Connelly, 2020). Unfreezing involved making it possible for people to let go of something counterproductive. This was crucial to overcoming individual resistance.

The unfreezing phase started with recognizing the need for change and motivating for the change (as cited in Connelly, 2020). The organization identified an increased need for reducing the inpatient fall rate. Evidence-based guidelines created a changing environment for quality improvement and reducing healthcare costs. Regular meetings occurred with the fall committee, quality and safety committee, and ACNO to update the project's planning. An interdisciplinary team was developed, including front-line nurses, charge nurses, department leaders, fall champions, physicians, and informaticists.

Increased workload created staff resistance but educating the staff on using the fall risk assessment tool and fall prevention was essential to reducing the inpatient fall rates and fall-related injuries. Unfreezing made it possible for the team to let go of what was done in the past and create positive change motivation. It was essential to develop an awareness for the nurses to understand that a problem existed and unfreeze the current practice.

The change phase included the planning and implementing stage of the project (as cited in Connelly, 2020). It was essential to create timelines for implementation and staff education.

Developing a workflow made this process smooth. Strong support from leadership was vital for the success of this stage. Reduction of inpatient fall rate and improving the staff knowledge and compliance on fall prevention was the primary goal of this project. Education needed to be provided to the nurse on the importance of fall risk assessment, fall prevention strategies, and how to use the assessment tool. A summary of staff education PowerPoint can be found in Appendix N.

The nurses started using the Morse Fall Risk assessment tool and fall prevention protocol.

The protocol for fall prevention was as follows:

- The assessment was done once every shift, and whenever there was a change in status
- After completing the fall risk screening, each patient received a multidimensional intervention to address each identified risk factors
- The oncoming shift nurse checked with the off-going shift nurse at the patient's bedside to ensure that the fall precaution strategies for the fall risk patients were initiated and maintained throughout the shift.
- A score > 25 needed intervention
- A score between 25-45 was considered a moderate risk
- A score above 45 was considered high risk and required full intervention such as multidimensional prevention strategies, safe environment, bed alarm on, lights on, a urinal within reach, and frequent purposeful rounding
- Two staff members ensured the safe environment once every shift

The final stage for stabilization and evaluation (as cited in Connelly, 2020) occurred when establishing a new habit, and this new habit became the new standard of practice.

Leadership support was the key to success at this stage. The new routine became a culture of

practice to assess the patients every shift and, as needed, to ensure fall prevention strategies were implemented. Through continuous support, education, and a reward system, the organization sustained the practice change. An evaluation was done at this stage to ensure goals were achieved in reducing the number of falls in acute care settings, and the change became permanent.

Evaluation of the challenges encountered was done during this stage for future reference. Challenges encountered were also evaluated for future reference. Data were analyzed, and the result and the dissemination plan were finalized and presented to the leaders and staff. The nurses recognized that the screening tool was part of the daily assessment that was expected from them.

Barriers and Facilitators

Identified the barriers and facilitators that impacted the implementation and created strategies to overcome the obstacles. Some of the barriers were resistance to change, lack of motivation to use the guidelines, lack of compliance in the documentation, and the belief that the policies are not relevant to their settings. An increased workload created a barrier because nurses must complete additional assessments and preventive measures based on the assessment every shift. Facilitators included leadership support, interprofessional collaboration among healthcare providers, willingness to change, and adequate training. Having a fall committee and fall champion in each unit provided added facilitators who supported and troubleshoot for the nurses.

Project Timeline

The first step of the project was completing an organizational assessment and a literature review. The total time for the project implementation was eight weeks. EPRC approvals were obtained from The University of St Augustine for Health Sciences and the organization. After

the appropriate approvals, data were collected on inpatient fall rate pre-implementation.

Education and training of staff on the proper use of the fall risk assessment tool and protocol began. Collection of pre-implementation data and staff education on how to use the assessment tool and protocol was done in 4 weeks. Once training was completed, the assessment tool and protocol were used by nurses, and data were collected for 6 weeks post-implementation (see Appendix G for a detailed timeline for the project).

Resources and Budget

The project's resources included the DNP student, informaticists, fall champions, clinical educators, unit managers, and front-line nurses. Minimal cost occurred because RN's were trained during their work hours. They were assessed using the AHRQ fall knowledge test tool as the pre-test/post-test (see Appendix H) during the educational secession to evaluate the nurses' general knowledge on fall prevention (AHRQ, 2013). The data analyst and informaticist performed their duties as part of their role in the organization. Other teams involved in the project performed their duties as part of their role in the organization, and no separate budget was involved. A detailed budget is shown in Appendix B.

Role of DNP Project Manager

As a project manager, the DNP student was responsible for the successful planning, initiation, coordination of the team members, and the project's supervision. A strong leader was essential to achieving the goals and for the success of the project. The project manager set timelines, scheduled meetings, and delegated the tasks. As a leader, the project manager motivated the team and helped problem-solve. Effective interprofessional communication and support from the management were essential for the success of this project.

Results

The evaluation was an integral component of the EBP project to monitor the project's impact and identify and deal with any issues arising in the project. It is a systematic application to assess the approach, design, implementation, and utility of interventions (CDC, 2013). The primary outcome measure of this study was the reduction of the rate of inpatient falls using a multidimensional fall prevention strategy. The participants of this EBP project included adult acute care patients admitted to the telemetry unit during the 6 weeks of the EBP project. Patients were assessed for their fall risk level using the Morse Fall Scale (MFS), and patients who scored >35 received the fall prevention interventions. The staff participants included the nurses primarily assigned to the telemetry unit.

Training and education were provided to nurses from the telemetry units. Educational training included a review of the MFS criteria, the use of the Fall prevention protocol, and fall prevention documentation. The EBP change project was implemented from May 10th through June 19th, 2021, in three telemetry units (5B, 5C, and 5D) at an acute care hospital in South Texas. All data were collected after EPRC approval from the University of Saint Augustine and approval from the facility's IRB committee. The data collected for this project included pre-intervention and post-intervention data.

The pre-intervention data included the number of patients who suffered a fall while admitted to the hospital. Data collected from the hospital's fall reporting system was used to calculate the rate of inpatient falls before the implementation of the EBP project. Post-intervention data included the number of patients who suffered a fall after implementing the project. All data were collected from the electronic fall reporting system.

Staff knowledge assessment occurred using the AHRQ Pre-Fall and Post-Fall Knowledge Test. The project manager obtained permission from AHRQ to use this tool (see Appendix I). Data were collected using a numbering system to provide participant anonymity for both the pre-test and post-test. Therefore, no identifying information or names were collected while assigning participant numbers. A post-test was performed, and an analysis of the scores was completed to determine the education session's effectiveness, following the education session and one month after implementation (see Appendix C for the scores). Chart audits were conducted to identify if staff completed the Fall Risk Assessment using the Morse Fall Score and utilized the appropriate protocol. In addition, fall prevention documentation was used to determine if the protocols were followed correctly (see Appendix D).

Data Analysis

An Intellectus software was used to compare pre-intervention and post-intervention data. A two proportions z -test was conducted to determine if a significant difference existed between the proportions of falls from February-April and May-June. The assumption of normality was assessed using the Central Limit Theorem (CLT).

