

Falls Education and Post-Fall Management in an Independent Living Community

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Notes from the Author

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Abstract

According to the Centers for Disease Control and Prevention, one out of every four adults over the age of 65 falls annually. Falls are the leading cause of injury for the older adult population, and fall-related deaths in the older adult population are increasing. For older adults in an independent living community, effective fall prevention programs are essential to reduce the rates of falls and, therefore, preserve functional abilities and improve quality of life. This project aims to address falls by providing fall education to residents and implementing a post-fall checklist for nurses to utilize when responding to fall events in the independent living community. The project also increased the organization's awareness of its current fall prevention practices and implemented changes to improve staff's awareness of falls. This paper discusses the project's successful implementation of organization-specific fall prevention education and the application of a new post-fall process. There were 84 falls throughout the implementation of the project, and nurse compliance with the utilization of the post-fall checklist was 90.5%. The project identified areas for the organization to further improve its response and follow-up to falls in the independent living community. The combination of these interventions works to increase fall risk awareness and address fall risks with the goal of reducing fall rates for independent living community residents.

Keywords: fall prevention, fall risks, fall prevention interventions, older adults, independent living community

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a significant amount of the post-falls process being nurse-driven, the follow-up varies depending on how the nurse manages the situation. For example, a nurse who has been at this facility longer may know the resident who fell and recognize that they have had three other falls recently. This might prompt this nurse to suggest physical therapy or an appointment at the clinic, but a nurse less familiar with this resident might not have the same insight. While the facility does not have a record of fall-related incidents, they know that falls are the most common reason residents require nurse assistance. Clarifying the fall response process would ensure every resident receives adequate care, potential causes of falls are addressed, and residents are connected to appropriate resources.

Falls remain a significant problem impacting older adults residing in independent living communities. Lach and Noimontree (2018) found that older adults are concerned with falls and desire fall prevention to be a priority in their medical care. Still, less than 20% of the participants reported discussing falls with their provider or any other individual in their life (Lach & Noimontree, 2018). In North Carolina, falls are the number one cause of injury and death for adults aged 65 and older (NCDHHS, 2021). The NCDHHS (2021) reported an increase in fall-related deaths between 2010 and 2019, increasing by 27.6%. The NCDHHS (2020) reported 848,816 emergency department visits, 94,904 hospitalizations, and 5,352 deaths related to unintentional falls from 2016-2019. Fall-related hospitalizations increased 226.7% during that interval. According to the data, these rates have continued to increase over the last ten years in North Carolina. Communities that implement multifactorial fall prevention interventions have reduced fall rates (Lee & Yu, 2020).

Implementing a fall checklist addresses national objectives to improve health set by Healthy People 2030 (U.S. Department of Health and Human Services [HHS], 2020a; HHS,

2020b). Rates of fall-related deaths among older adults continue to increase, and reducing the rates is a Healthy People 2030 objective (HHS, 2020a). According to the HHS (2020a), in 2019, 66.3 deaths per 100,000 population were related to falls in the older adult, which increased from 2018, above the Healthy People 2030 target of 63.4 per 100,000. Reducing the rate of fall-related emergency department visits by older adults is also a Healthy People 2030 objective (HHS, 2020b). The most recent data from HHS (2020b) reported 6,052.2 fall-related emergency department visits per 100,000 in the older adult population.

High rates of falls in the older adult population not only impact individuals but also significantly strain the healthcare system through the increased need for emergency medical services, emergency department resources, and hospital beds (NCDHHS, 2020). Reducing falls and fall-related injuries lessens the burden on the healthcare system and lowers healthcare costs. Florence et al. (2018) estimated the medical cost associated with falls for the U.S. healthcare system, including Medicare, Medicaid, and private payers, to be about \$50 billion in 2015. Studies also demonstrate that older adults report increased satisfaction with healthcare when fall education and prevention are a priority for providers during office visits (Chidume, 2021). In combination with the overall reduction in falls, fall-related injuries, and fall-related deaths, these factors meet the Institute for Healthcare Improvement Triple Aim (Institute for Healthcare Improvement [IHI], 2022). The Triple Aim is a framework to optimize health system performance by improving patients' experiences, improving the health and well-being of populations, and reducing the overall cost of health care (IHI, 2022).

Problem Statement

There are falls in independent living, and the post-falls process is inconsistent at the facility. There is a need for standardization of care to ensure screenings, interventions, and

prevention measures are taken to reduce the risks of future falls and lower the overall rate of falls in the independent living community. The facility recognizes falls as one of the most common reasons for a clinic nurse visit. The implementation of a standardized response to falls using a multifactorial approach has been shown to reduce fall rates and reduce the number of individuals who experience falls in the older adult population (Lee & Yu, 2020).

Purpose Statement

This project aims to address falls in an independent living community by providing fall prevention education and implementing a fall checklist for clinic nurses to utilize when responding to falls in the independent living community. One focus of the project will be providing education on fall risk to the independent living community residents during fall prevention month in September. The second focus of the project will be developing and implementing a checklist using multifactorial interventions to standardize the way nurses respond to falls and ensure areas contributing to falls are addressed.

Section II. Evidence

Literature Review

Literature searches were completed using PubMed, Cumulative Index to Nursing and Allied Health Literature (CINAHL), and Scopus. The results were narrowed by filtering for articles published in the last five years, and in one case, limiting the subject area to nursing. The search was completed using Boolean terms “and” and “or,” and search terms included *falls-prevention, falls-protocol, STEADI, independent-living, retirement community, falls response, and falls prevention guidelines*. The searches produced 199 articles. Abstracts were first reviewed to determine if the articles initially met the inclusion and exclusion criteria. Then, the articles were read in their entirety before making the final decision to include the articles. Articles were then evaluated based on the quality of evidence using Melnyk and Fineout-Overholt’s (2019) hierarchy of evidence. The majority of the articles included have a level of evidence of four or higher, and a limited number of articles with lower levels of evidence were also included. At the end of the literature search process, out of 199 articles, 12 were kept.

Inclusion criteria consisted of articles that discussed fall prevention, fall prevention interventions, falls in independent living communities, and responses to falls in independent living communities. Exclusion criteria included falls that occurred in settings other than independent living communities, fall prevention using fall detection devices, and fall prevention related to a specific disease of comorbidity. Two additional articles were included that provided quality information on best practices from professional organizations bringing the total number of articles included to 14. One of the articles included was outside of the five-year range but was included because it is a guideline with the most recent recommendations from the Panel on Prevention of Falls in Older Persons, American Geriatrics Society, and British Geriatrics Society

(2011). Additional information from the Centers for Disease Control and Prevention, the NC Department of Health and Human Services, and the U.S. Department of Health and Human Services were reviewed and included.

Current State of Knowledge

The high rate of falls among older adults is a significant problem in the field of healthcare (Lee & Yu, 2020). Increased morbidity and mortality rates are associated with falls in the older adult population (Panel on Prevention of Falls in Older Persons et al., 2011). Falls in the older adult population leads to increased dependency on assistance with activities of daily living (Lee & Yu, 2020). High fall rates are also a burden on the healthcare system, utilizing resources and increasing medical costs (Florence et al., 2018). There are numerous interventions that have been utilized to address falls in the older adult population and specifically in independent living facility settings, such as exercise programs, medication reviews, and environmental assessments to remove fall hazards (Ganz & Latham, 2020). The implementation of a multifactorial falls intervention program is consistently supported in the literature as more successful at reducing rates of falls than a single intervention process (US Preventative Services Task Force [USPSTF], 2018).

Guidelines were created by the Panel on Prevention of Falls in Older Persons et al. (PPFOP et al.) (2011) to make recommendations on fall prevention interventions using a committee of experts and a review of literature. The PPFOP et al. (2011) that created the guidelines consisted of experts in fall prevention and care of older adults from various healthcare professions. The panel completed a literature search of systematic reviews, meta-analyses, randomized controlled trials, controlled before-and-after studies, and cohort studies. Then the panel used a clinical algorithm in the decision-making process to determine what fall prevention

recommendations met the criteria to be included in the guideline. The recommendations regarding fall prevention are separated into two categories: assessments and interventions. First, a multifactorial assessment should be completed by a healthcare provider. Second, specific interventions should be implemented to address the fall risk factors identified during the assessment. Areas addressed included exercise and mobility, environmental factors, vision screening, medication review, cardiac screening for issues such as hypotension, and the use of vitamin D supplementation (PPFOP et al., 2011).

In 2018, USPSTF released an updated version of its fall prevention guidelines. These guidelines also recommend multifactorial fall interventions for individuals who are at an increased risk for falls. The USPSTF (2018) guidelines indicate exercise is one of the most beneficial interventions for individuals at risk for falls. A difference between the USPSTF (2018) guidelines and PPFOP et al. guidelines (2011) is the position on the use of vitamin D supplementation in fall prevention. Vitamin D supplementation is recommended by PPFOP et al. (2011) but not by the USPSTF (2018).

Current Approaches to Solving Population Problem(s)

Currently, there are many different approaches to reducing fall rates of older adults in independent living facilities. Guidelines published by PPFOP et al. (2011) and by the USPSTF (2018) both support the use of multifactorial fall interventions versus single intervention plans. Multifactorial fall prevention interventions are needed due to the various potential contributing factors to falls (Lee & Yu, 2020). This type of plan allows the fall prevention interventions to be designed for each patient individually, ensuring they address each patient's needs and increase adherence to the recommended interventions. Research supports that multifactorial assessments and interventions can decrease fall rates by 23% (Ganz & Latham, 2020). In a study completed

by Baker et al. (2017), older adult participants at risk for falling received specific risk assessments and, based on those findings, recommendations for fall reduction interventions. At a six-month follow-up, after the fall prevention intervention implementation, Baker et al. (2017) found a significant reduction in self-reported fall rates from 34% to 10.8% and a reduction in healthcare utilization related to falls from 20.5% to 5.3%. A systematic review and meta-analysis of 45 articles completed by Lee and Yu (2020) discovered that multifactorial fall prevention interventions led to a reduction in the rates of falls and an overall decrease in the number of older adults who experienced falls. Presently, the project site does not have a set protocol or checklist for fall prevention interventions or post-fall management for the independent living community residents.