The result of the two proportions z -test was significant based on an alpha value of 0.05, $z = -2.57$, $p = .010$, 95% CI = [-0.00096, -0.00208], indicated that the result did not support the intervention. The proportion of falls in February-April was significantly lower than the proportion of falls from May-June. The 95% confidence interval for the difference between the proportions of falls occurring in February-April and in May-June was -0.00096 to -0.00208. Table 1 presents the results of the two sample proportions z -test.

Table 1

Two Proportions z-Test for the difference between fall Feb-April and fall May-June

Samples	Responses	<i>n</i>	Proportion	<i>SD</i>	<i>SE</i>
Fall Feb-April	20	20634	0.00096	0.03	0.00
Fall May-June	30	14420	0.00208	0.05	0.00

Note. $z = -2.57$, $p = .010$, 95% CI: [-0.00, -0.00]

A separate analysis was conducted for the telemetry unit's fall data. A two proportions z -test was conducted to determine whether or not a significant difference resulted between the proportions of falls February-April and May -June in the telemetry unit. The result of the two proportions z -test was not significant based on an alpha value of 0.05, $z = -1.55$, $p = .122$, 95% CI = [-0.0012, 0.0026], indicating that the results did not support intervention. This showed no significant difference occurred between the proportions of the falls from the February-April telemetry unit and the May-June telemetry unit. This EBP change project was clinically significant because of its impact on clinical practice. The 95% confidence interval for the difference between the proportion of falls in the February-April telemetry unit and May-June telemetry unit was 0.0012 to 0.0026. Table 2 presents the results of the two sample proportions z -test.

Table 2

Two Proportions z-Test for the Difference between Feb-April telemetry and May-June telemetry

Samples	Responses	<i>n</i>	Proportion	<i>SD</i>	<i>SE</i>
Feb-April Telemetry unit	7	5923	0.0012	0.03	0.00
May-June telemetry unit	11	4193	0.0026	0.05	0.00

Note. $z = -1.55$, $p = .122$, 95% CI: [-0.00, 0.00]

A two-tailed paired samples t -test was conducted to examine whether the mean difference of knowledge pre-test and knowledge post-test was significantly different from zero. The result of the two-tailed paired samples t -test was significant based on an alpha value of 0.05, $t(29) = -3.55$, $p = .001$, and indicated that the results supported the intervention. This finding suggested the difference in the mean of knowledge pre-test and the mean of knowledge post-test was

significantly different from zero. Therefore, the mean of the knowledge pre-test was considerably lower than the mean of the knowledge post-test. Table 3 presents the results of the two-tailed paired samples *t*-test. (see Appendix K for a bar plot of the means in Figure 1 and Figure 2).

Table 3

Two-Tailed Paired Samples t-Test for the Difference Between Knowledge Pre-Test and Knowledge Post-Test

Knowledge Pre-Test		Knowledge Post-Test		<i>t</i>	<i>p</i>	<i>d</i>
<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>			
3.13	0.76	3.55	0.36	-3.55	.001	0.65

Note. N = 30. Degrees of Freedom for the *t*-statistic = 29. *d* represents Cohen's *d*.

Outcome measures included the patient fall rate in the acute care setting before and after implementing the project. Additionally, staff knowledge was assessed using pre-education and post-education scores. During the 6 weeks, only 5 of 2,000 patients experienced a fall in the telemetry unit. A paired proportion z-test results supported the intervention by improving the clinical practice. Improved staff knowledge was calculated using a paired sample t-test, and the results supported the intervention with improved staff knowledge.

Process measures included assessing every patient by the nurse using the assessment tool and score documentation. If the patient's score was >35, the fall prevention protocol was initiated. The percentage of staff using the tool was calculated by chart audit and fall prevention documentation.

Balance measures included calculating the average length of hospital stay for hospital-acquired falls. This was determined by subtracting the actual number of days a patient with a hospital-acquired fall stayed in the hospital from the average length of stay for any patient. The

goal was to reach ≤ 4.8 days, and during the implementation period, only two patients sustained an injury that required one additional day in the hospital in the telemetry unit.

Financial measures included the cost of training each RN and the cost associated with hospital-acquired falls. The RN's received 30 minutes of training during their work hours, and chart auditing occurred during work hours. Only two patients sustained an injury, and none transferred to a higher level of care following the falls.

Sustainability measures included monitoring the use of tools each shift and observing the nurses for protocol compliance. Adherence and non-adherence to protocol usage will be monitored by charge nurses and reported to the fall committee chair for re-training and corrective action as needed. The fall committee chair will be responsible for educating and training all new hires and evaluating the continuous use of the screening tool and prevention protocol initiation monthly.

Impact

The practice problem was that despite the organization exercising a good fall prevention strategy, falls were not prevented. The practice change was to introduce a multimodal fall prevention strategy over 6 weeks. This study's results were not statistically significant. Despite implementing a multimodal fall prevention strategy, the fall rate did not decrease compared to the previous months. This EBP change project was clinically significant because of its impact on clinical practice. The outcomes led to a better understanding of the possible fall prevention strategy and staff compliance.

The fall rate was calculated as the number of falls divided by the number of occupied bed days for the month multiplied by 1,000. This calculation returned the rate of falls per 1,000 occupied bed days. This calculation used a validated formula established by the National

Database of Nursing Quality Indicators (NDNQI), as presented by AHRQ (AHRQ, 2013). The data collection tool used was one developed for fall prevention documentation. The project's limitations included reduced census during the pandemic, lack of staff participation, staff floating to other units, and isolation situations for COVID-19 patients. To assess the effect of the overall fall rate, the project needed to be extended to evaluate the entire 3-month period and use other units in the organization for comparison. Once re-evaluated, this change in practice can be extended to other inpatient acute care units.

It would also be beneficial to conduct the project in other departments and assess the outcomes. There should be an ongoing evaluation of the protocol to maintain sustainability. Leaders of the units must review EHR to ensure that the nurses are documenting the assessment on the patients.

Dissemination Plan

Once the implementation was completed and results were evaluated, the next step involved sharing the results with the organization's other units. The results were presented to the fall committee first and then shared with stakeholders, including the front-line nurses, in a PowerPoint presentation. After making the nurses aware of the importance of fall risk assessment and fall prevention protocol, the results discussing the rate of inpatient falls pre-implementation and post-implementation of fall prevention protocol were shared using the intranet.

Once this project thrived in the pilot units, it was disseminated to the other units, the organization's regional level, and more medical centers involving all in the implementation of this protocol. The presentation was also posted on the organization's website for peer review and specific recommendations to the project at the peer level.

Archiving the change project at the University of St. Augustine for Health Sciences Scholarship and Open Access Repository (SOAR@USA) allowed students and faculty to access and share the results with the professional community. San Antonio Indian Nurses Association (SAINA) Newsletter, published quarterly and includes articles that educate, entertain, and enhance nursing practice, research, and leadership, was selected for publishing. This Newsletter had a peer-review process for submission. The National Association of Indian Nurses of America (NAINA) Newsletter, a peer-reviewed Newsletter published every 4 months, was selected for publishing at the national level.