The categories that encompass multifactorial fall prevention interventions vary throughout the literature, but one intervention that is consistent is exercise. A significant amount of literature supports exercises as a strong recommendation for fall prevention (PPFOP et al., 2011). The type of exercise intervention also impacted fall rates, with strength and resistance exercises having a more significant reduction in fall rates. It is vital to recommend an exercise intervention that best matches the needs of the individual. The initiation of exercise could include a referral for physical therapy or a recommendation for group fitness classes depending on the individual's needs (Ganz & Latham, 2020). One study found that the rate of falls was 23% lower in older adults who exercised compared to those who did not (Ganz & Latham, 2020). While exercise can be considered as a single intervention, fall rates were lower when exercise programs were used in combination with other interventions. Studies have also found that older adults who exercise have improved outcomes with injuries after falls (USPSTF, 2018).

Environmental hazards are another significant factor to consider for fall prevention in an independent living community. Stark et al. (2021) implemented a program to remove home hazards and educate older adults in independent living communities about strategies to prevent falls and had a 38% reduction in falls throughout the community. Conversely, PPFOP et al. (2011) did not find significant evidence to support the recommendation of environmental hazard interventions to be effective as a single intervention. Still, the PPFOP et al. (2011) did find strong evidence supporting its use in a multifactorial fall prevention intervention. Lach and Noimontree (2018) surveyed 267 older adult participants on their fall history, perception of falls, and awareness of fall prevention strategies. While environmental hazard checklists can be easily accessed online, Lach and Noimontree (2018) found that half of their participants had never seen one.

Other factors included in various multifactorial fall intervention programs are vision screenings, medication reviews, and cognitive evaluations. Older adults are at an increased risk for worsening visual acuity, glaucoma, and several other conditions that impact vision and can increase an individual's risk of falling (PPFOP, 2011). The literature is not conclusive on the impact of recommending annual vision screenings in reducing fall rates for older adults residing in independent living facilities (Ganz & Latham, 2020; PPFOP, 2011). Medication can also be associated with an increased fall risk (Ganz & Latham, 2020; PPFOP, 2011). During their survey of older adults, Lach & Noimontree (2018) found that only one out of every four participants had their medications reviewed by their physician or pharmacist. Lastly, older adults with cognitive impairments are at a greater risk for falls. Screening for cognitive impairments should be considered when implementing a multifactorial fall intervention program for older adults,

although there is not a significant amount of literature on its impact on the reduction of fall rates (PPFOP, 2011).

The last fall reduction intervention frequently discussed throughout the literature is vitamin D supplementation (PPFOP, 2011). Vitamin D deficiencies are common in the older adult population, and vitamin D supplementation is an easy intervention to improve bone health. Due to these factors, vitamin D is frequently recommended in the literature as a step in multifactorial fall interventions. A review of multiple studies found that vitamin D supplementation does not decrease rates of falls (Ganz & Latham, 2020; Taylor-Piliae et al., 2017; USPSTF, 2018). Because of this, the USPSTF (2018) does not support the use of vitamin D supplementation in the reduction of falls for older adults after finding no benefit in various studies.

Evidence to Support the Intervention

Resources for fall prevention, such as exercise classes, physical therapy, and occupational therapy, are available at the project site. An educational flyer about these resources and other multifactorial fall prevention interventions was created and disseminated throughout the independent living community (Appendix A). Even if residents of the project site already have a general knowledge about fall prevention, seeing the information presented concisely can reinforce the knowledge (Minnier et al., 2019). Studies have found that sharing fall prevention education with older adults in community settings leads to increased independence and safer living conditions (Chidume, 2021; Ong et al., 2021). Providing community-wide education about the components of multifactorial fall prevention and the resources available in the community is an essential first step to reducing fall rates.

The second intervention proposed to reduce fall rates at the project site was to implement a post-fall checklist (Appendix B). The checklist was used to review the potential fall risks of an individual after they had a fall and ensure that the proper interventions were implemented. Many studies throughout the review of literature recommend using multifactorial fall prevention interventions (Baker et al., 2017; Chidume, 2021; PPFOP, 2011; Reinoso et al., 2018; USPSTF, 2018). Chidume (2021) and Reinoso et al. (2018) both used aspects of the CDC's Stopping Elderly Accidents, Deaths, and Injuries (STEADI) fall risk assessment tool in their studies because of its comprehensive approach to reducing fall rates in the older adult population. Reinoso et al. (2018) completed a project with 27 older adults and implemented the CDC's STEADI assessment tool to provide individuals with information about their specific fall risks. During this process, Reinoso et al. (2018) found that many adults were unaware and had not previously been screened for fall risk, but were interested when provided with the information.

The PPFOP (2011) and USPSFT (2018) both recommend multifactorial fall prevention interventions in their guidelines due to their effectiveness in reducing fall rates when compared to single interventions. The areas on the checklist are based on tools, guidelines, and research on fall prevention strategies for older adults. The areas of focus essential to fall prevention are exercise and mobility, environmental hazards, medication review, vision screenings, and cognitive deficits (PPFOP, 2011; USPSTF, 2018). Addressing the factors that led to the current fall, in addition to assessing for other fall risks, is critical to preventing future falls.

The role of nurses in community fall prevention programs is well supported in the literature. In a study completed by Minnier et al. (2019), a fall prevention program was implemented with the goal of increasing older adults' awareness of fall risks. The results of the study indicated that nurses could have a significant role in fall prevention by educating older

adults through nurse-led fall risk screening programs and interventions. Nurses can utilize evidence-based tools and education to impact fall rates and advocate for the appropriate interventions (Minnier et al., 2019; Ong et al., 2021).

Evidence-Based Practice Framework

The Plan-Do-Study-Act (PDSA) is the operational framework that was utilized for this project. The purpose of the PDSA method is to adopt changes throughout the implementation period to improve the result (Taylor et al., 2013). The first step of the process, the Plan, is to develop an idea, define the goals, and begin the implementation process (The W. Edwards Deming Institute, 2022). For this project, the process began with the distribution of fall prevention educational flyers throughout the independent living community, educating the clinic nurses on the post-fall checklist, and the implementation of the post-fall checklist after falls occur, with the goal of reducing fall rates in the independent living community. The Do step of the PDSA model was the implementation of these project components. This step is followed by the Study step. During the Study step, the process and outcomes were reviewed to evaluate if the process was working successfully and to identify areas for improvement. This was a time to assess if the post-fall checklist was being implemented consistently and correctly. The outcomes measured included the number of falls in the independent living community and the number of times the post-fall checklist was implemented. The last step in the process, according to The W. Edwards Deming Institute (2022), is Act. The Act step occurs at the end of the learning process, where a review of the overall process occurs, adjustments can be made, and the cycle restarts with adjustments to the Plan step. The project was discussed with the stakeholders throughout the process, and adjustments were made to ensure the successful implementation of the education and post-fall checklist to reduce the rate of falls.

Ethical Consideration & Protection of Human Subjects

Ethical considerations were reviewed when initiating this quality improvement project. All the individuals at the independent living facility had equal access to the educational information and received the same post-fall checklist. The project did not cause any harm to any participants. The quality improvement project increased community residents' education and safety awareness related to falls, and the post-fall checklist increased the recommendation of appropriate fall prevention interventions. All individuals' right to privacy was maintained, and no identifying information was collected on any participant throughout the project. In preparation for the project, two modules, Social/ Behavioral Research Investigators and Key Personnel and Social and Behavioral Responsible Conduct of Research Course 1, were completed through Collaborative Institution Training Initiative (CITI). The project site does not have an Institutional Review Board (IRB); therefore, the University IRB process was completed to ensure that the project was ethical and safe for all participants. A Quality/ Research Self Certification Assessment tool was completed and submitted to the University. The IRB office determined that the project was a quality improvement project, and no further review was needed.

Section III. Project Design

Project Site and Population

This quality improvement project was implemented in a clinic for older adults that live in the independent living section of a retirement community in Wake County, North Carolina. Independent living in this facility means residents live in their own house, villa, or apartment within the community. The residents live independently and can manage their daily lives and medical needs without significant assistance. The clinic provides primary care to retirement community residents, and the clinic nurses respond to any healthcare emergency within the independent living community. There are approximately 500 residents living in the independent living community, and the majority of residents are 70 years and older (████████, personal communication, June 2022).

A facilitator for this project is the setting. Implementing this project in a setting where the individuals are more at risk for falls provides an opportunity to increase fall risk education, improve response to falls, and decrease the overall fall rate. Also, the clinic nurses were already accustomed to responding to falls and were eager to improve the post-fall process. Additional facilitators included access to distribute the fall risk education flyers and the ability to utilize the fall prevention resources that were already available to the residents in this community. Lastly, stakeholder support and the implementation of tools and resources based on evidence-based research were facilitators for the successful implementation of the project.

Potential barriers to the project's successful implementation included residents' hesitancy to report falls. Residents may have been hesitant to provide enough information to complete the post-fall checklist thoroughly. An additional difficulty was the inconsistent implementation of the post-fall checklist within the clinic nursing staff. To overcome these barriers and ensure the

project was successful, collaboration with the project team was critical. Monitoring and revising the implementation process was an important step to ensure project success. Engaging with and involving residents as active participants in the process was helpful in increasing participation and improving the overall success of the project.

Description of the Setting

The retirement community consists of two different areas, with independent living being the larger area and the other being the skilled nursing facility. The residents can choose one of the three providers in the clinic as their primary care provider, or they can continue with their previous primary care provider outside of the retirement community. Regardless of their primary care provider, all residents have access to clinic nurses for emergencies, dressing changes, or other tasks within a nurse's scope of practice. This project only involved the independent living residents. Staff education and use of the post-fall checklist was for the six clinic nurses.

Description of the Population

The population of the independent living residents at the retirement community consists of older adults. The population is predominantly White and consists of males and females. Many of the residents in the community are at risk for falls. These fall risks include mobility issues, environmental hazards, cognitive impairments, and other comorbidities that contribute to their increased risk of falling. The educational flyers were available to all residents in the independent living community. The post-fall checklist was implemented for every independent living resident that falls. Deviations in implementation occurred when residents were sent to the hospital or admitted to the skilled nursing facility after a fall, which meant the project leader was unable to contact the resident to collect additional fall information.

The clinic is open from 8:30 a.m. to 5:00 p.m. every day, including weekends and holidays. The clinic nursing staff consists of six Registered Nurses. The office also has two part-time doctors and a full-time nurse practitioner. During the week when providers are in the office, the clinic is staffed with two nurses. One nurse staffs the clinic on weekends and holidays for nursing tasks or emergencies. When the clinic is not open, a skilled nursing facility nurse responds to emergencies in the independent living facility.

Project Team

There were several team members who were a part of this project. The team was comprised of a Doctor of Nursing Practice (DNP) student, a DNP faculty member, the project site champion, the clinic nurses, and the Director of Outpatient Services at the facility. The project leader was the DNP student who, with the input of the other team members, created the project idea to address an identified need, searched for evidence, and developed the implementation plan. The project site champion was a clinic nurse who holds a Master of Science in Nursing and is a Registered Nurse (RN) at the facility. The project site champion was a key resource for developing the project idea, editing project tools, and critical in supporting the project implementation. The clinic nurses provided feedback on the project tools, including the post-fall checklist and the fall risk education flyer, and were responsible for implementing the post-fall checklist (Appendix A & Appendix B). The Director of Outpatient Services approved the project idea and the project tools and approved the distribution plan for the fall risk education flyer. The DNP faculty member advised the project lead throughout all aspects of the project.

Project Goals and Outcome Measures

This project had two main goals. The first goal was to educate residents and increase awareness of fall risks in the independent living community at the facility. The second goal was

to implement the post-fall checklist and improve the evaluation of fall risk factors after a fall occurred. With the implementation of the two interventions, the education and post-fall checklist, the intent of the project was that fewer falls would occur. The measurable outcomes were the number of falls in the independent living facility and the number of post-fall checklists that were completed. The number of falls that occur was further categorized into one of three categories, mobility, environmental hazard, or other. In addition to the falls data, residents were asked to evaluate their fall risks, and their responses were recorded during the data collection process. Lastly, clinic nurses' compliance with the next day follow-up phone calls after a fall was noted and added to the data collection. The collection of the data discussed above was to evaluate various areas that are potentially increasing the risks of falls for residents in this independent living community.

Description of the Methods and Measurement

All falls that occurred with independent living residents in this community during the implementation phase of the project were reviewed. The clinic nurses were informed of the distributed fall risk education flyer. The fall risk education flyer was adapted from a flyer created by the National Council on Aging (2021) and AgeWise King County (2022). The fall risk education flyer consists of information on the different steps residents can take to reduce their falls risk, including participating in balance and exercise programs, discussing fall risk concerns with their healthcare provider, reviewing their medications, annual vision and hearing assessments, reducing environmental hazards, and utilizing family member support. The flyer also connected residents to resources to address these areas of concern in the independent living facility.

The clinic nurses were educated about the purpose of the post-falls checklist and how to utilize the checklist after a fall occurred. The nurses were critical in ensuring all falls that occurred had a corresponding checklist. If a fall occurred in independent living when the clinic was closed, a skilled nursing facility nurse responded to the fall. Any time a significant event occurs at the facility, it is documented in the electronic health record (EHR) under a category called alerts. While falls are documented as alerts, the facility is not currently tracking, measuring, or analyzing the information. Alerts are used to ensure staff members are aware of any significant medical event that occurs with residents in the community. When a clinic nurse arrives in the morning, her first task is to check the alerts category. If a fall was documented, this clinic nurse was responsible for initiating the post-fall checklist. A designated falls nurse was responsible for following up on the fall alerts and post-fall checklist to ensure they were all accounted for and completed with as much information as possible. The project leader was the designated falls nurse during the duration of the implementation phase of the project. When the post-fall checklist was complete, the clinic nurse or falls nurse discussed the areas of concern with the resident, primary care provider, or other appropriate parties to ensure the proper interventions were considered. The project leader reviewed the data weekly to ensure proper implementation and to collect data.

The post-fall checklist included areas for the responding nurse to document the resident's name, reported reason for the fall, location of the fall, and if injuries were suspected. The checklist also included an area to document if the resident had experienced previous falls in the past 12 months. Next, there were options to document if vital signs had been obtained, if the emergency contact was notified, and if the resident was transported to the hospital or health center. In the next section of the checklist, there were three categories. Based on the resident's

description of the reason for the fall and the nurse's assessment of the fall, the nurse was to identify if the fall was likely related to gait, strength or balance problems, environmental hazards, or other. Under each of these categories, there were interventions the nurse could suggest to the resident, the resident's family, or the health care provider. The last section included an area to indicate that there was further follow-up after the fall occurred, either with a next-day phone call or a clinic appointment to see a provider.

Discussion of the Data Collection Process

Data collection occurred weekly once the project implementation began. The project leader reviewed the alerts from the previous week and recorded the number of falls that occurred with residents of the independent living community. Next, the project leader compared the number to the number of post-fall checklists completed to determine project compliance with the utilization of the post-fall checklist. At this time, the project leader, designated as the falls nurse, followed up on any incomplete checklist from the week and ensured the areas of concern were addressed. Ensuring the checklist were completed to the fullest extent allowed the last category of data, the potential cause of the fall, to be documented.

During the data collection process, the project leader attempted to call the resident to discuss the fall further and to ask the resident three questions regarding their perceived fall risks (Appendix C). The questions were "Have you participated in an exercise class of physical therapy in the past three months," "have you had an appointment with your primary care provider in the past three months," and "are there any fall risk areas that you are concerned about?" The "yes" or "no" responses to these questions were recorded as part of the data collection process. The residents' EHR were reviewed to evaluate clinic nurse compliance with post-fall 24-hour follow-up phone calls and documentation. The last piece of data that was

collected was if the resident had a previously reported fall in the past 12 months. This was collected by reviewing the resident's chart and previous alerts pertaining to a fall. The data was then entered into an Excel spreadsheet for data analysis (Appendix D). Lastly, descriptive statistics were utilized to analyze the data.

Implementation Plan

The implementation of the project occurred using the Plan-Do-Study-Act (PDSA) framework over a 12-week implementation period. This framework was selected because it is useful to frequently evaluate the project implementation and make adjustments. The first step in the implementation plan was to educate the clinic nurses on how to use the post-fall checklist. This education occurred face-to-face with clinic nurses at the project site. During this time, the clinic nurses were educated on the fall risk education flyer to ensure they could answer any questions independent living residents might have about the distributed educational flyer. After the clinic nurses had been educated on the post-fall checklist, implementation of the checklist began immediately with the next fall that occurred. Check-in meetings with the project champion occurred bi-weekly during the implementation phase to review the progress, make revisions if needed, and conduct a PDSA cycle review.

Timeline

The project implementation occurred over a 12-week period starting in August 2022 and concluding in November 2022. The staff education on the post-fall checklist occurred during the first week, and data collection began at that time. The new process was monitored by the project leader and project site champion, and revisions to the project were made as needed. The fall risk education flyers were distributed in September for fall prevention month. Details of the project plan are outlined in the timeline (Appendix E).

Section IV. Results and Findings

Results

During the 12-week implementation period, educational flyers regarding fall prevention were distributed throughout the independent living community, and the post-fall checklist was implemented at the facility's clinic. Data collection occurred weekly as planned, and the data that was intended to be collected was, with the addition of two additional data points that were deemed to be relevant as the implementation process continued. The first information collected included the number of falls and the number of post-fall checklists completed each week. This information was utilized to calculate compliance with the post-fall checklist with a goal of 100% compliance. There was 100% nurse compliance in completing the post-fall checklist for 10 out of the 12 weeks (Appendix F). The overall average compliance with the post-fall checklist was 90.5%, with 76 out of 84 falls having a completed post-fall checklist.

There were 84 reported falls during the project's implementation, with an average of seven falls a week (Appendix G). Falls ranged from three to 10 falls a week. A slight upward trend in falls was noted from week four through week 12. This trend could be related to an increase in reporting of falls due to the fall prevention education that was distributed throughout the community. This could also be related to the post-fall checklist that encourages the discussion of fall risks and fall prevention interventions. This increases the dialog between staff and residents about fall prevention and encourages reporting falls. Notable, week four had the least number of falls.

Data collection included the probable cause of the fall, which was determined by the resident's description of the fall incident and the nurse's assessment of the fall event. The categories included mobility, environmental, or other. Most falls fell under the mobility category, with 64 out of 84 (76%) falls categorized as being likely related to a mobility, strength, or

balance issue (Appendix H). Residents in this category frequently reported losing their balance or attributed the fall to muscular weakness. Environmental hazards were identified as the second most common category, with 12 falls representing 14% of the reported falls. Common statements residents made with this category were related to tripping over an object or the nurse noting a significant amount of clutter in the resident's apartment, with pathways not wide enough for the resident to navigate safely. The final category, classified as "other," encompassed issues that may have caused the resident to fall but did not align with the first two categories. For example, one resident who fell was experiencing new-onset atrial fibrillation, and others were experiencing transient weakness due to receiving their COVID-19 booster vaccine. This category represented 10% (8) of the total reported falls.