Conclusion

The primary goal of this project was to implement a multidimensional fall prevention program to reduce the number of inpatients falls. Studies showed that inpatient falls could lead to injury, increased length of hospital stay, increased healthcare cost, loss of independence, and death (Williams et al., 2014). Since multiple factors caused inpatient falls, fall prevention should focus on addressing those factors.

This paper discussed the significance of the problem, the PICOT question, the framework for the evidence-based practice change, change theory, evidence search strategy, evidence search result, and evaluation plan. It also discussed the themes from the evidence, practice recommendations, and the project setting. It also gave an overview of the plan and project evaluation plan with dissemination plans and a conclusion.

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Appendix A

Table A. 1

Evidence Table

Citation	Design, Level Quality Grade	Sample Sample size	Intervention Comparison	Theoretic al Foundati on	Outcome Definition	Usefulness Results Key Findings
<p>Blaizes, C. D. (2020). <i>Improving fall prevention with patient education in the acute care setting</i>. ProQuest Dissertations & Theses Global. https://search.proquest.com/docview/1878083177?accountid=158603</p>	<p>A quasi-experimental, quantitative design. Level II Grade B</p>	<p>This project’s sample population included a purposive sampling of patients (N = 332) on a medical-surgical unit within an acute care facility in the United States’ southeastern region.</p>	<p>Implementati on of a fall prevention program, which incorporates intentional fall prevention patient education (e.g., the Morse fall screening tool, hourly rounding tool, and environmental rounding tool), reduces the number of falls within the EHR. Comparison is no patient education and fall</p>	<p>Pender’s health promotion model.</p>	<p>The eradication of falls was not succeeded; the falls with injury may have been prevented by increasing awareness for patients and nurses.</p>	<p>There was a decrease in falls within the 30-day time frame, but the data was not statistically significant. Engaging patients and caregivers in the conversation about fall prevention strategies unique to the patient can improve fall awareness and decrease falls.</p>

			<p>prevention program. The validity and sustainability will be monitored by ongoing education and observation. The reliability was determined by comparison of data.</p>			
<p>Boye-Doe, S. (2017). <i>Improving fall prevention strategies in an acute-care setting</i>. ProQuest Dissertations & Theses Global. https://search.proquest.com/docview/1878083177?accountid=158603</p>	<p>Pre- and post-intervention design. Level II Grade C</p>	<p>RNs on 8NW were required to participate in the Safe Five program as part of the unit's and organization's fall prevention and patient safety program. Program evaluation included data from older adults (ages 65 years and older) admitted to</p>	<p>The impact of incorporating Safe Five into the current fall prevention protocol to increase staff compliance and reduce falls among older adults in the acute care setting. Safe Five Checklist: A simple method to ensure patients' safety and assess risk for falls.</p>	<p>The IOWA EBP model</p>	<p>The Safe Five program interventions resulted in a significant decrease in inpatient falls rate one-month post-implementation. Some adverse outcomes such as inpatient fall occurred due to patients overestimating their functional abilities, forgetting their limitations, or</p>	<p>The Safe Five falls prevention program had increased patients' awareness of their falls risk status, falls prevention measures, and the fall prevention program implemented.</p>

		8NW at University of Cincinnati Medical Center (UCMC)			declining to adhere to the implemented falls prevention strategies.	
Thierry, L. (2019). <i>Does Implementing a Quality Improvement Practice Decrease Falls on the Medical Wards?</i> ProQuest Dissertations & Theses Global. https://search.proquest.com/docview/2198787056?accountid=158603 .	A quantitative correlational design. Level 1 grade B	A sample of veteran patients 18-90 at risk for falls on two medical Ward in the Medical Center n=56, and 28-nurses on two separate medical wards.	A fall prevention project introduces a procedural tool such as the Morse Fall Score concentrates on fall-risk measures implemented with hourly rounding to decrease falls in the acute care setting (I). Hourly Rounding or Morse Fall Score tool alone affects the number of falls in the acute care setting (C). Morse Fall Score. The Morse Fall Score, another assessment tool located on the	The Neuman model theory	A decreased number of falls on the intervention unit at the large metropolitan hospital. The number of falls determined by pre, post, and archival fall data changes compared between two medical departments.	Educational training in Hourly Rounding and Morse Fall Risk Score procedural tools is an essential step in improving fall outcomes. There is a statistically significant reduction in fall rates in the intervention ward. A fall education training program supported safety through a reduction of falls. The hourly rounding and use of Morse Fall Score focused on patients at risk for falls reduced the number of falls in the

		<p>SharePoint computer drive and template provided in the nursing assessment, such as computerized nursing notes, assesses each patient on admission to the medical wards. The quantitative literature validity measures correlations of numbers through standard deviation and the Fall Prevention Toolkit and the Morse Fall Score to reveal the number of falls on two-sub medical wards. The quantitative project reliability process investigates the correlational</p>			<p>acute care setting.</p>
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			design of factors associated with falls in the medical ward.			
Ramasamy, K. (2019). <i>Educational training on falls intervention for elderly patients in acute care settings</i> . ProQuest Dissertations & Theses Global. https://search.proquest.com/docview/2244709920?accountid=158603 .	Pre- and post-intervention design. Level II Grade B	The participants for this project were 29 registered nurses in the cardiac unit. n=29	The intervention was an educational program on evidence-based fall prevention strategies using the American Medical Directors Association's clinical guidelines to improve staff nurses' ability to assess fall risk and apply intervention strategies for elderly patients in an acute care setting. The comparison was standard practice.	Lewin's change theory	Pre and educational test conducted shows a statistically significant increase in staff knowledge on the use of the fall assessment tool.	An educational program on evidence-based fall prevention strategies using the American Medical Directors Association clinical guidelines improved staff members' knowledge in recognizing, assessing, and managing falls. As a result of this staff education project, nurses gained improved knowledge in identifying the factors associated with falls. This project has resulted in positive social change for the patients, staff,

<p>McCracken, W. J. (2019). <i>Nurse and assistive personnel educational program for fall prevention and appropriate intervention</i>. ProQuest Dissertations & Theses Global. https://search.proquest.com/docview/2231085470?accountid=158603</p>	<p>Pre- and post-intervention design. Level II Grade B</p>	<p>The population is nurses and assistive personnel of 4 North West at Advocate Trinity Hospital.</p>	<p>Intervention is the fall prevention education to enhance current annual education sessions to evaluate the fall rate change. A comparison will be made before and after the educational period.</p>	<p>The Orlando Interactive Nursing Process theory</p>	<p>The number of inpatient falls after fall education intervention decreased.</p>	<p>and organization. Evaluating the current fall prevention strategies and educating the staff on using the process are essential steps in reducing the inpatient fall rate. In addition to seeing a positive change in the number of falls, this program may have reduced the number of injuries due to falls. This project increased employee morale.</p>
<p>Belcher, J. (2020). <i>Quality initiative to reduce falls in an acute care setting</i>. ProQuest Dissertations & Theses Global. https://search.proquest.com/docview/1878083177?accountid=158603</p>	<p>Pre- and post-intervention design. Level IV Grade B</p>	<p>It started the project with 21 nurses and finished with 18 nurses who participated in the pre- and post-test educational secession from an acute care</p>	<p>The implementation was staff education and reinforcement of the new fall prevention during the staff meeting, daily unit shift huddles, staff e-mail,</p>	<p>Neuman's systems theory</p>	<p>educating nursing staff on fall prevention measures will enhance their knowledge and skills regarding fall prevention.</p>	<p>Educating nursing staff on fall prevention policies decreases falls in the acute care setting and keeps the patient safe. An interdisciplinary team may enhance staff</p>