The next step in the data collection process involved the project leader making weekly follow-up phone calls with the residents who had experienced falls over the previous week. Early into project implementation, three questions were incorporated into the script to standardize the phone conversation to ensure consistency in the follow-up process. The yes or no responses were recorded in the data table (Appendix D). The implementation of the three questions was beneficial for many reasons. First, it allowed for additional data points to be collected, and second, the prolonged conversations encouraged residents to discuss their fall risks and possible interventions. Multiple attempts were made to contact the resident if they did not answer their phone. Residents that did not receive follow-up phone calls included residents who were admitted to the skilled nursing area of the facility or a hospital.

During the project implementation, 65 of the 84 (76%) residents who experienced a fall were followed up via phone call and were able to answer all three questions (Appendix I). The project leader was unable to follow up with 19 (22.6%) residents who experienced a fall. If

residents did not answer but were patients of the project site's clinic, a chart review was able to provide information to question two, regarding the last time they were seen by their primary care provider. For question one, 33 (39.3%) residents reported participating in exercise classes or physical therapy in the past three months compared to 32 residents (38.1%) reported they had not, and 19 (22.6%) residents were unable to answer the question. Of the residents who experienced a fall, 65 of 84 (77.4%) indicated via phone call or were identified during chart reviews to have seen their primary care provider within the past three months, compared to 13 (15.5%) who had not seen their primary care provider. Lastly, 34 of the 84 (40.5%) residents who experienced a fall reported they had concerns about their fall risks compared to 31 (36.9%) who indicated they were not concerned about their fall risks, and 19 (22.6%) residents were unable to answer the question.

Early in the implementation process, the project leader noted a significant number of residents were experiencing repeat falls. This means that they had already experienced at least one previous fall event during the implementation period. This led to the decision to include an additional data point in the data collection process. Chart reviews were completed of residents who experienced a fall during project implementation to determine if the resident had another documented fall within the past 12 months (Appendix I). Of the residents who experienced a fall, 55 (65.5%) experienced a fall in the previous 12 months, leaving 29 individuals (35%) without a documented fall in the past year. The 84 reported falls that occurred during the implementation of the project were from 57 different residents in the independent living community. Of the 57 residents, 17 (29.8%) experienced more than one fall during the implementation phase (Appendix J).

During the chart reviews, it was identified that many residents did not have a 24-hour post-fall follow-up phone call documented. Follow-up phone calls within 24 hours after a fall is a step that the project site indicated was routinely being done as part of the fall response prior to the project implementation. This finding prompted the inclusion of this data regarding residents who had experienced a fall during the project implementation phase. An additional chart review was conducted to review the compliance of 24-hour post-fall follow-up phone call documentation. Of the 84 residents who experienced a fall, 47 (56%) of the residents had a documented follow-up phone call.

Discussion of Major Findings

The first goal of the project was to achieve 100% compliance with the implementation of the post-fall checklist (Appendix F). This goal was achieved for the majority of the implementation period. Decreased compliance during weeks two and three was likely due to an increased workload on the clinic nurses due to a COVID-19 outbreak at the facility, a staffing shortage, and a new clinic provider. During weeks three and four of the project implementation, the project leader provided reminders for the clinic staff about the post-fall checklist. Chidume (2021) discussed the importance of having nurses involved in fall prevention. Research supports that nurse-led fall prevention education had a greater impact on fall prevention awareness in the older adult population (Chidume, 2021). Educating the clinic nurses about why the implementation of the checklist was important also worked to increase compliance.

The second goal of the project was to increase residents' education about fall risk factors and how to address the risk factors. This was achieved by distributing fall risk prevention flyers throughout the facility. The flyer included information about significant areas that contribute to fall risks and whom to contact in the facility to address the areas of concern. Ong et al. (2021)

emphasize the importance of awareness through education to allow individuals to recognize their fall risk factors in their systematic review of fall prevention education among older adults in independent living communities. The review indicated that studies implementing fall prevention education resulted in the intention or participation in fall prevention interventions. This goal was also addressed by the project leader in implementing a standardized response to falls, utilizing the post-fall checklist, and creating questions for consistent phone call follow-ups after a fall.

The basis of the project was to improve how the project site addresses falls and fall prevention with the overall goal of improving these processes to reduce fall rates. The literature strongly supports that multifactorial interventions are the best way to address fall prevention. (Lee & Yu, 2020; PPFOP et al., 2011). This project addressed falls from the prevention standpoint by providing education about how to modify fall risk factors and steps to implement after a fall has occurred to prevent fall recurrence. Both interventions utilized a multifactorial approach to fall prevention.

The project results determined that a majority of the falls that occurred in the facility were related to mobility, with 76% of the falls classified under the mobility category on the post-fall checklist. This finding is consistent with the literature indicating that it should be a significant focus of future fall prevention interventions (Ganz & Latham, 2020). Interventions such as exercise classes and physical therapy are well supported in the literature. However, only 39.3% of the residents who experienced a fall utilized the readily available resources at the facility. Ganz & Latham (2020) reported that a meta-analysis of older adults who participated in fall prevention exercises experienced 23% fewer falls than older adults who did not participate. The poor utilization of resources to reduce fall risks is a problem frequently seen in the literature. Lach and Noimontree (2018) support this finding with their study reporting that while older

adults in independent living facilities had a good awareness of their fall risks, they did not take steps to address the risks. Although falls that occurred during the project were categorized by their cause, mobility, environmental or other, many falls have multiple risk factors. This supports the necessity and benefit of a multifactorial approach to fall prevention.

Following up with residents after they experience a fall is essential for resident safety and future fall prevention. During project implementation, the project leader discovered that only 56% of patients with a documented fall received a follow-up phone call. When the project leader completed follow-up phone calls, many residents expressed their appreciation for the follow-up. Using standardized questions, residents seemed to take more time to discuss their fall risks. In their study, Minnier et al. (2019) noted that older adults were more likely to engage in fall prevention activities when they received positive input and, specifically, that registered nurses were positioned to provide the greatest impact in this area. Many residents appreciated the discussion and concerns about their fall risks, and 40.5% indicated that they were also concerned about their fall risk factors. Still, 36.9% reported that they were not concerned about their fall risk factors despite recently experiencing a fall. The lack of concern may result in residents' being less inclined to utilize fall prevention interventions such as exercise classes, physical therapy, or environmental reviews for fall hazards.

Section V. Interpretation and Implications

Costs and Resource Management

The costs associated with the implementation of this project were minimal. The most significant cost associated with the project was the expense of staff time. Prior to implementation, the project leader developed project tools, an educational flyer, and a nurse education plan. The project leader's time invested in the project before implementation was estimated to be 500 hours. The project required six clinic nurses to be educated by the project leader on the implementation plan. The average hourly pay of a registered nurse is \$32.21 (PayScale, 2023). It took an average of 30 minutes to educate the six clinic nurses on the project and the implementation steps. Completing the post-fall checklist took staff about 15 minutes, with 76 post-fall checklists completed during implementation. Additionally, the project leader monitored the project's progress and completed weekly data collection. These tasks took an estimated 54 hours. The only additional expenses for the project were the utilization of paper and printer toner. The facility estimates the cost of one ream of paper to be about \$4 and a toner cartridge to be about \$60. While the project's total cost, including staff's time, would be estimated at \$18,552.96, no additional costs regarding staff time were incurred because these tasks occurred during scheduled working hours. Considering these factors, the project's actual cost was \$64 (Appendix K).

If this project were implemented on a larger scale, the cost associated with its implementation would still be minimal because it requires few resources. Additional staff time would likely be required to train more staff, complete resident education, and collect data. The difficulty and time required to track falls and collect the necessary data would depend on the usability of the project site's EHR. Overall, this project is easily scalable to fit the needs of any

sized project site and can be implemented for a low cost if the workload can be incorporated into the staff's scheduled working hours and workflow.

When considering the project's cost, it is vital to consider the costs associated with the problem the project addressed. Falls are a high cost to the healthcare system (Florence et al., 2018). When a fall occurs in this facility, a clinic nurse must assist the resident. This can lead to a change in workload priorities and create a need for additional resources. The clinic nurse may also need to utilize supplies such as dressing supplies or medications to care for the resident properly. The individual who fell may also need an appointment with a provider, require admission to the skilled nursing facility, or be sent to the hospital for further evaluation. The severity of the fall determines the time and intervention the resident needs from facility staff to fully recover from the fall. For example, some residents who fall require daily dressing changes due to a skin tear that occurred during the fall. All of these considerations result in additional expenses to the facility and the resident who experienced the fall.

The cost of falls is not only a consideration at the project site but for the entire healthcare system. Falls in the older adult population are a significant burden on the healthcare system. It was estimated that the medical costs associated with fatal and nonfatal falls were approximately \$50 billion in 2015, with older adults accounting for a large percentage of this cost (Florence et al., 2018). Florence et al. (2018) also anticipate that the costs associated with fall events will continue to increase annually related to the growing older adult population. This project addresses fall-related costs by addressing two Healthy People 2030 goals to reduce the rate of emergency department visits and deaths related to falls among older adults (HHS, 2020a; HHS, 2020b).

Implications of the Findings

This project focused on two main goals. The goals of the project were 100% compliance with the utilization of the post-fall checklist and the distribution of the fall risk educational flyer to decrease falls. The post-fall checklist allowed clinic nurses to evaluate factors contributing to the majority of falls at the project site. The post-fall checklist addressed fall risk interventions that could decrease a resident's fall risks after they experienced a fall. Implementing the post-fall checklist ensured clinic nurses were educated on factors to consider after a resident experienced a fall. The fall risk education flyer increased residents' awareness of fall risk and directed them to resources available to address these risks in the independent living community. Overall, the project started a conversation about how the facility is currently addressing and tracking falls, which has led to documentation changes that allow the facility to track falls on an ongoing basis.

Implications for Patients

Falls are a significant problem for the older adult population. In the independent living community, there are many resources available for residents, but they must be aware of the resources and choose to utilize them. This project increased resident awareness of fall risks and available resources at the organization. Older adults have a vested interest in addressing fall risk. Falls contribute to a decrease in mobility and independence and increase individuals' medical costs. A single fall event with an injury for an older adult costs an average of \$1,400 (Minnier et al., 2019). Implementing a project to reduce falls also demonstrates the organization's commitment to addressing its residents' healthcare needs and safety. This can increase residents' and families' confidence and trust in the organization and increase satisfaction with care.

Implications for Nursing Practice

The project utilized the collaboration of an interprofessional team to reduce the rate of falls in the community they serve. The clinic nurses continued to use their advanced assessment skills and autonomy when responding to falls, but with the addition of the post-fall checklist as a guideline. The clinic nurses were essential for successfully implementing the post-fall checklist and for providing fall prevention education to the residents. The project also involved collaboration with the Director of Health and Fitness to discuss available resources for the residents to include in the fall risk prevention education. The clinic providers were critical in implementing the project as they were available to address risk factors and injuries related to falls and order interventions, such as physical therapy, when necessary. Lastly, the support and partnership with the Director of Outpatient Services allowed for practice changes. For example, the facility implemented a documentation change that will allow them to continue to track falls, which is critical in identifying residents experiencing frequent falls. Utilizing an interprofessional team to reduce falls in the independent living community demonstrates the organization's commitment to improving the safety and lives of its residents.

The project has multiple implications for nurse practice. The project worked to increase nurses' knowledge of interventions to address fall risks and, specifically, the resources available at the project site. The project addressed fall risks from multiple angles using an interprofessional team, with pre-fall prevention education and post-fall interventions, including practice changes and post-fall education about preventing future falls. Most importantly, the project renewed the project site's desire to review and change its practices. The process of policy reflection and quality improvement is critical to continue providing quality evidence-based interventions.

Impact for Healthcare System(s)

Falls in the older adult population are a significant issue in the healthcare field due to the exorbitant costs associated with post-fall healthcare needs and the strain on the healthcare system, especially on hospitals and the overutilization of emergency services. By working to reduce the rate of falls in the older adult community, this project addresses two Healthy People 2030 initiatives. Specifically, to reduce the rate of emergency department visits of older adults due to falls and to reduce the number of fall-related deaths among older adults (HHS, 2020a; HHS, 2020b). While Healthy People 2030 looks at trends nationally, the NCDHHS (2021) notes the same concerns at the state level with increased utilization of emergency services related to falls and the rise in fall-related deaths in the older adult population. Without interventions to reduce fall rates, like this project, the problem will only continue to worsen. According to the NCDHHS (2020), the age groups most at risk for falls, 60 years and older, are projected to have the fastest growth in population over the next 20 years. The NCDHHS (2020) notes a 44% increase in falls in the 60 to 64 age group, a 57% increase in the 65 to 84 age group, and a 117% increase in the 85 and older age group. These statistics indicate that without significant interventions to reduce falls in the older adult population, falls will continue to drastically impact the already significant healthcare costs and overburdened healthcare systems.

In addition to the health, financial, and resource benefits associated with fall prevention interventions, there are benefits for the organization. Steps to reduce older adults' risk of falls and to reduce the rate of falls in the independent living community reflect positively on the organization for taking steps to improve the health of their residents. This could result in improved patient and family satisfaction with care, contributing to more individuals wanting to live in the independent living community, therefore increasing revenue for the organization.

Sustainability

The project offered many benefits to the organization as a low-cost intervention to reduce falls. In many ways, the project will have a lasting impact on the project site. The project site plans to use the information from the post-fall checklist as a guideline and post it in the nurses' work area. The checklist will not be completed on paper following each fall but will be used as a reference. Completing the form was beneficial during the project's implementation for data collection but added additional work for the clinic nurses. The organization plans to continue using the fall prevention flyer to educate residents about fall risks and ways to address and lower these risks. The flyer also provides residents with information on the resources offered by the facility to address the fall risk recommendations.

A significant impact of the project was the awareness it created regarding how falls are currently addressed in the independent living community. Because of this, additional changes were implemented. The project leader worked with the organization to implement charting changes related to falls in the EHR, allowing the clinic nurses to identify residents with frequent falls better. This change will allow the organization to run fall reports and track all the falls within a given time. Since the implementation of this project, the project site has discussed creating an interprofessional falls task force to ensure that fall prevention continues to be addressed.

Dissemination Plan

Findings from this project were disseminated at various locations. Project findings were presented via PowerPoint at the project site on March 21, 2023, to community residents, the Director of Outpatient Services, the Director of Health and Fitness, the project site champion, clinic nurses, and other executives at a meeting. The meeting occurs monthly, organized by the

Director of Health and Fitness, to discuss fitness and nutrition topics with residents of the community. A poster presentation was presented at the College of Nursing on April 11, 2023, for the university faculty, fellow peers, and family members. The final paper from the project was submitted to the university's "Scholarship Repository" for public access. Lastly, the project leader plans to submit an abstract to the Journal of Gerontological Nursing to be considered for publication. The Journal of Gerontological Nursing is published by the American Geriatrics Society and is a peer-reviewed journal that publishes articles related to healthcare issues affecting the older adult population (Fick, 2023). These qualities make the Journal of Gerontological Nursing an excellent publication for disseminating information regarding fall prevention for older adults living in an independent living community.

Section VI. Conclusion

Limitations and Facilitators

Multiple limitations were noted during the project implementation. These limitations included a lack of data on fall rates prior to project implementation, an increase in staff workload related to a new provider, and site-wide staffing shortages. One additional barrier to implementation included multiple COVID-19 outbreaks in the independent living community. These factors made it more difficult for the clinic nurse staff to complete the post-fall checklist due to their increased workload. The lack of project site data on the fall rates of residents in the independent living community made it difficult to determine the project's impact during implementation. Lastly, the project was limited by the implementation period of 12 weeks, which limited the ability to determine the impact of the interventions on fall rates over an extended time period.

There were also limitations related to the project site's electronic health record (EHR). The charting system, as it was being utilized prior to the implementation of the project, did not allow the facility to track falls. The EHR also did not communicate with the charting system used by physical therapy and occupational therapy, making it difficult to determine if residents received therapy services. The inability to search quickly in the EHR made it difficult to quickly determine if residents had a previous fall. Overall, the limitations did not affect the success of the project's implementation; instead, areas were identified that the project site could address to work to reduce fall rates.

Numerous facilitators contributed to the success of the project. While not ideal, the EHR allowed for the documentation of falls and other accessible data utilized throughout the project. Ultimately, the project leader was able to implement a change within the EHR to track falls.

Another significant facilitator was the resources for fall prevention that were already available at the project site, such as the clinic, the nursing staff, exercise classes, and therapy services. The project benefited from overwhelming positive support from all the participants involved, including an interprofessional team of staff members and residents. The project site champion facilitated a smooth implementation process with constant support and an open line of communication. Frequent communication with the project site champion and other individuals was critical for successful project implementation. The project's most significant facilitator was the stakeholders' desire to reduce falls and improve the residents' quality of life in the independent living community. This desire was the most significant driving factor for the project's success and for the continued efforts by the project site to reduce fall rates.

Recommendations for Others

While this project could be easily implemented in other independent living communities or primary care settings, there are several suggestions for improvement. Organizations could incorporate the information in the post-fall checklist into an electronic version to be compatible with the EHR making the process more user-friendly and less time-consuming for staff. Organizations could also utilize the fall risk education flyer and make it specific to their patient population and community. Taking this one step further, the organization could use the fall risk flyer to create a template, then individualize it to a specific individual, individualizing the plan of care for residents. Both interventions work to address multifactorial fall risks for the older adult population. While this project site did not have data on fall rates prior to the implementation of this project, individuals implementing this project in the future should consider their site's falls data and adapt the project to address their facilities' specific needs best.

Recommendations Further Study

While fall prevention is a steady topic for healthcare research, there is still a significant need for further research. Specifically, there is a need for more research regarding the impact of nurse-led fall prevention interventions because nurses are such a critical resource for education and prevention. This project successfully utilized nurses to implement fall prevention steps in an independent living community. However, this practice was not commonly seen in the literature and was noted by other studies to be an area that deserved further exploration (Lee & Yu, 2020; Minnier et al., 2019). There is also a need for additional research on fall prevention programs implemented in independent living communities. Expanding on this fall prevention project to determine the long-term impact of the project interventions on fall rates would be beneficial to determine the effectiveness of the intervention.

Additionally, the goal of the post-fall checklist was to review and suggest fall risk interventions, but continued research would be beneficial to see the number of fall risk interventions that are being implemented. Lastly, it was discussed at the project site that falls are likely significantly underreported in the independent living community due to residents' fears of losing their independence. This concept was also noted by Lach and Noimontree (2018) in their study regarding fall prevention in independent living facilities. Further research on this phenomenon and interventions to address this barrier is needed to ensure that falls are adequately addressed.

Final Thoughts

Falls remain a significant issue for the growing older adult population. Fall prevention interventions are critical to reduce falls, prevent injuries, and preserve older adults' independence. The project aimed to educate residents about fall risks, how to address those risks,

and to address how the clinic nurses are responding to falls in the independent living community. The project implementation successfully provided education and changed the way falls are addressed at the project site to increase consistency and follow-up when responding to a fall. The project emphasized the importance of following up with residents about 24 hours after a fall and using three standardized questions to ask residents about fall risk areas. As an outcome of this project, the organization implemented a documentation change, led by the project leader, to modify how falls are charted in the independent living community. This will allow the organization to track the residents' falls more accurately. The organization is now working with physical and occupational therapy services to ensure that the clinic receives a weekly list of residents that are receiving therapy services. The most significant result of the project was that it led the organization to examine how they were addressing falls and implement changes beyond the goals and objectives of the project. Falls will be a continuous issue in the older adult population, but fall prevention initiatives can significantly reduce fall rates and improve the quality of life for residents in independent living communities.