		<p>hospital in a major southeastern city.</p>	<p>and unit shared governance meeting. This project utilized evidence-based initiatives to educate nurses about falls and the related effects as a means for quality improvement in patient outcomes</p>			<p>learning and improve clinical outcomes.</p>
<p>Ward, K. D. (2015). <i>Interdisciplinary assessment and intervention tools for fall prevention in decreasing fall rates</i>. ProQuest Dissertations & Theses Global. https://search.proquest.com/docview/1698487659?accountid=158603.</p>	<p>Literature review. Level V Grade A</p>	<p>CHIS questioned more than randomly dialed 42,000 adults' participants through telephone calls across the whole of California.</p>	<p>analyze the relationship between falling to the ground more than once in 12 months and the elderly within the context of factors contributing to fall risk within an acute care setting</p>	<p>Lippitt et al.'s change theory</p>	<p>The risk for falls could be considered inherent within an acute care setting; the goal for fall prevention strategies could be to eliminate this risk. The elimination of this risk is likely impossible, though proactive and informed prevention strategies are likely to</p>	<p>Study advocates for a multidisciplinary approach to fall prevention. It shows that considering multiple factors and specifically addressing them in fall prevention strategy planning can minimize the risk of falls in an acute care setting.</p>

					reduce this risk to a manageable level.	
Campbell, B. (2016). <i>Fall Safety Bundle</i> . ProQuest Dissertations & Theses Global. https://search.proquest.com/docview/1878083177?accountid=158603 .	Pre- and post-implementation design. Level II grade B	The population was a nursing staff which includes LPNs, RNs, and nurse techs from an acute care hospital	The intervention was to develop an evidence-based fall safety bundle for use by nursing staff and an education curriculum to increase staff awareness and knowledge for the prevention of falls and fall-related injuries	The modeling and role modeling (MRM) theory	The project created a standard work bundle that includes seven pieces of everyday work that will help with the prevention of falls and influence the overall improvement of staff and patient awareness of falls.	Evidence-based fall safety bundles and staff education could reduce the number of falls and improve staff knowledge and understanding. The educational intervention will improve staff knowledge and adherence to the bundle.
Davies, S. L. (2019). <i>Using the Theory of Planned Behavior to Implement a Multimodal Fall Reduction Plan</i> . S. ProQuest Dissertations & Theses Global. https://search.proquest.com/docview/2240015556?accountid=158603 .	Quantitative, correlational design. Level II grade B	A convenience sample of medical record data from 50 patients who fell over the last two years on the SPCU and 50 who did not, had their charts reviewed at a central	The intervention is implementing a fall prevention bundle -the Johns Hopkins fall risk assessment tool (JHFRAT). The comparison is the Morse Fall Scale	The IOWA model of evidence-based practice	The JHFRAT is more accurate at predicting falls than the currently used MFS tool and offers higher sensitivity for the patient population	Appropriate screening tools could predict those at high risk for falls and reduce fall incidence in acute care settings. Patients will benefit from a permanent implementation of this fall prevention practice. The

		Florida hospital	The validity of the results from this project's retrospective chart audits on the nurses' documentation accuracy. Reliability in a study refers to the degree to which an assessment tool offers consistent results.			nursing staff and others in the healthcare field would benefit from reading this project.
Mendoza, D. O. (2018). <i>The Significance of Falls in Older Adults in the Acute Care Setting: An Assessment of Fall Prevention Strategies in a Regional Medical Center in Southwestern Arizona</i> . ProQuest Dissertations & Theses Global.	Quantitative, correlational design. Level II grade B	A sample of medical record data of 237 patients above the age of 65, from a regional medical center	Implementation of an enhanced multimodal fall prevention strategy compared to the standard fall prevention assessment and strategy. This evaluates the falls patterns exhibited by the different genders (Independent variables) when it comes to hospital falls,	Roy's adaptation model	The project is significant in raising the awareness by ensuring that nurses are well trained and that they are compliant with the effective preventive measures that need to be adopted while handling older patients in the hospital environment. Raising awareness among the nursing staff is critical	Multiple interventions should be combined within the hospital environment to mitigate the rates of falls among elderly patients, as they work differently in reducing fall rates. There is significant relationship between the number of fall accidents and the prevention measures used in the hospital environment.

			to identify key contributing factors to falls among older patients and to suggest effective interventions that would assist in the mitigation of falls for these older patients in the hospital environment.		because they are directly involved with patients and deal with these patients on a daily basis compared to any other care giver.	
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Table A .2

Summary of Systematic Reviews (SR)

Citation	Quality Grade	Question	Search Strategy	Inclusion/ Exclusion Criteria	Data Extraction and Analysis	Key Findings	Usefulness/Recommendation/ Implications
<p>Hudson, S. A. (2020). <i>Systematic Literature Review on Fall Prevention in an Acute Care Hospital Setting</i>. ProQuest Dissertations & Theses Global. https://search.proquest.com/docview/2331977241?accountid=158603.</p>	<p>Level III grade B</p>	<p>What are the evidence-based fall prevention interventions that have resulted in a decreased fall rate among patients on medical floors in acute inpatient hospital settings?</p>	<p>A systematic literature review</p>	<p>The inclusion criteria were -studies that focused on risks factors associated with falling and clearly listed these risk factors in the article. - studies that identified fall prevention strategies on medical surgical units in an acute care hospital setting, which were implemented and resulted in a decreased number of falls. Exclusion criteria: studies that have not clearly discussed the interventions or have not implemented the interventions in practice, studies that were not on medical-surgical units, studies that were duplicated, and articles that were not evidence-based.</p>	<p>Data analyzed using descriptive analysis and included data presented in selected studies on fall rates, rates of falls with and without injury, and factors contributing to falls.</p>	<p>Several research studies suggested that identification of fall risk factors and implementation of multifactorial interventions to prevent fall have contributed to reduced fall rates on medical-surgical units in acute care hospital. Educating staff on fall prevention, bed-chair alarms, and the use of a fall risk assessment scale were the most frequently cited interventions. The Morse fall risk assessment scale was the most frequently mentioned risk assessment scale. Interventions included implementing a fall safety team, team collaboration that included patients and families in the prevention of falls, and interdisciplinary collaboration.</p>	<p>The study concluded that with improved identification of risk factors and implementation of evidence-based fall prevention interventions, patients admitted to acute care hospitals on medical-surgical units can experience better outcomes when it comes to falls. Working together as a team and having leadership support can enhance implementation of appropriate fall prevention protocols. This review recommended the need for educating staff on fall risk assessments and prevention interventions and the use of fall risk assessment tools to identify patients at risk for falls.</p>