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Appendix A

Falls Prevention Flyer

Falls Prevention

1 Find a good balance and exercise program

- Look to build balance, strength, and flexibility.
- Contact Kari if you have questions about available exercise programs x7147.
- Call the clinic at x7358 if you have questions about physical therapy.



2 Talk to your health care provider

- Ask for an assessment of your risk of falling.
- Call the clinic at x7358 to schedule an appointment or contact your primary care provider.



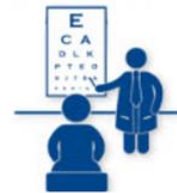
3 Regularly review your medications with your doctor or pharmacist

- Make sure side effects aren't increasing your risk of falling. Take medications only as prescribed.



4 Have your vision and hearing checked annually and update your eyeglasses

- Your eyes and ears are key to keeping you on your feet.
- Call the clinic at x7358 if you have questions about available services.



5 Keep your home safe

- Remove tripping hazards, increase lighting, make stairs safe, and install grab bars in key areas.
- Call the clinic at x7358 if you have questions about occupational therapy.



6 Talk to your family members

- Enlist support in taking simple steps to stay safe.



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Appendix B

Post-Fall Checklist

Post-Fall Checklist

Resident:	Date:
Reported reason for fall:	
Location of fall:	Suspected Injuries:
Vital signs: yes/no	Previous falls in the past 12 months:
Emergency contact notified: yes/no	Hospital or Health Center

Gait, strength, or balance problem:

- PT referral
- Participation in exercise classes
- Home care
- Adaptive equipment

Environmental hazards

- Education on environmental fall risks
- Visual acuity
- OT referral

Other considerations

- Dizziness/hypotension
 - o Orthostatic vitals
 - o Medication review
- Confusion/disorientation
 - o Neurological assessment
 - o SLUMS assessment

Follow-up

- Next day check up
- Clinic appointment scheduled

Appendix C

Data Collection Follow-Up Questions

Fall Follow-Up Questions

1. Have you participated in an exercise class or physical therapy in the past 3 months?
2. Have you had an apt with your primary care provider in the past 3 months?
3. Are there any fall risk areas that you are concerned about?

Chart Review Follow-Up Questions

1. Was there a previously documented fall in the past 12 months?
2. Was there a documented phone call follow-up within 24 hours after a fall?

Appendix D

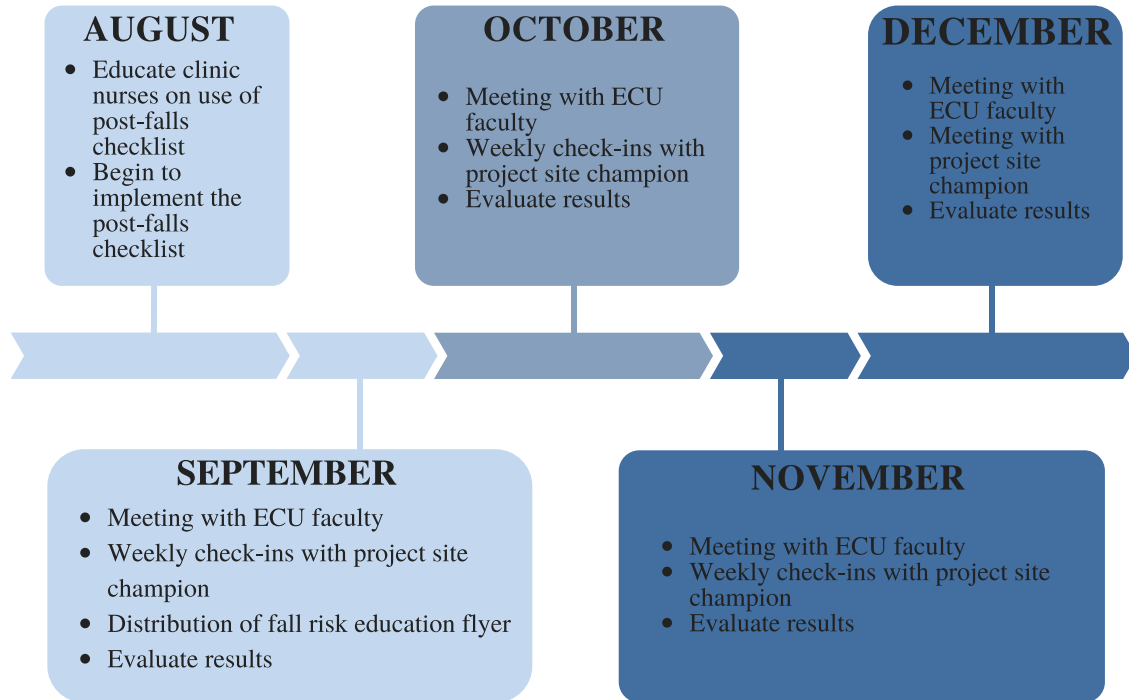
Data Table

	Week Number	Week 1: 8/29-9/4	Week 2: 9/5-9/11	Week 3: 9/12-9/18	Week 4: 9/19-9/25	Week 5: 9/26-10/2	Week 6: 10/3-10/9	Week 7: 10/10-10/16	Week 8: 10/17-10/23	Week 9: 10/24-10/30	Week 10: 10/31-11/6	Week 11: 11/7-11/13	Week 12: 11/14-11/20	Total
Number of falls		5	9	7	3	6	6	8	7	9	7	10	7	84
Number of Post-Fall Checklist completed at the time of data collection		5	5	3	3	6	6	8	7	9	7	10	7	76
Falls- Mobility		4	7	4	2	4	5	8	5	8	3	7	7	64
Falls- Enviornmental Hazard		0	1	2	0	1	0	0	1	1	3	3	0	12
Falls-Other		1	1	1	1	1	1	0	1	0	1	0	0	8
Question 1- Yes		1	5	3	1	4	3	3	2	4	2	3	2	33
Question 1- No		4	3	4	2	2	1	2	4	2	2	3	3	32
Question 2- Yes		5	8	7	3	5	6	5	5	7	3	6	5	65
Question 2- No		0	0	0	0	1	0	2	1	1	3	4	1	13
Question 3- Yes		5	3	5	3	3	3	3	3	1	1	3	1	34
Question 3- No		0	5	2	0	3	1	2	3	5	3	3	4	31
Unable to follow up		0	1	0	0	0	2	3	1	3	3	4	2	19
Follow up phone call after a fall		3	4	4	2	3	5	5	4	2	6	6	3	47
Residents with reported falls in the past 12 months		3	4	5	1	4	4	6	6	5	6	5	6	55