Appendix B

Budget

Expenses		Revenue	Result
Direct		The average additional cost for the hospital caring for hospital-acquired falls	On average, \$6,694/falls
Salary and benefits Education of RN's x1 hour x70 RN's x \$ 36		Estimated number of falls per year	118
Total Expenses	\$2,520	Total Revenue \$789,892	
Net Balance			\$787,372

Appendix C

Fall Prevention Staff Knowledge Test Results

Participants Number	Pre-test score	Post-test score	Difference
1	52	52	0
2	51	52	1
3	51	51	0
4	51	51	0
5	50	51	1
6	27	44	17
7	32	41	9
8	27	46	19
9	29	29	20
10	28	44	16
11	20	46	26
12	21	49	28
13	29	37	8
14	43	48	5
15	45	46	1
16	49	52	3
17	48	50	2
18	45	43	-2
19	47	48	1

20	44	48	4
21	48	36	-12
22	32	38	6
23	35	42	7
24	45	49	4
25	48	48	0
26	47	50	3
27	39	36	7
28	47	48	1
29	45	46	1
30	47	48	2

Appendix D

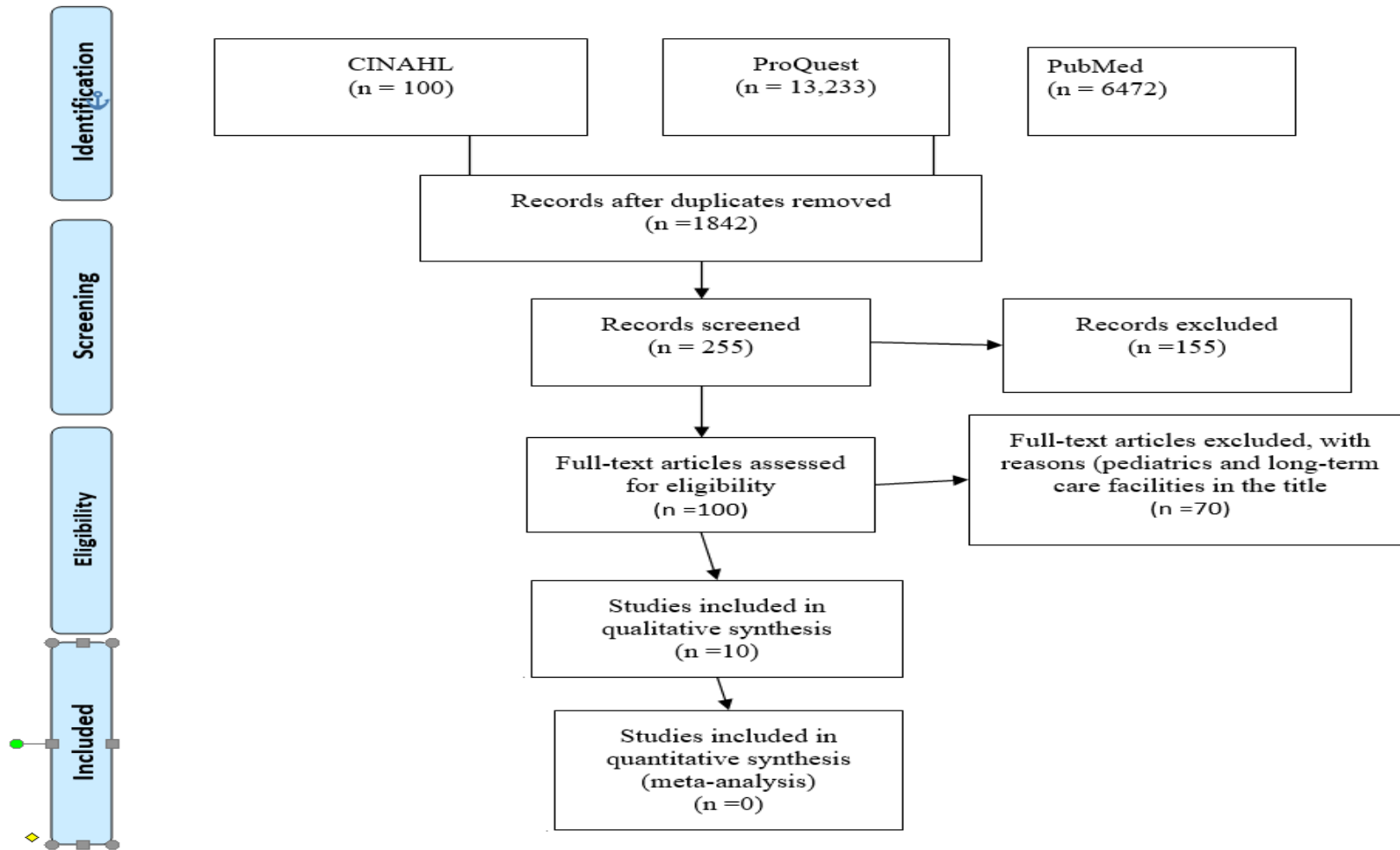
Data Evaluation Form/Fall Prevention Documentation

Patient MRN #	Facility Floor Diagnosis Time
Fall risk assessment	Yes No
Fall Risk Assessment Score	
History of falls	Yes No

<p>Multimodal Fall Prevention Protocol initiated</p> <ul style="list-style-type: none"> <input type="radio"/> Lights on (night lights) <input type="radio"/> Bed alarm on <input type="radio"/> Urinal within reach <input type="radio"/> Fall signs on the door <input type="radio"/> Non -skid socks on <input type="radio"/> Hourly rounding done 	<p>Yes</p> <p>No</p> <ul style="list-style-type: none"> <input type="radio"/> Safe Environment <input type="radio"/> Fall risk armband on <input type="radio"/> Patient education done <input type="radio"/> Family educated <input type="radio"/> Patient belongings within reach <input type="radio"/> The bed is in the lowest position <input type="radio"/> The oncoming shift nurse checked with the off-going shift nurse at the patient's bedside
<p>Signature of Nurse initiating the protocol (Outgoing Nurse)</p>	<p>Signature of Nurse verifying the protocol (Oncoming Nurse)</p>

Appendix E

PRISMA Reduction of Inpatient Fall Rate



Moher D, Liberate A, Tetzlaff J, Altman DG, The PRISMA Group (2009). Preferred Reporting Items for Systematic Reviews and Meta-Analyses: The PRISMA Statement. *PLoS Med* 6(7): e1000097. doi:10.1371/journal.pmed1000097.

Appendix F

SWOT Analysis

<p>Strengths</p> <ul style="list-style-type: none"> • Existing dedicated fall committee • Cerner EHR for data extraction • Electronic assessment tool for easy viewing • Interdisciplinary team approach • Availability of an existing fall assessment tool • Existing fall prevention strategy • Support from the organization 	<p>Weaknesses</p> <ul style="list-style-type: none"> • Resistance by staff • False screening and an inaccurate screening score • Wrong interpretation of assessment score by staff
<p>Opportunities</p> <ul style="list-style-type: none"> • Improving the quality and safety of patient care • Education of staff on fall risk assessment and fall prevention • Reduction of hospital cost 	<p>Threats</p> <ul style="list-style-type: none"> • Increased workload for staff • Increased risk for falls and fall related injuries due to inaccurate risk assessment

Appendix H

Fall Knowledge Test

Each question may have more than one option as the correct answer.

Please circle the letters that correspond to the correct answers.

1. Which of the following statements is *correct*?
 - a. Falls have multifactorial etiology, so fall prevention programs should comprise multifaceted interventions.
 - b. Regular review of medication can help to prevent patient falls.
 - c. The risk of falling will be lessened when a patient's toileting needs are met.
 - d. The use of antipsychotic medications is associated with an increased risk of falls in older adults.

2. A multifaceted intervention program should include:
 - a. Individually-tailored fall prevention strategies
 - b. Education to patient/family and health care workers
 - c. Environmental safety
 - d. Safe patient handling

3. Risk factors for falls in the acute hospital include all of the following *except*:
 - a. Dizziness/vertigo
 - b. Previous fall history
 - c. Antibiotic usage
 - d. Impaired mobility from stroke disease

4. Which of the following statements is *true*?
 - a. The cause of a fall is often an interaction between patient's risk, the environment, and patient risk behavior.
 - b. Increase in hazardous environments increases the risk of falls.
 - c. The use of a patient identifier (e.g., identification bracelet) helps to highlight to staff those patients at risk for falls.
 - d. A fall risk assessment should include review of history of falls, mobility problems, medications, mental status, continence, and other patient risks.

5. Patients with impaired mobility should be:
 - a. Confined to bed
 - b. Encouraged to mobilize with assistance
 - c. Assisted with transfers

- d. Referred for exercise program or prescription of walking aids as appropriate
6. The management of the acutely confused patient should include all of the following *except*:
- a. Moving patients away from the nursing station
 - b. Involving family members to sit with the patient
 - c. Orienting patients to the hospital environment
 - d. Reinforcing activity limits to patients and their families
7. Which of the following statements is *false*?
- a. Fall prevention efforts are solely the nurses' responsibility.
 - b. A patient who is taking four or more oral medications is at risk for falling.
 - c. A patient who is taking psychotropic medication is at higher risk for falling.
 - d. Testing or treatment for osteoporosis should be considered in patients who are at high risk for falls and fractures.
8. In hospital settings, intervention programs should include:
- a. Staff education on fall precautions
 - b. Provision and maintenance of mobility aids
 - c. Post fall analysis and problem-solving strategy
 - d. Bed alarms for all patients, regardless of risk
9. When assessing patients, which of the following statements is *false*?
- a. All patients should be assessed for fall risk factors at admission, at a change in status, after a fall, and at regular intervals.
 - b. Medication review should be included in the assessment.
 - c. All patients should have their activities of daily living and mobility assessed.
 - d. Environmental assessment is not important in the hospital as it is all standardized.
10. Risk factors for falls include:
- a. Parkinson's disease
 - b. Incontinence
 - c. Previous history of falls
 - d. Delirium
11. Exercise programs for ambulatory older adults should:
- a. Be very aggressive
 - b. Be unsupervised
 - c. Be ongoing
 - d. Include individualized strength and balance training
12. Which of the following statements on education in fall prevention is *false*?

- a. Education programs should target primarily health care providers, patients, and caregivers.
- b. Education programs for staff should include the importance of fall prevention, risk factors for falls, strategies to reduce falls, and transfer techniques.
- c. Instruction on safe mobility, with emphasis on high-risk patients, should be provided to both patients and families.
- d. Education should only be given at the start of the fall prevention program.

13. Which of the following is recommended to improve patient safety?

- a. Locking wheeled furniture when it is stationary.
- b. Having nonslip flooring.
- c. Placing frequently used items (including call bell, telephone, and remote control) within reach of the patient
- d. Rounding hourly to address patient needs

Answer Key:

1. A, B, C, D
2. A, B, C, D
3. C
4. A, B, C, D
5. B, C, D
6. A
7. A
8. A, B, C
9. D
10. A, B, C, D
11. C, D
12. D
13. A, B, C, D

Appendix I

Permission Letter



DEPARTMENT OF HEALTH AND HUMAN SERVICES

Agency for Healthcare
Research and Quality5000 Fishers Lane
Rockville, MD 20857
www.ahrq.gov

February 18, 2021

Manjusha T Maprel
DNP student
Univ. of St. Augustine for Health Sciences
St. Augustine, FL

Dear Mr. Maprel:

I am responding to your permission request on behalf of Ms. Randie Siegel, Deputy Director, Office of Communications at the United States Agency for Healthcare Research and Quality (AHRQ). Because your program wanted a signed permission from AHRQ, I am doing so on the Agency's letterhead.

This letter grants you permission to use "Tool 2E—The Fall Prevention Knowledge Test" from AHRQ's *Preventing Falls in Hospitals: A Toolkit for Improving Quality of Care* as part of your project for the DNP degree from University of St. Augustine for the Health Sciences (St. Augustine, FL).

This permission allows you to print multiple copies of Tool 2E, as needed. A copy of this tool can be included in your project paper in an Appendix. Please give appropriate source/reference citation to the Toolkit:

"Tool 2E—Fall Knowledge Test." *Preventing falls in hospitals: a toolkit for improving quality of care*. [Section 7. Tools & Resources]. (AHRQ Publication No. 13-0015-EF). Rockville, MD: Agency for Healthcare Research and Quality; January 2013. <https://www.ahrq.gov/patient-safety/settings/hospital/fall-prevention/toolkit/fall-knowledge-test.html>

Appendix J

Figure 1

The means of Knowledge Pre-Test and Knowledge Post-Test

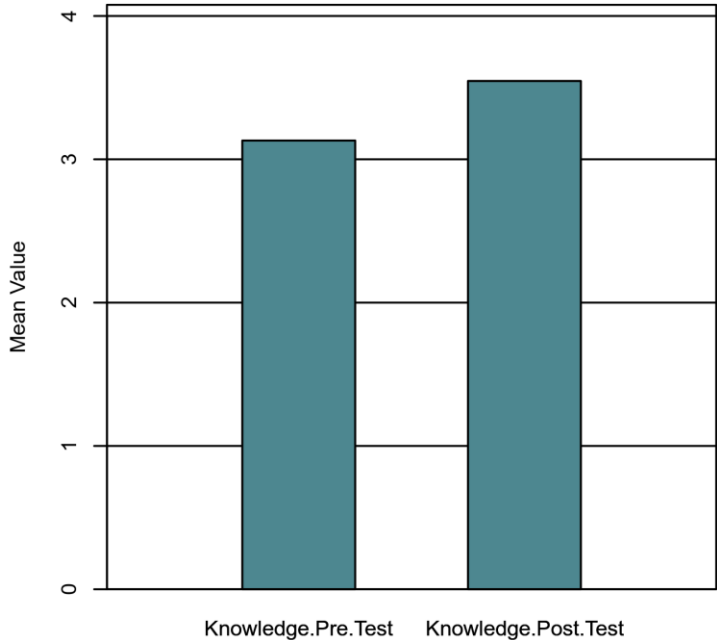
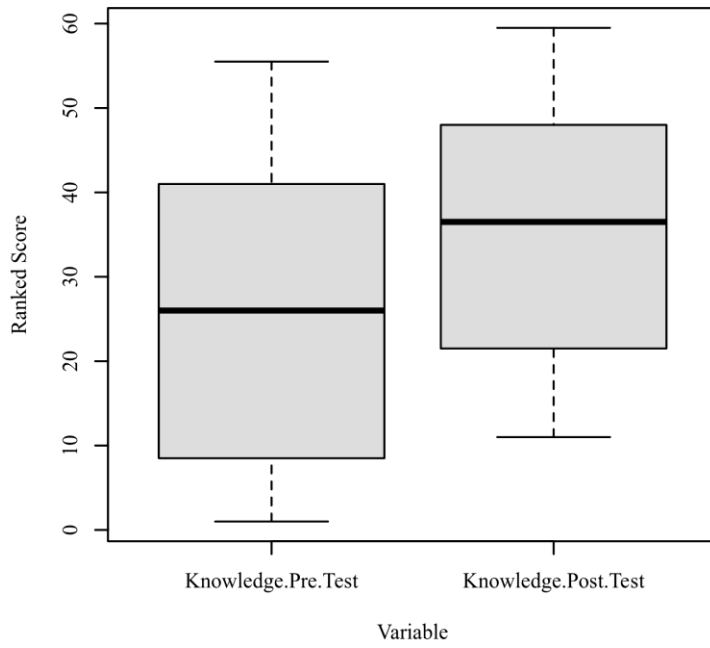