Appendix E

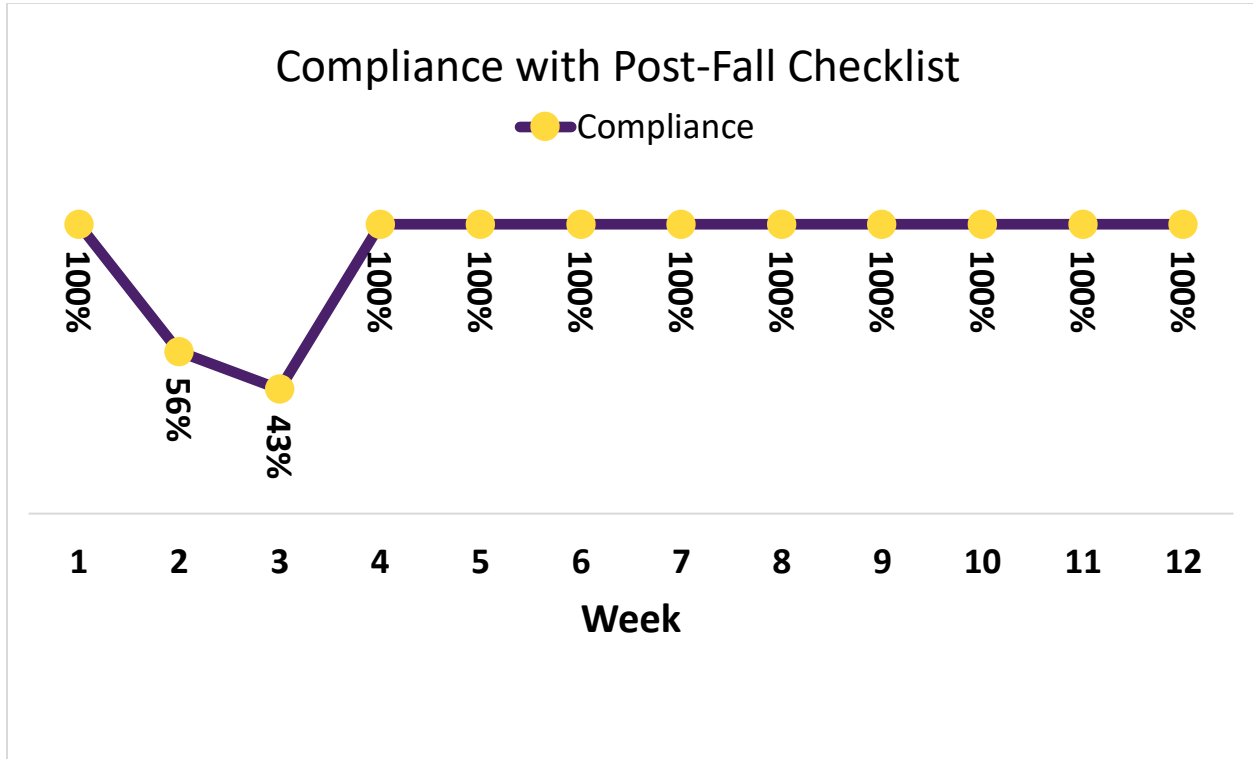
Timeline

DNP Project Timeline



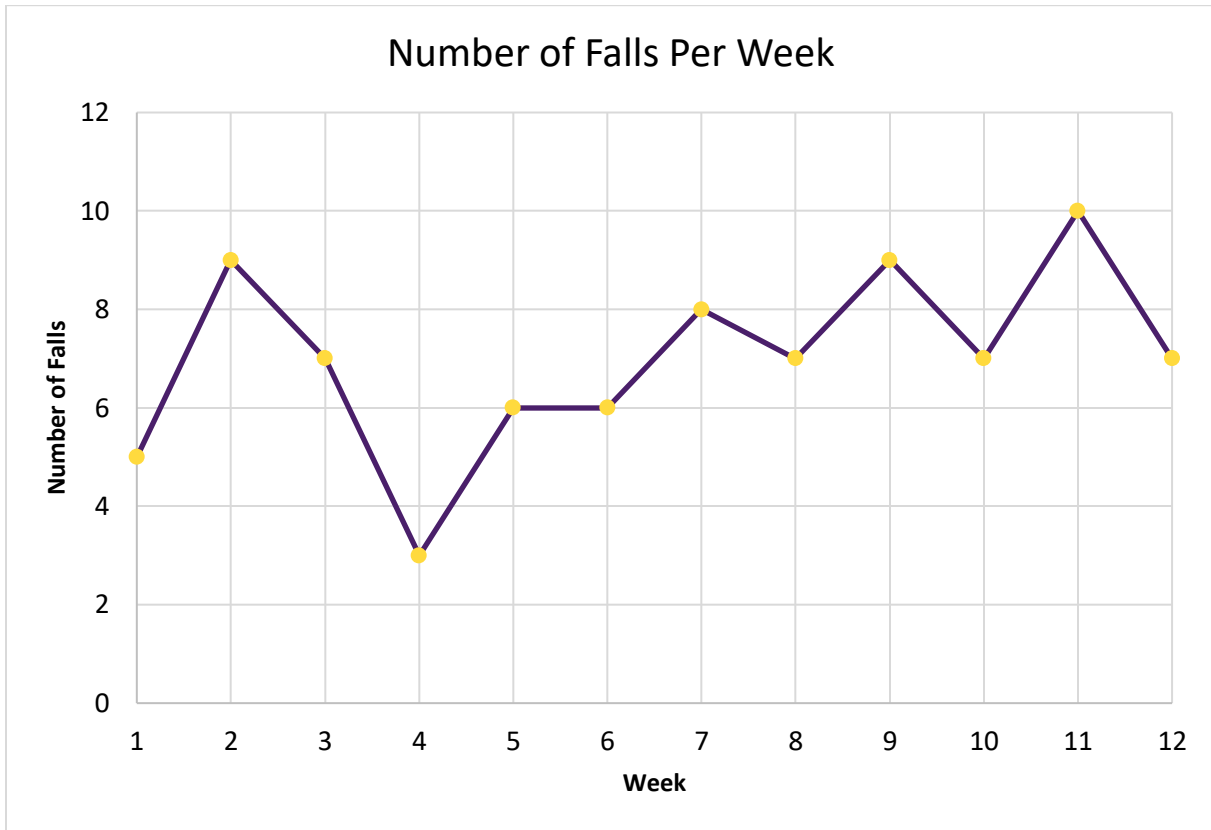
Appendix F

Weekly Compliance with Post-Fall Checklist



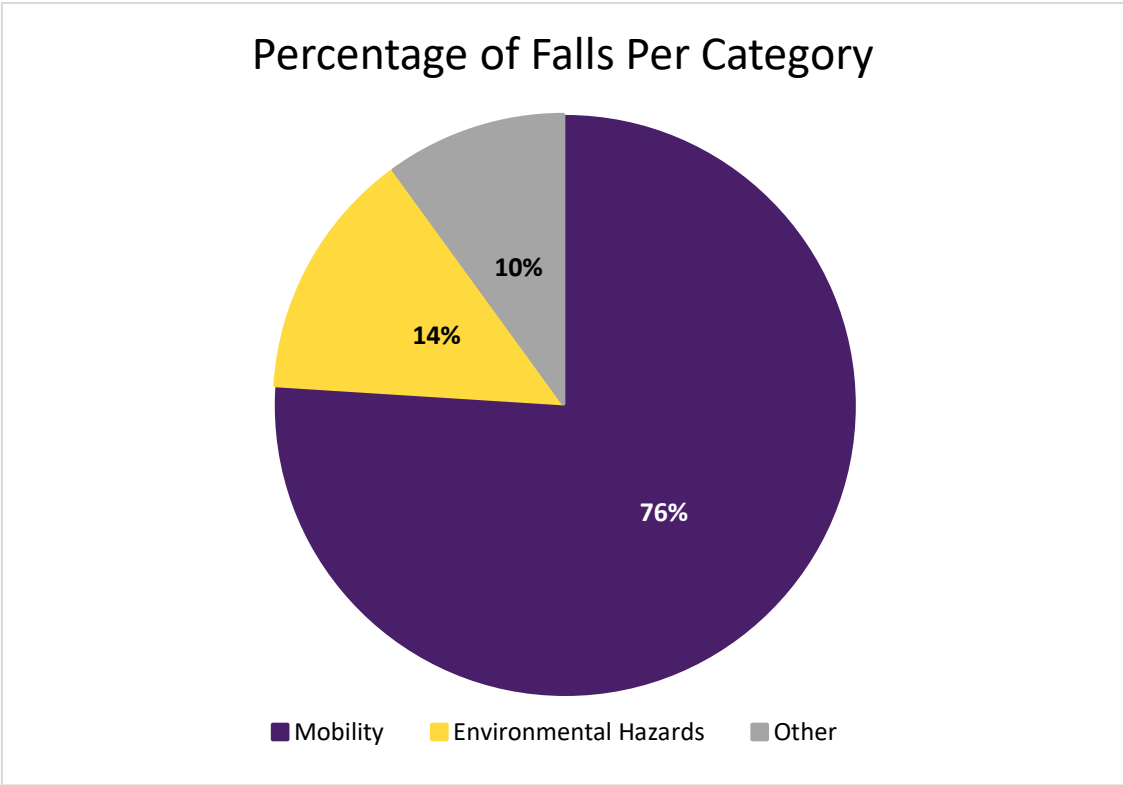
Appendix G

Number of Falls Per Week



Appendix H

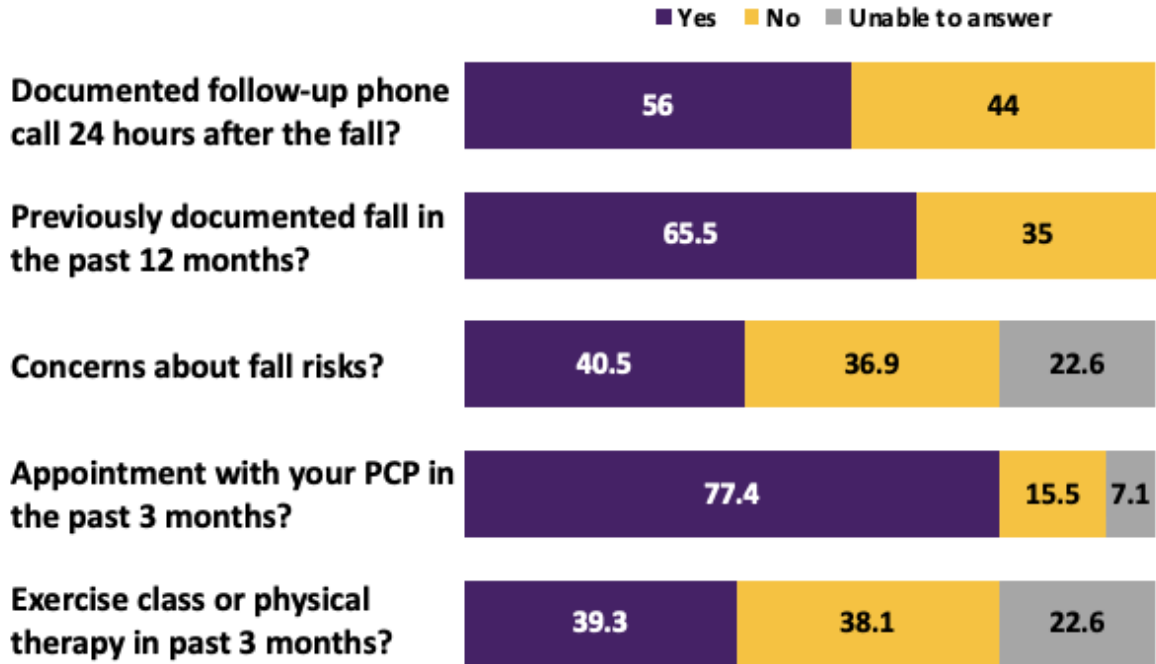
Percentage of Falls Per Category



Appendix I

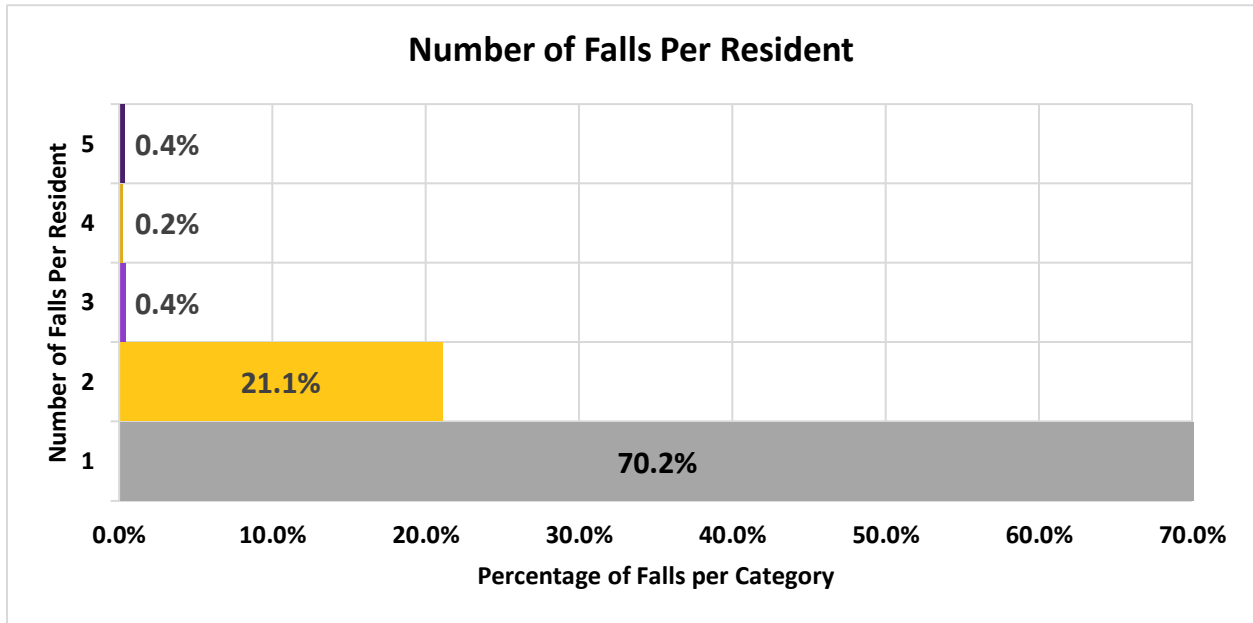
Responses to Fall Follow-Up Questions

Percentage of Responses to Fall Follow-Up Questions



Appendix J

Number of Falls Per Resident



Appendix K

Cost Analysis

Item	Quantity	Time	Cost per 1 Unit	Total Cost
Registered Nurse	<u>Pre-project preparation</u> 500 hours of pre-project research, literature reviews, and creation of tools	500 hours	\$32.21/hour	\$16,105
	<u>Nurse Education</u> 30 minutes per nurse x 6 nurses	3 hours		\$96.63
	<u>Implementation of checklist:</u> 15 minutes per checklist x 76 checklist	19 hours		\$611.99
	<u>Data Collection:</u> 3.5 hours of data collection x 12 weeks	42 hours		\$1,352.82
	<u>Project oversight:</u> 6 project team check-ins (2 nurses) x 1 hour	12 hours		\$386.52
Ream of Paper	1		\$4	\$4
Toner Cartridge	1		\$60	\$60
Total cost including staff time:				\$18,552.96
Total cost excluding staff time:				\$64

Appendix L

Doctor of Nursing Practice Essentials

	Description	Demonstration of Knowledge
Essential I <i>Scientific Underpinning for Practice</i>	<p>Competency – Analyzes and uses information to develop practice</p> <p>Competency -Integrates knowledge from humanities and science into context of nursing</p> <p>Competency -Translates research to improve practice</p> <p>Competency -Integrates research, theory, and practice to develop new approaches toward improved practice and outcomes</p>	<ol style="list-style-type: none"> 1. Analyzed research to guide project development and implementation. 2. Utilized Melnyk and Fineout-Overholt's hierarchy of evidence to analyze existing literature. 3. Utilized Plan-Do-Study-Act as the operational framework for project implementation. 4. Disseminated project findings to the project site and discussed and implemented practice changes.
Essential II <i>Organizational & Systems Leadership for Quality Improvement & Systems Thinking</i>	<p>Competency –Develops and evaluates practice based on science and integrates policy and humanities</p> <p>Competency –Assumes and ensures accountability for quality care and patient safety</p> <p>Competency -Demonstrates critical and reflective thinking</p> <p>Competency -Advocates for improved quality, access, and cost of health care; monitors costs and budgets</p> <p>Competency -Develops and implements innovations incorporating principles of change</p> <p>Competency - Effectively communicates practice knowledge in writing and orally to improve quality</p> <p>Competency - Develops and evaluates strategies to manage ethical dilemmas in patient care and within health care delivery systems</p>	<ol style="list-style-type: none"> 1. Advocated for changes in practice to improve safety and quality of care. 2. Developed practice tools and implemented changes that were cost-effective and worked to reduce healthcare-associated costs. 3. Evaluated the benefits of practice changes for the project site and communicated findings and recommendations back to the organization. 4. Monitored costs related to the project, developed a project budget and analyzed the cost-benefit of the project's implementation.
Essential III <i>Clinical Scholarship & Analytical Methods for Evidence-Based Practice</i>	<p>Competency - Critically analyzes literature to determine best practices</p> <p>Competency - Implements evaluation processes to measure process and patient outcomes</p> <p>Competency - Designs and implements quality improvement strategies to promote safety, efficiency, and equitable quality care for patients</p> <p>Competency - Applies knowledge to develop practice guidelines</p> <p>Competency - Uses informatics to identify, analyze, and predict best practice and patient outcomes</p> <p>Competency - Collaborate in research and disseminate findings</p>	<ol style="list-style-type: none"> 1. Completed multiple literature reviews throughout the project to critically analyze literature and develop the project based on best practices. 2. Communicated frequently with project site champion and other project stakeholders. 3. Presented project findings to project stakeholders. 4. Developed a plan to disseminate research findings to another organization via publication to further share the project findings.
Essential IV <i>Information Systems – Technology &</i>	<p>Competency - Design/select and utilize software to analyze practice and consumer information systems that can improve the delivery & quality of care</p>	<ol style="list-style-type: none"> 1. Developed a new tool based on evidence-based findings from literature reviews.