Figure 2

Ranked values of Knowledge Pre-Test and Knowledge-Post-Test



Appendix K

Measures to Reduce the Inpatient Fall Rate

Measure	Benchmark	Goal	Statistical Test	Data Type
Outcome measure: Rate of inpatient falls	4.06 % (The current fall rate for the organization)	≤ 2.18 %	χ^2	Continuous Data
Outcome measure: Initiation of fall prevention protocol	100 %	≥ 95 %	χ^2	Continuous Data
Outcome measure: Increased staff knowledge on fall prevention	100%	≥ 95 %	T-test	Correlational Data
Process Measure Percent of staff completing the risk assessment Q-shift	100%	≥ 95 %	χ^2	Continuous Data
Process Measure Percent of staff needed to be re-trained	20%	≤ 20 %	χ^2	Continuous Data

Balance Measure Length of hospital stay	An estimated average total length of stay, per fall injury, to be 14.5 days	≤ 4.8 days	x^2	Continuous Data
Financial Measure Cost of staff training	\$2,520 (cost of training 70 RN's at the cost of \$ 36/hour for 1 hour		x^2	Continuous Data
Financial Measure Cost of treating hospital acquired falls	\$6,694/falls (current hospital expense is \$789,892/118 falls	$\leq \$6,694$ per patients	x^2	Continuous Data
Sustainability Measure Compliance with the use of fall prevention protocol	100 %	≥ 95 %	x^2	Continuous Data
Sustainability Measure Percent of education of new hire	100 %	≥ 95 %	x^2	Continuous Data

Sustainability Measure	100 %	≥ 95 %	χ^2	Continuous
Re -training of non-compliant nurses				Data

Appendix L

April 6, 2021

Manjusha T Maprel
University of St. Augustine for Health Sciences
School of Nursing
NUR7801: DNP Practicum I

Re: **Notice of Institutional Approval for:** Baptist Medical Center

Project Title: Process Improvement Project: Reduction of Inpatient Fall Rate in an Adult Acute Care

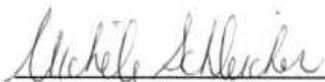
Dear Ms. Maprel,

The above referenced performance improvement project was reviewed and approved by Baptist Medical Center and the Baptist Health System (BHS) Research Department. As determined by the University of St. Augustine Evidence-Based Practice Review Council, your project does not meet the requirements for research as defined by DHHS regulations 45 CFR 46 and FDA regulations at 21 CFR 56.

The approval to conduct this project remains in effect as long as information is gathered as outlined in your submission. If the goals and or activities of the project change during the course of the project, or if new activities are proposed that would constitute human subject research, please contact the BHS Research Office so that we may determine whether or not the revised plan involves human subject research. At the conclusion of your study, please notify the BHS Research Office so that the study file can be closed.

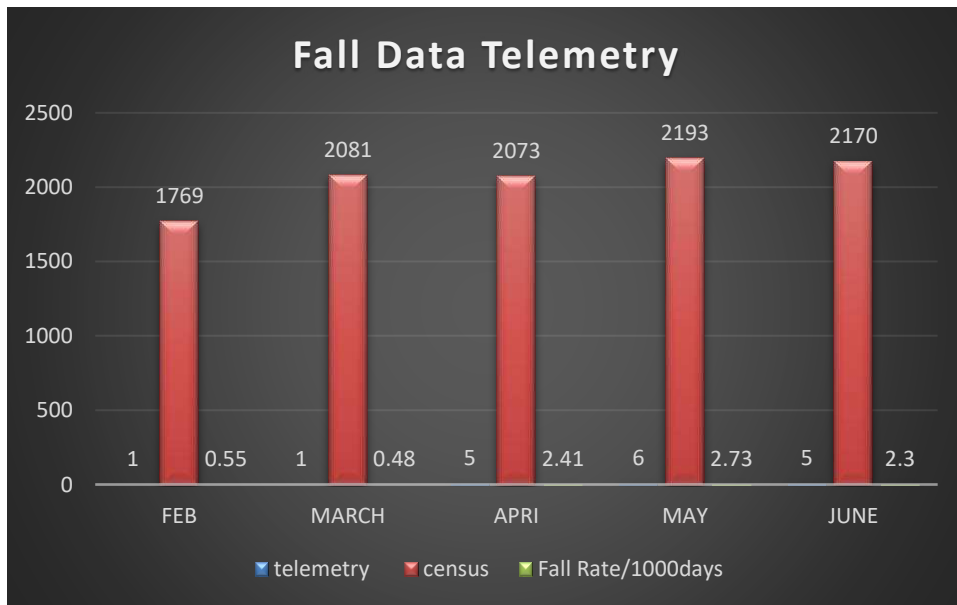
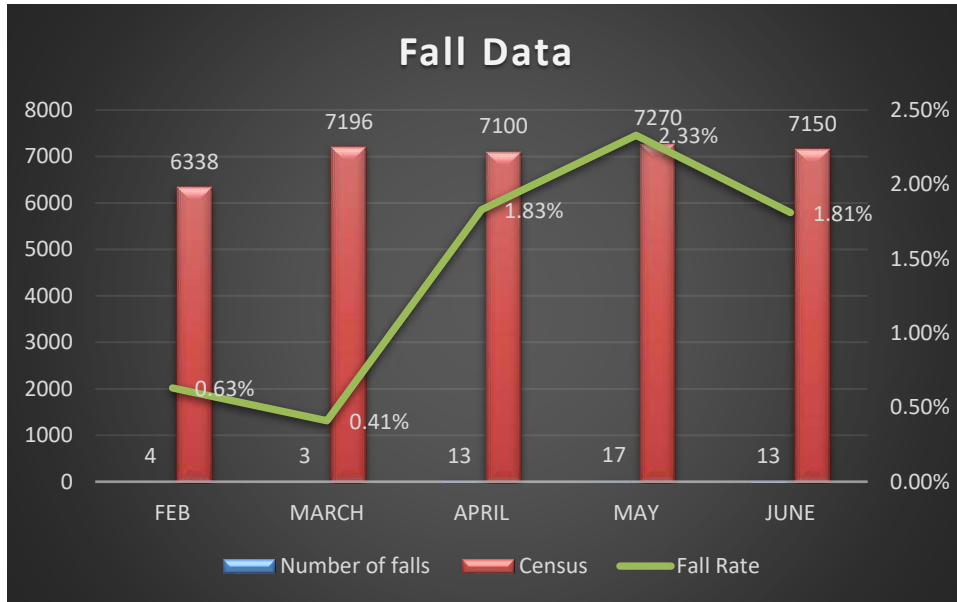
Should you have any further questions, please call (210) 297-8892.

Sincerely,



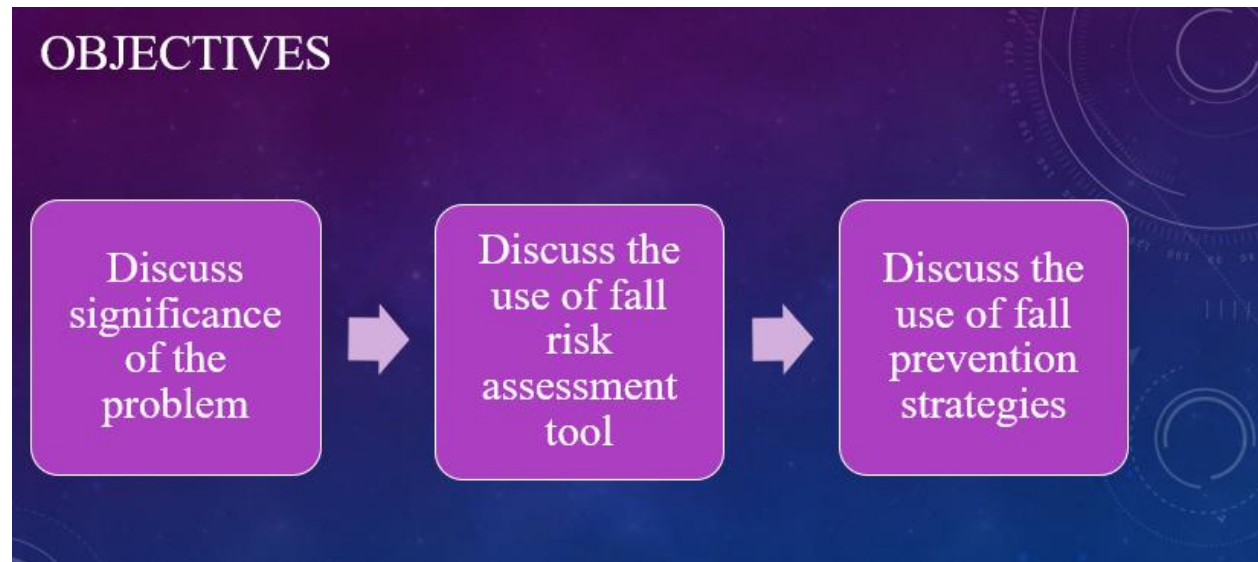
Michele Schleicher, RHIA
Research Department

Appendix M



Appendix N

PowerPoint for Staff Education



- ### INTRODUCTION
- Falls have multifactorial etiology, so fall prevention programs should comprise multifaceted interventions.
 - Individually-tailored fall prevention strategies are important
 - Education to patient/family and health care workers.
 - Environmental safety.
 - Safe patient handling.

INCIDENCE

- The national average of adults 65 years and older falling each year is about 28%
- The fall rate is 33.9% in the state of Texas
- Each year approximately \$50 billion is spent on medical costs related to non-fatal fall injuries, and \$754 million is spent related to fatal falls (CDC,2020).
- Our goal is to reach the national average of fall rate of 2.18%
- The Joint Commission has included prevention of falls as one of the national patient safety goals and a sentinel event alert; a reportable event to the Joint Commission.

SIGNIFICANCE

- Inpatient falls represent a critical clinical and legal problem attributing to severe injuries and even death in adult acute care patients (Fridman, 2019).
- The injuries resulting from inpatient falls are considered hospital-acquired conditions that impact the effectiveness of care delivery.
- Falls are among the most reported hospital-acquired conditions (Hoke, 2016).
- Falls in acute care settings can lead to severe injuries, increased length of hospital stays, pain, distress, and emotional trauma in the elderly.
- CMS no longer reimbursing the healthcare systems for treating preventable injuries, such as inpatient fall-related injuries

RISK FACTORS FOR FALLS

- Parkinson's disease.
- Incontinence.
- Previous history of falls
- Delirium/Dizziness/vertigo
- The use of antipsychotic medications
- Impaired mobility from stroke disease

PRACTICE RECOMMENDATIONS

Evaluation of current
Fall Prevention
Strategy

Fall risk assessment

- After completing the fall risk screening, each patient should receive an intervention plan to address each identified risk factor

A multidisciplinary fall prevention strategy

- Multifactorial fall prevention strategy utilizing tools such as bed alarm on, lights on, a urinal within reach, and purposeful hourly rounding

FALL RISK ASSESSMENT

- All patients should be assessed for fall risk factors at admission, at a change in status, after a fall, and at regular intervals.
- Medication review should be included in the assessment; A patient who is taking four or more oral medications is at risk for falling
- All patients should have their activities of daily living and mobility assessed
- Assessment should include review of history of falls, mobility problems, medications, mental status, continence, and other patient risks

THE PROTOCOL FOR FALL PREVENTION

- Assessment will be done once every shift and whenever there is a change in status
- After completing the fall risk screening, each patient should receive an intervention to address each identified risk factors
- A score > 25 requires intervention
- A score between 25-45 is considered a moderate risk
- A score above 45 is considered high risk and requires full intervention such as multidimensional prevention strategies, safe environment, bed alarm on, lights on, a urinal within reach, and frequent purposeful rounding

PROTOCOL CONTINUED

- The oncoming shift nurse will check with off going shift nurse at the patient's bedside to ensure that the fall precaution strategies for the fall risk patients have been initiated and maintained throughout the shift.
- Two staff members will ensure the safe environment once every shift
- Patients with impaired mobility should be Encouraged to mobilize with assistance, Assisted with transfers and referred for exercise program or prescription of walking aids as appropriate

WAYS TO IMPROVE PATIENT SAFETY

- Locking wheeled furniture when it is stationary.
- Having nonslip flooring.
- Placing frequently used items (including call bell, telephone, and remote control) within reach of the patient.
- Rounding hourly to address patient needs.
- Instruction on safe mobility, with emphasis on high-risk patients, should be provided to both patients and families

KEY POINTS

- Fall prevention efforts are everyone's responsibility
- Adhere to the policy
- Complete the morse fall risk assessment once every shift and whenever there is a change in status
- Plan to address each identified risk factor
- Be vigilant to create a safe environment
- Ensure that bed alarm on, lights on, and a urinal within reach
- Ensure frequent purposeful rounding