<p><i>Patient Care Technology for the Improvement & Transformation of Health Care</i></p>	<p>Competency - Analyze and operationalize patient care technologies Competency - Evaluate technology regarding ethics, efficiency and accuracy Competency - Evaluates systems of care using health information technologies</p>	<ol style="list-style-type: none"> 2. Utilized the organization's electronic health record to collect project data. 3. Implemented documentation changes in the electronic health record to improve data collection and tracking.
	<p>Description</p>	<p>Demonstration of Knowledge</p>
<p>Essential V <i>Health Care Policy of Advocacy in Health Care</i></p>	<p>Competency- Analyzes health policy from the perspective of patients, nursing and other stakeholders Competency – Provides leadership in developing and implementing health policy Competency –Influences policymakers, formally and informally, in local and global settings Competency – Educates stakeholders regarding policy Competency – Advocates for nursing within the policy arena Competency- Participates in policy agendas that assist with finance, regulation and health care delivery Competency – Advocates for equitable and ethical health care</p>	<ol style="list-style-type: none"> 1. Adapted educational material to make it specific for the project and project site and disseminated it throughout the project site. 2. Provided staff education to improve project implementation compliance. 3. Educated project stakeholders regarding practice changes related to project implementation. 4. Provided leadership, guidance, and support for project participants.
<p>Essential VI <i>Interprofessional Collaboration for Improving Patient & Population Health Outcomes</i></p>	<p>Competency- Uses effective collaboration and communication to develop and implement practice, policy, standards of care, and scholarship Competency – Provide leadership to interprofessional care teams Competency – Consult intraprofessionally and interprofessionally to develop systems of care in complex settings</p>	<ol style="list-style-type: none"> 1. Met with project stakeholders throughout the project process to discuss the development of the project and progress of the project throughout implementation. 2. Provided education and leadership for the interprofessional team that participated in the project. 3. Collaborated frequently with the project site champion about project progress and changes throughout project implementation.
<p>Essential VII <i>Clinical Prevention & Population Health for Improving the Nation’s Health</i></p>	<p>Competency- Integrates epidemiology, biostatistics, and data to facilitate individual and population health care delivery Competency – Synthesizes information & cultural competency to develop & use health promotion/disease prevention strategies to address gaps in care Competency – Evaluates and implements change strategies of models of health care delivery to improve quality and address diversity</p>	<ol style="list-style-type: none"> 1. Utilized Plan-Do-Study-Act as the operational framework and the Institute for Healthcare Improvement Triple Aim, to develop and implement the project. 2. Developed a project that addressed two Health People 2023 goals and problems that have been noted by the NC Department of Health and Human Services. 3. The project worked to address a growing area of concern that impacts a vulnerable population.
<p>Essential VIII <i>Advanced Nursing Practice</i></p>	<p>Competency- Melds diversity & cultural sensitivity to conduct systematic assessment of health parameters in varied settings</p>	<ol style="list-style-type: none"> 1. Completed CITI Modules for Research Investigators and Key Personnel and Responsible Conduct of Research.

	<p>Competency – Design, implement & evaluate nursing interventions to promote quality</p> <p>Competency – Develop & maintain patient relationships</p> <p>Competency – Demonstrate advanced clinical judgment and systematic thoughts to improve patient outcomes</p> <p>Competency – Mentor and support fellow nurses</p> <p>Competency – Provide support for individuals and systems experiencing change and transitions</p> <p>Competency – Use systems analysis to evaluate practice efficiency, care delivery, fiscal responsibility, ethical responsibility, and quality outcomes measures</p>	<ol style="list-style-type: none"> 2. Designed and implemented a new project tool based on best evidence. 3. Developed project stakeholder and participant relationships throughout the project process. 4. Utilized advanced clinical judgement to make adjustments throughout the project to improve outcomes.
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